 with a dumping-door arranged to be released discha
METALLIC HORSE - COLLAR. - D. F O'Loughlin, Moorbead, Minn. In carrying out nventor is the provision of a horse-colla which time of such perfect fit that scalds, gall, bruises, sores, etc., on the horse's neck and bruises, sores, etc., on
shoulders are obviated.
DISTANCE OR RANGE FINDER.-E. NICHolson, Cleveland, Ohio. The aim of this improvement is to provide a range finder, more especially designed for use on marine vessels and the like to readily ascertain the distance
the vessel is from a distant object-say a the vessel is from a distant object-say a
lighthouse-how far the vessel has to sail before is abreast of the lighthouse, and the dis tance between the vessel and the lighthouse
when abreast, all without requiring any mathe matical calculations.
SHELL-L. G. Roach, Fredericksburg, Va. The prime feature of the invention lies in the combination of an exploding means and a cen exploding means. This restraining device is normally active; but when the projectile begins its rotary flight the centrifugal force attend ing such rotation renders the restraining device inoperative, and then as the shell strikes the target the explodin
impact of the blow.
COLLAPSIBLE CABINET OR DARK ROOM.-L. F. Wilson, Gerrardstown, W. Va Though applicable to other purposes in the
arts, Mr. Wilson's improvements are intended more especially for use as a dark room for amateur and professional photographers, and suitable structure of this kind which is collapsible into small compass, for storage or
transportation, besides being light in weight and transportation, besides being light in weight and
HEAVY FIELD ARTILLERY.-T. Smythe, Santiago, Chile. The object in this case is to provide certain new and useful im provements in artillery whereby field-guns of
great length, large caliber, and heavy weight an be readily transported from place to place cision and steadiness and without unduly ex posing the gun and gunners to the fire of the posing the gun and gunners to the fire of the
enemy or rendering necessary a heavy shield.
NUT-LOCK.-N. D. Asdell, Lakeview, Ore means for securely locking a nut to a bolt a any desired point thereon. The improvement consists of novel means, employing a wedge seated in the nut and adapted for engagemen with the bolt thread, a key whereby the wedge is forced into locking position, special mean for securin
struction.
Lamp-hanger.-D. Mceachern, Rossland Canada. This device may be readily applied over any ordinary celling-block by means of depending from the bracket and supporting the tobthed segment, so the latter can be rotated to bring it to any position, and a fork is so connected with the block of the toothed seg. ment that it may be swung thereon to any ad justment, and its locking-block be moved into locking engagement with the segment block and be released by drawing upon the swinging arm so it can be adjusted to hold the lamp in any
position. position.
hook and eye.-a. W. Herbert and W. F. Washburn, New York, N. Y. In the present patent the invention relates to hooks and eyes,
and the more particular object is the produc and the more particular object is the produc-
tion of an exceedingly flat hook and eye capable of general use, affording a secure grip and ad of general use, affording a secure grip and ad-
mitting of a cheap and simple construction. The hooks and eyes are paired in the usual
manner, and each one is made of a thin plate of metal, and preferably by stamping.
SHOE-HEEL.-G. F. FISCHER, Rochester, N. Y. The purpose of the invention is to provide a shoe-heel of the cushion type and means for attaching the heel to the insole of a shoe, and further, to so mount the thread-section of the heel that it may be shifted to bring to the rear
the forward sections, which are comparatively the forward sections, which are comparatively
unworn, to take the place of the rear section of the heel, which has become unduly worn, and
to vertically adjust such thread-section, so that
the latter can be worn throug
portion of the depth of the heel.
BOX-PLATE depth of the heel. BOX-PLATE AND ATTACHMENT THERG-
FOR.-H. MCCANN, Hamilton, Canada This FOR.-H. McCann, Hamilton, Canada. This
Invention relates to means for shaping and supporting plastic material, such as mortar of cement or hot concrete, in the erection of building or cther walls from such material, and the object is to provide novel box-plates and novel
means for assembling and holding such plates in box form for the reception of the plastic material and retaining it in proper shape until it becomes rigid
TWine-holder.-C. L. Peterson and m. O. Thompson, Sibux Falls, S. D. In the pres-
ent patent the invention has reference to new ent patent the invention has reference to new
and useful improvements in twine-holders, the object of the inventors is the provision of a object of the inventors is the provision of to be suspended over a counter or the like and in which the twine will not become snarled
CANDLE-HOLDER FOR CHRISTMAS reEES.-P. Rummelin, Portland, Ore. In car
rying out the present invention Mr. Rummeli has particularly in view the provision of a
device which will combine the functions and device which will combine the functions and
features of a bolder for sustaining the candle in a vertical position when on the tree and receptacle for containing the gre
the like dripping from the candle.
drawers.-T. f. Trimble, Valatie, N. Y., and W. A. Harder, Hudson, N. Y. The present improvement relates to drawers used more
particularly as clothing for gentlemen. The particularly as clothing for gentlemen. The garment is comfortable and to a great extent
self-adjusting. The seams are so located as to have no tendency to produce chafing or to be
otherwise objectionable. The inventors have produced a neat simple article of manufacture having the advantages mentioned above and ICE-CREAM beaply made.
ICE-CREAM FREEZER.-C. E. Taylor, Magnolia, Ark. This Invention comprises a new combination of parts of a construction capable of freezing the cream in a minimum amount of
time and labor, which can be readily repaired time and labor, which can be readily repaired
by an ordinary tinner, and in which the parts by an ordinary tinner, and in which the parts
have such correlation that they can be used for either domestic or manufacturer's uses. In in the holder and as a milk-cooler, etc.

SUSPENSION-SEAT.-H. G. Grote, 5-7 Doventhorsteinweg, Bremen, Germany. This Invention is a suspension-seat, with or without
support for the feet, for the use of passenger support for the feet, for the use of passengers
on the railroad or other means of transportaon the railroad or other means of transporta-
tion ; for soldiers, even if transported in freight tion; for soldiers, even if transported in freight
cars; for the transportaition of the wounded in ears; for the transportation of the wounded in
war, and in case of aecidents or wherever it can, and in case of aecidents or to the comfort of travelers. If used on shipboar
seasickness.
DESIGN FOR A SMOKE-RING MAKER.E. Nahr, New Orleans, La. The figure in this with the mouth in formative position for eject ing smoke-rings, the rings floating about the
head, the fingers of one hand holding up a smok head, the fingers of one hand holding up a smoking cigar and the fingers of the other twisting HARNESS-TRACE.-D. K. Bellis, Manton, Mich. One object of this Invention, which that class which employ leather and metallic chains in their construction, is o overcome embodying a metallic chain as an integral part thereof, the leather and the chain being so combined as to retain the desirable pliability or lexibility of the trace.
envelop-SEaler.-W. McD. Henry, Kesley, Iowa. Mr. Henry's invention refers to
improvements in sealing devices for envelops, particularly envelops for expressing money or other valuables, the object in view being to may be a simple device for this purpose that may be quickly sealed and the u
tape or ribbon be dispensed with.

GAME APPARATUS.-D. MCRUER, Pauls Valley, Ind. Ter. Among other things this for automatically rotating a central object or turret, to provide an improved group of em-
blematical figures in the central rotary object blematical figures in the central rotary object or turret, to employ a movable or shiftable im-
pelling device and to provide means which en pelling device and to provide means which enable the impelling device to be advanced in
case a light shot is to be discharged. The invention is an improvement on a prior paten
PULLEY-FAST
PULLEY-FASTENING.-A. W. Hight, Bal lard, Wash. The purpose in this case is to provide means for preventing the slipping of split
pulleys on their shafts. The invention is especially applicable to that class of pulleys in which the sections are held up by U-bolts or clevises passing through the pulley-sections and encircling the shaft. The invention involves the U-bolt with the shaft.
NON-REFILLABLE BOTTLE.-W. E. JoHNSon, Spokane, Wash. It is the object of this contrivance to effect an improvement in that
class of non-refllable bottles which are provided with a stopper or plug having a valve dapted to open for discharge of contents of position. The stopper with its the required may be returned to the maker or jobber for
adVERTISING DEVICE.-L. R. GAYNor,
Coon Rapids, Iowa. The purpose in this case is
to display an advertisement at a desired point
by its flexible connection with a and attract attention by woining the placard on whirch the advertisement is placed with a
grotesque figure that will be fully exposed, along with the advertisement, when the door is moved in the act of opening it, the closing per-
mitting a return movement of the advertisement mitting a return movement of the advertisement and a merging of the
unrecognizable form.
Filfter.-J. P. Rumitel, Sioux Falls, S. D One of the principal objects of this inventor a to provide a filter which shall separate
and purify the water passing through the same of all animal matter, sediment, or the like. A may be easily and quickly attached to a faucet, hydrant, or spout, or the like, and which shall perform its proper function without requiring further attention.
Not e.-Copies of any of these patents will be furnished by Munn \& Co. for ten cents each.
Please state the nams of the patentee, title of the invention. and date of this paper.
Business and Personal (Uants.

## MEAD THis courind carfilir-




Marine Iron Works. Chicago. Catalozue free.
linquiry No. 4603.-For machinery for making
kuitted goods.
Inguiry No. 4604 .-For a machine for sharpen-
nk tonlet clipper blades.
Tnquiry No. 46n.5. For direct-current
Handle \& Spoke Mchy. Ober Mfg. Co., 10 Bell St.,
Inguirv No. 4606.-For a machine for perforat-
ing hardorawn conper
for dealers in such oopper.

Inquirystock, Mechanicsburg, Pa.
Inquiry No. 46ny--For makers of pianos, furni-
ure and carriakes, having export trade.
Sawmill machinery and outfits manufactured by the
Lane Mfg. Co.. Box 13, Montpelier, Vt.
Inquiry No. 4 608.-For machines for shrinking
and measuring cloth. Metal Stamping Co., Niagara Falls, N. Y., cuts and
Inquirr No. 4609. -For a quick-speed tool steel
alny containing tungsten, molybdenum and chro-
mium.
Novelty makers should write sending lists to Ho
\& Co., general importers, Auckland, New Zealand.

Let me sell your patent. I have buyers waiting
Charles A. Scott, Granite Building, Rochester, N . Y.
Inquiry No. 4611. - Wanted. an oll burner suitable
for use under a small, horizontal boiler for steam-heat-
ing purposes.
Gear Cutting of every description accurately done,
Inquiry No. 461, \&.-For the present address of the
Party desires to purchase either entire or half interest F. Russel, 2444 vernon Ave., Chicago, Ill.
 We manufacture anything in metal. Patented arti-
cles, metal stamping. dies, screw mach. work, etc. cles, metal stamping, dies, serew mach. work
Metal Novelty Works, 43 Canal Street, Chicago.
Inquiry No. 4614.-For a shooting gallery outat
The largest manufacturer in the world of merry-go rounds, shooting kalleries and hand organs. For prices
and terms write to C. W. Parker, Abilene, Kan.
Inquiry No. 4615 . - For machines for spinning
piano bass strinks, uliso moolding machines for piano
frames and general mmull work.
The celebrated "Hornsby-Akroyd" Patent Safety Oil
Engine is built by the De La Vergne Refrigerating Ma Engine is built by the De La verpne Refrigerating Ma-
ohine Company. Foet of . as 1
13sth Street, New York.
Inguiry No. 4616.-For makers of tubular smoke
stacks.
chinery, stampings, dies, tools, etc. Excellent inarket ing Inquiry No. $461 \%$. - For makers of telephone sys-
tems. Manufacturers of patent articles, dies, metal stamp-
ing, screw machine work, hardware specialties, machin ery and tooks. Quadriga Manufacturing Company, 18

## Inaniry No. 4 G18.- For dealers

New norit to justify are ready for the ma ket. Must possess merit to Justify extensive advertising
in this and ForignCountries. What hare you 9 Wizard

## Jnaidity Na, an1

A large casualty company desires to obtain the ser
vices of three or four high-class men with pood expe rience to inspect boilers and elevators. Please reply
stating age, weight, qualiflcations and references. Adress inspector, Box 773, New York.
Inquiry No. 46\%2.-For makersof tack machines. WANTED.-A number of good instrument and tool
makers at Edison Laboratory, Orange. N. J. Wages

Inquiry No. 4621.-For makers of different novel-
Young man studying mechanical engineering desires
position with reputable house. Experience more of an object than salary. H. A. Klein, 1250 Degraw Street.
Brooklyn.
Inaniry No. 4692.- For plans and speciflcations
for a fity-foot pleasure launch.
WANTED.-A solution to impresnata and harden
WANTED.-A solution to impregnate and harden
articles made of paper.

## 







(9179) E. C. H. says: We desire to stall a pumping engine to raise 150,000 galons of water in a run of 24 hours. Our boiler
pessure is 110 pounds, discharge pressure 80 pounds, In case of a fire we would want to raise
it to 100 pounds. Suction 15 to $\%$ feet it to 100 pounds. Suction 15 to 20 feet. Sup-
ply of water to pump is ample. We have tudied slide valves, balanced valves, semi-rotative valves, etc., and find it hard to decide
which is most suitable. Will you please inform which is most suitable. Will you please inform
us as to the proper proportions, cylinders, for a compound engine meet our needs; also which style steam valve is the
most economical? A. Without knowing all of the details of the character of the pump which ou are designing, it is impossible for us to
ive you any information in regard to proportion of the cylinders, stroke, and valves needed for a pump to do the work which you describe.
The valve which is most generally used and The valve which is most generally used and
which gives the best satisfaction for cold ater pumping, is a hard rubber disk held by means of a spiral spring on a bronze seat.
Where the quantity of water to be pumped is large, a number of these valves are arranged close together. The same type of valve is us-
ally used for the inlet as for the discharge. Much practical experience is necessary in order o build a satisfactory and efficient pump. We would advise you to write to some of the well-
known pump manufacturers, and ask them it known pump manufacturers, and ask them it
one of their regular pumps will not meet your equirements. If not, they can doubtless build
(9180) J. J. G. asks: Please answer through your paper which is the most elastic,
such as glass and ivory or india rubber, and such as glass and ivory or india rubber, and
why and oblige. A. Glass, steel, and ivory are the most elastic substances known, if by "most astic" is meant the ability to restore thelr orm after distortion and the retaining of that
power for an indefinite time. lndia rubber has far less elasticity of this sort. It quickly gives
ut and will not come completely back after distortion. India rubber has a great range of elasticity and can be bent or stretched much farther than most other substances. In range
it is far more elastic than glass, steel, or ivory.
(9181) W. J. H. says: Can you tell. me whether practical use is being made of gravity
motors at the present time? Would it be feasmotors at the present time? Would it be feas-
ible to construct a motor of this kind to generate about one-fourth of a horse power for a
period of ten hours, using a steam engine or wind mill for winding the heavy weight up and then utilizing the gravity motor for power t such times when the engine or windmill was dle? What would be the best plan for the congravity motor on the market which would furA clock with weights is a gravity motor, and nything which requires more power than could be run by well-constructed clock work could not be satisfactorily run in this way. A motor to
furnish a fourth of a horse power for ten hours would require a weight of 33 tons lifted to a eight of 150 feet, provided the efficiency of
(9182) F. B. D. says: Please inform me which are the warmest, for the sides of a
ouse, shingles or clapboards? A. If shingles house, shingles or clapboards? A. If shingle
are laid on building paper, or on any surface which is practically air-tight, they will prob ably keep a house warmer than clapboards If, on the other hand, the shingles are laid directly on the sheathing, which usually contains a large number of cracks and openings which
would admit air, the shingles will probably not keep the house so warm as the clapboards, because they will admit more air into the walls rom the outside.
(9183) R. W. G. says: I am sincerely interested in knowing the shape and motions of earth. Please answer the following
uestions in Notes and Queries: 1. Have any surveys ever been made to determine whether
the known curvature of the earth's surface is onver curvature of the earth's surfan ex tended portion of the surface of the earth demonstrate that the surface of the earth is
convex. No line a mile long run for a canal n which water is to flow can be run without the earth, which is almost exactly 8 inches in one mile. For two miles it is very nearly 32
inches. See any book upon leveting or geo-
detic surveying for the mathematics of this. detic surveying for the mathematics of this. convex surface shows that the surface of the earth is convex, since water covers about three-
quarters of the earth's surface. It is said that quarters of the earth's surface. It is sald that
an Englishman a few years ago wagered that an Englishman a few years ago wagered that
no one could prove that the surface of the earth was convex, and put the money in the hands of the editor of a sporting paper. surveyor took up the wager and set stakes of the same height in a lake a mile apart, and
proved that the middle of three stakes was eight inches above the two on either side of it. The editor decided that thils was proof and paid over the money. 2. If so, who made the sur-
vely and when?. A. Every survey which runs a level for any number of miles demonstrates the convéxity of the earth's surface. The sur-
vey to establish the length of the meter in vey to establish the length of the meter in
France about 1780 is such a survey. All the work of the United States Coast and Geodetic Survey is such work. The laying out of the great irrigation canals in the West and the surveying of public lands of the United States are also examples. The pendulum method is
also complete as a demonstration of the shape of the earth. 3. Are there any demonstrable proofs of the earth's rotation upon its axis? A upon its axis are equally conclusive. The prindropped from a great height, the Foucault experiment with a long pendulum, and the gyro scope. Besides these may be mentioned the deviation of projectiles to the height in the northern hemisphere, the trade winds, and the rotation of cyclones. All these are discussed at considerable length in the work of Young referred to above. If our correspondent is not convinced by these demonstrations he would hardly be convinced "though one rose from the that the earth moves around the sun? All the proofs given in Young's, Newcomb's, or Procfor their truth on something that is assumed and as a proof founded on an assumption is no
proof until the assumption is proven, I want a demonstrable proof that is not founded on an assumption, if there be such an one. A. From restrial proofs of the earth's revolution around the sun. This is an astronomical fact. The stars are explicable only by the earth's revolu tion around the sun. These: have satisfled astronomers for nearly a century and will still be "deemed satiafactory. They may be-" "hotnded
on an assumption," but an assumption" tirely legitimate, and proof for the assumptio will establish its truth as certainly as proof of
fact from which a law may be deduced, will fact from which a
(9184) S. R. says: Referring to
our note No. 9036, A. W., June 6, and note your note No. 9036, A. W., June 6, and note
No. 9086, A. M. W., July 11, regarding the coloration of glass as observed at high alti tudes, and your request that some reader might
throw some light on the subject, I have to say that at this place, which is an old mining camp ituated at an elevation above tide of 5,200 feet, it would be an impossibility anywhere in the: neighborhood to find a piece of what was originally white glass that is not now of a
violet tint, ranging according to length of ex violet tint, ranging according to length of ex
posure from a ligint amethystine tint to a vers deep purple, excepting only such fragments a have recently been thrown out. In your answer
to 9036 you say, "We should look for the cause of the discoloration" [it is rather a stance in the region rather than the altitude." In. thls you are no doubt correct. I have subinitted some samples of the glass to a Wash-
ington scientist, with the suggestion that as radium has the property of coloring glass a purple or violet tint, there might be a pitchblende ever, that the cas section. He thought, nowused in the coloration was due to something of glass, such as a mineral of some kind. As terest, I take the liberty of sending you by mail a small box of fragments of glass, 3how ing the various purple tints to which the glass further that there is but little soll, so little that there is only a very sparse grass to be seen
after heavy rains, which quickly dies out. It Is all :rock, rock, rock, principally porphyry There are found here gold, silver, copper, zinc, and I believe also bismuth, with some other
minerals. Bismuth is, I belleve, possessed af some propertles similar to uranium. Id no ject, but I hope others may, as it has excite much curiosity here.
(9185) A. C. J. says: In SUpplement No. 1440, of August 8, 1903, in the article "The Size of Atoms," at the end is mentioned
Prof. Osborne Reynolds' Rede lecture on a new Prof. Osborne Reynolds' Rede lecture on a new
theory of gravity. Will you please tell wheri this lecture may be found published? A. The matter in question was quoted from the En-
gineer, London, to which we shall be obled refer our correspondent for information regard Ing Prof: Reynolds' Rede lecture, on a new theory of gravity.
(9186) P. E. J. asks: When the ele ments cesium and rubldium are placed in water they decompose it with the liberation of $\mathbf{H}$.
Which takes flre, but does Cs give the flame a
on chemistry I find that the element erbium. has
never been isolated. On looking through never been isolated. On looking through
Merck's Index, 1896, a catalogue of nearly every chemical known, I find it thus: "Erblum (E) metal, dark gray powder." Also tell me
if this element is not like didymium, which has been split into different elements? A. Cæsium was named from the blue lines which its flame Gives in the spectrum, of which there are two.
The word cessium means sky blue. Rubidium a similar way gives two dark red lines. The word rubidium means dark red. Both are from the Latin. With reference to erblum, Remsen's "College Chemistry" says: "A final statement
cannot be made as yet. It is even questlonable cannot be made as yet. It
whether it is an element."
(9187) L. F. B., Jr., says: Would you kindly tell me where I can get data and formulas for small plunger pumps for circulat
ing water in small quantities? What is the al lowance of efficiency, and what is good practice for relation of stroke to bore? A. A good
practice does not allow the speed of a plunger practice does not allow the speed of a plunger
pump to exceed 100 feet per minute. For pump to exceed 100 feet per minute. For
very small pumps the speed should be considerably less than this if smooth action
desired. The relation between the stroke the bore of the pump is immaterial, provided the displacement of the plunger per stroke is kept constant. Ordinairily the stroke is degarding the speed, or the diameter is dete mined by the pressure requirements: For
a steam pump the diameter of the steam cylinder and the steam pressure control this. The efficiency of a small plunger pump is seldom over 50 per cent, and in case of a
very small pump would be considerably under this figure. Without knowing the exact aize and character of the pump, it is impossibi for us to gi
on this point.
(9188) H. H. says: Can you furnish
me with formulas for both the solution. and
the wax used by electrotypers? A. Gutta percha, or impermeable plaster, or one of the following mixtures may be used for the pur-
pose: White wax, 200 grammes; spermaceti, pose: White wax, 200 grammes; spermacet,
30 grammes; stearite, 250 grammes; plumbic carbonate, 30 grammes.
$(9189)$ B. W. R. says: I want to call our attention to a little matter here with wheels and irrigation canals. We have a
canal 16 feet wide with a fall of two feet to the mile. We run" 7,000 miner's inches of water thereln, which makes it about four
feet deep. We have undershot wheel in the fitch. Any one of these wheels, 16 , feat long and 16 feet in diameter, is raising 25 inches,
250 gallons per minute, 25 feet high. place in the ditch we have four of these wheels working close together, that is, Just
barely working clear of each other. There is no difference between the speed and power
of either of these four. The water in the ditch is not raised, that is, not booked up above the first wheel. Now, then, if we were to put 16-foot wheels all the way along the
ditch, and each one of them were to do as well as elther one of the four mentioned, and as not to diminish the quantity of water in the power ditch, we should have power enough to raise many times the water in this ditch. I know something about what theory claims all know what they are really, doing. How am I to account for the discrepancy? Figure this out before laying it aside. We could
put 300 of these wheels in the mile ditch. put 300 of these wheels in the mile ditch.
They would raise 7500 gallons of water 25 fhey would raise 7500 gallons of water
feet high, which would be 90,000 gallons feet high, which would be 90,000 gallons
feet high (or the fall of the ditch in the feet high (or the fall of the ditch in the
mile). This would be accomplished in one
minute, while it would take fifteen minutes minute, while it would take fifteen minutes
for the same quantity of water to pass through for the same quantity of water to pass through
the other words, the ditch at the side which carries the water to be raised
would have to be many times larger than the power canal. I am telling you what is actu ally taking place here every day in the rrigation season and much attention. No matter what our books
may say about power generated by may say about power generated by water
in streams, there is a matter here worthy of streams, there is a matter here worthy
discussion and observation. A. The explanation of the apparent paradox which ou give in your recent inquiry is very sim-
ple; you have undershot wheels 16 feet long and 16 feet in diameter, ralsing 250 gallons 25 feet high per minute. Four of these wheels do not, apparently, affect the level of the wa
ter in the ditch in which they are running ter in the ditch in which they are running.
These wheels get their power from the water because of its velocity as it dows to the ditch This velocity is gradually acquired as it falls,
locity, you may place in your ditch enough heels to absorb the power equivalent to th gergy of the water due to this velocity. It
you add more wheels than this, you will get no additional power, but will simply reduce the velocity of the water in the ditch. If you were to put in 300 wheels, as yon suggest, th
velocity of each wheel would be so much less velocity of each wheel would be so much
than the velocity of your present wheels that vou would not be able to generate anything ing now, and the sum of all the power gener

## exceed the energy in your gtream

(9190) E. O. L. says: Can you inform me what yind of a preparation to use to cove
rust : from coming, through the white paint? I
want something to use in: boat work around salt water. A. If you were to cover your iron work, nail heads, bolts; etc., with the black asphaltum varnish that is ordinarily used for
iron work aboard ship, and cover this with white lead paint, we belleve that you would ave less trouble from the rust coming through which will not so readily penetrate a pain lead in linseed oil paint. There is, however nothing that we know of that will
prevent the trouble you speak of.

## NEW BOOKS, ETC.

 Pharmacien. Licensié ès Sciences Rennes-Paris: Imprimerie Oberthur. 1903.

Radium and Otherb Radio-Active Sub stances. Polonium, Actinium, an Thorium, with a Consideration of Phosphorescent and Fluorescent Subtances, the Properties and Applicaof Disease by the Ultraviolet Light Van` Nostrand Company. 1903.
Readers of the Scientific American Supplement will doubtless recall the admirable the radio-active substance, and on selenium and the Finssen light. In this comprehensive paper Mr. Hammer presented all that is now posi-
tively known of radium, the practical utilizatively known of radium, the practical utiliza
tion which has thus far been made of selenium, especially by Ruhmer, and the remarkable re sults obtained by Finssen of Copenhagen, with Mr. Hammer's book is noteworthy for its com pactness as well as for its comprehensive-
The Figiting Chance. By Gertrude lishing Company. 1903. 12mo. Pric $\$ 1.25$.
ead not prove that prefaces are sometime addressed, but even by book-reviewers, let it be sald here that Miss Lynch's preface is
an admirably studied bit of irony that cleverly hits the average reader in his most vulnerable spot-his carefui disregard of the introduc-
tions to the books he reads. Miss Lynch'snove itself tells in a sparkllng, epigrammatic style arid story of a all bent upan attaining a certain object. Starting with the ccitch-phrese that the goal, the book fing chance in reaching chance is utilized. In the end a clever in genue, after having succeeded in accomplishing
the very task which she had set for herself, is undermined by her own cleverness, and does lore with the man who is least able to gratify bitions.
The Warner Library of the World's Best Literature is at last within easy reach of
every American home. This enterprise was effected by the "Public. Opinion Club." The first dition, published a few years ago, was offere The New Memorial Edition contalns many beautiful illustrations in color, a course of ays tematic reading, and other new features have
been added. The present Warner Library is an improvement in every respect over the earliest.
It is a splendid array of de luxe books, taking note of every author and every worthy literary production from the earliest days of writing a complete survey of the world's literary hought be obtained. It is impossible in a of the Warner Library. But, if the inguiry coupon given with the advertisement in a pre-
vious issue is sent in, it will bring handsome vious issue is sent in, it will bring
specimen pages and full particulars.
Subject List of Works on Architect URE AND Building in the Library of the Patent Office. London: The
Patent Office. 1903. 18mo. Pp. 164. Price 25 cents.
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Mr. Hodgson's remarkable work is the outof the Carpenter's Steel Square." These were among the first that were ever issued devoted ntirely to describing the uses and applications of the square, and so well did they meet with sted in the steel square, that the were interurged to put the papers in book form and several hundred thousand copies have been sold, Indeed it is doubtful if any other technical book ever had the same sale. Now nearly everything that is known about the steel square is embodied in the two handsome volumes. The most intricate problems are solved with the aid of the steel square. It is not too much to say that a carpenter who does not possess these
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out of his kit.
The New International Encyclopedia. Edited by Profs. Gilman, Peck, and Colby. New York: Dodd, Mead $\&$
Co. 1903. Vols. VIII. and IX. 4to. Po. 1903. 953. Published by subscription.
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## INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued or the Week Ending
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