Business and Personal.

The charge for Insertion under this head is One Dollar a line for each insertion about eight words to a line. Adverisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

For Sale-One Payne engine and boiler. Automatic cut-off. In first class order. But little used. W. P. Davis, Rochester, N. Y.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. 6 Spindle Turret Drill Presses. A.D. Quint, Hartford, Ct. 2d hand drills and shapers. Amer. Tool Co., Clev., O. Mixing machinery. J. H. Day & Co., Cincinnati, Ohio. For pile driving engines. J. S. Mundy, Newark, N. J. Portable and Stationary Cylinder Boring machines.

Pedrick & Ayer, Philadelphia, Pa.

Wanted-Second-hand Woodward Pumps. P. O. Box 60, N. Y. City.

Wanted-2d hand Nash gas engine, 1 H. P. 2d hand Gar lathe, small size. W. K. R., Drawer 442, N. O., La.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Screw machines, milling machines, and drill presses The Garvin Mach. Co., Laight and Canal Sts., New York. Centrifugal Pumps. Capacity, 100 to 40,000 gals. per minute. All sizes in stock. Irvin Van Wie, Syracuse, N.Y.

Patent for sale or partner wanted. Leuzinger clothes line pulley, patent, May 12, 1891. For description, see

Wanted-2 steam jacket kettles, 35 to 70 gallons each, lower drain. G. W. Hoffman, 69 E. Wash. St., Indian-

Guild & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps acid blowers, filter press pumps, etc.

Split Pulleys at Low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4; Munn & Co., publishers, 361 Broadway, N.Y. Competent persons who desire agencies for a new popular book, of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office, 361 Broadway, New York.

Magic Lanterns and Stereopticons of all prices. Views illustrating every subject for public exhibitions, etc A profitable business for a man with small capital Also lanterns for home amusement. 220 page catalogue free. McAllister, Optician, 49 Nassau St., N. Y.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway.



HINTS TO CORRESPONDENTS

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication. References to former articles or answers should

give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Special Written Information on matters of personal rather than general interest cannot be averaged without computation.

expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 centseach.

Books referred to promptly supplied on receipt of

Minerals sent for examination should be distinctly marked or labeled.

(4007) M. L. asks: 1. What is a good charge for tin assays? A. Tin ore 5 grammes, potassium cyanide in powder 25 grammes. Besides this the crucible is lined with a layer of the cyanide, and the charge is covered with the same. Fuse and keep fused poisons known, but this gives about the best results of any of the fire assays. A non-poisonous charge is: Tinore 5 grammes, charcoal 1 gramme (mixed with the ore), 12.5 to 15 grammes black flux, 1 to 1.25 grammes horax glass. Cover with salt and a small piece of coal. Fuse three-quarters to one hour. 2. Is it possible for mercury to soak through a copper plate in a mill so as to ooze out in drops underneath? A. Yes. 3. Why are old plates so valuable? A. On account of the precious metal they retain. 4. It is stated that horse power will be furnished (or can be) over the distance from the Niagara to Chicago for about half the cost of steam power. Is this true? A. The exact proportion cannot be given. The interest on the installation and cost of maintenance will probably make it impossible. 5. What size current is necessary and how is it used to remove superfluous hair by electrolysis? See our Sup-PLEMENT. Nos. 176, 353, 834.

(4008) A. E. G. writes: In the Scient TIFIC AMERICAN for August 1, Professor Henry Rowland is quoted as saying "the voltage of stroke of lightning is roughly estimated at about 6,000,000,000 What is the amperage of a stroke as nearly as may be judged by a similar estimate? A. Carl Hering, in his "Dynamo-Electric Machines," says that the E. M. F. of lightning is 3.560,000 volts, and the current is about 14,000,000 amperes. The energy is estimated to be equal to a 100 horse power engine working 10 hours. 2. Where can I learn the rome sol-fa notation or system of writing music? I would like to buy a book to learn it from. A. In most schools where music is taught. 3. As the patent laws are now, can any one make a patented artices or machine, if they make it themselves and use it exclusively for their own benefit, without becolouig hable for infringement? A. No. 4. How is the carbon deposited on carbon paper? A. It is applied with a brush or sponge, the carbon or other pigment being mixed with glycerin or vaselin, with a mixture of beeswax and oil or some similar medium. 5. when a metallic spring is compressed it contains latent energy, representing the power expended in compressmg it. If it is dissolved in acid while still in a compressed state, what becomes of the latent mechanical

energy it contained? A. The energy expended in compression is given out in heat, which is dissipated

(4009) L. M. C. asks (1) how to make a storage battery suitable to run a 1/2 or 1/4 candle power electric light in a necktie and small enough to carry in a coat pocket? If this subject has been discussed in any of your papers, will you please refer me to such? A. We expect to publish a description of a storage bat tery suited to your purpose at an early date. 2. What is the fluid used in those "electric inhaler" bottles! Consist of a small bottle with a screw top, and a piece of copper separated from a piece of zinc by a strip of flannel. The fluid completes it. When placed near the nostrils a strange sensation is felt, extending to the back of the head. A. Oil of mustard is the principal ingredient. 3. Is there any acidproof paste, that can be mixed like coment and will harden in a few minutes? A. For weak acids use oxide of zinc and a solution of chloride of zinc. Chloride of zinc is poisonous, but the cement is inert after hardening and washing. For strong acids melt together pitch 1 part, resiu 1 part, and plaster of Paris 1 part; all the ingredients must be drv. 4. Will you please tell me how to compute the quantity of wire required to get the greatest magnetism out of a bar of soft iron? A. For this information we refer you to Sloane's "Arithmetic of Electricity," \$1, and Thompson's " Electro-magnets," \$6, by mail.

(4010) Subscriber wishes to know the following: At his place of business there is a 20 horse electric motor, 500 volts. The writer while thoughtlessly adjusting brushes caught hold of all the lower brushes and pressed them upward, this having the desired effect. He also took hold of the upper set and was quickly thrown backward. Now what amount of current passed through me, the machine running a load of about 12 horse power? After catching hold of brushes I felt nothing except the after effect, which was a slight shaking of the hand and a slight soreness of finger ends. A. It is impossible to form any idea from the data sent as to the amount of current passing through your body, as it is wholly a question of resistance. The condition of your hands may have been such as to have prevented anything more than a small fraction of the current from passing through you. For instance your hands may have been very dry or very oily. On the other hand, your hands may have been moist and the contact with the brushes good, in which case you would have received the amount of current due to the normal resistance of your body, which would have been only a fraction of the output of the machine.

(4011) H. W. G. asks how to construct steel triangle to be used in lieu of a bell. I want it with sides from 3 to 4 ft. long. Please state what kind of steel to use? What shape, whether square or round? Proper form of construction, and should angles be bent sharp or rounding? How should it be hung, and with what should it be struck to obtain the best sound? I am informed that to strike a bell with wrought iron will ruin the bell. Is this true, and would the same effect be produced upon a triangle by use of a similar striker? A. For a steel triangle with sides as stated, use a square bar of tool steel one inch diameter and from 10 to 12 feet long. Balance the bar in two loops of strong twine about one-third of its length from each end. Strike the bar between the end and one of the strings. Move both strings toward the center a little at a time to get the tone that suits you, and when the proper bearings are found, mark them with chalk and bend to a triangle at the marked points with an easy bend. A wrought iron hammer would not injure a trian gle more than a hammer of any other metal.

(4012) J. E. H. writes: I wish to make a storage battery. Battery is to have 10 plates 6 inches long and 8 inches wide; plates are to be of lead onetwelfth inch thick marked in squares of one-eighth inch with holes punched at each corner of squares and cov ered with a coating of red lead paste made by mixing red lead with diluted sulphuric acid. In what pro portions with water will I dilute the sulphuric acid? A. Use 1 part of acid to 10 of water. 2. About how much current will such a battery yield for three hours working constantly, after being charged? A. About 20 for 10 minutes. The cyanide is one of the worst amperes. 3. How many gravity batteries should I use in forming the plates and afterward in charging the battery? I only wish to use storage battery once in two days. The zinc and copper of the primary battery each has an active surface of about 18 square inches Sulphate of copper and sulphate of zinc are used in charging the cells. A. The forming as well as the charging may be done with four cells. The forming however could be facilitated by the use of four times that number.

Replies to Enquiries.

The following replies relate to enquiries recently published in Scientific American, and to the number therein given:

(3889) Referring to Notes and Queries No. 3889, C. E. H. has no cause for alarm, as the milky appearance in the water from his hot water boiler is caused by a foaming from the air it contains. This is readily shown by drawing a tumblerful and holding it up to the light, when it will be seen that the water clears from the bottom, and what appear to the eye to be white particles rises instead of falls. -W. G. BLISH,--[It is well known that the vesicles of air and steam rise in theclearing of water drawn from the hot water faucet. This does not account for the sediment that settles from hot water drawn from a galvanized iron boiler. This goes to the bottom every time.-ED.]

C. A. G. asks for a black ink. -J. H. G. asks for an acid-proof cement for nickel-plating tanks .-- L. B. asks for a receipt to give a steel-blue on brass .- A. O. asks for a receipt for fining wine .- T. M. asks how to make and ink typewriter ribbons.-A. C. G. asks for a cement or mucilage to stick labels to tin.-C. W. F. asks for a stain for Russian tan shoes .- G. E. P. asks for a good bay rum and sea foam.-G. F. L. asks for pastes for mounting photographs.-F. C. C. asks how to make a dipping solution for silvering.

Answers to all of the above queries will be found in the "Scientific American Cyclopedia of Receipts, Notes and Queries," to which our correspondents are referred. The advertisement of this book is printed in anothe column. A new circular is now ready

INDEX OF INVENTIONS

:	Fe	bru	ary	2,	189	2.			H
(See note at er						IAT			E
									H
Adding and pri Air brake, R. G Air cooling app Alarm. See Bu Aluminum, sep Amalgamating	ara ara ara sil	oates itus, l lar ala iting, ver or	E. H. c. S. c. S. es, A	C. Oe Bradl Jan	hlma ley	467	,920,	467,921 468,115 468,148 468,063	F
Alarm. See Bi Aluminum, sep Amalgamating Animal shears, Annunciator, e Ash pan and fe Awning, W. N. Axle box, anti- Axle collars, d Holcomb	lec nde Ke	& H. trical er, ex enned	Burg W. tensi	on Ebert on, T	. L. Je	nkins		468,217 468,170 467,988 468,277	H
Bank hill binde	r l	H. D.	Aller	1				467 967	H
Basin, catch, J.	E.	Shar	lev.		•••••	• • • • • • • •		468,144 468 157	H
Basins, seal tras Beams, bolster Bearing, ball, F Bearing, thrust Bed bottom, A Bed pan, W. A Bed, wardrobe, Bedstead, J. L Beer cooler, V. Bett driving me Bit tight ening Bicycle, G. A.] Billiard cushion Billiard cushion Billiard tables, Binder, tempor	for I. (, L. I . Yat /. H. Fros	Duvir tes Hulte t	age gren				468,062 468,067 468,043 468,054	H
Bed pan, W. A. Bed, wardrobe, Bedstead, J. L. Beer cooler, V.	Cr J. Pc C.	andal Teel alk Trabe	old					467,923 468,184 468,030 468,050	I
Belt driving me Belt tightening Bicycle, G. A. I Bicycle shoe, M	ch ba Bui L S	anism se for well. Hes	n, T. o	J. Lur hiner	nls y, J.	J. Woo	d	468,078 468,010 467,914 468,223	0
Billiard cushion Billiard tables, Binder, tempor Bit. See Bride	n, F cha ary	R. H. I	Brigg older A. H	for, V unzike	v. She	rwood		468,076 468,278 468,199	0
Blinder, bridle.	ĸ.	G. Ca	ıtber					468,238	0
Block. See En Board. See Dr Boats, footrest Boiler feeder, I Boilers, feed w Fleming Book, record fo	ate	Rause er me	chan	ilism	for st	eam, S	. s.	468,209 468,014 467,994	
Boot or shoe, C Boot tree, G. H Bottle making a	. A I. S ma	Brotephe	wn ns glas	s, T.	W. Sy	nnott.	258	468,187 468,006 468,140 468,259	000
Box. See Axle Box clamping in Box corners, in	nac ach	chine,	A. A	y box Fue mmir	hs g, C.	H. Fu	chs.	468,094 468,095 467,960	0
Boilers, feed w Fleming Book, record fr Boot or shoe, C Boot tree, G. H Bottle making Box. See Axle Box clamping I Box corners, m Box covers, loc Box tenoning or Boxes, former Brake. See brake.	nac for ne,	hine, maki G. M	C. H ng, A cKay	Fuel Fol	ger	76 da	Vor	468,096 467,986 468,225	1
brake. Brake mechani F. De Fores Brick kiln G. C	sm t	, aut	omat	ic flu	id pro	essure,	w.	468,240 467 001	
Brick machine, Bridle and relie Bridle bit, C. Si Bronzing mach	J. va mit	C. And ble bi	ders t, sai	ety, J	J. Atk	inson.		468,059 468,299 468,309 467	1
brake. Brake mechani F. De Fores Brick kiln. G. for Brick machine, Bridle and relie Bridle bit, C. Si Bronzing mach Broom bolder, Brushes, duste: Buckle clip, C. Buggg curtains W. Wright. Building found	J. 1 18, L.	M. Ha etc., h Wied	ise iolde irich	r for,	W.F.	Loan	ino	467,932 468,036 468,028	i I
Buildings, cons	tru	iction	of. F	L. Gus	astavi	no		468,296	1
Buildings, com. Robinson Burglar alarm, Button, separa. Cable grip adju Cake tin, A. S. Canopy frame, Capodastro, Da Car check, J. M Car constructic Car conpling, A Car coupling, A Car coupling, B Car coupling, B	J. l	I. Cov	ingto Per	ry	T.vne	h		468,228 467,922 468,037 468,064	
Cake tin, A. S. Canopy frame, Capodastro, Da	Ste C.	willian &	ams.	ngrer	1			468,073 468,290 468,193 468,061	
Car construction Car coupling, A	v. 1	H.C. P.Cla McC	Hode rk. ord (r)				468,176 468,192 11,220 468,211	j
Car coupling, E Car couplings, Cloud Car for use upo Car seat, E. L.	pi n i	ncline	eratir ed ra	ilway	vice i	or, J. Iessne	w.	468,060 467,945 468,265 468,310 467,951]
Cars, bolster at Carbonated bey	tac ver	comi chmer ages,	oined at for appa	leg, l ratus	. Sobi E. H. for n	nski Mumf naking	ord. H.	468,310 467,951 467,916]
Carding engine Carding machin Carriage curtai			able l, D. l er, E	for, S Lamso S. R	Drivon ichar	er ls		468,106 468,2 0 2 468,080	
Case. See Loc	k c	ase.	Surgi	cal in	strup	nent c	ase.	468,310 467, 9 62]
Typewriter Cash register, (Caster, S. Fl Caster, furnitu Casting iron pli Casting knittin	em re,	W. E. ing Nicke ingot	Abm el & V s, etc	eyer. Wainv J. V	vright	le		467,905 468,195 467,952 468,292]
Casting knittin E. Gearhart Catamenial sac Caterer's tray t Chair. See Per Chairs, cribs, Swift Check book H	k,	nachii J. J. 1 le, F.	verni R. P	linder er errym	s, mo	uld fo	r, J.	468,171 467,963 468,038]
CHECK HOUR, II.	. Ľ.	Telle	y	• • • • • • •			• • • • •	468,090 468,024]
Chopper. See Chnrn, A. Fay. Chnrn, A. V. St Clgar cutter an Cinch, sling, D. Clamp. See To Clip. See Buck	Cot ew d li	ton c art ghter	hopp , F. S	er. Senff.				468,013 468,158 468,287 468,205	
Cinch, sling, D. Clamp. See To Clip. See Buck Clock, alarm, S.	oba cle . A	cco be clip. De l	an ox cla Vorm	mp. anvill	e,,		 		1
Clock, alarm, 8 Clover hullers, Coal auger post Collar pad, A. Concrete mixin Concrete pipe,	rec	leane I. F. M	r for IcNe	lly	. K. au	or	• • • • • • • • • • • • • • • • • • • •	467,978 468,058 468,230 468,290	1
Concrete post,	ď	or st	ep,	table	top,	etc., O	. A.	468,269 468,268	1
Condenser, sur Conveyer, C. W Conveyer mech Cooler. See Be	an er	Iunt. ism, I coole	. A. er.	Locky	wood.			468,048 468,109 467,943	1
Cooler. See Bo Corn popper, G Cotton chopper Coupling. See ling. Thill Cover fastener Cultivator, J. F Cultivator, S. S	Ca Col	L. K. & r coup	t T'. (F. Car Elec	nsler ctric	wire co	up-	468,102 467,915	
Caltimates act		70 12	7 D.	0				467,949 467,995 468,271 468,300	1
Cupola furnace Curtain ring, J. Cut-out, J. B. M.	S. Mu	Sahl & G.	er Clay	ton				468,306 468,105 468,101	000
Damper, W. A. Decorticating f	& lbr	A. E. ous pl	Ken ants,	mach	ine fo	r, Lan	aux	468,285 468,284 468,249]
Dehorning imp Display box, W Door closing or	len V. V	nent, Vatt. eckir	W. A	. Can parat	us, S	huber	t &	468,249 468,236 467,964	
Door securer, C	vin	Carding o	iwell levic	e for	dome	tlens	e, E.	467,997 468,218 467,906 468,237]
Allison Oraught equali Draw shave, G. Dredge, J. H. F. Dry board, C. A. Drying kiln, S. Dye, azo, C. Ru Dye, blue-red a Electric curre:	M Cuc	Cond ni	ver.				•	468,239 468,201 468,188 467,953 468,049 468,142	1
Drying Kiin, S. Dye, azo, C. Ru Dye, blue-red a Electric curre	do zo,	M. U gene	lrich rator	в, гел	rulato	or for,	G.	468,049 468,142	
Electric cut-ou	ts, Th	meth omsor	od of	and	mean	for in	ter-	468,120 467,919 468 100	
Electric elevate Electric light t Electric lights	or, ow, d	A. Neer, C.	eubul A. B for	rger eards raisir	ley	l lowe	ring	468,253 468,186 468 150	
Electric curres Pfannkuch Electric curren rupting, E. Electric cut-ou Electric elevat Electric elevat Electric light Suspend ed, Mectric machi Electric motor Flectric or cab Electric signal Electric syntoh	ne, J.	dyna W. D	mo, I arley on, F	G. Tho , Jr., O. E	omsor Blacky	vell		468,121 467,924 468,128 468,31	1
Electric signal Electric switch Electric switch	sye, E	tem, Tho	H. F.	Eato	on	_, ва		468,107 468,119 468,125	1

INDEX OF INVENTIONS	Electrical distribution, system of, E. Thomson 468,122 Electrical distribution, system of, Thomson & Rice, Jr
For which Letters Patent of the United States were Granted	Section Sect
February 2, 1892.	Envelope, E. Morgan. 468,079 Envelope machine, F. A. Jones 467,977 Extension table, A. M. Holstein 468,042
AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents,]	Eyeleting machine, G. A. Pflueger. 468,201 Fabric: See Woven fabric: 468,201 Fabric: See Woven fabric: 468,201 Fare register electric W. H. Gilman 468,172
Adding and printing machine, Mason & Shoup 463,250	Farm gate, J. N. Morgan 467,950 Feather tip or plume, E. W. Moch 467,947 Feed water heater, A. M. Rowe. 468,181
Air brake, R. G. Coates	Feed water heater, oil extractor, and water puri- fier, combined, F. Bauer
Amalgamating silver ores, A. Janin. 468,063 Animal shears, C. & H. Burgon. 488,217 Annunciator, electrical, W. Ebert. 468,170	Fence, Marsh & Phillips. 467,989 Ferrule, rawhide, F. Latulip. 467,979 Fibrous materials, machine for washing, E. Gun-
Amangamating silver ores, A. Janin. 405,053 Animal shears, C. & H. Burgon. 488,217 Annunciator, electrical, W. Ebert. 468,270 Ash pan and fender, extens bn, T. L. Jenkins. 467,988 Awning, W. N. Kennedy. 468,277 Axle box, anti-friction, E. M. Briedwell. 467,668 Axle collars, device for cutting grooves in, H. Broke Nil blacks, H. D. Allen. 468,065	drum 468,097 File, reference, H. I. Talley 468,312 Filter, J. H. Drake 482,24
Barrels thimble and bushing for, Anthony &	Filter, J. H. Drake. Finger ring, J. H. Fink. Finger ring, J. H. Fink. Firearm, breech-loading. • W. Bergman. Fire extinguisher, automatic, O. B. Hall. Fishing reel, O. P. Ross. Fishing reel, O. P. Ross. Fishing reel, O. F. Sinke, extraohment, for E. F. 488,180.
Savage	Fishing reel, O. P. Ross. 468,180 Fishing rods, slack line attachment for, E. F. Pflueger 468,227 Flax, etc., machine for backling, J. Erskine 468,124 Fly paper holder, H. R. Wend el. 468,273 Frame. See Canopy frame.
Bearing, ball, H. G. Yates. 468,067 Bearing, thrust, W. H. Hultgren. 488,043 Bed bottom, A. H. Frost. 468,054	Furnace. See Cupola furnace.
Bed pan, W. A. Crandall. 467,923 Bed, wardrobe, J. Teel. 468,184 Bedstead, J. L. Poalk. 468,030 Beer cooler, V. C. Trabold. 488,030	Furnaces, superheating steam coil for smoke consuming, C. A. Tinkham
Belt driving mechanism, T. J. Lumis. 468,078 Belt tightening base for machinery, J. J. Wood. 468,010 Bjoycle, G. A. Burwell. 467,914	Game board, J. R. Harrison 467,972 Game board, E. L. Williams 468,214 Garbage receptacle, E. B. Merritt 468,046 Gas, apparatus for separating oil and water from, 469,046
Bicycle shoe, M. S. Hess. 468,223 Billiard cushion, F. H. Briggs. 468,076 Billiard tables, chalk holder for, W. Sherwood. 468,278 Rinder temporary A. A. Hunziker 481,198	Gas, apparatus for turning on and off and light-
Bit. See Bridle bit. Blinder, bridle, R. G. Cather. 468,238 Block. See Engraving block.	Gas compressor, J. D. Ambrose
Bit. See Bridle Dt. Blinder, bridle, R. G. Cather. 468,238 Block. See Engraving block. Board. See Dry board. Game board. Boats, footrest for row, J. J. Sherman. 468,211 Boiler feeder, H. Rauser et al. 468,289 Boilers, feed water mechanism for steam, S. S. Fleming. 468,018 Book record form O. E. Nasgele. 467,994	Glove, L. Frank. 488,149 Glove fastening, J. S. Healey 467,974 Grain binder, L. H. Grieser. 468,225 Grain cleaner attachment, H. Bryan. 488,003
Fleming 468,014 Book, record form, O. E. Naegele 467,994 Boot or shoe, C. A. Brown 468,187	Crowel corporing machine E. E. Cilbort 460 124 460 107
Book, record form, O. E. Naegele	Gravel washing and grading machine, N. Jewett. 488,247 Grinding machine, tool, E. F. Ternan. 467,947 Grib tester, pocket, C. W. McClure. 488,164 Grits, etc., apparatus for purifying or sorting, C. Hacgenmacher. 487,647
BOX clamping machine, A. A. Fuchs	Haggenmacher. 467.987 Guard. See Railway track guard. Gun lock, T. J. Lockwood. 468,002 to 468,004 Hammer, A. Chambers. 488,191
Box tenoning machine, C. H. Fuchs. 488,986 Boxes, former for making, A. Folger. 463,986 Braiding machine, G. McKay. 468,225 Brake. See Air brake. Locomotive driver	Hand press, domestic, J. W. Condon. 488,082 Hand rest, E. A. Castellaw. 468,082 Hand rest, E. E. Frederick. 467,991 Hanger. See Trolley wire hanger.
Brake machanism automatic fluid pressure W	Gun lock, T. J. Lockwood
F. De Forest. 488,240 Brick kiln, G. C. Little. 447,881 Brick machine, J. C. Anderson. 488,659 Bridle and relievable bit, safety, J. Atkinson. 488,269 Bridle bit. C. Smith. 468,309	Hay rack, S. R. Carson. 468,139 Hay rack and loader, combined, P. Hope. 468,035 Heater. See Feed water heater.
Bridle bit, C. Smith. 465,900 Bronzing machine, W. B. Silverlock. 467,852 Brushes, dusters, etc., holder for, W. F. Loan. 468,036 Buckle clip, C. L. Wiedrich. 468,028 Buggy curtains, device for raising and lowering, 467,962 W. Wright. 1. F. Loan. 467,962	Hayrake and toader, combined, F. Hope. 400,005 Heater. See Feed water heater. Heating cup, A. Berger, et al. 468,147 Heel nailing machine, H. A. Webster. 488,279 Hinge, gate, G. Rohrbach. 488,210 Holder. See Broom holder. Fly paper holder. Knitting machine web holder. Pall holder. Paper holder. Telephone holder. Hook See Check hook. Wilfletree hook
Buggy curtains, device for raising and lowering, W. Wright. 467,968 Building foundation, J. E. Robinson. 468,229 Buildings, construction of, R. Guastavino. 468,236	
Buildings, constructing foundations for, J. E.	Horn's, mouth piece for reed, I. W. Pratt
Button, separable, C. E. Perry 468,037 Cable grip adjusting device, H. H. Lynch 468,064 Cake tin, A. S. Stebbins 468,073	Hub, J. H. & E. S. Coyle. 48223 Hydrau c apparatus, J. Weeks. 468,104 Ice cream freezer, C. L. Bellamy. 468,682 Ice cream freezer, J. C. Hoxie. 467,844 Impression roller, F. M. Moore. 488,071
Canopy frame, C. Williams 468,290 Capodastro, Dahlman & Blomgren 468,193 Car check, J. M. DeWitt 468,061 Car construction H. C. Hodges 48176	Impression roller, F. M. Moore
Robinson	Invalid and center table, combined, W. Kohl- stetde
Cloud. 468,060 Car for use upon inclined railways, J. Messner. 467,945 Car seat. E. L. Bushnell 483,25	Ironing machine, H. E. Smith
Car step and gate, combined, C. O. Sobinski	same, White & Bigelow
Carding engines, feed table for, S. Driver. 468, 106 Carding machines, wool, D. Lamson. 468, 222 Carriage curtain fastener, E. S. Richards. 468, 080 Carrier See Target tran Carrier.	Kiln. See Brickkiln. Drying kiln. Knitting and forming hose, F. W. Simons
Carrier. See Target trap carrier. Cart, garbage, W. Huey. 468,310 Cart, road, C. Thomas. 467,952 Case. See Lock case. Surgical instrument case.	Knitting machines, transfer device for, W. H.
Typewriter case. Cash register, G. W. E. Abmeyer. 467,905 Caster, G. S. Fleming. 468,195 Caster, furniture, Nickel & Wainwright. 467,952 Casting iron pigs, ingots, etc., J. W. Cole. 468,292 Casting iron pigs, ingots, etc., J. W. Cole. 468,292	Knitting stockings, W. Esty (r) 11,221 Lamp, incandescent electric, D. H. Piffard 467,822 Lamp, oil spray, A. Shedlock. 488,085 Lamp socket, incandescent, D. H. Piffard 467,982 Lamp socket, incandescent, W. L. Silvey. 467,858
Casting iron pigs, ingots, etc. J. W. Cole. 468,292 Casting knitting machine cylinders, mould for, J. E. Gearhart. 468,171 Catamenial sack, J. J. Vernier. 467,963 Caterer's tray table, F. R. Perryman 468,038	Lamp socket, incandescent, W. L. Silvey 467,895 Lamps, wick raising mechanism for, W. A. Hull 467,975 Last, E. S. Morton 468,088 Last block fastener, E. S. Morton 468,07 Latch, A. Didion 468,040
Chairs, cribs, etc., fan attachment for, W. H.	Lathe, engine, P. & W. Shellenback
Swift 468,030 Check hook, H. E. Kelley 468,024 Chopper. See Cotton chopper. 268,013 Chnrn, A. Fay 468,013	Locomotive driver brake, J. E. Normand
Chnrn, A. V. Stewart. 468,158 Cigar cutter and lighter, F. Senff. 468,267 Cinch, sling, D. O'Sallivan 468,206 Clamp. See Tobacco box clamp.	Lubricant, J. Ketchum. 467,333 Lubricator, E. D. Bangs. 488,239 Lubricator, F. Prinz. 488,262 Mattress, apring, G. W. Murray. 488,018 Macourage referred B. F. Culling. 488,218
Clock, alarm, S. A. De Normanville	Measurer and bagger, grain, G. Anderson 468,091 Measuring instrument and current direction indi-
Collar pad, A. Scott	destantial movement, S. B. Wortmann
pel. 468,269 Concrete post, door step, table top, etc., O. A. 8tempel. 488,268	Mill. See Saw mill. Mine shafts, electric signal for, F. W. Bacorn 467,985 Moulding articles in sand, machine for, J. Forbes. 467,930 Motor. See Electric motor. Railway motor.
Condenser, surface, T. J. Rayner	Spring motor. Water motor. Mower, lawn, T. T. Wood
Corn popper, G. Staley	Musical instrument, H. S. Saroni. 468,265 Musical instruments, cut-off valve for, V. Seidel. 468,308 Nipple holding machine, L. J. Mundelin. 468,304 Nose ringer, P. C. Goodrich. 468,174
Cotton chopper, H. K. & T. G. Cansier	Nut lock, B. Edgar. 468,355 Nut shearing and punching machine, J. Altmann. 467,908
Cup. See Heating cup. Cupola furnace, C. Sabler. Curtain ring, J. S. & G. Clayton 488,105	sop
Cutter. See Cigar cutter. Damper, W. A. Kemp	Ore washers, picking table for, H. G. Merry
Damper, W. A. & A. E. 'Kemp 468,234 Decorticating fibrous plants, machine for, Lanaux 8. Rendon. Sendon. 468,249 Dehorning implement, W. A. Campbell. 468,236 Display box, W. Watt. 467,964	Padlock, R. J. Myers 468,113 Pail, dinner, H. B. Adams 468,011 Pail holder, O. J. Thomas 468,161
Display box, W. Watt. 467,964 Door closing or checking apparatus, Schubert & Werth. 467,997 Door securer, C. F. Cardwell. 468,218	Painting machine, E. Armitage
Doubling and winding device for domestic use, E. Allison	J. W. Sutton
Draw shave, G. M. Conover. 468,239 Dredge, J. H. Kuoni 468,201 Dry hoard, C. A. Brown 468,188 Drying klin, S. W. Peregrine 467,953	Piano, A. H. Hastings. 468,135 Pianos, music desk for, T. P. Brown. 468,071 Pianos, music desk for, E. Peterson. 468,071 Pile armor or casing, Bedbury & Badgley. 468,291
Dye, azo, C. Rudolph	Pipe. See Concrete pipe. Sheet metal pipe. Pipe under water, apparatus for laying iron, J. G. Falcon. 467,927 Planing machine feed mechanism A. R. Hutch-
Electric currents method of and magna for inter-	1080D 468.445
Electric elevator, H. W. Leonard 468,100 Electric elevator, A. Neuburger 468,253 Electric light tower, C. A. Beards ley 468,186 Electric lights, device for raising and lowering	Planters, wneel for seed, W. H. Holsclaw
rupting, E. Thomson	Plastic material, moduling, H. B. tarrigues. 408,225 Pilers, compound, F. Newitt. 468,005 Plow, W. A. Keahey. 468,109 Plow, J. E. & E. M. Mitchell. 467,946 Plow, J. Oliver. 468,025 Post. See Coal auger post. Concrete post. Press. See Hand press. Telescopic press. Pressure regulator, fluid, I. Cumberbacch 468,037 Propueller for steam vessels, side. A. Cooper. 468,037
Electric signal system, H. F. Eaton. 468,178 Electric switch, E. Thomson. 468,179	Press. See Hand press. Telescopic press. Pressure regulator, J. B. Knickerbocker
Electric switch, A. Wright 468,125 Electric wire connector, C. J. Coleman 468,233 Electric wire coupling, W. B. Lillard 468,096 Electrical distribution, system of H. W. Leonard 48,096	Propeller for steam vessels, side, A. Cooper
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