STEAM VALVE.-R. A. Filkins, North Adams, Mass.-This invention relates to a steam valve which is so arranged that it can easily be worked up and down with perfect ease, while it closes the ports perfectly steam and air tight. The invention consists of a plug or valve which is made of two sec tions fitted around a tapering stem that is smallest at its lower end, and of two fingers grooved between the sections. The fingers catch under a shoulder of the stem; but when the valve is on its seat, tuey release the stem and allow it to be forced down between the sections so as to spread them laterally apart. The port holes will thus be most effectually closed,

WATER WHEEL.-William S. Place, Charleston, Maine.-This invention relates to a water wheel of simple construction whereby the power of the water is obtained both by impact and gravity or by a simultaneous downward and lateral pressure.

PRSSARY.-C. R. Gorgas, Brooklyn, N.Y.-This invention consists of an india rubber bag or cap provided with a rubber tube, which is to be dis-tended by a flat spiral spring when inserted into the vagina; also of an implement provided for inserting the spring within the india rubber cap.

SELF-LOADING CART .-- G. W. Whitson, Asbville, N. C .-- This invention has for its object to furnish an improved cart, whichshall be so constructed and arranged as to be self-loading, and which can be easily operated.

NUTMEG GRATER -H. H. Barstow, Chicago, Ill.-This invention consists of a grating plate placed within a case and sustained by springs which press the plate against the nutmeg held between it and the top of the case. The nut meg is affixed in a rod which passes through the case terminating in a handle by which it is actuated to and fro in the operation of grinding.

APPARATUS FOR LOADING AND UNLOADING WAGONS .- Selah S. Brewster Manchester, Mich.-This invention consists in providing within the building used for the purpose, near the top, an axle or windlass having ropes at each end and a pulley over which a rope works, which is connected at one end to a winding-up crank shaft conveniently arranged at the side of the building near the floor, whereby the said windlass is operated to raise the box of rack from the wagon, when it maybe suspended till required for use again by fastening thecrankshaft so as to holdit.

CLOCK ESOAPEMENT.-J. V. D. Patch, Brownville, Nebraska.-The object of this invention is to obtain an equable and easy action of the pallets of \$ clock escapement or verge, so-called, and with the minimum power and tric tion.

Plox Ax.-John C. Conklin, Yorktown, N. Y.-The object of this invention is to provide a socket for the insertion of the handle of pick axes.

WATER WHEEL.-D. W. Case, Garden City, Minn.-This invention related to an improvement in water wheels, and it consists in a novel arrangement of chutes and gates, whereby the gates may be readily operated, opened and closed, and rendered self-regulating when desired, so as to obtain an improved speed of the wheel.

BOLT AND RIVET HEADING MACHINE.-Wm. Melville, Paterson, N, J. invention relates to a machine for cutting the blanks and for forming; the heads of bolts and rivets, and consists in such an arrangement and combination of dies, holders, punch, and cuiter, that the desired results can be attained with simple mechanism and in a short time. The whole machine op erates perfectly automatically, as, after the various parts have been adjusted for the production of certain kinds of rivets or bolts, the end of the bar has block be inserted in the machine when it will be cut and the separated blank will be held and headed in the desired manner.

SHEEP SHEARS,-Hermann Wendt, Elizabeth, N. J .-- This invention relates to the construction of sheep shears, and is an improvement on a process o construction previously patented by Hermann Wendt and Henry Seymour. The object of the present invention is to obviate the wearing of what are commonly termed the "stops," which are employed to prevent the blades of the shears from passing each other. Hitherto thesestops have been formed entirely of iron, but by this improvement they are formed of steel and iron combined and in such a manner that the process of construction of Wend & Seymour, above alluded to, is not interfered with in the least. Henry Sey mour & Co., 52 Beekman street, New York, assignees.

CLOTNES WASHING MACHINE.-John Phillips, Jr. Georgetown, Mo.-This invention relates to a clothes washing machine of that class in which a reciprocating rubber is employed for subjecting the clothes to the necessary pressure and rubbing action.

CLASP FOR JOINING BELTS .- Benjamin D. Randleman, Port Louisa, Iowa -The object of this invention is to provide a simple and effective clasp for joining the ends of belts. It consists of the combination of torked and straight links with a pair of hinged plates. The links serve to provide a flexible connection for the hinged plates, which latter serve to secure the ends of the belt.

MINCING CLEAVER.-Samuel J. Tongue, Philadelphia, Pa.-This invention consists in combining a mincing knife or cutter and a cleaver in such a man nor that one and the same implement may be used either in the capacity of a cleaver or a mincing knife as may be desired.

CUTLERY .- A. L Taylor, Springfield, Vt .- This invention relates to an improvoment in cutlery and is more especially designed for table cutlery knives, forks, etc. The object of the invention is to avoid the difficulty at tending the loosening of the handles on the tangs, which is caused chiefly by the washing of the cutlery in warm water and also to avoid the loss occa sioned by the breaking and checking of the handles, a contingency of frequent occurrence when horn, bone, and ivory are used as the stock or mate rial.

L COMBINED CIDER MILL AND PRESS.-Eli Wangaman, Blairsville, Pa.-The object of this invention is to combine grinding and pressing mechanism in the same general machine whereby apples, grapes, and other fruit may be ground, and the juice of the same expressed immediately by conveying the pomace from the grinding mechanism to the pressing rollers located at some point in the trame conveniently below.

POTATO DIGGER.-Arthur Van Norman, Detroit, Mich.-This invention re lates to a potnto digger, and it consists in the employment of a cylindrical revolving screen provided with an internal screen, the above parts being used in connection with a scoop and a reciprocating cutter.

COOKING STOVE.-Evan O. Thomas, Jersey City, N. J.-This invention re lates to a cooking and baking stove, which is provided in the oven with suspended shelf that can be rotated from the outside without requiring the oven to be opened. The above is of oval shape, with a cylindrical or nearly cylinarical baking oven, which is on one end of the stove so that the crescent shaped fire-place fits around half of the oven.

SPARK ARRESTER.-A. F. Smith, Ellsworth, Maine.-This invention relates to spark arresters, to be applied to the smoke stacks of locomotives, chimneys, etc ,forthe purpose of preventing escape of sparks therefrom. The invention consists in the peculiar construction of the device, whereby a good or cfl cient draught is obtained, to ensure the escape of smoke and cinders, at the same time prevented from passing out of the device. MACHINE FOR SPLITTING WOOD .- Leonard Tilton, Brooklyn, E. D., N. Y .-This invention relates to a machine for splitting wood, and it consists in the employment of fixed cutters, a reciprocatory hopper and a vibrating bed all arranged to operate in such a manner as to effect the desired end, in an expeditious and perfect manner. BEE HIVE .- Joseph Chase, Rupley, Ohio .- This invention relates to the manner of constructing a bee hive, whereby the contents of the hive may be readly seen, the bestprotected from theravages of themoth, and the interior of the hive kept at a uniform temperature, or nearly so, being warm in winter and cool in summer. SHEARS .-- Hermann Wendt, Elizabeth, N. J .-- This invention relates to an improvement in shears for general use, and it consists in forming the thumb piece of the eye or loop in the handle, through which the thumb passes in such a manner that the shears may be  $op_e$  rated with far greater facility than hitherto; also, in a certain means, whereby the holes, through which the rivet or screw passes to hold the two parts of the shears together, may be formed by punching instead of drilling, which is now a necessity, At present rivet holes cannot be punched in consequence of the drop, which welds the steel to the malleable cast iron portions, coming in contact in its descent with the portion of the malleable cast iron through which the rivet or screw passes, and compressing or hardening said portion to such a degree asto preclude punching. This difficulty is fully obviated by this improvement.

## Scientific American.

## Answers to Correspondents.

CORRESPONDENTS who expect to receive answers to their letters must, in all cases, sign their names. We have a right to know those who seek in formation from us; besides, as sometimes happens, we may prefer to ad-dress the correspondent by mail.

SPECIAL NOTE.—This column is designed for the general interest and in-struction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, uchen paid for as advertisemets at \$100 a line, under the head of "Busi-ness and Personal."

I All reference to back numbers should be by volume and page.

A. A. S., of Boston.-Why is spruce better than other woods for sound-boards? Because on account of peculiarities in its texture it is more sonorous at first and tends to become more so by use, its resinous matter probably being eliminated to some extent by continued vibration.

W. M., of Minneapolis.-What is the object of thumbing the vent while loading cannon? It is to prevent fragments of cartridge re maining in the gun, from being fanned into fisme by currents of air.

E. H., of Mo.-All other things being equal the conductive nower of lightning rods increase with the areas of their cross sections Your conductors are not of the proper shape to insure the greatest efficien cy, and they are not properly insulated.

L. H. S., of N. Y .- Your idea is not new and it is for many reasons impracticable.

A. F. A., of Albany, N. Y.-The water line of avessel, in or der to secure the greatest speed with the least expenditure of force, should form such a curve that the closing together of the water after displace ment should tend to accelerate its motion, rather than to retard it. A water line of the shape you propose, would not admit of such acceleration

W. A. E., of Va.-What is the object of making the hindwheels of a wagon higher than the others? To bring the hind bo'ster to a level with the front one, and to raise the box so as to let the fore wheels under in turning. The question would be more to the point if you asked the reason why the forc wheels were smaller than the hind ones.

G. H. P., of N. Y.-To tin small castings, clean them and Prang's American chromos for sale at all respectable art boil them  $w_i$ th scraps of block tin in a solution of cream of tartar. To copper them, clean and dip in a solution of blue vitriol.

R. A., of Pa., says: "In your reply to J. B. F., of R. I., page 39, current volume, you say, in a suction pump the pressure of the atmosphere can raise the water about 30 feet without mechanical power; the conclusion is obvious. What do you mean by this? Will the lift pump require the necessary force to raise a column of water 30 feet high and the suction pump require no force to do the same work if the bucket is 30 feet above the water? Would it not require the same power to lift a column of water 30 feet high whether the pump is lifting or suction? lt our cor respondent would read carefully the paper he would find that his inquiries are fully answered. On page 23 of the same volume to which he refers a complete answer is given to his query. Sometimes it is necessary to an swer twice on the same subject to meet the demands of correspondents.

S. H. of Pa.-The increase of the pipe at the upper end would increase the flow, but to calculate the percentage of increase would take too much of our time. You should apply to a hydraulic engineer.

A. S. P., of Ohio —After you have exhausted the air from an air-tight box, it would rise providing it was lighter than the atmosphere -not otherwise

C. H. H., of Mass.-We have not kept the address of the party who made the inquiry, therefore we cannot comply with your request.

J. S. M., of Me.-We are not responsible for the statement to which you refer. You will notice that it is credited to the Times' corres pondent.

J. B., of Mass.—We are of the opinion that the device by which you propose to regulate the expansion and contraction of the balance wheel of a watch, possesses knowledge of a patentable character.

J. O. B., of Ohio, says that in railroad repairing much labor and money is uselessly expended in packing the gravel as closely midway between the rails as at the ends of the sleepers, where the weight and wear come. As the gravel is shaken out from under the rails the sleepers are supported mainly at the middle and the road becomes uneven.

J. B. S., of N. Y.—There is no foundation whatever for the statement that the notes of birds and insects, the rippling of brooks and waves, the sound of the wind, etc., follow the intervals of the minor scale. It is one of those assertions repeated by some by reason of some supposed authority. Every good musician, with a sharp well cultivated ear, knows that it is utterly untrue, and those familiar with the science of acoustics declare it absurd.

P. D., of Ohio, answers, in regard to the inquiry as to the cause of the variation in the watches of railroad men, that the reasons are, 1st, the want of perfect equilibrium in the balance wheel; 2d, deficient adjustment of lever fork, roller jewel, and plate; 3d, escape wheel and pallet lock too hard or too easy. He states that these defects are more common in the fine English escapements than in the American or Swiss watches. When these parts are well acjusted a watch will keep time almost under any circumstances. A thickening of the oil, which may also affect the motion, is also mentioned by this correspondent as being caused by the steam, gas, and heat to which the machinists are exposed.

P. C., of Ill.-The sample of copper you sent us was found to contain no traces of silver. Of gold there were traces, but in so small a quantity that it would not pay to take it out. There is no premium offered for the finding of a large mass of copper. Eight pounds is a very small piece .- much larger pieces are frequently sent to this market

B. F. H., of Ind.—It is a fact known to all who have had experience in handling heavy glass tubes that they frequently break, when they have been rubbed on their interior surface. Glass tubes for steam gages should only be cleaned by washing, using hydro chloric or nitric acid, or any other substance that will clean them without the necessity of and its accompanying description, are alone worth the price of tue number. rubbing. The reason of such fracture is that the glass of these tubes is in state of great tension: the inside surface being stretched, and ready to crack when the least scratch or abrasion is made on its surface. Some standard experiments in natural philosophy illustrate and explain the same thing ; for instance, the so-called Bolognese flask and Prince Rupert's glass drops, a description of which may be found in some good text book on physics.

To machinists--see advertisement of rule for screw cutting.

Where can I get steel casting guards or fingers for harvesters? also, rivets of good quality for the knife sections? also rolled iron fin ger bars? What is the relative standing, with agricultural men, of the two kinds of harvester rakes, viz: those, like Wood's, called platform rakes which remove the grain at right angles to the cutter bar, or those which remove it parallel to the cutter bar, known as sweep rakes? I. Lancaster, No. 77 N. Paca st. Baltimore, Md.

Wanted-iron founders to manufacture my patent window curtain fixture. No fitting required. State price per pound. C. F. Knauer. Pittsburgh, Pa.

For sale-the patent right of A. Eagle's machine for mixing compositions. Patented April 16, 1868. Address A. Eagle, 48 Court street, Brook, yn.

Manufacturers of rice cleaners will address M. W. C., care of Leaycraft & Greenfield, New Orleans, with circulars and prices.

For descriptive circular of the best grate bar in usc, address Hutchinson & Laurence, No. 8 Dey st., New York.

Parties wishing to contract for first class brass and composition castings, please address Ridlon & Bond, Postoffice Box 733, Biddeford, Me.

Wanted-breech-loading shot guns made on contract, royalty, or shares. Address Box 786, Washington, D. C.

Peck's patent drop press. For circulars, address the sole manufacturers, Milo Peck & Co., New Haven, Conn.

 $\Lambda$  partner wanted—a gentleman of integrity and Christian character-with a capital of \$50,000 to \$100,000, to invest in the perfecting of new machinery. Address L. H. Soule, Mt. Morris, N. Y.

Millstone-dressing diamond machine, simple, effective, and durable. Also, Glazier's diamonds, diamond drills, tools for mining, and other purposes. Send stamp for circular. J. Dickinson, 64 Nassau st. N. Y

stores. Catalogues mailed free by L. Prang & Co., Boston.

For breech-loading shot guns, address C. Parker, Meriden, Ct.

Winans' boiler powder (11 Wall st., N. Y.,) 12 years a standard article for preventing incrustations. Beware of imitations and pretended agents. -----· ----- - · · · · · · · ·

## NEW PUBLICATIONS.

ENGINEER'S AND MECHANIC'S POCKET BOOK.

This valuable handbook, edited by Chas. H. Has well, office No. 6, Bowling Green, New York, has reached its twenty-first edition. We do not hesitate to say that we have never before seen so much valuable information compressed into so small a compass. There is scarcely a subject in the entire range of mechanics, hydraulics, hydronamics, steam engineering, and the collateral sciences, that is not practically treated of, in clear and perspicuous style, without those abstract formulas and demonstrations which render larger works of no avail to the ordinary mechanic. By the use of its tables a great saving or labor and time in any kind of work in which the principles of mensuration, strength of materials, or ordinary arithmetical computation are involved can be made. Mr. Haswell brings to bear upon bis work a knowledge and judgment ripened by experience, and a stock of information gathered from the best sources both in this country and in Europe. The work is bound in flexible morocco covers, with a receptacle for loase memo-randa, and a clasp. It should be carried in the pocket of every mechanic. We give it our unqualified commendation

METALLURGY OF IRON. By H. Bauerman, F.G.S. A Treatise, with an Appendix on the Martin Process for Making Sieel from the Report of Abram S. Hewith, U.S. Com-missioner to the Universal Exposition at Paris, 1867. First American Edition, revised and enlarged. New York: Virtue & Yorston, 12 Dey street, and D. Van Nostrand 192 Broad way Nostrand, 192 Broad way.

This is an important addition to the stock of technical works published in this country. It embodies the latest facts, discoveries, and processes connected with the manufacture of iron and steel, and should be in the hauds of every person interested in the subject, as well as in all technical and scientific libraries.

THE CRACK SHOT, or the Young Rifleman's Complete Guide, being a treatise on the use of the rifle, with rudimentary and finishing lessons, including a full description of the latest improved breech-loading weapons, profusely illustrated, and containing rules and regulations for target practice, and directions for bunting game found in the United States and British Provinces, has just been issued by W. A. Townsend & Adams, New York. It will find a welcome place in the knapsacks of many sportsmen who at this season are exchanging the dust and noise of the city for sylvan shades and forest sports.

The ECLECTIC MAGAZINE for August is at hand, with its usual amount of rich literary entertainment. The elegant portrait of Hiram Powers, with which it is embellished, is by no means the least of its many attractions. E. R. Pelton, publisher, 108 Fulton street, New York.

ATLANTIC MONTHLY .-- Ticknor & Fields, Boston. August number just out. For sale by all news dealers.

PATENT OFFICE ILLUSTRATIONS .- We are indebted to Messrs E. R. Jewett & Co., publishers, Buffalo, for advance sheets of the Patent Office illustrations from 62.847 to 64.986. This brings the work up to May, 1867.

The sixth number of the WORKSHOP is received. We should do violence to our sense of the sterling merit of this publication did we fail to heartily commend it to all lovers of art. The splendid engraving of the Pulpit of the Church of Santa Croce, Florence, by Benedetto da Majano, Published by E. Steiger, 17 North William street, New York.

Business and Lersonal.

The charge for insertion under this head is one dollar a line.

The patent sweet fern and chemical lacing, as made by J. H. & N. A. Williams, Utica, N. Y., is the best that is made, it will not mildew or become rotten.

Greatest invention of the age--a washing boiler by which clothes are washed in 4 to 6 minutes. A live partner wanted to obtain patent and exhibit at fairs this fall. Address Postoffice Box 209, Cedar Falls, Iowa

Wanted-a situation by a competent manufacturing chemist of three years'experience in German factories. Address Box 3051.St Louis.

Manufacturers of goods sold by hardward dealers will please address Daniel Clarke, IpsWich, Mass.;

## EXTENSION NOTICES.

John Ross, of Brooklyn, N. Y., administrator of the estate of Charles Ross, deceased, having petitioned for the extension of a patent granted to the said Charles Ross the 17th day of October, 1854, for an improvement in grinding surface in mills, for seven years from the expiration of said patent, which takes place on the 17th day of October, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 28th day of September next.

Abigail L. Webster, of Binghamton, N. Y., administratrix of the estate of Benjamin B. Webster, deceased, having petitioned for the extension of a patent granted to the said Benjamin B. Webster the 3d day of October, 1854, for an improvement in musketo curtains, for seven years from the expiration of said patent, which takes place on the 3d day of October, 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 21st day of September next.

Samuel Van Syckel, of Titusville, Pa., having petitioned for the extension of a patent granted to him the 31st day of October. 1854, and reissued the 9th day of June, 1868, for an improvement in grate bars, for seven years from the expiration of said patent, which takes place on the 31st day of October 1868, it is ordered that the said petition be heard at the Patent Office on Monday, the 12th day of October Bext.