Accident to an English Express Train.
The Scotch express left Edinburgh as usual, and consisted of ten ordinary carriages, a Pullman car and two heavy engines. Running at the normal speed, nearly sixty miles per hour, the train approached Northallerton, in Yorkshire, on the Northeastern Railway, about 3 o'clock P. M., in the midst of a thick fog which covered the land, but left the atmosphere above clear. This probably prevented the drivers seeing the signals which were set against them, and the whistling of the goods engine gave the firstintimation of danger. Almost immediately after the express plunged into the goods train. The impact was terrific. The front engine was turned over and thrown down the side of the slight embankment, which exists down the side of the slight embankment, which exists
here, into a field adjoining, and the tender was swung completely around and rested end upward on the top of the engine. The second engine and tender fellover on its right side in the middle of the line, the tender being crushed into the footplate. The front portions $o^{f}$ both engines were battered in, and one of them had its chimney and cupola knocked off. The guard's van was smashed almost to atoms, the woodwork being splintered, the axles snapped and various portions of the van and the luggage scattered about in all directions over the permanent way. The third-class carriage that followed shared a similar fate, the wheels being forced underneath the Pullman car, which was partly raised up by the force of the collision. The guard's van at the rear of the goods train was also smashed up. The Pullman car was damaged, but the main body of it was preserved intact. Six passengers were seriously injured, while the majority of the passengers received a severe shock. The driver of the first engine, Thomas Adamson, received fatal injuries, and the driver of the second engine was also seriously injured. Help was tion. while work was at once begun to clear away the wreck.
The most noticeable feature of the wreck is the comparatively uninjured condition of the Pullman car. Although shifted from its normal position on the trucks, with the exception of the smashing in of the platforms, the car body suffered little and resisted the shock to a remarkable degree. "It is doubtless true," says the London ,Railway World, "that the weaker carriages before and behind the Pullman car acted in some measure, at least, as buffers ; but it is evident that if the other cars had been built with something of the longitudinal stiffness of the Pullman, while the
train might have been thrown off the track, there
would have been no such complete smashing up of ${ }^{\text {invention introduced. This thing hasbeen frequently }}$ carriages as the photographs show. Our ordinary car-, done, but this decision should prove a deterrent. riages with their comparatively weak sills and end EDs.] construction serve quite well enough for regular service, but in case of collision they can offer slight re astance. With cars of longer and heavier build, the alignment of the train mas be broken, and the car but the bodies are much more likely to remain intact and to offer the occupants an opportunity of escape than the match box structures which compose many of our express trains. The accident at Thirsk also demonstrated the advantages of the Pullman car in case of collision : and while accidents are happily of rare occurrence on English railways, it is a question that managers and superintendents of car depart ments might well consider, whether some changes cannot be made which will approximate in some degree the strength and stability of the Pullman car. In
America, where, as a general rule, the ordinary car riage is much stronger than the corresponding carriage on an English railway, the companies feel the need of securing even stronger construction. The two examples which we have now had of the way in which the Pullman and the ordinary cars act in collision
should serve as an incentive to devise means by which should serve as an incentive to devise mean
the effects of accidents may be minimized."

## Patent Decision.

Where an invention had been reduced to practice in positive form under a patent, and the applicant has simply filed his application, without doing anything to adapt and render the invention practical, and where he knew of the issue of the patent within a few days after its issue, and made no suggestion that the invention was his, but recommended it to purchasers, both orally and in writing, as the invention of the patentee, and where he did not sert any title to it un company who owned the patent to do service for a rival company, the Court of Appeals of the District of Columbia held (Wells et al. vs. Reynolds et al.) that priority must be awarded to the patentee.
[The above decision is not only good law, but is sound common sense. From this decision inventors will see the danger of delay in the making of their applications, for the purpose of allowing another to get a oatent, and after it is well introduced apply for a patent with a view of proving priority, thus derive the
benefit of the first patentee's efforts in getting the

## The Water Power of Niagara.

Engineers have estimated, says Harper's Weekly, that the total water power of Niagara Falls is $7,000,000$ horse power. This estimate, to be sure, is in the main only a guess, but when the area drained into the lakes above Lake Ontario, and passing through the Niagara River, be considered, the guess or estimate does not seem to be too large. The water surface of the great lakes above Ontario is 84,000 square miles, and the watershed of these lakes is 240,000 square miles-more than twice the area of Great Britain and Ireland. The total length of shore line is 5,000 miles, while the voltotal length of shore line is 5,000 miles, while the vol-
ume of water is 6,000 cubic miles, of which Lake Supeior contains almost one-half. The rate of outflow at Buffalo is from 217,000 to 275,000 cubic feet per second, while the fall of the cataract is 165 feet. The volume of water in the lakes is such that it has been estimated that even if no rain fell, the flow of the river would be continuedat its present rateforonehundred years-that continued at its present rateforonehundred years-that
is, if the lakes could be gradually drained. These are is, if the lakes could be gradually drained. These are
very large figures, but in the main they are the results f exact measurements.
The small water powers in the world are uneven, and are afflicted by floods and droughts, but this great power at Niagara is as constant as anything in this world can be, not even the ice in the severest and longest winter ever known appreciably changing it. The present plant is intended only to utilize 125,000 horse power, and the turbines now in place are only horse power, and the turbines now in place are only
for a small part of this. Other turbine wheels will be put in place as the demand for power grows. The general plan of the company contemplates the ultimate use of 450,000 horse power on the American side and a like amount in Canada. Such a power would turn all the wheels within a radius of 500 miles of the falls. At the present time a considerable part of the power de veloped is to be taken to Buffalo by electric transmision, and it is the confident expectation of the electri cians now at work on the problem that the power can be taken as far east as Albany, 300 miles away, and delivered there cheaper than power can be generated by burning coal. If this be so, then all the country between Albany and the falls will be admirably adapt ed for manufacturing, while the Erie Canal will afford cheap and tolerably quick transportation, for there seems to be little difficulty in the way of hauling these seems to be little difficulty
boats by electrical power.

## recently patented inventions.

## Railway Appliances.

Switch Mechanism. -Sumter B. Battey, New York City. A transversely sliding switch bar is connected with the switch rail, according to this insupported rods fitted to slide on the car patform are supported rods fitted to slide on the car platform are
adapted to engage the blocks to shift the bar laterally. adapted to engage the blocks to shift the bar laterally.
The improvement is designed to afford a simple and The improvement is designed to afford a simple and
durable manism, more especially fitted for use on
street railroads, to enable the driver or motorman to set durable mechanism, more especially fitted for use on the switch at will, while the car is in motion, to change
the'direction of the car to a side track, or to set the switch the'direction of the car to a side track, or to set the switch
rail back to the main track, if it had been previously left rail back to the main track,
turned for the side track.
Dumping Car and Attachments. Samuel W. Beatty, Bayou Goula, La. This inventor has devised a simple, strong and durable car peculiarly
adapted for carrying and dumping sugar cane, but also adapted for carrying and dumping sugar cane, but also applicable for other purposes, and in connection with the
car is an easily controlled mechanism to effect the dumpcar is an easily controlled mechanism to effect the dump-
ing. The bottom and sides of the car form a slatted fexible body. held together by lapge, and the body is and outward in dumping, the loaded car having been previously brought beneath hoisting and dumping apparatus.

## Mining, Etc.

Grading Ores or Similar Mate-rials.-Daniel Brennan, Jr., Bayonne, N. J. This in ventor has devised a method of classifying ores com-
minuted so finely as to be difficult and expensive to minured so finely as to be difficult and expensive to
classify by screens. The material is fed in a close falling stream into a chamber containing water or other fluid, and the force of gravity is utilizud to separate the
finer and lighter particles from the coarser and heavier finer and lighter particles from the coarser and heavier
ones. Near the bottom of the apparatus are vertical ones. Near the bottom of the apparatus are vertical
partitions forming a central and two side pockets, each with an outlet, and on top of each partition 18 a movable partition on a shaft, by which the partitions may be of the partitions regulating the fineness of the material falling in tie outer pockets.
Mixing Device in Alloying.-William H. Howard, Pueblo, Col. The process of alloyin the silver in molten argentiferous lead, with zinc, is facilitated, according to this invention. by a device for
conveniently and thoroughly mixing the zinc with the conveniently and thoroughly mixing the zinc with the
molten leal, without danger of oxidizing and renderin the zinc inert. A cover having on its under side an
annular flange is passed into the molten lead in the annular flange is passed into the molten lead in the
pot, and a stirring device on the under side of the cover passes into the lead. This device consists of a
cylinder supported by brackets from the cover, and a cylinder supported by brackets from the cover, and a
propeller wheel in the cylinder is adapted to be rotated propeller wheel in the cylinder is adapted to be rotated
by a shaft, the stirring being thus performed mechanically in a confined chamber, instead of by hand, with

## Electrical..

Section Insulator.-Albert Hennefeld, Christ. Dehner and Charles H. Van Ness, Colorado Springs, Col. This is a simple and effective trolley wire
break, which may be inserted in the line at any time without interfering with traffic, and without the necessity of slackening the line. It consists of a curved bar of wood or other insulating material with metallic thps at
its ends, and means for mechanically connecting the ends of the trolley wire and engaging the span wire, the insertion in the line being made without the use of Telephonf Mouthpiece. - Rial N. Telephone MOUTHPIECE. - Rial N.
Denison and Frank M. Geary, Brooklyn, N. Y. This mouthpiece is suitable for attachment to epeaking tubes from the ordinary mouthpiece, but it is made with an outer and inner shell to form an intervening chamber,
the inner shell being perforated andan antiseptic matethe inner shell being perforated and an antiseptic mate-
rial located within the chamber, whereby the mouth piece will be cleanly and in no manner a conductor germs.

## Mechanical.

Power Hammer.-James ${ }^{\text {B }}$ B. Sweeney and Robert W. Laird, St. Johnsbury, Vt. This hammer is adapted to deliver an elastic blow similar to that of a
hand hammer, and has a vertically reciprocating ham. mer head actuated by a tilting helve, the hammer head and helve being connected by a built-up spring formed
of contiguous parallel plates, so that by using more or less plates the spring may be more or less resilient. The invention provides a simple and easily operated means
of driving and adjusting the helve to give a powerful of driving and adjusting the helve to give a powerful
blow and just the requisite stroke. Machine and Method of Fulling Cloтн.-Henry Balbian, North Vassalborough, Me.
This inventionprovides for uniformly fulling a number This inventionprovides for uniformly fulling a number
of separate pieces of cloth simultaneously by twisting them together and then fulling them in their twisted the fulling rollers, is a revoluble carrier provided with the fulling rollers, is a revoluble carrier provided with
guide holes for the passage of the pieces of cloth, and guide holes for the passage of the pieces of cloth, and
a guide rod located intermediate the fulling rollers and the carrier. Each piece is, by means of this improve-
ment, designed to receive the same fulling as would be the case with the ordinary machine treating one piece. Wrench.-William N. Smith, Santa Cruz, Cal. This is a monkey or pipe wrench of very simple and durable construction, in which the lower jaw
may be quickly and accurately adjusted to a pipe or nut, may be quickly and accurately adjusted to a pipe or nut,
this being effected with one hand. The jaws are capable of very fine adjustment, and the tool is composed of but-
few parts, any portion being capable feady few parts, any portion being capable of ready replace-
ment, should it become damaged or otherwise unfit for

## use. $\quad$ Agricultural

Thrashing Machine.-Riley Knight,


Land Marker. - Henry Bowers, Milton, Wis. This device comprises a marker arm adapted for pivotal attachment to a planter, and with a regulating by the driver, without stopping the team or leaving the
by or throw it from marker as desire above the ground rhe device is especially adapted for use with corn plant ,
Erame for Haystacks. - John P. Brown, Walcott, Ind. This frame comprises upper arched sections adapted to cover the top of the stack,
square sections to cover its sides and ends, and quadrant sections to assist in closing the ends, each of the sec tions comprising an open frame provided with a netting, and means for detachably connecting the several sec-
tions with each other. The frame is inespensive, durations with each other. The frame is inexpensive, dura-
ble, and readily applied to a stack or rick, preventing the ble, and readily applied to a stack or rick, preventing the
stack from falling or being blown over by heavy winds, while any part of the frame may be readily removed to fford access to the straw.

## Hiscellaneous

Thawing Ice from Pipes.-Isaiah H. Simpson, Brunswick, Me. This is an improvement on a formerly patented invention of the same inventor truction, for rapidly thawing ice formed in pipes. The invention consists princigally of a revoluble boiler through which circulates the water to be heated and orced into the thawing pipe.
Swing.-Samuel 1. Alston, Galveston, seat supports are suspended from a pivoted rocker. Th frame forming the support of the swing can be easily
knocked down and packed in small knocked down and packed in small space, or moved to
where it is to be erected, indoors or in the open air, the swing being a neat, convenient, and perfectly safe on

Paper File.-Joseph B. McEnally Clearfleld, Pa. This device comprises two clamping strips,
one with two transverse slots and a laterally opening longitudinal slot, while the other strip has spaced holes conforming with the transverse slots. A binding is bent to produce two limbs that engage the spaced
and inexpensive, and affords means for securely filing
Hanger for Use in Buildings. Louis Lane, Newark, O. This hanger is for securely
supporting the ends of joists in buildings, and is adapted supporting the ends of joists in buildings, and is adapted
to be readily secured to the header or supporting beam or wall. It is formed of sheet metal, and has a horizontai wall. It is formed of sheet metal, and has a horizontai
seat, from which extend vertical triangular wings, triangular flanges extending sidewise therefrom at right angles, and there being a bearing iron on which the triangular flanges are fastened. The blanks for the

Paper Box.-Edward E. Pinkerton, Sioux City, Ia. This is a folding or knock-down box, formed of a single blank of pasteboard or similar material, being quickly cut or stamped therefrom and readily
creased and folded, and the individual parts securely creased and fol
locked in place.

Typewriting Machine.-Walter F. Kasson, Boise City, Idaho. This is an improvement in
typewriters, having a knee-lever attachment, whereby the carriage may be ehifted from left to right without manual assistance. The platen is automatically turned at the end of each line to make the line space, or it may be turned bystriking a finger piece of the platen key. The improved attachments are applicable to Remington machines, and, with slight modications, to other machines.
Alarm Clock.-Theodore Biedinger and Thomas J. Kane, New YorkCity. This is an improvement in clocks, having a setting spindle to spring
out and stop the alarm, and which, when pushed in, out and stop the alarm, and which, when pushed in, permits the alarm to ringuntil the clock is run down.
The attachment is very simple, costing comparatively The attachment is very simple, costing comparatively
nothing, and may be arranged so that one cannot stop nothing, and may be arranged so that one cannot stop
the continued sounding of the alarm until the attachthe continued sounding of the alarm until
ment is readjusted by hand for such purpose.
Garment Securing Device.-Otte Van Oostrum, Portland, Oregon. This is a device, convenient to adjust, for reliably retaining trousers, gloves, or shoes, in closed adjustment, but so that the fastening
may be released by draft strain on a cord or other flexi may be released by draft strain on a cord or other flexi
ble connection attached to a series of similar fastening ble conne
devices.
Rain Water Cut-Off.-Jean M. Castaing and Jean B. Dohin, New Orleans, La. This is a device to be arranged between the conductor on a building and the cistern. It i , so constructed that the first water running from the roof, carrying off the accumula-
tions of dust, etc., will be discharged without running tions of dust, etc., will be discharged without running
into the cistern, but after a certain amount of water has into the cistern, but after a certain amount of water has
been thus allowed to flow away a valve will be automatically shifted so that the clean water will run to the cisern. The apparatus is very simple and may be applied to any ordinary conductor and cistern.
Whll Piph Puller. - Jerome S. Cousins, Williamsville, Mich. A base, which may be of
heavy plank, is slipped over the pipe, to rest upon the

Well timbers, and around the pipe is an externally threaded tubular screw on which is a beveled cogwheel
resting on a collar, the wheel having a hub threaded to fit resting on a collar, the wheel having a hub threaded to fit
the screw, and being uriven by a pinion on a shaft from the screw, and being ariven by a pinion on a shaft from
any suitable power. Above the tubular screw is a wedge-
shaped collar, the wedge entering a clamp by which, as the wedge is forced upwara, pivoted dogs clamp the pipe with a pressure corresponding to the pressure on the
wedge. The apparatus is strong and inexpensive, may be readily applied, and enables a pipe to be quickly
Loised. Lock.-William W. Davis, East Orange, N. J. This inventor has devised an improvement in that class of locks in which the mechanism is so arranged that
when the door is open te parts of the lock will project in when the door is open ut parts of the lock will project in
such a manner as to catch the person or clothing of those passing near. This lock has no protruding parts, is positive in operation, and little likely to get out of order, and has novel features of internal mechanism.
Steirilization.-Albert Hussener, rialsenkirchen, Germany. For the sterilization of mate
rottles, jars, etc., this inventor has devised an rials in bottles, jars, etc., this inventor has devised an
apparatus by which to mechanically close and make per fectly tight against the outer air, by means of a plain lat cover, vessels of any shape intended for preserving articles of food, the vessels and their contents having been previously sterilized by heating in a hot water bath The apparatus not only effects the closure, but during the process of sterilization exhausts the air from the in
terior of the vessels, the outside air not being able to penetrate to the interior of the vessels during or subse quent to the process of sterilization.
Siphon Valve. - Frederick Booth Concord, N. H. A valve body is, according to this inven ion, fitted to slide on the fixed outlet pipe, and is formea
at its lower end with inlet openings for'the water, an at its rupper end with a vent extending downward out bottom of the tank. The invention relates to device
bold for fiushing water closets, urinals, etc.., and the valve is
very effective and noiseless, and arranged to automat very effective and noiseless, and arranged .to automat-
ically drain the tank whenever the valve is pulled, at the same time using the discharge pipe for an overflow
Key Ring and Cigar Cutter.-Edward B. Aiguier, Newark, N. J. This combination de
vice is strong and simple, very ornamental, and is ar vice is strong and simple, very ornamental, and is ar
ranged to prevent accidental disengagement of a key ranged to prevent accidental disengagement of a key
when the cutter is being used. The ring has its ends spaced apart and is formed of two hinged sections, cured to one of the ring sections, its mopable section engaging the other ring section:
Screen.-George W. Cross, Pittston, ma. In making screen segments, this invenion provide a means whereby the screening surface may be formed
integrally with ribs, by upsetting or otherwise treating one of the faces, the ribs being so produced that the screen surface may be smoothly and evenly laid on the spiders or framing, the ribs abutting against the spiders.
The ribs and screen segments are; also so formed that The ribs and screen segments are; also so formed that
the ribs may be given more or less pitch, as desired, the ribs may be given more or less pitch, as desired,
without interfering with the perfect laying af the ends without interfering with the perf
of the segments upon the spiders.
Shutter Fastener. - Joseph W. Johnson, Point Pleasant, N.J. This improvement comprises two curved bars, each with a pivot hole and an end extension to serve as a handle, and on the con-
vex side two notches or grooves, with a locking device having at one end a transverse perforation to receive a fastening screw, the other end being adapted to engage any of the grooves. The fastening is also a bower, and
may be applied to any ordinary blind or shutter, holding it open in such a way that it cannot become loosened by the action of the wind. It is also adapted to hold the blinds at an angle to the window to enable them to act
as an awning.
Ironing Board Attachment.-Ro bert N. Boston, Chestertown, Md. This is a device for
firmly holding the neck band and bosom of a shirt while being ironed, and is adjustable to neck bands of diffe ent sizes. In using this improvement the neck band
held distended and all wrinkles removed, the adjacen portions of the bosom being also held smooth.
Stove Pipe Joint.-Josiab E. Smiley Smiley, Ohio. This is an improvement designed to
facilitate the detachment of sections of pipe when desired. One of the pipe sections has notches in one end and intervening elastic portions provided with spiral ribs, the other section having corresponding spiral
grooves arranged oppositely, the grooves and ribs corre sponding in arrangement and pitch.
Fish Trap.-Bernice Wood, Benson, N. C. Thisinvention provides a trapdesigned to catch a large or small quantity of fish at each operation, and
is so arranged as to collect the large fish and allow the small ones to pass through. The invention is also de signed to furnish a method of utilizing swamp or waste lands for fish culture, especiaily land in which small run ning streams or gulleys are f
turned into ponds by damming.
Game Board.-Jay F. Beaman, Antwerp, N. Y. This is an improvement in checker or draught boards, and the playing blocks or spaces are
hexagonal, with blank triangular spaces between them. hexagonal, with blank triangular spaces between them.
The corners of the plasing field are similar, thus avoid. ing the "double corner," and rendering impossible the well known "parallel move" in such corner, so that a game cannot be made a draw or tie. The game is played in very much the same manner as checkers, but the in-
vention provides for a large sized board for use by a number of players
Mustache Curler. - Charles C. Burgio, Brooklyn, N. Y. This is a small and inexpen-
sive device, to be applied in pairs to the ends of the mustache, to curl them without heating, the device being applied to the dry mustache and alowed to remain in position for a few minutes.
Nore.-Copies of any of the above patents will be
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N. Spon.
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The present work is uniform with "Twenty Years with the Indicator." The author is the well known cona table, especially in those relating to steam, is in its ac curacy, and the amount of labor necessary to prepare the present work must have been very great. The result is a collection of tables in which nothing is offered
which has not been proved. In this book we have in a compact form the most useful data for computations for boiler testing, duty performance of pumping engines, use of the indicator. No theories of any kind are considered or expressed intentionally. Each table is accompanied with explanatory notes showing how problems are worked out in connection with the tables. The work includes steam tables, Regnault's tables, heat of steam, pressure temperature, volume and density of steam,
factors of evaporation, hyperbolic logarithms, engine

The American Annual of Photography and Photographic Times Almanac for 1895, of the Scodignity inherent to a volume of over 500 pages. It has a great variety of information useful to the photographer, with the times, including also a carefully compied selectinn of standard formulas and useful recipes. The two hundres or more ill ustrations which embelish its pages likewise present some fine examples of photo-engraving and photo-mechanical printing.

SLIENTIFIC AMERICAN
BUILDING EDITION

## NOVEMBER, 1894.-(No. 109.)

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Elegant plate in colors showing a cottage at BronxTwo perspective elevations and floor plans, Esq. mated cost $\$ 5,000$. Mr. William A. Lambert, architect, New York Citr. A modern and pleasing design.
2. Plate in colors showing the residence of John Cottier, Esq, at Bensonhurst, L. I. Three perspec-
tive elevations and floor plans. Cost $\$ 6,750$ complete. A good example of Colonial architecture. Messrs. Parfitt Bros., architects, Brooklyn, N. Y.
a ${ }^{2}$ welling at Edison Park, Ill. Cost $\$ 1,700$. Archiect, Mr. F. W. Langworthy, Chicago, Ill. tive elevations and floor plans
4. A very attractive residence recently erected for A. C. elevations and floor plans. Mr John E Baker, architect, Newark, N. J. A modern design.
5. An $\$ 800$ summer cottage built for A. R. Doten, Esq., at Casco Bay, near Portland, Me. Perspective architect, Portland, Me.
. Perspective elevations and floor plans of a handsome residence recently completed for George W. Catt,
Esq., at Bensonhurst, L. I. A very picturesque design. Cost $\$ 8,100$ complete. Mr. S. S. Covert, church at Short Hills, N. J., built entirely of rubble stone. Estimated cost $\$ 6,000$. Perspective elevation and floor plan. Messrs. Lamb \& Rich architects, New York City
.
A stable and conservatory attached to the residence
of John Cottier, Esq., at Bensonhurst, L. I. Perof John Cottier, Esq, at Bensonhurst, L. I. Per-
spective elevation and ground plan. Messrs. Parift Bros.. architects, Brooklgn, N. Y.
10. A residence at Ardmore, Pa., in the Queen Anne style. Perspective elevation and floor plans. Cost com-
plete $\$ 6,750$. Architects and builders, Messrs. J. B. Cornell \& Sons, Philadelphia, Pa.
cottage at Edgewater, Ill., erected for Edgar Smith Esq. A unique design in the Colonial style. Cost
$\$ 7,800$ complete. Two perspective elevations and foor plans. Mr. G. W. Maher, architect, Chicago, II.
12. An attractive cottage at Bath Beach, Long Island N. Y., recently erected for G. W. Snook, Esq. Two
perspective elevations and floor plans. Mr. Percey Emmett, architect, Bath Beach, Long Island.
3. Miscellaneous contents.-Wood pavementin London. -Preservation of wood.-Methods of constructing chimney fiues and pipes at Paris, illustrated.- T
passing of red brick.-Long distance house mov-ing.-Carved and fancy mouldings, illustrated. -A new sash lock.-Automatic heat regulation in Curiosities about wood.-Cement water tanks. Animproved hot water heater. illustrated.-How to cool a cellar.-A new woodworking machine, 1llustrated. - An improved stage bracket iron, illus trated.-Party walls.-Architectural metal orna
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The Imperial Power Building, of Pittsburg, Pa., will be completed March 1. It is a new, eight story factory
building, fitted up as a model plant. with the flnest machinery, electric do namos and motors obtainable, maring it desirable for manufacturers. The proprietor pro-
poses to rent space as may be required by a manufac poses to rent space as may be required by a manufac-
turer. Eacb floor contains 7 , $\mathbf{c c o}$ square feet, capable of and appliances to meet any wants and give convenience not obtainable elsewbere. Located in the heart of tbe city, within thirty feet of the Pennsylvania R. R. freight
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誳
HINTS TO CORRESPONDENTS.

6313) G. M., Los Angeles, asks: What proportional size shall I make the pressure jet and throat
of a water jet pump to raise water 12 feet, with a fall of 60 feet? To what fractional height of pressure jet can water be forced by a iet pump, and abont what is the
percentage of efficiency? Where can I find directions percentage of efficiency? Where can I find directions for designing jet pumps? A. The relative areas in a water
jet for the conditions as stated should be as 1 to 1.75 jet for the conditions as stated should be as 1 to $1 \%$ with carved or bell-shaped internal surface. The nozzle should be placed just within the commencement of the
curve of the neck piece. If well made with smooth frictional surfaces, water can be raised to from one-sisth to one-half the height of the supply head, by varying the proportions of the areas of the nozzle and neck. The quantity raised will vary as the ratio of the areas and inversely as the height. The efficiency depends upon the
provision for eliminating the friction of the waterin the pipes connecting the ejector, ran ing from 50 to 60 per
(6314) A. C. P. says: I take the liberty to ask for the name of inclosed insect. They have apand as no one seems to remember of having ever seen them before, they have aroused my curiosity. So would be very thankful for a name for same, also a.general ex-
planation of their sudden appearance. A. Answer by $\mathbf{C}$. L. Marlatt, Acting Entomologist Tnited States Department of Agriculture.-The insect referred to is what is generally known throughout the West as the box elder
bug (Leptocoris trivitatus, Say). Of late years this in sect has been enormously abundant every fall thoughout the upper Mississippi Valley, collecting in great numbers on the sunny sides of buildings and frequently gaining entrance into wellings in such numbers as to be a serious annoyance to housekeepers. Throughout the summer it may be found in different stages of development, chiefly on the box elder (Negundo aceroides), upon juices extracted from the bark and trunk of which it subsists. In the late summer it may be frequently noticed in dense
patches on the trunks of these trees. It also occurs $\left\lvert\, \begin{aligned} & \text { patches on the trunks of these trees. It also occurs, } \\ & \text { however, upon other trees, particularly ash. Later, it }\end{aligned}\right.$
leaves its summer breeding places and seeks hibernating quarters for the winter, crawling into crevices in walls and outbuildihgs or wherever it may receive protection
from the cold and storms. Wherever they are collected in masses as described they may easily be destroyed by
crushing with a stiff brush or by dousing with scalding crushing with a stiff brush or by dousing with scalding
watcr or by the use of any of the oily insecticides in ry strong dilution.
(6315) B. A. J. says: Will you kindly inform me how halation may be prevented? A. Halawindows in photographs of interiors, and blocks up the etails. It is, too, often found to occur in landscapes jaken in a strong light, the tops of trees and other oba mist, orentirely obliterated. It is caused by refiection rom the back of the plate, and occurs most strikingly in pates of the cheap class, which are thinly coated. With ery thickly coated plates it rarely occurs, except when taking brightly lighted interiors. To prevent it the back of the plate may be coated with a misture of powdered burnt sienna, $1 / 2$ oz.; gum arabic, $1 / 2$ oz.; glycerine, 1 z.; water, 5 oz. This is readily washed off before de. elopment. A special ready-made preparationis sold for dead black needle paper, or black American cloth, to the size of the plate, coat it with glycerine, and squeegee it on to the back of the plate when placingit in the slide.
(6316) W. C. P. asks how gelatine sheets re mact. A. Dissolve fine glue or isinglass in water so hot on a plate of glass (previously warmed with steam and slightly greased) fitted in a metallic frame whose dges are just as high as the wafer should be thick. Lay on the surface a second glass plate, also hot and greased. so as to touch every point of the gelatine while resting on the edges of the frame. By its pressure the thin cake rendered uniform. When the glass plates have cooled, the gelatine will be solid and may be removed. It can
then be cat into disks by punches etc. It can of course, be colored by adding suitable coloring material, aniline colors, for instance.

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