

**WATER WHEEL.**—Vincent M. Baker, Preston, Minn.—This invention relates to a new and improved water wheel of that class which are placed on a vertical shaft and are commonly termed "horizontal wheels."

**POCKET-BOOK PROTECTOR.**—Alfred Arneemann, Guttenberg, Iowa.—This invention consists of a spring catch attached to the pocket-book, and of a wire clasp fastened to the pocket or garment. The spring catch can be easily fastened to the clasp, whereby the pocket-book will be securely locked in the pocket or to the garment.

**FACE TESTER FOR MILL STONES.**—James Kuhn, Mount Pleasant, Penn.—This invention relates to a new and useful substitute for the "staff," which is now used for marking the faces of mill stones in order that they may be cut down and brought into a plane when rendered uneven by wear.

**LOCOMOTIVE BOILER.**—Quintin Parker, New York city.—This invention relates to a new manner of constructing the fire places of locomotive boilers, and its object is to produce a boiler in which the lower flues cannot be clogged by cinders and ashes, and in which a fire place of just sufficient size is arranged. The invention consists chiefly in the application of a discharge channel, through which the ashes, cinders, and other impurities can, from the inclosed plate in rear of the flue sheet, fall to the ground so that thereby the lower flues are kept clear.

**GRAIN MOISTENER.**—L. J. Adams and J. H. Esale, A Von, Ill.—This invention has for its object to moisten and toughen the bran of hard or frozen wheat and soften the berry so as to raise the quality of the flour and facilitate the bolting of said flour.

**BIN FOR SUGARS, TEAS, ETC.**—Morgan L. Rich, Sand Bank, N. Y.—This invention has for its object to improve the construction and arrangement of sugar bins so as to make them more convenient in use, the bins being arranged more compactly than is possible when they are constructed and arranged in the ordinary manner.

**BINDING ATTACHMENT FOR REAPERS.**—Joseph K. Bull, Buckingham, Iowa.—This invention has for its object to furnish an improved attachment for reapers to facilitate the binding of the grain, and at the same time to enable the bundles to be deposited upon the ground in groups of six or more.

**WAGON BRAKES.**—Hugh Davidson, New Salem, Ill.—This invention has for its object to furnish an improved automatic brake which shall be so constructed as to adjust itself properly to all positions of the wagon, which can be cheaply and easily made by any blacksmith, which shall be more durable than other brakes now in general use, and which shall be capable of being applied to any wagon.

**CHALK AND SANDPAPER HOLDER.**—Charles F. Ritchel, Chicago, Ill.—This invention has for its object to furnish a neat, simple, and convenient chalk and sandpaper holder for billiard cues, which shall be so constructed and arranged as to be easily carried in the pocket so as to be ready for use at any time.

**CORSETS.**—Mrs. Emilie J. Meriman, New York city.—The main object of the present improvements in corsets is to so construct the same as to relieve the hips of the wearer, from the great weight of the clothing which with the use of the ordinary corsets bears thereon, and transferring it to the shoulders in such a manner as to cause no feeling of uneasiness, and to allow the greatest possible amount of freedom of movement to the waist or body.

**TELEGRAPH INSTRUMENT.**—Robert K. Boyle, New York city.—This invention relates to a new telegraphic printing apparatus, which is so arranged that it will adapt itself to every variation of the weather, and that it will utilize the whole power of the current. The invention consists, first, in a new arrangement of connecting the magnet with the electro magnets. In this apparatus four electro magnets are employed, a pair being arranged on each side of the horseshoe magnet. The two electro magnets on each side are arranged one above the other. Two horseshoe magnets are firmly secured to an oscillating horizontal bar, in such a manner that each end of each horseshoe is between the two opposite face plates of two opposite electro magnets. By means of this arrangement the through current, which is generally obtained, is avoided, and the horseshoe magnet will more easily change its position when the polarity of the electro magnets is reversed.

**GAS MACHINE.**—Hiram S. Maxim, New York city.—This invention relates to a new gas machine which is so arranged that the production of gas will be entirely automatically regulated, and that the volume of gas as well as its pressure, is under automatic control. The invention consists in the arrangement of the various devices for regulating the pressure of the evaporated gas, for regulating the quantity of illuminating gas made, and for regulating the supply of air to the machine.

**REGULATING WATCHES.**—Frank G. Johnson, Port Richmond, Staten Island, N. Y.—This invention relates to an improvement in watches, whereby the regulating hand of the watch is so operated that it may be adjusted with the greatest nicety, and the invention consists in fixing a fine thread screw in the watch, with a movable grooved nut thereon, which nut, as it is turned on the screw, moves the regulating hand.

**COMBINED SPUR AND CREEPER.**—Ferdinand Mehrmann, Fountain City, Wis.—This invention consists in providing to the sides of an ordinary or suitable spur, a bow-shaped bar or plate with teeth on one side; said plate or bar can be either turned forward under the sole of the boot or shoe, to be used as a creeper, or it can be folded back over the heel, where it will be out of the way, the whole instrument being then only a spur. By means of a suitable fastening device, the bow can be locked to the spur in either position.

**MEAT CHOPPER.**—Thomas Payne, Grand Rapids, Mich.—This invention has for its object to furnish a simple, convenient, and effective machine for chopping sausage meat and other substances, which shall be so constructed and arranged that the chopping box may be revolved automatically, with a slow and steady movement, bringing a new part of the substance to be chopped beneath the knives at each stroke.

**SERVICE PIPE FOR WATER OR GAS.**—Edward Hagan, New York city.—The object of this invention is to protect water or gas pipes from freezing up, and to provide a ready means of withdrawing and repairing such pipes when the same require inspection, cleaning out, or repair without the necessity of digging up the whole length of ground pipe from the main, thus avoiding delay, inconvenience and great expense.

**LADDER FOR LAMP-LIGHTERS.**—M. M. Smith, Nashville, Tenn.—The object of this invention is to provide a simple, portable, and effective step ladder for the use of lamp-lighters.

**FANNING MILL.**—H. A. Snyder, Shullsburg, Wis.—The object of this invention is to provide a governor for fanning mills, which acts automatically to prevent the grain from being blown over the sieves when the fans are driven with very high velocity, or to so adapt itself to a low velocity that the grain will be perfectly cleaned in that case. It consists of a hinged board forming part of the box or cylinder, the said board being suitably connected with the gates which admit air to the box, that the movement of the said gates to shut off the excess of air to the box is dependent upon the movement of the hinged board, which latter is itself actuated to movement by the antagonistic forces of a spring and the current of air developed by the fan wheel. When the force of the current of air exceeds that of the spring, the board raises, and being connected with the gates, actuate them to shut off a portion of the entering air, but when the force of the spring is in excess, the board tends to approach the outer ends of the fans, and in so doing moves the gates to admit a greater supply of air.

**COFFEE MILL.**—Wm. H. Barns, New London, Conn.—This invention consists in placing a coiled spring around the arbor of the rotating grinding plate or runner, so-called, of a coffee mill or such other analogous grinding mills as are susceptible of and are improved by the application of the coiled spring as above mentioned.

**CHURN.**—C. M. Lightner, Harrisburg, Pa.—This invention consists in a cubical or oblong box, by means of suitable trimmers affixed to any two diagonally opposite corners of the said box, and providing the box with an internal dasher or revolving frame, which is actuated by suitable mechanism to revolve in a contrary direction to the box, and thus produce a thorough agitation of the milk, whereby butter will be formed in short time.

**PIANO HAMMER.**—C. W. Brewer, Racine, Wis.—The object of this invention is to obviate the so called bell tones which result when the lower octaves of a square piano are struck with force. The invention consists of a soft rubber tube, or volute, inserted in the felt portion of the modern felt and buckskin hammer head, and by this composite is produced the proper elastic action of the whole head.

**STUMP EXTRACTOR AND REMOVER.**—C. C. Manuel, North Troy, Vt.—The object of this invention is to provide a machine for extracting or removing stumps, large stones, and other ponderous articles. It consists in a strongly braced frame raised by uprights to a suitable height above the axle trees of a stout running gear or wagon, and provided with mechanism for extracting stumps or lifting from the ground any ponderous bodies, as large stones, logs, and the like.

**APPARATUS FOR DRAWING OFF STARCH.**—Colgate Gilbert, Buffalo, N. Y.—This invention relates to a new and improved method of constructing apparatus for drawing off starch and other substances held in solution or suspension in water, whereby the separation of the starch or other substance from the impurities is effected automatically and perfectly.

**BELTING, ETC.**—Thomas Standing, Port Richmond, N. Y.—This invention relates to a new and improved method of constructing belting, or traces, or other straps now made of leather only, or of any one material, whereby the strength of the same is greatly increased.

**PRESSARY.**—W. F. Chrisman, Trenton, Tenn.—This invention consists of an elastic air vessel composed of a combination of textile fabric and india-rubber, the layer of india-rubber being interposed between the textile material thus uniting the two layers of the latter. It consists also of the form given to the instrument together with a stop cock attachment therefor which latter is employed in inflating the same when in the vagina.

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 information from us; besides, as sometimes happens, we may prefer to address the correspondent by mail.

**SPECIAL NOTE.**—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1 00 a line, under the head of "Business and Personal."

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

**R. S., of Mich.**—Pozzuolana is brought from Pozzuoli, near Naples, and consists of volcanic ashes, concreted into a cellular mass of a baked appearance and rusty color. When a proper proportion of it is made into mortar with lime and sand, it sets speedily under water, making one of the best water cements known.

**R. L., of N. H.**—To make a fine red lake, take coarsely powdered cochineal 1 oz., water and rectified alcohol each 2 oz., digest for a week, filter, precipitate with a solution of tin added every two hours until the color is all thrown down; wash with distilled water and dry. It will not pay you to make it on a small scale.

**J. L. S., of Ohio.**—A good whitewash for out door work is made by adding to ordinary lime whitewash two ounces of glue, well dissolved, to a gallon of the wash, and also one half a pound of whiting.

**J. O. B., of N. Y.**—The incense burned in Catholic Churches, is gum olibanum. It is best pure, but is frequently adulterated with turpentine.

**G. W. F., of Mass.**—Are hydraulic presses ever used for raising buildings? If so how is the power applied? Could the power of two men at the pump be sufficient to raise a large building? Ans. They are. The power may be any motive power used for any other purpose. The power upon the pump necessary to raise any given weight, depends upon the relative area of the pistons. Theoretically a press might be constructed so that a mouse could raise one of the Egyptian Pyramids.

**G. L. M., of N. Y.** writes us in regard to crank-engines. He thinks he differs from us in our views expressed on page 121 of the present volume, the fact is we are perfectly agreed. The difference is simply in the construction of terms. We used the term applied, in its philosophical sense, i. e. used to produce an effect. Mr M. will admit doubtless that the full application of steam to the production of motion is only made through a portion of the stroke in a crank engine. The admission of steam into the cylinder when the crank is in the dead center, would not be the application of steam to the production of motion because in that position no motion can be obtained. The words admit and apply are not synonymous.

**C. M. B., of N. Y.**—The subject of your letter, the use of compressed air as a motor and the utilization of waterfalls for that purpose, you will find treated in this issue under the head of "Transmission of Hydraulic Power." We shall write again on the same subject, as we deem it of great importance. The article also on page 179 current volume, entitled "Solar Heat," treats on a branch of the same subject.

**H. E. L., of N. J.**—This correspondent, referring to an article on paper on page 36, current volume, SCIENTIFIC AMERICAN, in which the okra plant is mentioned as a material for paper making, suggests "Bagasse" or "bergasse," the crushed sugar cane, as a possible useful substitute for rags in the manufacture of paper. He says that it may be obtained in almost unlimited quantities on sugar plantations, where the only use it is put to is as a fuel. The outer shell of the cane is similar to straw which has not yet proved to be a competent substitute for rags. The pith, we think, lacks the fibrous quality requisite for conversion into paper. We believe the address of the Okra Paper Company is 48 Pine street, New York city.

**J. S., of Mass.**—We know of no better varnish for loom harnesses than that made according to the following recipe, used by an overseer of cotton weaving of more than thirty years' experience: 2 gallons linseed oil; 2½ lbs. gum shellac; 2 lbs. litharge; 1 lb. red lead; 1½ lbs. umber, ½ lb. sugar of lead.

**P. J., of Minn.**—Why does not the gas in a pipe burn when it is lighted at the orifice? Such a question is puerile. Hydrogen gas—the common "illuminating" gas—is not inflammable. It requires oxygen to produce and sustain combustion, and that is found in the atmosphere, which must be mixed with the hydrogen to produce a flame.

**S. O. L., of Ohio.**—Malachite is a native oxide of copper. The best specimens are found in Siberian copper mines. It is used for ornamentation as veneers generally, although now quite fashionable for brooches, ear drops, etc. Probably the finest native and wrought specimens in this country are those sent as presents to the late Gov. Thomas H. Seymour of Connecticut by the Emperor Nicholas of Russia.

**T. of Malvern, Eng.**—In the solution of the problem you send us you accept the velocity of the wave of sound as 2,000 feet per second, and the apparent velocity as 2,080 feet.—This is all wrong. The theoretical velocity uncorrected for temperature is 916 feet, corrected for temperature it is 1090 at the freezing point and one foot more for every degree above this; 1,100 feet at 42° Fah., 1,140 feet at 82° Fah., etc. Your calculation based on these erroneous premises is therefore incorrect. You ask, "Who hears the true pitch of the whistle of a moving locomotive?" Of course those who remain at the same distance from the sounding body, viz., the people on board the train, and those at a great distance at right angles to the direction of its motion; those whom the train approaches hear it sharper, those from whom the train departs, flatter than it really is.

**F. M. B., of Ky.**—The ink stains in the piece of goods you send us are to a considerable extent removable by pure water, without changing the original color. For what remains of the stains use, carefully, oxalic acid. The red color produced by the acid in the original dye can be restored by ammonia.

**R. S. T., of Ala.**—Kalsomine is composed of zinc white mixed with water and the sizing of glue. The surface to which it is applied must be clean and smooth. For ceilings mix half a pound of glue with fifteen pounds of zinc; for walls a pound of glue, with fifteen pounds of zinc. The glue, the night before its use, should be soaked in water and in the morning liquefied on a fire. It is difficult to prepare or apply kalsomine; few painters can do so successfully, Paris white is often made use of for it, but it is not the genuine article.

**P. O. A., of Minn.**—To make fire-proof mortar, take two-thirds of the best lime and one third of smith's black dust, and mix with the necessary quantity of water. The will form a mortar that will set nearly as hard as iron, and is the best to use for setting the firebricks in or about fire places.

**S. M., of N. J.**—A printer's error vitiated our answer to your query last week instead of being, the superheating surface in marine engines is too small it should have been too large.

**S. O. O., of Mass.**—We can highly recommend the following recipe for paste for polishing furniture: Three ounces of white wax, half ounce of Castile soap, one gill of turpentine. Shave the wax and soap very fine, and put the wax to the turpentine; let it stand twenty-four hours; then boil the soap in one gill of water, and add to the wax and turpentine.

Business and Personal.

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

Send to T. Ellwood Zell, Philadelphia, for circular of a valuable work. Agents wanted.

Scientific American from the third year of its publication for sale. W. Clare Anderson, St. Louis, Mo.

Manufacturers of cotton-bale ties send address to J. A. Shone, Holly springs, Miss.

Mr. Asabel Wheeler has the honor of a very complimentary letter on the merits of his Siccochast Oil, from Capt. Nicholson, of Her Majesty's ship, *Royal Alfred*. Having thoroughly tested it, he now orders a quantity to be used in painting the *Alfred*, at Quebec.

Notice.—Abner Woodard, patent right agent. His address is wanted by E. G. Knowlton, Cleveland, Ohio.

I will act as agent, in North Missouri, for a good thing. Address J. F. A., Chillicothe, Mo.

Wickersham's American oil feeders save the expense of throwing away oil cups, when the cups fail to act. The same cup will always answer; no screws to regulate; nor does the atmosphere drive the oil out of the cup.

Wanted,—Makensie No. 2 2d-hand cupola. N. C. Stiles, Middletown, Conn.

For sale—the whole or a part of the patent right for a damper regulator for steam boiler furnaces, in successful use. Address Jas. F. Neall, 306 North 2d st., Philadelphia.

A. G. B., of N. B., can get his desired information by addressing J. Merry, 23 Leroy st., New York.

Fairman's new compound lathe chuck. Address, for description, Talford & Fairman, Manufacturers, Rochester, N. Y.

To license on royalty—my improved saw set, patented Aug. 25th, 1868. Address W. B. Weaver, Reading Center, N. Y.

Retorts for bone black.—Wanted, a set of retorts, and all iron works appertaining to it, for the purpose of making bone black. Also, plans and specifications for putting up the kiln. Address Wm. Henry, box 773, New York Postoffice.

Peck's patent drop press. Milo Peck & Co., New Haven, Ct. Wanted—a machine suitable to crush quartz and bones. Send circulars and price list to E. D. S., Postoffice box 708, New Orleans.

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, 61 Nassau st., N. Y.

The toy Boomerang.—See Advertisement.

A foreman for a machine shop wanted,—one who has some experience in the business and can bring good recommendations. Address D. A. Brown & Co., Fishersville, N. H.

Wanted—a master mechanic capable of superintending a locomotive and machine shop. One thoroughly accustomed to managing men required. Address box 116 New York postoffice.

N. C. Stiles' pat. punching and drop presses, Middletown, Ct.

For sale—the whole or a part of a paper mill, all new machinery. For particulars address L. A. Beardsley, Fredericksburg, Va.

For sale—the patent right, in Great Britain, for perforated saws. The manufacture of these saws is now firmly established in the United States, and they are rapidly taking the place of all other solid saws. Apply to J. E. Emerson, Trenton, N. J.

Prang's American chromos for sale at all respectable art stores. Catalogues mailed free by L. Prang & Co., Boston.

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

Wanted—a second-hand steam hammer. Norway Manufacturing Company, Wheeling, W. Va.

Winans' anti-incrustation powder, 11 Wall st., N. Y. 20,000 references. No foaming. No injury. 12 years in use. Imitations plenty.

NEW PUBLICATIONS.

**THE THREE VOICES.** By Warren S. Barlow. Boston: Wm. White & Co., publishers.

The author of this volume is not well known to literary fame; nevertheless he has produced a poem of 131 pages, which has the merit of a rhythmical composition classed under three headings—The Voice of Superstition, The Voice of Nature, The Voice of a Pebble—and partakes of the nature of a criticism upon things held sacred, and is not exactly orthodox in its theology. We have never considered it profitable to read skeptical works, for at best our ideas of the Christian faith are too loosely regarded, as a general rule.

**PERSONAL HISTORY OF ULYSSES S. GRANT.** By Albert D. Richardson.

We have received a copy of the above work of 560 pages from the American Publishing Company, of Hartford, Conn. Mr. Richardson is a very graphic and careful writer, and in his new volume he has grouped together a great variety of incidents in the life of the illustrious subject, which will be read with interest long after the heat and prejudice of party warfare has passed away.

### Improvement in the Application of the Common Buck Saw.

The engraving presents a view of a machine designed to take the place of the ordinary buck saw and horse, and applicable also to other purposes. The bed frame, A, is supported on legs and has at one end an adjustable truck, B, which may be lowered when the machine is to be moved from place to place, and act as the wheel to a barrow; the machine being propelled by means of the handles at the other end of the frame. Fixed to this bed is a transverse frame, C, extending beyond the sides of the bed, and carrying a sliding horse, D, for receiving the log, E, the horse being moved back and forth by means of the lever, F. Rising from the bed is an upright frame supporting two shafts; the lower one carrying a gear and having on one end a crank by which it may be turned, and the upper one having a pinion meshing into the gear and a fly wheel with crank attached. This crank is connected with the saw by a bar or pitman, G, the saw moving in slides on a frame, H, pivoted to the upright at I. The weight of this frame aids in the action of the saw. When the log, E, is to be moved for taking another cut, the lever, J, having a hook attached, engaging with a pin on the frame, H, is used to support the frame. On the frame, H, is pivoted another frame, K, carrying struts, L, for grasping the log, to prevent its rolling while being sawed.

From this description the operation of the machine will be readily understood.

Patented through the Scientific American Patent Agency, Aug. 25, 1868, by M. P. Noel, whom address for further particulars at St. Cloud, Stearns Co., Minn.

### Device for Feeding Cattle on Growing Crops.

It is sometimes very desirable to feed crops while growing, thereby saving the labor of cutting and gathering, but if stock is turned into a field loosely, without control or guide, a large portion of the crop is destroyed by trampling. Beside this, the straying of the cattle and the trouble of collecting them when needed, are serious annoyances, demanding some device for controlling the animals while allowing them sufficient freedom for grazing or cropping. Sometimes, also, it is desirable to confine the cattle to a certain space or portion of the field, and the common method of securing the animal to a tether fastened to a stake, however feasible on grass land, is very destructive in growing corn, millet, etc.

The device shown in the accompanying engraving prevents all these annoyances and enables the farmer to govern his stock. As will be seen, the contrivance is very simple; a rope stretched between trestles, one end of the line fastened to a stake driven into the ground or to any fixture, and the other end secured to a simple windlass by which the line is made taut. The tension of the line holds the trestles at either end in an upright position without the necessity of sinking their feet into the ground. On the line, at such intervals as are required to govern the range of the animals, are snugs fastened with set screws. The animals are secured to the rope by tethers, one end of which is attached to the stretched line by a snap loop or a ring, and the other end to the neck, horns, or nose of the animal, in the latter case a snap ring engaging with the cartilage of the nose. If necessary, guide cords may be attached to the ring and the horns of the animal, as seen in the figure of the bull, to afford comfort to the animal while feeding.

For herding cattle, mules, sheep, or swine, facility of leading them to water, preventing hampering, and giving entire control over them, this device is evidently valuable. With its use much of the trouble and expense of fencing will be avoided, and stock may be grazed or fed on open commons, or in fields of growing crops, without danger or annoyance. We cordially commend this simple contrivance to the attention of our agricultural readers. It was patented by Jesse Wilkinson, June 2, 1860, who, if addressed at Champaign, Champaign Co., Ill., will give any further information desired.

### PROPELLING BOATS ON CANALS.

From a correspondent we have received copies of articles published in Rochester (N. Y.) papers, relative to the performances of a canal boat named the *Edward Backus*, from its builder, or rather the inventor of a new method of propelling boats, which it seems from published reports has been tried with at least present success. Instead of a side-wheel boat

or an ordinary propeller, or, indeed, any boat propelled by paddles acting on the water, this is a sub-aqueous traction machine, finding its means of propulsion on the bed of the canal and by its traction wheel. We cannot do better, without diagrams or other engraved illustrations, than to copy the following attempted description from the *Rochester Daily Democrat*:

"A ten horse-power boiler and double engines are placed amidships; and by these are driven an eight-foot traction wheel, which runs in what is called a 'well,' the bottom of

ful effort at improving the speed of canal navigation, but we do not recognize it in the description before us of the traction wheel boat. Still, as we before hinted, diagrams or drawings might change the complexion of the case.

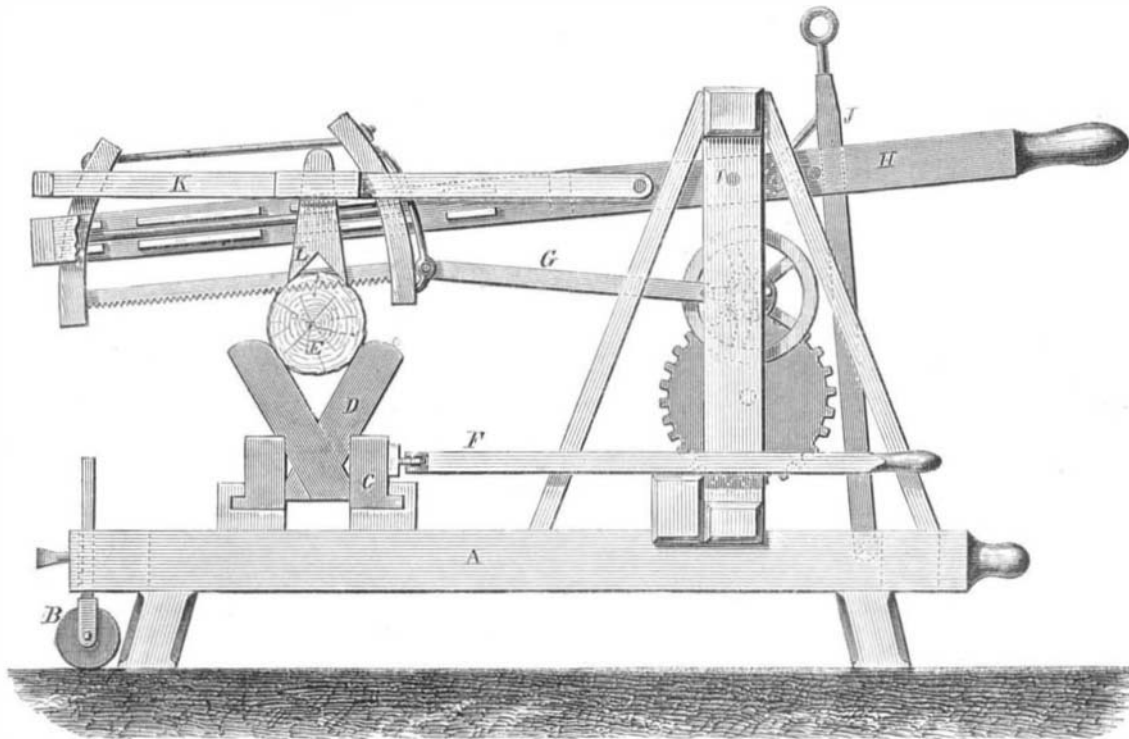
### Progress in Science—Something to Think About.

At the close of the ceremony of "capping" the medical graduates of the University of Edinburgh, Sir James Y. Simpson, one of the most celebrated physicians of Europe, delivered an address, in the course of which he said:

"A most extensive field for new investigations lies temptingly open for the young and ambitious physician in the almost innumerable series of new chemical compounds which modern organic chemistry has evolved. Among this world of new compounds will probably be yet detected therapeutic agents more direct, more swift, and yet more sure in their action than any which our present pharmacopoeias can boast of. It may be, also, that the day will yet come when our patients will be asked to breathe or inspire most of their drugs instead of swallowing them; or at least when they will be changed into pleasant beverages instead of disgusting drafts and powders, boluses and pills. But that day of revolution will not probably be fully realized until those distant days when physicians—a century or two hence—shall be familiar with the chemistry of most diseases; when they shall know the exact organic poisons that produce them, with all their exact antidotes and eliminators; when they shall look upon the cure of some maladies as simply a series of chemical problems and

formulas; when they shall melt down all calculi, necrosed bones, etc., chemically, and not remove them by surgical operations; when the bleeding in amputations and other wounds shall be stemmed, not by septic ligatures or stupid needles, but by the simple application of hemastatic gases or washes; when the few wounds then required in surgery shall be swiftly and immediately healed by the first intention; when medical men shall be able to stay the ravages of tubercle, blot out fevers and inflammations, avert and melt down morbid growths, cure cancer, destroy all morbid organic germs and ferments, annul the deadly influences of malaria and contagions, and by these and various other means markedly lengthen out the average duration of human life; when our hygienic condition and laws shall have been changed by State legislation, so as to forbid all communicable diseases from being communicated, and remove all causes of sickness

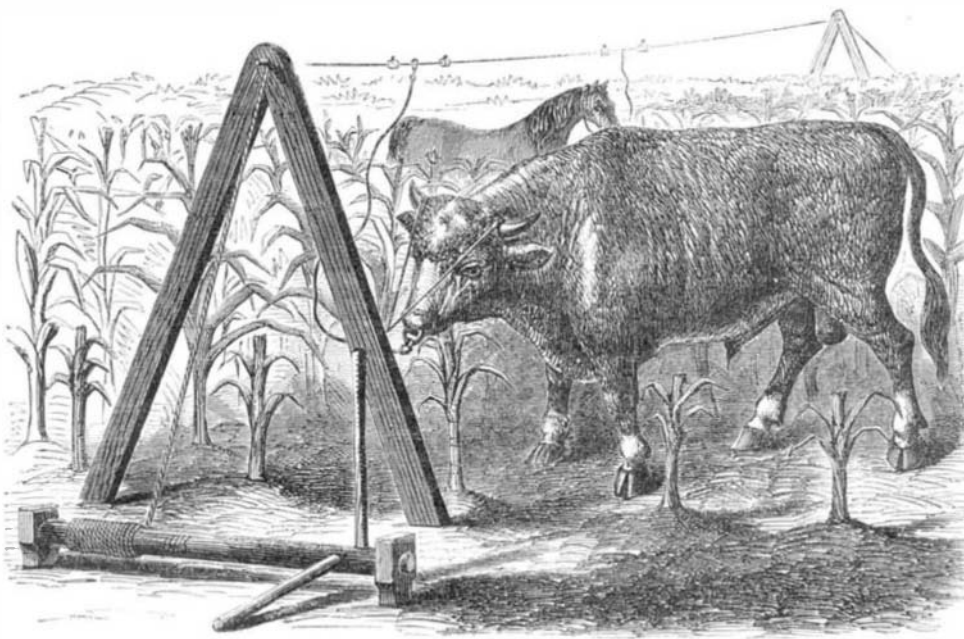
that are removable; when the rapidly increasing length of human life shall begin to fulfill that ancient prophecy, 'the child shall die an hundred years old'; when there shall have been achieved, too, advances in other walks of life far beyond our present state of progress; when houses shall be built and many other kinds of work performed by machinery, and not by human hands alone; when the crops in these islands shall be increased five or ten fold, and abundance of human food be provided for our increased population by our fields being irrigated by that organic waste refuse of our towns which we now recklessly run off into our rivers and seas; when man shall have invented means of calling down rain at will; when he shall have gained cheaper and better motive powers than steam; when he shall travel from continent to continent by submarine railways, or by flying and ballooning through the air; and when—to venture on only one illustration more—tiresome graduation addresses shall no longer require to be written by old professors nor listened to by young physicians."



NOEL'S PATENT SAWING MACHINE.

which is the bottom of the canal. This wheel has a facing of iron, through the center of which runs a chain acting upon it like a belt upon a pulley. This chain passes around a smaller wheel on the main shaft. On the surface of the wheel are spurs or clogs projecting about four inches from its surface and about four inches in width, and these with every revolution of the wheel, digging into the bottom of the canal, force the boat through the water. By means of a contrivance attached to the wheel, it rises and falls as the inequalities of the bottom of the canal may demand. In addition to the wheel, a four-foot propeller is also in the boat, to be used when she is required to go into deep water."

The statement does not give the amount of the rise and fall that may be imparted to the wheel to meet the inequalities of the bottom of the canal. Probably it is not much; for we are told that a propeller is used for deep water. The



WILKINSON'S PATENT CATTLE HERDER.

Rochester *Union and Advertiser* says that a propeller wheel at the stern "may be lowered in a moment to its place." One would be apt to inquire whether it would be necessary to grade the bottoms of canals as we do the level of railways or common roads, in order that this contrivance should work, and if so, whether the action of the spur wheel would not soon change the level by continually stirring up the sand and mud. The varying nature of the bed—mud, sand, gravel, etc.—and the inequalities of its surface—alternate hills and hollows—would seem to suggest that fully as much reliance should be placed on the propeller at the stern as on the amidships traction wheel. The *Rochester Democrat* says: "With two hundred tons of coal the boat moved along at the rate of two miles an hour." This rate hardly proves the superiority of this mode of propulsion over that of horses on the score of speed. We would gladly chronicle any success-

PATENTS.—If success is the test of merit, we invite inventors to consider the fact that of the list of patents published in our last number, SEVENTY-FIVE were solicited through the Scientific American Patent Agency. The Patent Office, under the management of Commissioner Foote, is getting into fine working order, and applications will be more promptly examined and disposed of than heretofore. Inventors who desire advice and assistance in procuring their patents can receive our Pamphlet of Instructions and correspond with us freely.

AT GRANBY, Mass., in the yard at the residence formerly owned by the late Rev. Elijah Gridley, there is a fine elm tree of a century's growth. Upon the side of this tree, twelve feet from the ground, is a currant bush rooted in the bark which has thrived and produced its annual crop for years.