vantage, when presenting the analytic method to the student, of applying it in the first instance in the systematic study of a few in. The discovery of these documents is due to Dr teresting curves. In deference to usage, a chapter on the circle is introduced immediately after that on the straight line; but, if experience is to be trusted, it is better in a first course to proced from the straight line directly to the parabola, so that, as early as possible, the student may get the impression which comes from seeing a method employed in the investigation of new material. The part of the book devoted to solid geometry is more extended than is customary in elementary texthere given should be easily accessible to stu- Hudson, since the author is satisfied that no book, the present work follows the fortunate Outside of the new documentary evidence above modern tendency toward the practical and referred to, the narrative of Hudson's life is forms as good a treatise upon the subject as a condensation of the facts that have been possible for the non-collegiate student.

A MANUAL OF PRACTICAL ASSAYING. By the late H. van F. Furman. vised and enlarged by W. D. Pardoe. Machine Shop Drawings. 497 pp.; 8vo. New York: John Drawings, Making Shop Wiley & Sons, 1909. Price, \$3.

This standard work on assaying has, in the (sixth) edition, been thoroughly revised and brought up-to-date. The chapters on zinc, water, and coal analyses have been rewritten, and minor changes have been made in certain to those who do not thoroughly understand parts due to the description of new methods. Because of their increasing importance commercially, chapters have been added on the assay of telluride ores, tungsten, molybdenum, and vanadium. On the latter important subjects the reputation of the work as one of the leading text-books on the subject has been completely maintained and the usefulness of the whole enhanced.

STRUCTURAL DETAILS. Elements of De-York: John Wiley & Sons, 1909, able one for the purpose, being used. Price, \$2.25.

The title of this volume corresponds to a course of instruction conducted by the author in the College of Civil Engineering in Cornell University during the past nineteen years. In this course the students receive their first in- readers of the SCIENTIFIC AMERICAN that we struction in the application of the principles of mechanics to the design of the details of many respects problems involving timber construction are better adapted for this purpose than if confined to structural steel. It may lieves, however, that the importance of careful will be ready about the latter part of December study of every detail can only thus be properly emphasized. In practice it seems to be the exception rather than the rule to give the same attention to details of timber structures as to those of steel. In the interest of sound engineering practice it is essential that all connections and details have the same degree of security as the framed members. In several articles the order of design is given in full, with a view of economizing the time of the student, and of promoting systematic habits in making the computations required, these objects being regarded as important elements in efficient engineering education and practice. Whereas the book is intended for college use, much of it is so written as to be intelligible without the mathematics involved and valuable to the practical carpenter or builder desirous that his work shall be on sound principles or interested in the theory upon which are founded the rules of his practice.

THE INTERNAL COMBUSTION ENGINE. By H. E. Wimperis. 320 pp.; 8vo.; fully ill. New York: D. Van Nostrand Company, 1909. Price, \$3.

This is the first treatise on gas, gasoline engines we have seen which goes as thoroughly into the subject both theoretically and practically as do the best text-books on the steam engine. The author traces the energy that drives our engines all the way from solar heat and molecular action to the uses to which the modern internal combustion engine is applied, covering sufficiently the laws of thermodynamics, the chemistry of combustion and explosion, the best design in gas engines and producers, and oil and gasoline en-The final chapter on gasoline engine efficiency and rating is the best we have seen on this much debated question, and is in so far AND EACH BEARING THAT DATE practical and helpful to the amateur and the sportsman as to discuss the modification of [See note at end of list about copies of these patents.] accepted ratings which should be made in hillclimbing and other automobile competitions.

HENRY HUDSON. A Brief Statement of His Aims and Achievements. By Thomas A. Janvier. To which is added a newly discovered partial record, now first published, of the trial of the mutineers by whom he and others were abandoned to their death. New York and London: Harper & Bros. 148 pp.; 12 ill.; 16mo. Price, 75 cents.

The Hudson-Fulton Celebration has aroused keen interest in the life of one of the most romantic characters among the explorers and navigators of the sixteenth and seventeenth centuries. The book before us is divided into two parts, the first consisting of a brief sketch of the life of Henry Hudson, and the second

portant properties, partly because of the ad- dealing with newly-discovered documents. The latter have remained neglected for three centuries, and are here published for the first time R. G. Marston, M.A., as a result of a search in the Record Office in London. The story of the trial is of great interest, but of little satisfaction, inasmuch as we are ignorant of what punishment, if any, was inflicted upon the muti-neers of the "Discovery." The importance of these documents is that they establish the fact (until now not established) that the mutineers were brought to trial, and that they embody a sworn testament, hitherto unproduced, of six members of Hudson's crew concerning the mubooks; but it is desirable that the material tiny. The illustrations include no portrait of Although intended as a college text. authentic portrait of the man is in existence recorded by Hudson's authoritative biographers, notably Purchas, Gerritz, Van Meteren Asher, Murphy, Brodhead, and Read.

Drawings, Making Shop Sketches and Laying Out Work. By Fred H. Colvin, A.S.M.E., F.I. New York: McGraw, Hill Book Company, 1909. 16mo.; 139 pp. Price, \$1.

This little book is intended to be a help the reading of drawings, rather than an attempt to teach drawing in itself. It shows how seen and unseen portions are represented. , the use of full and dotted lines, the way in which different views are drawn, and how to study them all so as to secure a correct idea of the shape of the piece represented. Many actual examples are given from the drawing room practice of the leading shops in this country, and the meaning of each carefully sign of Heavy Framing. By H. S. explained. The book is an eminently practical Jacoby. 368 pp.; 8vo.; 6 folding plates and 34 full-page ill. New York: Labr Wilson 2 Control of the control

A Book of Fourth-Dimension Essays.

The subject of the fourth dimension seems to have aroused so much interest among the have decided to publish in book form the prize essay, the three essays that received honorable structures. Experience has shown that in mention, and about sixteen of the best essays which were submitted in the recent Fourth Di mension Contest. The entire collection will be edited by Prof. H. P. Manning, who will preappear at first as if too much attention to pare an introduction of considerable length, in details is given in the examples on the design which the subject of the fourth dimension of joints, beams, and trusses. The author be-will be simply and lucidly discussed. The book

Legal Notices

PATENTS

INVENTORS are invited to communicate with Mnnn & Co., 361 Broadway, New York, or 625 F Street, Washington, D. C., in regard to securing valid patent protection for their inventions. Trade-Marks and Copyling registered. Design Patents and Foreign

A Free Opinion as to the probable patentability of an invention will be readily given to any inventor furnishing us with a model or sketch and a brief description of the device in question. All communications are strictly confidential. Our Hand-Book on Patents will be sent free on request.

Ours is the Oldest agency for securing patents it was established over sixty years ago.

MUNN & CO., 361 Broadway, New York Branch Office, 626 F St., Washington, D. C.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending October 26, 1909,

Account register, Clundt & Reidt	938.214
Acid derivative, guaia col carbenate sulfo, A.	000,==1
Einhorn	938,132
Acid, derivative of aminoarylarsinic, Ehrlich	
& Bertheim	
Advertising device, J. E. Dowsing	
Agglomerating machine, O. Crochet	938,217
Agricultural machine seat adjusting mechan-	
ism, J. Burd	937,922
Air and steam coupling, automatic, J. V.	005 004
Robinson	
Air brake systems, angle cock support and	937,839
lock for, W. E. Sharp, reissue	13,029
Air compressor and intercooler, combined, J.	10,020
G. Levner	938,004
Air inlet, fresh, E. B. Henry	938,145
Air ship, W. C. Perry	937,956
Air supply device, fresh. F. S. Lippitt	937,827
Air through barrels, pneumatic syphoning	
system for circulating, J. F. McLain	938,014
Alloy, metallic. G. Hartmann	938,422
Alumina, manufacture of, G. McCulloch	938,269
Alumina, recovery of soda in the manufac-	
ture of H. C. Peffer 938 270	938 432

_ 1			
The	-	945 1	Door release, electrically operated, W. H.
cen-	Amusement device, N. P. Lithander 937,5 Amusement device, J. J. Tanner 938,1	179	Snyder
ime,	Animal trap, J. Jackson 938,2 Animal trap, J. D. Pettit 938,5	239 [] 397 []	Door stop, W. Boettcher 938,114 Draft equalizer J. Van Metre 937,975
Dr.	Animal trap, J. Jackson 938,2 Animal trap, J. D. Pettit 938.3 Ankle brace, F. J. Sescila 938,3 Apparel attachment, wearing, A. Goldberg 938,5 Apparel Lattachment, wearing, A. Goldberg 938,5	440 i	Draft equalizer, L. E. Ward 937,900
h in	Arch support, D. Livignano 937,8	830	Draft collers, etc., covering for, Z. T. Subers 938,087
the	Autographic register D T Darker 0381	162	Draw bar and draft attachment, W. Ember-
sfac-	Ax, S. Amster	911 1	ger
pun-	Ax, S. Amster 937, Axle nut locking device, T. W. Caudle 937, Axle skein, E. D. Hassenplug 937, Ball mill, P. T. Lindhard 937, Bath tub leg, W. H. Lose 938, Bettory W. Condition 939,	924 1 936	Drilling attachment for various classes of machines, F. E. Bocorselski 938,113
uti- e of	Ball mill, P. T. Lindhard 937,8	826	Dynamos and motors, means for holding in place laminations of alternating current,
fact	Batt rub leg, W. H. Lose 938, Battery, W. Gardiner 938, Battery case, glass storage, F. L. O. Wadsworth 938, Bearing, L. C. Trent 937, Bearing, antifriction, C. A. Latham 937, Bearing hall C. F. Ionkins 937,	312	place laminations of alternating current, C. E. Wiley
eers	Battery case, glass storage, F. L. O. Wads-	445	C. E. Wiley 938,033 Egg beater, M. D. Christin 938,369 Egg case fastening, J. G. Dutschke 938,131
ly a	Bearing, L. C. Trent 937,	974	Electric alarm, R. C. Bronson
six	Bearing, antifriction, C. A. Latham 937,	251 [] 811 []	Electric alarm, R. C. Bronson 937,919 Electric attachment plug, S. W. Ito. 938,238 Electric furnace, A. C. Higgins, reissue 13,027 Electric heater, H. W. Denhard 938,127
mu-	Beater and mixer, P. L. Bean 938,	407	Electric heater, H. W. Denhard 938,127
t of	Beet digger and topper, W. C. Mauer 938.	263 j	Electric protection system, O. Jacobson 937,941 Electric wiring protecting box, H. W. Eden. 938,373
t no ence.	Rolt fastening device T R Colden 938	306 1 049	Electric wiring protecting box, H. W. Eden. 938,373 Electrical devices, strain relief for, G. W. Goodridge
bove		255	Electrodes, making active material for stor-
e is	Billet heating furnace, C. J. F. Johnson 938,	,424	Electrodes, making active material for storage battery, J. W. Aylsworth 938,451 Electrolytic apparatus, A. Brichaux 937,918
been	Binder, loose sheet book, E. Jay	057 1	Elevator, D. C. Suplee 938,027 Elevator, J. S. Muckle 938,268
gra-	Blanks, machine for the formation of, D.	115	Embroidery punching tool, M. N. Jarvis 938,384
eren,	Blanks, machine for the formation of, D. J. Bogan 938, Block signal system, Nix & Dalgarn 938,	.331	Engine electric igniter, gas, J. A. Charter 918,123 Engine reversing mechanism, traction, J. D.
	Boaru. See Game Boaru.	040	Musser
ing	Boiler alarm, F. C. McAdam	0001	J. A. LEWSUM
hes,	Boiler furnace, steam, F. A. Shoemaker 938, Boiler tube cleaner, J. D. Thompson 938.	,022 289	Evener, W. A. Paul
H.	Book, car record, A. J. Camp 937,	923	Exerciser, F. P. Fay
rk:	Crump	,370	Exercising apparatus, W. P. Stull 938,348 Exercising apparatus, electrical, W. C.
909.	Boller tube cleaner, J. D. Thompson. 938, Book, car record, A. J. Camp. 937, Book leaves, reinforcement for, F. H. Crump. 938, Book mark, line guide, and pencil holder, combined, M. E. Smoot. 938,	025	Exerciser, F. P. Fay 938,045 Exercising apparatus, W. P. Stull 938,348 Exercising apparatus, electrical, W. C. Shaufer 938,399 Exercising machine, L. S. Hackney 937,795
		,020	Exhibition apparatus, R. C. Adams. 937,981 Explosion engine, F. H. Treat. 938,401
help	mel	,325 .413	Explosion engine, F. H. Treat
tand	Bottling machine, liquid, F. W. Jacob 938,	,240	Fabrics and other materials, apparatus for
an	Bottle, non-refillable, H. W. Deutsch, 938,303, 938, Bottling machine, liquid, F. W. Jacob. 938, Brake head, adjustable, W. E. Fowler, Jr. 937, Brick, facing, J. N. McQuern. 938, Brick setting frame, R. C. Penfield. 937, Brick, vitrified paving, K. Langenbeck. 937, Brick by W. Brick School, 938,	,430	impregnating, E. W. Strohn 937,889 Fastening, H. E. Percival 938,073
2wor	Brick setting frame, R. C. Penfield 937, Brick, vitrified naving, K. Langenbeck 927	,955 ,8 2 2	Feed box and driver's back rest, combina-
nted, y in	Diusu, r. W. Michi	,275	tion, J. J. Moriarty 938,069 Feed water heater, H. Etheridge 938,134 Feeder, poultry, J. R. Ryan 988,342 Feeding and watering device, A. C. Mar-
v to	Brush, cloth steaming, Svoboda & Kopecky. 938, Brush, fountain paint, O. Anderson 938,	,362	Feeding and watering device, A. C. Mar-
idea	Brush, fountain paint, O. Anderson	,431 ,393	som 937,947 Fence machine, wire, J. W., P. W., and W.
Iany	Building construction, E. D. Martin 938, Building mold, D. M. Eddy 937, Burner attachment, F. J. Farr. 937, Button making machine, A. C. Jones 938, Cable hauling apparatus, F. Shaw 938, Cable highly 6 F. Strahler 938	781	H. Sommer
ving-	Button making machine, A. C. Jones 937,	,989 ,150	Fence post more, P. J. Haas 937,793 Fence post or stay, P. Arendt 938.296
this			Fence post or stay, P. Arendt
fully	Calking tool, right and left, A. Serfoss 938, Camphene, preparation of, O. L. A. Dubosc 937,	,173	Filtering and washing the filtered material, apparatus for, Grothe & Carter 938,378
tical rav-	Can testing machine. C. B. McDonald 938.	.1651	Filtering apparatus, C. W. Schultze 938,279 Fire box. W. D. Boyce
suit-	Car brake, Rote & Shee	,340	Flag or signal, G. W. Dallimore 938,221 Float ball and float valve connection, A. E.
~	Car coupling operating mechanism, auto-	,104	Noonan 938,071
	Car coupling operating mechanism, automatic, E. E. Turney, reissue	,030 427	Flue, sectional smoke, S. B. Goucher 938,140 Flush tank, B. Walker, Jr 938,294
	Car door hanger, freight, A. O. Banks 937	,751	Flush tank, B. Walker, Jr. 938,294 Flushing apparatus, E. Opperman 938,018 Flushing apparatus, C. A. Wulf 938,195 Forge and furnace, W. N. Best 938,111 Form gage, E. R. Sextone 938,280 Freezing plate, R. H. Kirk 938,061 Frost overcoming means, Harding & Pagel, 937,952 Fruit gatherer, C. G. Hannah, 937,797
ys.	Car fender, Bruce & Coutts 938, Car mover, W. McLeish 938, Car, passenger railway, J. H. E. Branson 938, Car pipe line coupling, P. A. Senecal 937, Car with D. N. Legita. 937	,328	Forge and furnace, W. N. Best 938,111
eems	Car pipe line coupling, P. A. Senecal 937	,874	Freezing plate, R. H. Kirk
the twe	Car sand box, D. B. Keeports	,153 ,813	
prize	Cars, traveling ladder for sleeping, S. M. Niblack 938		Fruit package, J. A. Hilliker
rable	Carbureter, M. F. Mieville	5.VII	Furnace charging apparatus, blast, F. H.
ssays	Carousel power mechanism, H. B. Auchy 937	7,750	Crockard
1 Di-	Carpet end binder, aisle, E. Posson 938 Carpet molding, Rodgers & Schwartz 938	5.17U L	Bevan 938,112 Game board, R. A. Hallock 937,796
will pre-	Carpet molding, Rodgers & Schwartz 938 Cart and wagon bodies, wear strip for, J. T. Hamilton 938	3.230	Game board. C. Tanron
h, in	T. Hamilton 938 Cart, dump, L. H. & A. Young 938 Cart, dump by a reserved was proposed for make	3,198	Garment rack, B. Harskowitch 938,231
nsion	Castings by air pressure, means for making, O. J. Sayers	,964	Garment rack, B. Harskowitch 938,231 Gas air heater, F. S. Lamson 937,821 Gas burner, T. S. Philpott 938,019 Gas burner, F. T. Todd 938,182 Gas burner, A. Holtman 938,423
book	1 Catch, salety, A. J. Thurstans 958	3,090	Gas burner, A. Holtman 938,182
nber.	Unain wrench, C. E. Bonner 937	1,917	Gate, W. B. Homer 937,997
	I Chair attachment E Schulz 938	2 179 !	Gear cutting machine, T. C. Dill 938,304 Gears, adjustable device for yieldingly hold-
	Charm and trimming, E. S. Goddard. 937 Cheese cutting apparatus, L. J. Kunick. 938 Chuck, S. T. Lewis 938	3,063	ing beveled, E. J. Loring 937,831
	Ulgar lighter, electric, S. A. Campbell 938	3,368	Gearing, power transmission and reversing, Crane & King
	Circuit breaker, automatic, J. N. Kelman 938 Circuit closing and breaking device for elec-	3,324	Glass beveling machine or apparatus, W. O.
	trically operated annunciators, etc., A. May	3.394	Bailey
	Clamp, F. J. Christman 937 Clasp, L. S. Murdock 937	7,766	mechanism for. H. Douchamp 938.305
	Cleaning device, G. B. Hakins 938	3,421	Glass, making wire, C. J. Jungers. 938,385 Governor, bench, A. S. B. Little 937,828 Governor, engine, S. S. Hall 937,993
vith	Clothes line fastener, A. Bertram	- 1	Grain hulls, apparatus for removing, G. E.
· UT	gan	7,823	Henry
ard in-	Clothes wringer, Walther & Scherer 938 Clutch and governor, combined, F. E. Parker. 937	3,358 7.851	Grate shaker, W. J. Simpson 937,967 Grave filling apparatus, D. A. Sparks 937,882 Grinder for cutter bars, G. B. Hudson 937,939 Grinding device, interior, J. R. Keller 938,387
hts	Clutch, frictional, W. H. Haggard 938	3,317	Grinding device, interior, J. R. Keller 938,387
ign	Coaster and bottle opener, E. A. Parker 937 Cock, stop and waste, W. H. Smith 938	₹.442	Grinding machine, saw tooth, W. H. Lucas. 938,159 Grinding mill, F. Nolte
	Column clamp A. H. Schward, Ir. 938	3,097	Grooving machine cutter head, H. B. Ross. 937,962
nta- an y	Colter, plow, W. J. Wieder. 938 Column clamp, A. H. Schwerd, Jr. 938 Comb, E. Caldwell 938	3,040	Guns and rifles, magazine lock for take down repeating shot, F. Hardy 937,934
and	Combing machine feeding device, Heilman. J. C. A. Wenning	3.189	Hair growing device, Daggett & Slinghart. 938,125 Hammer, P. H. Bartsch 937,915
All	Composing machine, record strip, Bancroft & Indahl 938	2000	Hammer nail holding attachment, P. Carls-
Our	Indahl 938 Composition of matter, Rowe & Howard 937 Computing device, J. S. Dinkelspiel 938	7,869	80n 937,987 Hammer or the like, drop, E. Holmgren 937,938
on	Computing device, J. S. Dinkelspiel 938 Concrete building making machine, A. S.	3,222	Harrow, E. D. Orton
oda;	Merriett	3,010	
	Concrete for the construction of fireproof buildings, fiber, G. Rosenleaf937	- 1	mend 938.398
ork		7,868	mend 938.398
	Concrete post, reinforced, P. J. Haas 937 Condiment holder, A. Hitt 937	7,794 7.995 (mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 988,257
c, l	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,380 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,277
C,	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,380 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,008
c,	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,287 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,277 Hat sweat band, N. R. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252
	Condiment holder, A. Hitt 937 Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler.	7,794 7,995 8,414 7,847	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,280 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,277 Hat sweat band, N. R. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,076
o. NS	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847 7,971	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,380 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat weat band, N. R. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,076 Hay take and stacker, combined, C. A. Robben 938,076 Hay tedder, A. Dobey 938,129
	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847 7,971 8,121	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,836 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,271 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,252 Hay rake and stacker, combined, C. A. Robben 938,252 Heatter, W. G. Glenn 937,788 Heating apparatus, E. B. Smith 937,878
	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847 7,971 8,121 7,965 8,199 8,233	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,836 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,271 Hat sweat band, N. R. Marshman 937,446 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,252 Hay rake and stacker, combined, C. A. Robben 938,252 Heating apparatus, E. B. Smith 937,788 Hinge, gate, A. Higgins 937,879 Hitching device, detachable, W. Hayarand 937, 900
	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847 7,971 8,121 7,965 8,199 8,233 8,031 7,840	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,836 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,271 Hat sweat band, N. R. Marshman 937,446 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,252 Hay rake and stacker, combined, C. A. Robben 938,252 Heating apparatus, E. B. Smith 937,788 Hinge, gate, A. Higgins 937,879 Hitching device, detachable, W. Hayarand 937, 900
	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847 7,971 8,121 7,965 8,199 8,233 8,031 7,840 8,353 7,846	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,280 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,277 Hat sweat band, N. R. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,008 Hay tedder, A. Dobey 937,846 Hay tedder, A. Dobey 937,878 Heater, W. G. Glenn 937,878 Heating apparatus, E. B. Smith 937,879 Hinge, gate, A. Higgins 937,804 Hitching device, detachable, W. Hazzard 937,800 Hoe, O. T. Cuppet 938,035 Hortzontal boller, D. A. Beyl 938,035 Horn support, B. Mazanek 938,343
	Condiment holder, A. Hitt	7,794 7,995 8,414 7,847 7,971 8,121 7,965 8,199 8,233 8,031 7,840 8,353 7,846	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8267 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat pin, I. M. Savit 938,281 Hat person your 938,267 Hat sweat band, N. E. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,009 Hay tedder, A. Dobey 938,129 Heating apparatus, E. B. Smith 937,789 Heating apparatus, E. B. Smith 937,879 Hinge, gate, A. Higgins 937,800 Hotching device, detachable, W. Hazzard 937,800 Hoe, O. T. Cuppet 938,039 Horn support, B. Mazzanek 938,009 Horseshoe calk, J. C. Schneider 938,8343 Hose and pipe coupling, E. Marek 937,833
	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Copying machine cutting device, Zeiss & Rudet 938 Corn husking machine, M. G. Harvey. 938 Corn tester, seed, C. E. Twamley, reissue. 13 Corner staying machine, W. F. Morse 937 Corset, K. V. Tojetti 938 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate collansible Smith & Coserove 937	7,794 7,795 8,414 7,847 7,971 3,121 7,965 8,199 8,233 3,031 7,840 8,353 7,856 8,224 8,244 8,244	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,836 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,208 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,262 Hay rake and stacker, combined, C. A. Robben 938,252 Heating apparatus, E. B. Smith 937,788 Hinge, gate, A. Higgins 937,804 Hitching device, detachable, W. Hazzard 937,800 Hote, O. T. Cuppet A. Beyl 938,035 Horn support, B. Mazznek 938,009 Horseshoe calk, J. C. Schneider 938,343 Hose and pipe coupling, E. Marek 937,833 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,843
NS	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Copying machine cutting device, Zeiss & Rudet 938 Corn husking machine, M. G. Harvey. 938 Corn tester, seed, C. E. Twamley, reissue. 13 Corner staying machine, W. F. Morse 937 Corset, K. V. Tojetti 938 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate collansible Smith & Coserove 937	7,794 7,795 8,414 7,847 7,971 3,121 7,965 8,199 8,233 3,031 7,840 8,353 7,856 8,224 8,244 8,244	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8267 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat pin, I. M. Savit 938,281 Hat press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,264 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,076 Hay tedder, A. Dobey 938,129 Heating apparatus, E. B. Smith 937,788 Hinge, gate, A. Higgins 937,804 Hitching device, detachable, W. Hazzard 937,804 Hoe, O. T. Cuppet 938,035 Horn support, B. Mazanek 938,009 Horseshoe calk, J. C. Schneider 938,343 Hose and pipe coupling, E. Marek 937,833 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,838 Hose coupling, I. H. Towne 938,183 Hobe coupling and turn plug, T. A. Arthur 938,297
NS	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7,794 7,795 8,414 7,847 7,971 8,121 7,965 8,123 8,233 7,840 8,353 7,840 8,353 7,856 8,224 8,244 7,913 8,041 7,913 8,041 7,913 8,041 7,913 8,041	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8257 Hat frame machine, Hoppe & Becker 938,8281 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,271 Hat sweat band, N. R. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,076 Hay tedder, A. Dobey 938,129 Heating apparatus, E. B. Smith 937,788 Hinge, gate, A. Higgins 937,804 Hitching device, detachable, W. Hazzard 937,804 Hot, O. T. Cuppet 938,035 Horn support, B. Mazanek 937,837 Horseshoc calk, J. C. Schneider 938,335 Hose and pipe coupling, E. Marek 937,833 Hose coupling, F. Vlach 938,035 Hose coupling, F. Vlach 938,035 Hose coupling, J. H. Towne 938,183 Hose coupling and turn plug, T. A. Arthur 938,220 Hydrant, stand pipe, and the like, H. S. Lange 938,064
NS	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Copying machine cutting device, Zeiss & Rudet Corn husking machine, M. G. Harvey. 938 Corn husking machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corton gin, E. L. Peterson 937 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 937 Cream separator, K. O. A. Carlsson. 937 Creal and kit, combined, Wakefield & Harter 938 Crib or bed, folding, E. Gundelach 938	7,794 7,795 8,414 7,847 7,971 8,121 7,965 8,123 3,031 7,840 8,353 7,840 8,353 7,840 8,224 7,986 8,244 7,986 8,244 7,986 8,243 8,341	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8267 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat pin, I. M. Savit 938,207 Hat sweat band, N. E. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,009 Hay tedder, A. Dobey 938,129 Heater, W. G. Glenn 937,788 Heating apparatus, E. B. Smith 937,879 Hinge, gate, A. Higgins 937,804 Hitching device, detachable, W. Hazzard 937,800 Hore, O. T. Cuppet 938,035 Horn support, B. Mazzanek 938,009 Horseshoe calk, J. C. Schneider 938,343 Hose and pipe coupling, E. Marek 937,833 Hose coupling, F. Vlach 938,039 Hose coupling, F. Vlach 938,292 Hydrant, stand pipe, and the like, H. S. Lange 938,064
NS	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 938 Corn husking machine cutting device, Zeiss & Rudet 938 Corn husking machine, W. F. Morse 937 Corset, K. V. Tojetti 938 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Cotton gin, W. D. Doremus 937 Cotton gin, W. D. Doremus 937 Cotte, collapsible, Smith & Cosgrove. 937 Crate, collapsible, Smith & Cosgrove. 937 Crate, folding, S. W. Banks, Jr. 937 Cream separator, K. O. A. Carlsson. 937 Creel and kit, combined, Wakefield & Harter 938 Crib or bed, folding, E. Gundelach 938 Cultivator, F. E. & J. S. Bradley. 937 Cultivator adjustable tool joint, W. H.	7,794 7,994 7,995 8,414 7,847 7,971 8,121 7,965 8,199 8,233 8,353 7,840 8,353 7,846 8,244 7,913 7,986 8,244 7,913 7,986 8,233 8,315 7,764	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,836 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat pin, I. M. Savit 938,281 Hat press, automatic, A. C. Laughlin 938,262 Hay rareler, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,076 Hay tedder, A. Dobey 938,129 Heater, W. G. Glenn 937,788 Heating apparatus, E. B. Smith 937,879 Hinge, gate, A. Higgins 937,804 Hitching device, detachable, W. Hazzard 937,800 Hore, O. T. Cuppet 938,035 Horn support, B. Mazzanek 938,009 Horseshoe calk, J. C. Schneider 938,343 Hose and pipe coupling, E. Marek 937,833 Hose coupling, F. Vlach 938,035 Hose coupling, F. Vlach 938,183 Hose coupling and turn plug, T. A. Arthur 938,297 Hub fastener, T. J. Cupstid 938,064 Lange 938,064 Lydraulic machine for making casing, J. R. French 937,894
NS	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Coyling machine cutting device, Zeiss & Rudet 938 Corn husking machine, M. G. Harvey. 938 Corn husking machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corset, K. V. Tojetti 938 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 937 Cream separator, K. O. A. Carlsson. 937 Creal and kit, combined, Wakefield & Harter 938 Cultivator, F. E. & J. S. Bradley. 937 Cultivator adjustable tool joint, W. H. Dunsha 933	7,794 3,414 7,847 7,971 3,121 7,965 8,199 8,199 8,323 3,031 7,840 8,323 7,856 8,224 7,7840 8,233 8,353 7,856 8,244 7,880 8,244 7,880 8,247 7,789 7,778	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8267 Hat frame machine, Hoppe & Becker 938,8281 Hat pin, I. M. Savit 938,281 Hat person under the service of t
NS ATE	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Coyling machine cutting device, Zeiss & Rudet 938 Corn husking machine, M. G. Harvey. 938 Corn husking machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corset, K. V. Tojetti 938 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 937 Cream separator, K. O. A. Carlsson. 937 Creal and kit, combined, Wakefield & Harter 938 Cultivator, F. E. & J. S. Bradley. 937 Cultivator adjustable tool joint, W. H. Dunsha 933	7,794 3,414 7,847 7,971 3,121 7,965 8,199 8,199 8,323 3,031 7,840 8,323 7,856 8,224 7,7840 8,233 8,353 7,856 8,244 7,880 8,244 7,880 8,247 7,789 7,778	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8267 Hat frame machine, Hoppe & Becker 938,8281 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,208 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,262 Hay rake and stacker, combined, C. A. Robben 938,262 Heating apparatus, E. B. Smith 937,788 Hitching apparatus, E. B. Smith 937,804 Hitching device, detachable, W. Hazzard 937,804 Hitching device, detachable, W. Hazzard 937,804 Horizontal boiler, D. A. Beyl 938,035 Horn support, B. Mazanek 938,049 Horseshoe calk, J. C. Schneider 938,343 Hose coupling, F. Vlach 938,049 Hose coupling, F. Vlach 938,049 Hose coupling, F. Vlach 938,049 Hose coupling and turn plug, T. A. Arthur 938,297 Hub fastener, T. J. Cupstid 938,220 Hydraulic machine for making casing, J. R. French 937,954 Ice making applatace, C. C. Madson 938,250 Impression apparatus, L. Huffman 938,381 Incubator, C. E. Adair 938,260 Incubator, E. A. Maisch 938,260
NS ATE	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Coyling machine cutting device, Zeiss & Rudet 938 Corn husking machine, M. G. Harvey. 938 Corn husking machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corset, K. V. Tojetti 938 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 937 Cream separator, K. O. A. Carlsson. 937 Creal and kit, combined, Wakefield & Harter 938 Cultivator, F. E. & J. S. Bradley. 937 Cultivator adjustable tool joint, W. H. Dunsha 933	7,794 3,414 7,847 7,971 3,121 7,965 8,199 8,199 8,323 3,031 7,840 8,323 7,856 8,224 7,7840 8,233 8,353 7,856 8,244 7,880 8,244 7,880 8,247 7,789 7,778	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,3257 Hat frame machine, Hoppe & Becker 938,3251 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,277 Hat sweat band, N. E. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,008 Hay tedder, A. Dobey 938,129 Heater, W. G. Glenn 937,788 Heating apparatus, E. B. Smith 937,890 Hitching device, detachable, W. Hazzard 937,800 Hitching device, detachable, W. Hazzard 937,800 Horseshoe calk, J. C. Schneider 938,335 Hose and pipe coupling, E. Marek 938,009 Horseshoe calk, J. C. Schneider 938,338 Hose coupling, F. Vlach 938,035 Hose coupling, F. Vlach 938,035 Hose coupling, J. H. Towne 938,123 Hose coupling and turn plug, T. A. Arthur 938,297 Hub fastener, T. J. Cupstid 938,200 Hydrant, stand pipe, and the like, H. S. Lange 938,044 Hydrant, stand pipe, and the like, H. S. Lange 937,990 Hydrant, stand pipe, and the like, H. S. Lange 937,990 Hydrach 938,259 Impression apparatus, L. Huffman 938,259 Impression apparatus, L. Huffman 938,250 Incubator, C. E. A. Maisch 938,260 Incubator, automatic heat regulating, W.
NS ATE ents.] 38,214 38,132	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Copying machine cutting device, Zeiss & Rudet Corn husking machine, M. G. Harvey. 938 Corn husking machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Cotton gin, E. L. Peterson 937 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 937 Cream separator, K. O. A. Carlsson. 937 Creal and kit, combined, Wakefield & Harter 938 Crib or bed, folding, E. Gundelach 938 Cultivator, F. E. & J. S. Bradley. 937 Cultivator, automatic adjustable, W. L. Logan 938 Cultivator, automatic adjustable, W. L. Logan 938 Curtain bracket, J. D. Sullivan 938 Curtain fastener, Johnson & Cotton. 937 Cusoidor, McDermott & Morv. 937	7.794 3,414 7,847 7,971 3,121 3,121 7,965 3,233 3,031 7,965 8,244 8,244 8,244 8,244 7,785 8,244 8,244 7,795 8,244 8,244 7,795 8,244 8,244 7,795 8,244	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,3257 Hat frame machine, Hoppe & Becker 938,3251 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,277 Hat sweat band, N. E. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,076 Hay tedder, A. Dobey 938,129 Heater, W. G. Glenn 937,788 Heating apparatus, E. B. Smith 937,890 Hitching device, detachable, W. Hazzard 937,800 Hitching device, detachable, W. Hazzard 937,800 Horseshoe calk, J. C. Schneider 938,334 Hose and pipe coupling, E. Marek 938,009 Horseshoe calk, J. C. Schneider 938,334 Hose and pipe coupling, E. Marek 938,009 Horseshoe calk, J. C. Schneider 938,343 Hose coupling, F. Vlach 938,259 Hoylarolt, stand pipe, and the like, H. S. Lange 938,200 Hydrant, stand pipe, and the like, H. S. Lange 938,260 Impression apparatus, L. Huffman 938,281 Incubator, C. E. Adair 938,200 Incubator, E. A. Maisch 938,200 Incubator, metallic, F. C. Perkins 938,210 Incubator, metallic, F. C. Perkins 938,271 Incubator, metallic, F. C. Perkins 938,271
NS ATE ents.] 38,214 38,133 37,925	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Copying machine cutting device, Zeiss & Rudet Corn husking machine, M. G. Harvey. 938 Corn husking machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Cotton gin, E. L. Peterson 937 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 937 Cream separator, K. O. A. Carlsson. 937 Creal and kit, combined, Wakefield & Harter 938 Cultivator, F. E. & J. S. Bradley. 937 Cultivator, automatic adjustable, W. L. Lugan 938 Cultivator, automatic adjustable, W. L. Lugan 938 Cuttain fastener, Johnson & Cotton. 937 Cusnidor, McDermott & Mory. 938 Cusnidor, McDermott & M	7.794 3,414 7,847 7,971 3,121 3,121 7,965 3,233 3,031 7,965 8,353 8,353 8,353 8,244 8,244 8,244 7,795 8,243 8,244	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 958,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,389 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat pin, I. M. Savit 938,281 Hat weat band, N. E. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,006 Hay tedder, A. Dobey 938,129 Heater, W. G. Glenn 937,788 Heating apparatus, E. B. Smith 937,879 Hinge, gate, A. Higgins 937,800 Hitching device, detachable, W. Hazzard 937,800 Hortseshoe calk, J. C. Schneider 938,334 Hose and pipe coupling, E. Marek 938,009 Horseshoe calk, J. C. Schneider 938,343 Hose coupling, F. Vlach 938,833 Hose coupling, F. Vlach 938,833 Hose coupling, F. Vlach 938,833 Hose coupling and turn plug, T. A. Arthur 938,297 Hub fastener, T. J. Cupstid 937,804 Hydrant, stand pipe, and the like, H. S. Lange 938,044 Hydrant, stand pipe, and the like, H. S. Lange 938,044 Hydrant, stand pipe, and the like, H. S. Lange 938,041 Hydrant, stand pipe, and the like, H. S. Lange 938,042 Incubator, C. E. Adair 938,260 Incubator, E. A. Maisch 938,261 Incubator, E. A. Maisch 938,261 Incubator, metallic, F. C. Perkins 938,271 Indicator See Test indicator 1881,990 187,984
NS 38,214 38,132 37,922 38,217	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Copying machine cutting device, Zeiss & Rudet Corn husking machine, M. G. Harvey. 938 Corn husking machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Cotton gin, E. L. Peterson 937 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 937 Cream separator, K. O. A. Carlsson. 937 Creal and kit, combined, Wakefield & Harter 938 Cultivator, F. E. & J. S. Bradley. 937 Cultivator, automatic adjustable, W. L. Lugan 938 Cultivator, automatic adjustable, W. L. Lugan 938 Cuttain fastener, Johnson & Cotton. 937 Cusnidor, McDermott & Mory. 938 Cusnidor, McDermott & M	7.794 3,414 7,847 7,971 3,121 3,121 7,965 3,233 3,031 7,965 8,353 8,353 8,353 8,244 8,244 8,244 7,795 8,243 8,244	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8267 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,208 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,262 Hay rake and stacker, combined, C. A. Robben 938,262 Hay rake and stacker, combined, C. A. Robben 938,262 Heating apparatus, E. B. Smith 937,788 Hitching device, detachable, W. Hazzard 937,800 Hitching device, detachable, W. Hazzard 937,800 Horseshoe calk, J. C. Schneider 938,035 Hose and pipe coupling, E. Marek 937,833 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,834 Hose coupling, J. H. Towne 938,183 Hose coupling and turn plug, T. A. Arthur 938,297 Hub fastener, T. J. Cupstid 938,220 Hydrant, stand pipe, and the like, H. S. Lange 937,854 Ice making appliance, C. C. Madson 938,250 Impression apparatus, L. Huffman 938,251 Impression apparatus, L. Huffman 938,251 Impression apparatus, L. Huffman 938,251 Incubator, E. A. Maisch 938,250 Incubator, E. A. Maisch 938,250 Incubator, See Test indicator. Insulator backet, E. V. Brown E. E.
NS 38,214 38,133 37,022 38,227 37,922	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas 937 Cooking cabinet and heat conservator, B. F. Carpenter 938 Cooler. See Milk cooler. Copper from raw unroasted ores and other products, extraction of, G. Schneider. 937 Copying machine cutting device, Zeiss & Rudet Corn husking machine, M. G. Harvey. 938 Corn husking machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Corner staying machine, W. F. Morse 937 Cotton gin, E. L. Peterson 937 Cotton gin, E. L. Peterson 937 Cotton gin, W. D. Doremus 938 Couch, A. H. Keller 938 Crate, collapsible, Cosgrove & Smith 938 Crate, collapsible, Cosgrove & Smith 937 Cream separator, K. O. A. Carlsson. 937 Creal and kit, combined, Wakefield & Harter 938 Cultivator, F. E. & J. S. Bradley. 937 Cultivator, automatic adjustable, W. L. Lugan 938 Cultivator, automatic adjustable, W. L. Lugan 938 Cuttain fastener, Johnson & Cotton. 937 Cusnidor, McDermott & Mory. 938 Cusnidor, McDermott & M	7.794 3,414 7,847 7,971 3,121 3,121 7,965 3,233 3,031 7,965 8,353 8,353 8,353 8,244 8,244 8,244 7,795 8,243 8,244	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8267 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,208 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,262 Hay rake and stacker, combined, C. A. Robben 938,262 Hay rake and stacker, combined, C. A. Robben 938,262 Heating apparatus, E. B. Smith 937,788 Hitching device, detachable, W. Hazzard 937,800 Hitching device, detachable, W. Hazzard 937,800 Horseshoe calk, J. C. Schneider 938,035 Hose and pipe coupling, E. Marek 937,833 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,834 Hose coupling, J. H. Towne 938,183 Hose coupling and turn plug, T. A. Arthur 938,297 Hub fastener, T. J. Cupstid 938,220 Hydrant, stand pipe, and the like, H. S. Lange 937,854 Ice making appliance, C. C. Madson 938,250 Impression apparatus, L. Huffman 938,251 Impression apparatus, L. Huffman 938,251 Impression apparatus, L. Huffman 938,251 Incubator, E. A. Maisch 938,250 Incubator, E. A. Maisch 938,250 Incubator, See Test indicator. Insulator backet, E. V. Brown E. E.
NS ATE ents.] 38,214 38,132 37,922 37,923	Condiment holder, A. Hitt Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7,794 5,414 7,995 5,414 7,997 1,847 7,997 1,847 7,996 8,199 8,234 8,303 1,866 8,224 7,784 8,391 7,798 8,293	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,8267 Hat pin, I. M. Savit 938,271 Hat sweat band, N. R. Marshman 938,208 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,262 Hay rake and stacker, combined, C. A. Robben 938,262 Hay rake and stacker, combined, C. A. Robben 938,262 Heating apparatus, E. B. Smith 937,788 Hitching device, detachable, W. Hazzard 937,800 Hitching device, detachable, W. Hazzard 937,800 Horseshoe calk, J. C. Schneider 938,035 Hose and pipe coupling, E. Marek 937,833 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,095 Hose coupling, F. Vlach 938,834 Hose coupling, J. H. Towne 938,183 Hose coupling and turn plug, T. A. Arthur 938,297 Hub fastener, T. J. Cupstid 938,220 Hydrant, stand pipe, and the like, H. S. Lange 937,854 Ice making appliance, C. C. Madson 938,250 Impression apparatus, L. Huffman 938,251 Impression apparatus, L. Huffman 938,251 Impression apparatus, L. Huffman 938,251 Incubator, E. A. Maisch 938,250 Incubator, E. A. Maisch 938,250 Incubator, See Test indicator. Insulator backet, E. V. Brown E. E.
NS ATE ATE 38,214 38,132 38,217 37,922 37,963 37,636	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 988 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7.794 3,414 7,995 3,414 7,971 3,121 7,965 8,199 8,233 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 8,303 7,840 8,303 7,840 8,303 8,303 7,840 8,303 8,303 7,840 8,303 8,303 7,840 8,303 8,303 7,840 8,303 8,	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,385 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,267 Hat sweat band, N. E. Marshman 938,008 Hay carrier, J. Ney 937,846 Hay press, automatic, A. C. Laughlin 938,252 Hay rake and stacker, combined, C. A. Robben 938,076 Hay tedder, A. Dobey 938,129 Heater, W. G. Glenn 937,788 Heating apparatus, E. B. Smith 937,879 Hinge, gate, A. Higgins 937,800 Hitching device, detachable, W. Hazzard 937,800 Hortseshoe calk, J. C. Schneider 938,343 Hose and pipe coupling, E. Marek 938,009 Horseshoe calk, J. C. Schneider 938,343 Hose coupling, F. Vlach 938,035 Hose coupling, F. Vlach 938,035 Hose coupling and turn plug, T. A. Arthur 938,297 Hub fastener, T. J. Cupstid 938,220 Hydrant, stand pipe, and the like, H. S. Lange 938,064 Hydraulic machine for making casing, J. R. French 937,890 Incubator, C. E. Adair 938,260 Incubator, E. A. Maisch 938,261 Incubator, E. A. Maisch 938,271 Indicator See Test indicator 937,984 Insulator, strain, T. Varney 937,937 Insulator, strain, T. Varney 937,937, 938,409 Insulator, strain, T. Varney 937,897, 938,409 Insulator, strain, T. Varney 937,897, 938,409 Internal combustion engine, J. V. Rice, Jr. 937,862 Ions, process and apparatus for the produc-
NS 38,214 38,133 37,925 37,839 113,026	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 988 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7.794 3,414 7,995 3,414 7,971 3,121 7,965 8,199 8,233 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 7,840 8,303 8,303 7,840 8,303 7,840 8,303 8,303 7,840 8,303 8,303 7,840 8,303 8,303 7,840 8,303 8,303 7,840 8,303 8,	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,385 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat press, automatic, A. C. Laughlin 938,262 Hay rake and stacker, combined, C. A. Robben 938,076 Hay tedder, A. Dobey 938,129 Heating apparatus, E. B. Smith 937,789 Hitching device, detachable, W. Hazzard 937,800 Hoe, O. T. Cuppet 937,927 Horizontal boiler, D. A. Beyl 938,035 Horn support, B. Mazanek 938,035 Horn support, B. Mazanek 938,035 Hose coupling, F. Vlach 938,035 Hose coupling, F. Vlach 938,335 Hose coupling, F. Vlach 938,290 Hydrant, stand pipe, and the like, H. S. Lange 937,854 Hydraulic machine for making casing, J. R. French 938,220 Hydraulic machine for making casing, J. R. French 938,220 Hydraulic machine for making casing, J. R. French 938,220 Hydraulic machine for making casing, J. R. French 938,220 Incubator, C. E. Adair. 938,250 Incubator, E. A. Maisch 938,250 Incubator, See Test indicator. Insulator bracket, E. V. Brown 937,894 Insulator, strain, Varney & Rose 937,896 Insulator, strain, T. Varney 937,997, 938,092 Insulator, strain, T. Varney 937,897, 938,092 Insulator, strain, T. Jusher 937,896
NS 38,214 38,132 37,926 38,277 37,936 13,023 38,000 38,146	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7.794 3,414 7,995 3,414 7,971 3,121 7,965 8,199 8,233 8,031 7,840 8,303 7,840 8,234 7,880 8,244 7,880 8,244 7,798 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 8,393 8,393 8,393 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,494 8,393 8,494 8,	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,385 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat guarding land land land land land land land land
NS 38,214 38,132 37,926 38,277 37,936 13,023 38,000 38,146	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7.794 3,414 7,995 3,414 7,971 3,121 7,965 8,199 8,233 8,031 7,840 8,303 7,840 8,234 7,880 8,244 7,880 8,244 7,798 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 8,393 8,393 8,393 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,494 8,393 8,494 8,	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,385 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat guarding land land land land land land land land
NS 38,214 38,132 37,926 38,277 37,936 13,023 38,000 38,146	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7.794 3,414 7,995 3,414 7,971 3,121 7,965 8,199 8,233 8,031 7,840 8,303 7,840 8,234 7,880 8,244 7,880 8,244 7,798 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 8,393 8,393 8,393 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,494 8,393 8,494 8,	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,385 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat guarding land land land land land land land land
NS 38,214 38,132 37,926 38,277 37,936 13,023 38,000 38,146	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7.794 3,414 7,995 3,414 7,971 3,121 7,965 8,199 8,233 8,031 7,840 8,303 7,840 8,234 7,880 8,244 7,880 8,244 7,798 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 8,393 8,393 8,393 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,494 8,393 8,494 8,	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,385 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat guarding land land land land land land land land
NS 38,214 38,132 37,926 38,277 37,936 13,023 38,000 38,146	Condiment holder, A. Hitt Confectioners' melting table, G. F. Dickson. 938 Container closure, H. N. Norton. 937 Converter starting device, vapor, P. H. Thomas	7.794 3,414 7,995 3,414 7,971 3,121 7,965 8,199 8,233 8,031 7,840 8,303 7,840 8,234 7,880 8,244 7,880 8,244 7,798 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 7,778 8,391 8,393 8,393 8,393 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,244 8,393 8,494 8,393 8,494 8,	mend 938,398 Harvester, beet, F. C. Harding 937,994 Harvester, corn, B. E. Reed 938,335 Hasp fastener, C. Lovely 938,257 Hat frame machine, Hoppe & Becker 938,385 Hat guard, C. H. Shaw 938,281 Hat pin, I. M. Savit 938,281 Hat press, automatic, A. C. Laughlin 938,262 Hay rake and stacker, combined, C. A. Robben 938,076 Hay tedder, A. Dobey 938,129 Heating apparatus, E. B. Smith 937,789 Hitching device, detachable, W. Hazzard 937,800 Hoe, O. T. Cuppet 937,927 Horizontal boiler, D. A. Beyl 938,035 Horn support, B. Mazanek 938,035 Horn support, B. Mazanek 938,035 Hose coupling, F. Vlach 938,035 Hose coupling, F. Vlach 938,335 Hose coupling, F. Vlach 938,290 Hydrant, stand pipe, and the like, H. S. Lange 937,854 Hydraulic machine for making casing, J. R. French 938,220 Hydraulic machine for making casing, J. R. French 938,220 Hydraulic machine for making casing, J. R. French 938,220 Hydraulic machine for making casing, J. R. French 938,220 Incubator, C. E. Adair. 938,250 Incubator, E. A. Maisch 938,250 Incubator, See Test indicator. Insulator bracket, E. V. Brown 937,894 Insulator, strain, Varney & Rose 937,896 Insulator, strain, T. Varney 937,997, 938,092 Insulator, strain, T. Varney 937,897, 938,092 Insulator, strain, T. Jusher 937,896

November 6, 1909.	
L for waste and overflow, J. B. Wise Lamp bracket, N. W. Shipp Lamp shade, art, F. S. Verbeck Lamp socket and automatic switch, com-	938,102
Lamp socket fastening electric H Chris-	937,858
Lamp socket, incandescent, H. A. Bretz	938,212 938,038
sen Lantern, J. O. Alwood Lap-forming mechanism, C. E. T. Scribner. Last, T. Amnelius	938, 213 937,748 938,437 937,982
Lathe head stock, White & Medford Lathe tool, A. Stevenson Lathe, turret, C. L. Libby	938,030 937,886 938,156 937,775
Lamp socket retainer, electric, N. Unristensen Lantern, J. O. Alwood Lap-forming mechanism, C. E. T. Scribner. Last, T. Amnelius. Lathe head stock, White & Medford Lathe tool, A. Stevenson Lathe, turret, C. L. Libby Lathes, planers, etc., tool for, W. E. Delano Lavatories, etc., leg attachment for, W. H. Lose Leather splitting machine, J. Busfield Lens grinding implement, F. Buchhop. Light extinguisher, automatic, H. E. Mat-	938,157
Lens grinding implement, F. Buchhop Light extinguisher, automatic, H. E. Mat- thai	937,765 937,763 937,836
Liquid concentrating apparatus, O. Venter Loading machine, grain, B. F. Kepner Lock. J. F. Beatty	937,976 937,814 937,756
Lock, H. G. Voight. Locomotive boiler, S. A. Reeve Logging swivel joint, J. V. Robinson	938,444 938,171 937,960
Light extinguisher, automatic, H. E. Mat- thai Lightning rod, J. F. Goetz Liquid concentrating apparatus, O. Venter Lock G. F. Beatty Lock, H. G. Voight Loccomotive boiler, S. A. Reeve Logging swivel joint, J. V. Robinson Loom shuttle or filling carrier, O. A. Sawyer Loom, wert-replenishing, H. Wyman, 937,979,	937,983 937,888 937,980
Loom yarn stripper, weft-replenishing, F. W. Moore Looms, weft-controlling mechanism for weav-	937.838
Lubricator, C. A. Dotson Lumber loading mechanism, F. Pearson Mail chute, L. Ehrlich	938,415 937,954 938,416
Manicuring device, H. W. Durkee Manure drill, A. Spies Mask, breather, E. Kuhn	938,227 938,177 938,247 937 809
Mercury circulating device, J. Whiting Message recording apparatus, F. A. Skelton. Messenger hanger, C. E. Cook	938,191 938,441 938,216
Looms, weft-controlling mechanism for weaving, J. Rostron Lubricator, C. A. Dotson	938,122 938,205 937,762
Brightman Metals, uniting, W. Griffith Milk cooler, W. T. Murray Milking apparatus, E. E. Good Milling process, M. C. Peters Miter box, N. P. Lithander Miter box, W. E. Shutts Mixing machine, F. Aeschbach Modding machine	938,377 938,395 937,789
Milling process, M. C. Peters. Miter box, N. P. Lithander. Miter box, W. E. Shutts. Mixing machine, F. Aeschbach.	938,333 937,946 938,282 938,201
Molding machine, H. H. Harris	938,321
Mower, lawn, N. Walker	938,160 937,977 938,100 938,101
Money N. Walker. Mowing machine, G. W. Willis. Muffler, H. B. Winters. Music leaf turner, Stragiotti & Vercellini. Music stand attachment, C. J. Willis. Music al instrument attachment, H. Gunther, Necktie fastener and collar button, T. Papworth	938,085 938,450 938,142
	001,010
Nut lock, T. Hand Occulting light, White & Cornick Oil burner, E. K. Hill Oil burner, G. W. Moore	938,320 938,031 938,236 938,428
Needle serving box, J. Hermann. Nippers, M. Friday. Nut lock, T. Hand Occulting light, White & Cornick Oil burner, E. K. Hill Oil burner, G. W. Moore. Open hearth furnace, Knox & Murray Oranges, machine for washing, A. Taplin. Ores, apparatus for pulverizing, desulfurizing, or oxidizing metallic and other, Royer Luckenbach. Ores, chloridizing, C. A. Diebl	938,245 937,970
Ores, treating poor sulfid, A. Holdsworth	938,005 938,044 938,055
Oxygen and nitrogen compounds, process of and apparatus for the production of, Haber & Koenig	938,316 938,420
Pan lifter, H. Walker. Paper feeding machine, G. B. Maegly Paper lunch box. H. J. Zell.	937,916 938,187 938,0 6 6 938,406
Pencil holder, F. G. Knapp Pendant switch, J. G. Peterson Pendulum bob, rotary, C. Grivolas	937,815 937,857 937,792 937,747 937,873
and apparatus for the production of, Haber & Koenig. Packing rings, making piston, W. Geiser. Packing, steam, O. D. H. Bentley. Pan lifter, H. Walker Paper feeding machine, G. B. Maegly. Paper lunch box, H. J. Zell. Pencil holder, F. G. Knapp. Pendant switch, J. G. Peterson. Pendulum bob, rotary, G. Grivolas. Penholder, J. Altman. Penholder, J. Altman. Penholder, W. T. Nelson. Phonograph, P. Weber. Photographic film developing machine, E. A.	937,873 938,330 9 3 ,905
Phonograph, P. Weber. Photographic film developing machine, E. A. Taylor Piano players, apparatus for producing per- forated records for automatic, H. P. Ball.	938, 2 87 938, 4 52
Picker. See Fruit picker.	.
Pie plate lifter or holder, L. C. Lyzotte Piling, sheet, W. A. Kriedler937,817, Pillow sham holder, M. A. Nally Pine counling. M. F. Kelly	938,258 937,818 938,015 938,425
Pipe main service connection, W. N. Phillips Pipe section mold, curved, W. S. Sigler Pipe threads and like work, machine for	938,425 937,958 938,024
Pie plate lifter or holder, L. C. Lyzotte Pie plate lifter or holder, L. C. Lyzotte Piling, sheet, W. A. Kriedler 937,817, Pillow sham holder, M. A. Nally Pipe coupling, M. F. Kelly Pipe main service connection, W. N. Phillips Pipe section mold, curved, W. S. Sigler Pipe threads and like work, machine for chasing, W. T. Johnston Pipes, transporting bar for, W. S. Sigler Pipes, machine for making continuous, R. F. Dockery	938,058 937,959 938,023
Planetarium, F. J. & W. F. Trippensee	937,892
Planter marking attachment, corn, L. P. Lewis Plastic material into charges, machine for dividing, G. E. Gowdy. Plastic material, machine for dividing, G. E. Gowdy Plastic materials, nested dies for forming bodies from, P. J. Fish, Sr. Plate holder, L. M. Siegel, Pluoger mechanism for jig tanks, G. H. El- more	938,051
Plastic materials, nested dies for forming bodies from, P. J. Fish, Sr	938,047 938,082
Pluoger mechanism for jig tanks, G. H. El- more	938,307 938,001 938,161
Power controlling apparatus, W. R. Mc- Keen, Jr. Pressure regulator, H. F. Smith	937,844 938,346
Printing mechanism, E. W. Dean. Printing press folding apparatus, coupon, J. W. Jones. Printing machine, J. L. Firm. Printing mechanism, E. W. Dean. Printing press folding apparatus, H. F. Bechman	938,243 938,046 938,043
Printing press folding apparatus, H. F. Bechman Propeller, M. D. Thompson Protectors slugg or fasteners machine for	938,364 938,291
inserting, M. F. Brogan Pump, C. R. Green Pump, automatic steam, W. S. Ferguson Division or the steam, W. W. Hitborn	938,118 937,790 938,418 938,146
Printing press folding apparatus, H. F. Bechman Propeller, M. D. Thompson	938,435
F. H. Pierpont	938,074
Pierpont	938,434 938,453
Punch cutting machines, cutter for, F. H. Pierpont Punching machine, J. L. Bernard Pyrometer or heat measuring device, me- chanical, J. L. Zander Rail anticreeper, A. O. Buckius, Jr. Rail clamp, J. C. Crowson Rail joint, A. H. Neypher Rail joint, H. Protheroe, et al. Rail joint and fastener, H. H. Markland Rail joint and the bar and nut lock, C. C. & M. K. Gross	938,210 938,218 938,167
Rail joint and fastener, H. H. Markland Rail joint and tie bar and nut lock, C. C. & M. K. Gross	938,272 938,262 938,314
Railway composite cross tie, O. Gerlach	938,136
Railway danger signal mechanism, R. E. Murphy Railway, pleasure, H. Whiting Railway rail support, A. Neusus Railway switch, automatic, W. L. Kubach Railway tie, P. S. Torrance. Railway tie, C. Lemieux. Railway track construction, A. J. Coover Razor, safety, J. R. Gilda Razor, safety, W. L. & E. J. Nahm Razor stropping device, M. Gallas. Reels, making grading, F. Prinz. Refrigerating apparatus, R. H. Thomas Regenerative reversing furnace, L. L. Knox, 938,246.	938,166 937,819 937,972
Railway tie, G. Lemieux	938,003 937,770 937,992 938 300
Razor stropping device, M. Gallas	937,786 937,861 938,181
negenerative reversing furnace, L. L. Knox, 938,246,	938.426



"Star" Foot and Power Screw Cutting Cross Lathes

FOR FINE, ACCURATE WORK SENECA FALLS MFG. CO. 695 Water Street, Seneca Falls, N. Y., U. S. A.

Engine and Foot Lathes

MACHINE SHOP OUTFITS, TOOLS AND SUPPLIES. BEST MATERIALS. BEST WORKMANSHIP. CATALOGUE FREE SEBASTIAN LATHE CO.. 120 Culvert St., Cincinnati. O.

Your PATENTS Incorporate and BUSINESS in ARIZONA

Laws the most liberal. Expense the least. Hold meetings, transact business anywhere. Blanks, By-Laws and forms for making stock full-paid for cash, property or services, free. President Stoddard, FORMER SECRETARY OF ARIZONA. resident agent for many thousand companies. Reference: Any bank in Arizona

STODDARD INCORPORATING COMPANY, Box8000 PHOENIX, ARIZONA

SENSITIVE LABORATORY BALANCE DEJIGITIVE LABUKATUKY BALIANUE
By N. Monroe Hopkins. This "built-up" laboratory
balance will weigh up to one pound and will turn with a
quarter of a postage stamp. The balance can be made
by any amateur skilled in the use of tools, and the will
work as well as a \$125 balance. The article is accompanied by detailed working drawings showing various
stages of the work. This article is contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1184. Price 10
cents. For sale by MUNN & Co., Inc., \$31 Broadway, New
York City. or any bookseller or newsdealer

Veeder Counters

to register reciprocating movements or revolutions. Cut full size. Booklet Free.

VEEDER MFG. CO. 18 Sargeant St., Hartford, Conn. Cyclometers, Odometers, Tachometers. Counters and Fine Castings.
Represented in Great Britain by Messis. Markt & Co., Ltd., 6 City Road, Finshur; Square, London, E. C., England.



WORK SHOPS of Wood and Metal Workers, without steam power, equipped with BARNES' FOOT POWER

MACHINERY
allow lower bids on jobs, and give
greater profit on the work. Machines
sent on trial if desired. Catalog Free. W. F. & JOHN BARNES CO.
Established 1872.

1999 RUBY ST. ROCKFORD, ILI..

How to Construct An Independent Interrupter

In SCIENTIFIC AMERICAN SUPPLEMENT, 1615.
A. Frederick Collins describes fully and clearly with the help of good drawings how an independent multiple interrupter may be constructed for a large induction

This article should be read in connection with Mr. Collins' article in SCIENTIFIC AMERICAN SUPPLEMENT, 1605. "How to Construct a 100-Mile Wireless Telegraph Cutst."

Each Supplement costs 10 cents; 20 cents for the two. Order from your newsdealer or from MUNN & CO., Inc., 361 Broadway, New York

Two Good Books for Steel Workers

Hardening, Tempering, Annealing and Forging of Steel

By JOSEPH V. WOODWORTH Size 6½ x 9½ inches. 288 pages. 201 illustra-tions. Price \$2.50 postpaid

tions. Price \$2.50 postpaid

THIS is a practical work, treating clearly and concisely modern processes for the heating annealing, forging, welding, hardening and tempering of steel, making it a book of great value to toolmakers and metal-working mechanics in general. Special directions are given for the successful hardening and tempering of steel tools of all descriptions, including milling cutters, taps, thread dies, reamers, hollow mills, punches and dies and various metal-working tools, shear blades, saws, fine cutlery and other implements of steel, both large and small. The uses to which the leading brands of steel may be adapted are discussed, and their treatment for working under different conditions explained; also special methods for the hardening and tempering of special brands. A chapter on case-hardening is also included.

The American Steel holes, are buoyancy spaces rendered Worker

By E. R. MARKHAM

Size 5½ x8 inches. 367 pages. 163 illustrations. Price \$2.50 postpaid tions. Price \$2.50 postpaid

THIS is a standard work on selecting, annealing hardening and tempering all grades of steel, by an acknowledged authority. The author has had twenty-five years' practical experience in steel-working, during which time he has collected much of the material for this book. Careful instructions are given for every detail of every tool. Among the subjects treated are, the selection of steel to meet various requirements, how to tell

The vessel is fitted throughout with a tool. Among the subjects treated are, the selection of steel to meet various requirements; how to tell steel when you see it; reasons for different steels; how to treat steel in the making of small tools. taps, reamers, drills, milling cutters; hardening and tempering dies; pack-hardening; case-hardening; annealing; heating apparatus; mixtures and baths, the best kind, and why; and in fact everything that a steel-worker would want to know is contained in this book.

OUR SPECIAL OFFER: The price of these books is \$2.50 ach, but when the two volumes are ordered from us at one time, we send them prepaid to any address in the world on receipt of \$4,00.

MUNN & COMPANY, Inc. Publishers 361 Broadway, New York

THE 10,000-TON SUCTION DREDGER FOR USE ON THE MERSEY.

(Continued from page 332.) Each valve is of tapered cylindrical form extending the full depth of the hopper, with open-bottomed valve at the lower edge, and has a lift of four feet. These valves are worked by hydraulic cylinders controlled from fore-and-aft gangways and supported by a continuous fore-and-aft girder running the full length of, and above, the hoppers. Guide rings efficiently stayed to the hopper sides are fitted at the upper and lower parts of the valves for steadying the same.

A surface valve with lever for opening or closing it from the gangways is fitted on top of each hopper valve, to drain off the surface water. During dredging operations, the mixture of sand and water is delivered into the landers, and thence falls into the hoppers through the valves already described. The sand settles in the hoppers, while the surface water escapes aft along the waterway formed by the hopper coamings to the weir plates, which can be adjusted to suit the trim of the ship, and then flows overboard through large rectangular shoots, two of which are disposed on each side. When discharging spoil, the hopper valves are raised, and the sand rapidly falls through the openings in the bottom of the vessel.

There is an indicator fitted in the chart room which shows the draft of the ship, together with a complete system of repeating telegraphs and speaking tubes for transmitting orders to the pumping and propelling engine rooms, and to the different winchmen in their respective winch houses. Moreover, there are powerful electric alarm bells fitted to the pipemen's positions. Pushes are provided for each pipeman, and one on the navigating bridge, so as to give alarm in case of necessity.

The hydraulic installation carried out by the builders of the ship comprises a set of three-cylinder inverted high-pressure direct-acting engines having three cranks and three single-acting ram pumps, driven direct from the piston-rod crossheads. The hydraulic pressure is 800 pounds per square inch, and is used for working the four main sluice valves on the suction pipes at the sides of the vessel, as well as those on the delivery pipes at the ends of the landers, and for opening and closing the twelve hopperdischarge valves.

The propelling machinery is right aft, and consists of two sets of inverted, vertical, triple-expansion engines of the same type as the pumping engines, each having cylinders of 221/2 inches, 37 inches, and 61 inches diameter, respectively, by a stroke of 45 inches. Steam is raised in four large single-ended marine boilers measuring 151/2 feet by 121/2 feet, placed between the propelling and pumping engine rooms and constructed for a working pressure of 180 pounds per square inch. Watertight doors controlled from the upper deck are fitted in the machinery space bulkheads to provide access from one room to another.

The side compartments adjacent to the hoppers, as well as the two forward necessary for the vessel to support her weight of hull, plant, and load on the specified draft of water.

The engineers and officers are housed in the poop and the crew in the forecas-

The vessel is fitted throughout with a complete installation of electric light on the incandescent system. The engines and dynamo are placed in the propellingengine room. The engine is of the inclosed type, compound direct double-acting, and coupled direct to the dynamo. which is of the direct-current compoundwound pattern. The powerful windlasses, each driven by separate vertical engines

(Concluded on page 340.)

Home-Made **Experimental Apparatus**

In addition to the following articles, the Scientific American Supplement has published innumerable papers of immense practical value of which over 17,000 are listed in a carefully prepared catalogue, which will be sent free of charge to any address. Copies of the Scientific American Supplement cost 10 cents each.

If there is any scientific, mechanical, or engineering subject on which special information is desired, some papers will be found in this catalogue, in which it is fully discussed by competent authority.

A few of the many valuable articles on the making of experimental apparatus at home are given in the following list:

ELECTRIC LIGHTING FOR AMATEURS. The article tells how a small and simple experimental installation can be set up at home. Scientific American Supplement 1551.

AN ELECTRIC CHIME AND HOW IT MAY E CONSTRUCTED AT HOME, is described in cientific American Supplement 1566.

THE CONSTRUCTION OF AN ELECTRIC THERMOSTAT is explained in Scientific American Supplement 1566.

HOW TO MAKE A 100-MILE WIRELESS ELEGRAPH OUTFIT is told by A. Frederick ollins in Scientific American Supplement 1605.

A SIMPLE TRANSFORMER FOR AMA-TEUR'S USE is so plainly described in Scien-tific American Supplement 1572 that anyone can make it.

A ½-H,-P. ALTERNATING CURRENT DY-NAMO. Scientific American Supplement 1558.

THE CONSTRUCTION OF A SIMPLE PHOTOGRAPHIC AND MICRO-PHOTOGRAPHIC APPARATUS is simply explained in Scientific American Supplement 1574.

A SIMPLE CAMERA-SHUTTER MADE OUT OF A PASTEBOARD BOX, PINS, AND A RUBBER BAND is the subject of an article in Scientific American Supplement 1578.

HOW TO MAKE AN AEROPLANE OR GLID-ING MACHINE is explained in Scientific Ameri-can Supplement 1582, with working drawings.

EXPERIMENTS WITH A LAMP CHIMNEY. In this article it is shown how a lamp chimney may serve to indicate the pressure in the interior of a liquid; to explain the meaning of capillary elevation and depression; to serve as a hydraulic tournique, an aspirator, and intermittent siphon; to demonstrate the ascent of liquids in order than the contract of the in exhaustive tubes; to illustrate the phenomena of the bursting bladder and of the expansive force of gases. Scientific American Supplement

HOW A TANGENT GALVANOMETER CAN BE USED FOR MAKING ELECTRICAL MEAS-UREMENTS is described in Scientific American Supplement 1584.

THE CONSTRUCTION OF AN INDEPENDENT INTERRUPTER. Clear diagrams giving actual dimensions are published. Scientific American Supplement 1615.

AMERICAN Supplement 1015,

AN EASILY MADE HIGH FREQUENCY APPARATUS WHICH CAN BE USED TO OBTAIN EITHER D'ARSONVAL OR OUDIN CURRENTS is described in Scientific American
Supplement 1618. A plunge battery of six cells,
a two-inch spark induction coil, a pair of onepint Leyden jars, and an inductance coil, and all
the apparatus required, most of which can be
made at home.

SIMPLE WIRELESS TELEGRAPH SYSTEMS are described in Scientific American Supplements 1363 and 1381.

THE LOCATION AND ERECTION OF A 100-MILE WIRELESS TELEGRAPH STATION is clearly explained, with the help of diagrams, in Scientific American Supplement 1622.

THE INSTALLATION AND ADJUSTMENT OF A 100-MILE WIRELESS TELEGRAPH OUT-FIT, illustrated with diagrams, Scientific American Supplement 1623.

THE MAKING AND THE USING OF A WIRELESS TELEGRAPH TUNING DEVICE. illustrated with diagrams, Scientific American Supplement 1624.

HOW TO MAKE A MAGIC LANTERN, Scientific American Supplement 1546. THE CONSTRUCTION OF AN EDDY KITE. Scientific American Supplement 1555.

THE DEMAGNETIZATION OF A WATCH is thoroughly described in Scientific American Supplement 1561.

HOW A CALORIC OR HOT AIR ENGINE CAN BE MADE AT HOME is well explained, with the help of illustrations, in Scientific American Supplement 1573.

THE MAKING OF A RHEOSTAT is outlined a Scientific American Supplement 1594.

Good articles on SMALL WATER MOTORS are contained in Scientific American Supplement 1494, 1049, and 1406.

HOW AN ELECTRIC OVEN CAN BE MADE is explained in Scientific American Supplement 1472.

THE BUILDING OF A STORAGE BATTERY selescribed in Scientific American Supplement A SEWING-MACHINE MOTOR OF SIMPLE DESIGN is described in Scientific American Sup-

plement 1210.

A WHEATSTONE BRIDGE, Scientific American Supplement 1595.

Good articles on INDUCTION COILS are contained in Scientific American Supplements 1514, 1522, and 1527. Full details are given so that the coils can readily be made by anyone.

HOW TO MAKE A TELEPHONE is described in Scientific American Supplement 966.

A MODEL STEAM ENGINE is thoroughly described in Scientific American Supplement, 1527. HOW TO MAKE A THERMOSTAT is explained in Scientific American Supplements 1561, 1563, and 1566.

ANEROID BAROMETERS, Scientific American Supplements 1500 and 1554.

A WATER BATH, Scientific American Supplement 1464.

A CHEAP LATHE UPON WHICH MUCH VALUABLE WORK CAN BE DONE forms the subject of an article contained in Scientific American Supplement 1562.

Each number of the Scientific American Supplement costs 10 cents by mail.

Order from your newsdealer or from MUNN & CO., Inc., 361 Broadway, New York

and connected by compound positive clutches at both crank and main shafts, are fitted on the forecastle head for working the anchors.

The steam steering is of the Caldwell combined steam and hand type, with control shafting to the steering standard on the navigating bridge, and is placed in the engine-room casing. Hastie's handscrew steering is fitted aft immediately over the rudder head, for use in case the steam gear breaks down. On the starboard side a motor launch is carried under Welin bow davits, ready for immediate use for taking soundings or making observations.

SOME CURIOSITIES OF INVENTION.

(Concluded from page 332.) by cork bulwarks b. We wonder if the inventor really believes in the efficacy of

the hand-operated screw propeller which he has provided.

The Society for the Prevention of Cruelty to Animals would undoubtedly interest itself in restraining the inventor who devised the arrangement here shown to enable a dog or cat to run a sewing machine. We once heard of a man who patented a contrivance for driving a coffee mill by means of a bicycle, so that by the simple contrivance of riding a bicycle it was possible to obtain not only a certain amount of exhilarating exercise, but also to provide enough ground coffee for breakfast. This patentee surely outdoes him. The dog is made to rotate a central shaft carrying a large gear wheel which meshes with a small bevel gear carried on the sewing machine driving wheel. It seems to us that after the dog had sewed one shirt he would be too dizzy to do much more; or perhaps when that occurs, the central shaft is to be driven in the opposite direction.

A grain of common sense is to be found in the trunk that becomes its own luggage trolley, for it must be confessed that the ordinary trunk when full is not the easiest thing in the world to handle. The inventor has provided a single wheel and a folding lever handle which serves the purpose of pushing the wheeled trunk along. He evidently was not concerned much with the problem of the amount of space consumed by the wheels and the handle when folded within the

The handle shown for carrying parcels used in carriages has been employed in European railways. The device consists simply of two straps and a rest board, with the whole easily detachable. Straps serve the purpose of binding the rest board and walking sticks and umbrellas together.

A boat driven by windmills is certainly a mechanical curiosity. Just why this complicated arrangement of bevel gears connecting the propeller shaft with the vertical windmill shaft should be better than canvas transcends our imagination.

There is a touch of the Yankee in the fishing device, the last of the inventions illustrated. Evidently the inventor was accustomed to fishing in streams where bites were few and far between, and where patience was ill rewarded. He has contrived a fishing pole with a swinging arm carrying a clapper which is made to ring a bell as soon as a fish bites and swings the arm down,

BIRDS OF PASSAGE.

(Continued from page 335.)

of the return of the same individuals. Some wonderful European records of the return of a species to a given nesting site are given by the late Prof. Alfred Newton. A common falcon, Falco peregrinus, a cosmopolitan bird commonly known as the duck hawk, in this country, had its eyrie at one point in Finland for 110 years: that is to say, there was at this same point an occupied nest of this species from 1736 to 1855. At Oxbridge, in one or the other of two earthen bottles placed for their use, a pair of blue titmice had their nest every year, with two (Concluded on page 342.)

STILL GROWING Over 210,000 Circulation

LESLIE'S WEEKLY is growing in circulation, influence and advertising value—growing fast.

Over 200,000 people subscribe to or buy LESLIE'S WEEKLY each week because they want an illustrated newspaper and cannot get anything like it elsewhere.

Advertisers use LESLIE'S WEEKLY because they recognize it as the only paper in its class without a competitor in a highly profitable field.

Because in consequence they run less risk of duplicate circulation than in the multitude of other publications which aside from name are all about alike.

Because a big publication like LESLIE'S WEEKLY filled with the finest photographs depicting every important or nationally interesting event makes the best possible history of the world's progress and insures each weekly issue a longer life than most monthly magazines enjoy.

Advertisers who buy space now at the rate of 75 cents a line will get the benefit of this large and rapidly increasing circulation which is absolutely guaranteed.

Advertising Department

LESLIE-JUDGE COMPANY

Western Office 1136-37 Marquette Building CHICAGO, ILL.

Fifth Avenue and 27th Street Brunswick Building **NEW YORK**



BARKER MOTORS

Reliable.-1 1/4 to 10 H. P-Economical

Their perfect operation and reliability are due to common sense mechanical ideas and good construction. While low in price, they are materials with careful attention to details.

G. L. BARKER, NORWALK, CONN.



Just Published—A BOOK OF INTEREST TO RIFLEMEN

The Bullet's Flight from Powder to Target

The Internal and External Ballistics of Small Arms. A Study of Rifle Shooting with the Personal Element Excluded, Disclosing the Cause of the Error at the Target.

Illustrated with one hundred and eighty-eight plates, showing the results of over three hundred rifle experiments performed and chronologically arranged

By F. W. MANN, B.S., M.D.

Size 7½ x 9¾ inches. 384 Pages. Price \$4.00 postpaid

THIS is a thoroughly practical treatise and deals with a subject the literature of which is not commensurate with its importance or interest, and it possesses unusual value, not only because it furnishes a large amount of information, of a wery practical kind, but because this information is the results of a practical experience on the part of the writer, extending over a period of thirty-eight years. The results of the author's experiments, as here given, have been persistently and laboriously worked out with an earnest desire to assist his fellow marksmen. In view of the fact that conjecturing and theorizing have been so prevalent in rifle literature, the work has been kept free from speculation, except where they have either been proved to be false or have been fully substantiated by recorded experiments. Most of the illustrations are photoand morteing have been so predact in trictiterature, the work has been proved to be false or have been fully substantiated by recorded experiments. Most of the illustrations are photographic reproductions of the results of actual tests. Every page is full of interest for the rifle enthusiast. There is a full discussion of various kinds of rifles, of the effect of difference of length, of variations of rifling, etc., as well as of instructive experiments such as that of venting the barrel near the muzzle. An idea of the contents may be gathered from a few of the subjects treated, such as the Personal Element vs. Mechanical Rifle Shooting; Utility of Vented Barrels; High-Pressure Shapshooting Powder; Telescope Mounts; Ruined Rifle Bores vs. Smokeless Powder vs. Primers; Accurate Ammunition Sharpshooting Powder; Telescope Mounts; Ruined Kife Bores vs. Smooketess Powder vs. Primers; Accurate Ammunition Difficulties; Flight of Bullets; Gyration and Oscillation; Motions Executed by Normal Flying Bullets; Determining Rifle Twists; Kinetics of Spin, etc. In many respects this work is unique in the literature that has been published on this subject. It is a thoroughly practical work and will be found to be of very real value to those who are engaged in astudy of the ballistics of the rifle with a view of improving the all-around efficiency of that weapon.

MUNN & COMPANY, Inc., Publishers, 361 Broadway, New York City

Regulator, R. S. Dimond	938,372
Regulator, R. S. Dimond. Rerolling metal shapes from old railway rails, J. E. York. Retort charger, A. S. B. Little. Rings from tubes, machine for turning, W. D. Mitchell	938,197 937,829
Rivet, W. C. Bray	938.116 938,249
Barth Rock drilling machine or engine, L. L. Scott Roost, chicken, J. L. Herman Rotary engine, F. H. Leftwich Rotary engine, C. A. Burrows. Rotary motor, W. S. Elliott. Rotary table, J. F. Beatty Rug hanger, M. Braymes Rule, flexible slide, R. J. Roberts Running gear, C. O. Wyman	937,914 937,872 938,234
Rotary engine, F. H. Leftwich	937.824 938,211 938,228
Rotary table, J. F. Beatty. Rug hanger, M. Braymes. Rule flowible slide R. I. Robarts	937,755 938,117 937,863
Saits, neutralizing solutions of, B. Diamand.	955,125
Collins	938, 2 15 938,367
Saw, metal cutting, W. H. Lucas	938,158 937,904
Scale, computing, L. C. Wetzel	938,096 937,907
Sausage twisting and linking machine, W. J. Collins Saw guide for ax handles, C. D. Bryant Saw, hand, K. Ziegler. Saw, metal cutting, W. H. Lucas. Saw setting machine, H. Wakkins.937,902 to Sawing machine, wood, T. Kimura Scale, computing, L. C. Wetzel Scale spring hanger, L. Wilson. Scale, weighing, J. E. Cochran937,767, Scales, weight recording means for weighing, G. Guldbrandsen. Screw-driver, J. B. Ruple.	938,141 938,341
Seal, box, W. M. Brooks	938,141 938,341 938,206 938,193 938,329
ing, G. Guidbrandsen. Screw-driver, J. B. Ruple. Seal, box, W. M. Brooks. Sealing means, F. A. Winslow. Seat attachment, J. Nause. Seed conveyer, cotton, D. H. Greeson. Self-playing instrument web controlling mechanism, Hamilton & Thayer. Selling liquids, automatic machine for, A. Meinert	938,052 937,933
Selling liquids, automatic machine for, A. Meinert Separating mechanism, J. Loufek Separator. See Cream separator.	938,326 938,256
Separator. See Cream separator. Sewage discharge system, T. Ferguson Sewing machine guide for hat sweats, J. C.	937,784
Sewage discharge system, T. Ferguson Sewing machine guide for hat sweats, J. C. Ringe Shade and fixtures, window, Hughes & Rob- inson	
inson Shade and screen for windows, combination, Hughes & Robinson Shade bracket L. E. McCahan	938,147 937,842
Shade roller, W. D. Janes Shade support. window, C. C. Brown Shaper head, G. V. Fellows	937,842 938,383 938,207 938,135
Shaping machines, combined guard and chip breaker for, W. S. Richards	938,273 938,042 937,807
Sheet feeder, A. J. Hodge Sheet metal into irregular forms, machine for cutting, A. W. B. S. Rohde	937,807 937,865
Shade and screen for windows, combination, Hughes & Robinson	938,403 937,871
Shelf bracket, R. R. Kintz Shock loader, J. B. Schuman Shovel, etc., handle. H. S. Urban	938,000 938,438 937,894
Show rack, O. B. Winston	938,194 937,799 938,103
Sheet metal socket, E. L. Watrous. Sheet of material, composite, L. S. & M. Samuel Shelf bracket, R. R. Kintz. Shock loader, J. B. Schuman. Shovel, etc., handle. H. S. Urban. Show rack. O. B. Winston. Sifter, ash, H. L. Hastings. Sifter, ash, C. Wolfenden. Signal recorder, electric, N. H. Suren, Signal & vstem, W. Mears. Signaling system, O. M. Leich. Signaling system, electrical, F. M. Slough.	938,286 937,837
Signaling system, electrical, F. M. Slough Skate, combined roller and ice, J. A. Nolan.	938,345 938,168
Signal 8vstem, W. Mears. Signaling system, O. M. Leich. Signaling system, electrical, F. M. Slough. Skate, combined roller and ice, J. A. Nolan. Skirt supporter. C. B. Patterson. Sled, bob, N. Koopman. Sled, folding or collapsible. W. H. Coleman. Small arms strikers or firing bolts auto- matic safety device for, J. Tambour.	937,943 938,300
Small arms strikers or firing bolts, automatic safety device for, J. Tambour Smelting, electric, E. R. Taylor Smelting furnace, electric, E. R. Taylor	938,349 938,35 2 938,351
Smoking pipe and making same, corncob, T J. Tyner Sounding tackle Gutt & Heyn	938,443 938 143
Spark plug, O. C. Winestock. Spark plug, W. S. Bechtold Spark plug, F. H. Weinhauer. Speedometer, E. Schneider. Spinning, doubling, and like textile machine	937,908 938,108 938,188
Spinning, doubling, and like textile machine S. Z. de Ferranti. Spinning ring base, M. H. Maloney. Spoke fastener, W. L. Jett.	938,278 938,375 938,392 938,149
Sprayer E Harry	038 144
Stemp canceling F Z Wilkochecky	938,084 937.942 938,098
Steam, apparatus for utilizing exhaust, H	. 938,410
H. Wait. Steam equalizer, H. H. Wait. Steel, producing and refining. F. C. Perkins Step or running board, G. W. Morse Stereotype plate and base, separable, A. F	. 938,357 . 938,356 . 937,855 . 938,163
Stitch separating machine F P Taylor	937,803
Stitching apparatus, book, M. Christensen Stone, manufacture of artificial, W. Lake Stool, F. K. Crumb Stove and water boiler, combination gas, R. Schneider Stove, folding camp, C. L. Swinney Stove, gas, J. I. Orkin	. 937,925 . 938,248 . 938,219
Schneider Stove, folding camp, C. L. Swinney Stove, gas, J. I. Orkin.	938,0 21 937,890 937,951
Stove, gas, J. I. Orkin. Strainer, T. Richardson. Strainer for coffee pots, J. E. Willetts Street sweeper, M. F. Adkins Sugar from whey, extracting milk, Nilsson & Hellovist	. 938,274 . 938,099 . 938,361
Sugar from whey, extracting milk, Nilsson & Hellovist Sugar, producing from ligno-cellulose fer mentable, Ewen & Tomlinson.	
Superheater boiler, E. H. Wells	. 938,449 . 938,336 . 937,957 . 937,758
Switch, A. G. Rhodes. Switch mechanism, electric, J. G. Peterson Switch stand, S. K. Blair. Tag fastener, G. A. Wadsworth. Tag. shipping, J. W. Foster.	
Taiking macrine, L. P. Valiquet. Tape, top, L. M. Victorius. Target practice aiming machine, C. Monroe Teeter board, revolving, R. Barrett. Telegraphy, J. F. Richardson. Teleghone exchange system and apparatus P. H. Menson.	. 938,327 . 937,753 . 938,337
Telephone registers, locking and signaling	, 001,002
system for, A. S. Spiegel	. 937,901 r . 938,039
ston system, O. M. Leich	. 937,909 . 938,154
Telephone transmitters, appliance for us with, C. J. Kintner. Test indicator, P. G. Wheeler. Thread board, W. O. Aldrich. Threshing machine, R. W. Gotshall.938,138 Threshing machine cleaning and sorting de vice, G. Erlinger, Jr. Tie plates, manufacturing, E. H. Bell.	. 938,060 . 937,978 . 938,202 3, 938,139
Threshing machine, R. W. Gotshall. 938,138 Threshing machine cleaning and sorting device, G. Erlinger, Jr	938,139
Time recorder, W. H. Bundy937,920 Timer and distributer, combined, C. T	937,921
Brown Timing machine for use in pigeon races etc., W. McMillan Tire armor R. E. Johnson	. 938,208 3, . 937,848 937,819
rice armor, R. E. Johnson. Tire armor, pneumatic, L. W. Galloway. Tire bolt wrench, G. Lindahl. Tire construction, G. E. Garon. Tire detachable tread, automobile, T. M.	. 937,812 . 938,311 . 937,944 . 937,787
Tire regilient H Klingler reisene	13 009
Tires, means for holding and inflating pnet matic. E. W. Stanley. Toaster, W. J. Stewart. Tobacco leaf feeding device. L. P. Whitake Tobacco, renovating, cleansing, and arome tizing, S. B. Heddles. To the inprotector C. S. Burgan.	937,884 . 937,884
Tobacco, renovating device, D. P. Willtake Tobacco, renovating, cleansing, and aroma tizing, S. B. Heddles	937,80
tizing, S. B. Heddles. Toe tip protector, G. S. Burgan. Tool, E. Bartels. Tool, J. Spaar. Tool, J. Spaar. Tool, C. F. Riesenweber. Top lift flattening machine. A. J. Bolton. Torches, air nump for blow. O. Bernz. Toy, R. R. Essig. Toy, Rure, G. T. Tralf. Toy, mechanical, E. Eastman. Toy rifle, gun, and like arm, G. Schrodel. Trace releaser, W. J. Parvin. Transformer, F. M. Slough.	937,75 938,08 938,33
Top lift flattening machine. A. J. Bolton Torches, air pump for blow. O. Bernz Toy, R. R. Essig.	937,98 937,75 938,41
Toy, figure, G. T. Tralf	. 938,318 . 937,780 . 938,081
Transformer, F. M. Slough	. 938,072 . 937,877

TESTING BITUMENS.

(Concluded from page 336.) penetrated into the specimen. As it is desired to ascertain this with considerable accuracy, it is necessary to magnify the displacement of the rack. This is the office of the pinion and indicator. The dimensions of these are so arranged that a fall of 0.1 millimeter (=0.0039 inch) will correspond to one division on the dial.

Penetration at most temperatures is permitted for just five seconds. At the beginning the reading of the dial is noted, and also at the close. The difference will show the amount of penetration in terms of tenths of a millimeter. But if the test is made at the freezing point of water, or at a lower temperature, the penetration is allowed to continue for a full minute. The weight carried by the needle is not always the same. For temperatures that do not rise above 32 deg. F., the weight is 200 grammes, At 77 deg. F. it is 100 grammes. For a temperature of 100 deg. F. or higher, the weight is reduced to 50 grammes. As the apparatus depending upon the needles weighs just 50 grammes, apart from the weight W, the requisite variations in load are readily made.

The question arises here, however, as to whether there is any point of view from which the amounts of penetration at the various temperatures may be regarded as comparable. Thus Mr. Dow gives the penetrations of three different asphaltic cements, A, B, and C, as follows:

PENETRATION NUMBERS.

Temperature.	Α.	В.	C
32 deg. F	10	13	25
77 deg. F	55	47	45
100 deg. F	150	110	75
115 deg. F	350	220	120

The amount of penetration of A at 32 deg. F. is 10: at 77 deg. F. it is 55. But are the cases comparable? Can we say with an justice that the viscosity in the one case is 51/2 times that in the other? The penetration of 55 was accomplished with half the load and in one-twelfth the time. Offhand, it would seem that the number 55 should be 24 times as great.

There are, however, two other influence at work-one tending to make the number 10 too large, the other tending to reduce it. Falling bodies-and such a body the penetrating needle is-do not have a uniform velocity, but become accelerated. On the other hand, as pointed out by Mr. S. Whinery, the depth of penetration is not a measure of the work done, the needle being in fact of a conical form. The farther the penetration, the greater the amount of material displaced, and the greater the frictional resistance (due to adhesion) per unit of penetration. However, it is conceivable that the form and material of these counteracting factors might be so adjusted as to nullify each other.

With the disturbances arising from acceleration and from variation in resistance eliminated, there still remains the apparently faulty method of varying the weights and the time. It would seem better to maintain these factors precisely the same, or else correct the numbers so as to have them comparable, whatever the temperature. However, the Dow machine has, apparently, proved itself of great value in actual practice. An improved machine has recently been put on the market, in which the framework arrangement supplying weight for the needle is entirely discarded, being replaced by a tube containing the weight and holding the needle. This tube slides in a guide-arm supported by a substantial upright. The extra weight, as may be seen in the engraving, is placed low on the tube, and so will tend to deflect it but little, if at all. The table carrying the specimen is supported by a screw arrangement. This enables the specimen to be brought into contact with the needle at zero position. The mirror, seen at the bottom of the apparatus, enables the operator to determine when contact be-

WANTED.—One third-class ship draftsmen at \$4.00 per diem. A competitive examination will be held December 20, 1909, to fill the above position. For further information address "U. S. Superintending Naval Constructor, New York Ship Building Co. Camden, N. J."

·INVENTORS-

We manufacture all kinds of Machine Novelties. Consult us as to developing, perfecting and marketing your patents. MACHINE ACCESSORIES AND NOVELTIES MFG. CO. PROVIDENCE, R. I.

CONSULTING ENGINEER.

ERNEST L. RANSOME Reinforced Concrete 11 Broadway, New York

SOUTHERN STAMPING & MFG. CO. Manufacturers of special and patented article R. S., Nashville, Tenn.

MACHINES Coriss Engines, Brewers and Bottlers' Machinery. THE VILTER MFG. CO., 899 Clinton St., Milwaukee, Wis

MODELS & EXPERIMENTAL WORK. . V. BAILLARD CO.. 24 Frankfort Street. New York

Expert Manufacturers Fine Jobbing Work RUBBER. PARKER, STEARNS & CO., 288-290 Sheffield Av., B'klyn, N. Y

MODELS & EXPERIMENTAL WORK Chas. E. Dressler & Co., Metropolitan Bldg., 1 Madison Ave., New York

Models, Novelties and Patented Articles NEW YORK FLATIRON CO. Belle Mead, N. J.

HOEFT & COMPANY
Die Makers, Model Makers, Machinery Builders, Ponch Presset
Light and Heavy Stampings. 120 Michigan St., Chicago, Ill., U.S.A

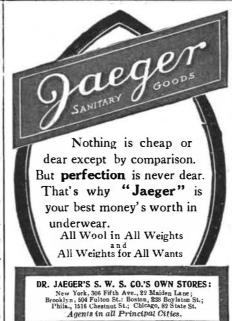


THE BEST EQUIPPED SHOP Mechanical and Electrical Manuf Special Machinery, Jigs, Tools, Repairs, Experimental Devices Designing and Commercializing a Specialty
THE ROWLAND TELEGRAPHIC COMPANY, Baltimore, Md.

NOVELTIES & PATENTED ARTICLES MANUFACTURED BY CONTRACT, PUNCHING DIES, SPECIAL MACHINERY

E.KONIGSLOW STAMPING & TOOL WORKS, CLEVEL AND, O

DRYING MACHINES For Granular Materials S. E. WORKELL Hannibal, Mo., U. S. A.





Looks like a diamond—wears like a diamond—billiancy guaranteed forever—stands filing like a diamond—bas no paste, foil or artificial backing. Set only in solid gold mountings. 1-20th the cost of diamond—paroval. Write for our catalog De Lave

Remoh Jewelry Co., 453 N. Broadway, St. Louis



HOLTZER-CABOT **MAGNETOS**

Rugged, Durable and Highly Efficient. For Automobiles, Moto Boats, etc. Send for Bulletin No. 15S7.

THE HOLTZER-CABOT ELECTRIC CO. BROOKLINE, MASS







The Middle West Number

SCIENTIFIC **AMERICAN**

On December 11th, 1909, the Scientific American will issue a number devoted entirely to the wonderful Middle West region of the United States, a number which will set forth broadly and lucidly not only the agricultural interests of that region, but also those larger engineering undertakings which are des-tined to transform the Middle West, in part at least, into a manufacturing ter-

With that object in view the Middle West Number will publish articles on the following

I. The Chicago and Gulf Waterway.—An illustrated description of Chicago's drainage canal, an engineering work which stands witbout a parallel in the world.

II. Chicago as a Railroad Center.—Chicago is the greatest railroad center in the world.

111. The Wonderful Grain Trade of Chicago.

-Chicago is an enormous wheat bin, into which much of the grain raised in the middle West is poured.

IV. Shipping on the Great Lakes.—Most of the iron orethat is now smelted in Pennsylvania is mined in the middle West. To transport it to the blast furnaces of the East at a cost which will enable American steel makers to compete with foreign steel makers, it has been necessary to devise a new kind of lake transportation. Ships of 10,000 and 12,000 tons burden have been constructed which convey ore at small cost through the Great Lakes, and which are without a counter to a whom a proper to a world. counter part anywhere in the world,

V. The Haudling and Shipment of Iron Ore.— The above-mentioned fact that iron ore is mined in the middle West and smelted in the East has necessitated not only the construction of special freight.carrying steamers, but also the designing of special machinery for loading and unloading the ore from the steamers.

VI. Freighting on the Mississippi.—Freighting on the Mississippi is a more important industry than most of us may realize.

VII. The Steel Industry.—One of the greatest steel plants in the world is that which has been built at

VIII. The Freight Subway System of Chicago.—Chicago can boast of a rational system of banding freight by means of subways.

IX. The Water Supply of Chicago.—Chicago's source of water is Lake Michigan. The city is supplied with water by means of a tunnel which extends two miles out into the lake. X: Rectaining Arid Lands.—The United States Government has under way many irrigation projects for the purpose of rectaining lands which are and, but which will clossom if properly watered.

XI. Harvesting the Grain of the Middle West, Farms that cover not some but the West.—Farms that cover not acres but square niles crops that aggregate not simply bushels but car-loads have rendered it necessary to plant and harvest on an unprecedented scale in the middle West. The in genious agricultural machinery which has been de signed to cope with these peculiar conditions is described and illustrated.

The Middle West Number will be more than twice the size of the regular SCIE NIFIC AMERICAN. It will be lavishly illustrated. It will be contained in a colored cover which strikingly depicts Chicago's grain elevators at work. Order from your newsdealer or from MUNN & COMPANY, Inc., 361 Broadway, New York City

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from print issued since 1863, will be furnished from patent in the foregoing list, or any patent in print issued since 1863, will be furnished from print issued since 1863, will be furnished from number of the patent desired and the date he given. Address Munn & Co., Inc., 361 Broadway, New York.

Canadian patents may now be obtained by the inventions named in the foregoing list. For terms and further particulars address Munn & Co., Inc., 361 Broadway, New York.

MUNN & COMPANY, Inc., 361 Broadway, New York City

tween needle and specimen has been secured. The counterbalancing arrangement used in the Dow apparatus is replaced by the pressure of a spring. The remaining features are essentially the same. The rejection of the framework device weighting the needle and the string counterbalance would seem to be steps in advance, especially if the replacements will yield as good results.

A practical word may be added as to the results shown in the table of penetrations. The cement A is regarded as showing as great a variation as is safe for pavement use. A greater variability in viscosity at the different temperatures would be difficult, if not impossible, in practical application. If soft enough for 32 deg. it would be too soft at high temperatures. C shows a steadiness which would be valuable if it were not for an accompanying bad quality. Its ductility (at 77 deg. F.) is but 20, while A is 300. B shows less variability in viscosity than A and more than C. Its ductility (at 77 deg. F.) is 75.

The susceptibility to change in hardness resulting from application of heat or to ageing may be ascertained by utilizing the penetrometer.

It will be seen from a consideration of the facts which have been recounted, that the tests for ductility and viscosity are of great practical utility.

ī		
П	Trigger mechanism, E. R. Williams Trigger mechanism. single, P. H. Robinson. Trolley, O. W. Brenizer. Trolley, Pole, J. Harsen. Trousers, F. H. Sprague Trowel, P. Neerup Truck, S. Craig Truck lateral motion roller bearing device, car, J. C. Barber Trunk tray support, C. F. Rom Trube mill cement feeder, A. E. Sparrow. Tunnel, subaqueous, E. W. Moir. Turbine, elastic fluid, F. Hodgkinson. Turbine, elastic fluid, F. Hodgkinson. Turbine, muffler and fly-wheel, combiner, J. A. Lawson.	938,192
П	Trigger mechanism. single, P. H. Robinson. Trolley, O. W. Brenizer.	937,864
П	Trolley pole, J. Harsen	937,935
ı	Trousers, F. H. Sprague937,883.	938,347
П	Truck, S. Craig.	938.301
П	car. J. C. Barber	937 752
Ц	Trunk tray support, C. F. Rom	937,866
1	Tunnel, subaqueous, E. W. Moir	938,176 938 265
	Turbine, elastic fluid, F. Hodgkinson	937,996
1	Turbine muffler and fly-wheel, combiner. J.	938,309
-	A. Lawson	938,253
1	Typewriter keyboard lock, W. P. Kidder	938,354
	Typewriting machine, A. T. Brown	938,119
1	Typewriting machine, Tanner & Jones	938,350
i	Typewriting machine, J. B. Secor	938,439
١	Ultramarines, manufacture of, F. Bellet	938,408
1	Valve, H. Gibbs.	938, 00 7
1	Valve, F. Schreidt	938,080
1	Valve, air brake safety, O. Gibson.	93 , 2 92 937,991
1	Valve, barrel, C. F. Terney	938,288
1	Valve, engineer's, W. Ohlsen	937,773
-	Valve gear, A. M. Wolf	938,360
.	Karcher	938,386
	Valve, pressure regulating, H. F. Cunning	937,774
	Valve, vacuum air, C. A. Dunham	938,226
1	Vault, burtal, H. Lanius	938,365 938, 2 50
1	Vault, burial, G. HessVehicle brake, R. R. Hart	938,379
1	Vehicle, dumping, C. Miller	938,012
1	Vehicle, motor, H. Pieper	938, 0 53 93 7 859
١	Vehicle motor fore carriage, Vignle & Forget	938,094
١	Vehicle ventilator, F. R. Harvey	937,940 938,232
1	Vehicle wheel, E. HartmanVehicle wheel, E. Hopkinson	937,798
'	Vehicle wheel, L. M. Wolffsohn	937,910
•	Vending machine, coin controlled, H. A.	938,184
	Turbine, elastic fluid, F. Hodgkinson. Turbine, elastic fluid, S. Z. de Ferranti. Turbine muffler and fly-wheel, combiner, J. A. Lawson. Typewriter attachment, W. A. Tompkins. Typewriter geven developed fock, W. P. Kidder. Typewriting machine, A. W. Steiger. Typewriting machine, A. W. Steiger. Typewriting machine, Tanner & Jones. Typewriting machine, Tanner & Jones. Typewriting machine, Tanner & Jones. Typewriting machine, L. D. Broughton. Ultramarines, manufacture of, F. Bellet. Umbrella, folding, J. T. Manning. Valve, H. Gibbs. Valve, C. Walnwright. Valve, C. Walnwright. Valve, check, H. F. Cunning. Valve, check, H. F. Cunning. Valve, check, H. F. Cunning. Valve gear, A. M. Wolf. Valve gear, A. M. Wolf. Valve, safety gas, F. D. Gregory. Valve, to S. W. Wolf. Valve, C. Walnwright, C. A. Dunham. Vapor burner, R. C. Bierbower. Valvault, burlal, G. Hess. Vehicle brake, R. R. Hart. Vehicle fender, C. W. M. Guble. Vehicle motor fore carriage, Vignle & Forget Vehicle motor fore carriage, Vignle & Forget Vehicle wheel, E. Hopkinson. Vehicle wheel, E. Hopkinson. Vehicle wheel, W. D. Trigalet. Vending machine coin controlled mechanism, J. Fritsche. Vending machine, picture, T. R. McQuillan.	937,820
	J. Fritsche	938,419
	Vent, sanitary, W. S. Tuttle	937,949
-	Ventilator, H. F. Maranville,	938.067
r	Vibrating, tension, and operating table, J.	097 005
-	Violin tuning peg, P. Rose	938,079
1	Voting machine, J. H. Dean 938 126	937,806
1	Wagon brake, E. A. Johnson	938,241
5	Wagon, school, Parry & Byers	937,999 937,953
	Ladue Vending machine coin controlled mechanism, J. Fritsche Vending machine picture, T. R. McQuillan. Venting machine, picture, T. R. McQuillan. Ventilator. See Vehicle ventilator. Ventilator. See Vehicle ventilator. Ventilator, H. F. Maranville. Vibrating, tension, and operating table, J. Lend Violin tuning peg, P. Rose. Voting booth. E. Hinton. Voting machine, J. H. Dean. Voting machine, J. H. Dean. Vagon brake, E. A. Johnson. Wagon unner, F. Kindahl. Wagon, school, Parry & Byers Wagon, the W	030 150
1	Wall, retaining, M. M. Upson	938,091
-	Warp frame, W. L. Dorr	938,124 938 130
	Washer, H. A. Davis	937,985
	Watchmaker's tool, C. H. Pratt.	937,860
3	Water elevating apparatus, O. A. Roed	938,078
	Water heater, electrically operated, J. A.	000,200
g	Water heating apparatus, A. C. Dunhain,	938,234
	Water purifying apparatus, H. Relsert Water tube boiler, H. F. Ely Weather strip, W. C. F. Beale	937,777
t	Water purifying apparatus. H. Reisert Water tube boiler, H. F. Ely Weather strip, W. C. F. Beale Weight indicating mechanism Helmann.	937,782
	Weight indicating mechanism, Heimann &	938, 107
-	Welding machine, chain, F. H. Howard	938, 654
f	Wheel, B. Stewart	937,969
å	Whiffletree, quick releasing, E. A. Carkin.	938,120
Ö	Window ventilating device. C. V Wellow	938,382
_	Wire stretcher, W. W. Snyder	937.881
8	Wood, bending, J. T. Breece.	938,029 938,366
t	wood, preserving, Von Heidenstam & Friede- mann	097 •02
е	Wrench, D. W. Shaffer	937,966
3,	Wrench, E. D. Hamilton	938.020 938.319
n 1.	Wristband, H. J. Collis.	937.769
3-	Weight indicating mechanism, Heimann & Flatow Welding machine, chain, F. H. Howard Wheel, D. Stewart. Wheel, G. H. Treadgold. Whiffletree, quick releasing, E. A. Carkin. Window balcony, portable, T. Hull. Window ventilating device, C. V. Walker. Wire stretcher, W. W. Snyder. Wire stretcher, J. R. Wase. Wood, bending, J. T. Breece. Wood, preserving, Von Heidenstam & Friedemann Wrench, D. W. Shaffer Wrench, C. Sauer Wrench, E. D. Hamilton Wristband, H. J. Collis. Yoke, neck, G. E. Wheeler.	938,299