





Ephraim Ball, of Canton, Ohio, assignor to Ball & Butler, and Ball & Butler assignors to Ephraim Ball aforesaid, for an Improvement in Mowing-machines. Patented Dec. 1, 1857:

I claim first, The combination of the short curved arm, R, with the bar, Q, and finger-bar, P, the whole constructed and arranged for joint operation, substantially as and for the purposes above set forth. Second, I claim the combination of the coupling arm, with bar, Q, wrist, f, socket, h, hinge, g, and short finger-beam, P, substantially as and for the purposes set forth. Third, I claim extending the coupling arm, R, outside of the frame in combination with the front hinges of bar, Q, also outside of the main frame, when the parts are constructed and arranged in the manner substantially as described, whereby greater freedom of the movement of the cutting apparatus is secured.

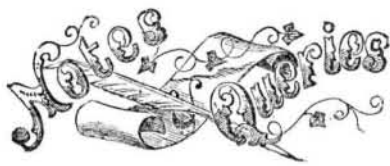
Ephraim Ball, of Canton, Ohio, assignor to Ball & Butler, and Ball & Butler assignors to Ephraim Ball aforesaid, for an Improvement in Mowing-machines. Patented Dec. 1, 1857:

I claim the combination of the independent driving wheel, B, at the grain side of the machine, with the hinged bar, Q, to which the short finger-beam is rigidly attached, and the hinged coupling arm, whereby the cutting apparatus may rise and fall freely, and the cutters be kept in operation while turning to the left upon uneven ground, substantially as described.

## DESIGNS.

S. B. Ellithorp, of New York City, for a Design for the Frame of a Sewing-machine.

B. M. Johnson, of New York City, for a Design for Gas Cocks, &c.



A. T. L., of Ga.—Your galvanic battery is similar to what is called the "Maynooth battery." You have simply substituted iron for the negative plate, in place of copper, platinum or charcoal.

R. D. & Co., of C. W.—The condensers of coal-oil vapors used here are simply close tanks of boiler-iron, which we suppose you can have made at Toronto.

H. B. M., of Conn.—The best substance which we can recommend to put on your smoke stack, to prevent it burning off, is black-lead mixed with alum water (some alum dissolved in warm water). It will not burn off so rapidly as the coal-tar which you have tried.

J. McK., of Ga.—It will require a very large hydraulic ram to force water half a mile to an elevation of 30 feet, with a fall of 5 feet. If the supply of water is abundant you can do it, but the cost for lead pipe and apparatus will be great.

H. S. S., of Pa.—The best way to prepare a black board is to give it one or two coats of black paint as a groundwork, then put on one coat of copal varnish and allow it to dry, after which it should be slightly rubbed down with fine sand paper. After this give it another coat of the same kind of varnish, in which some very fine emery or ground glass is mixed, which will permit the board to be used either with chalk or a common slate pencil.

R. K., of Texas.—We cannot forward you any single number containing a description of the hydraulic ram. In Vol. V. of the SCIENTIFIC AMERICAN this hydraulic motor is illustrated and described. If well constructed, it is perfectly reliable; and on a fall of 5 feet, it will raise about one-twelfth of the inlet water 60 feet high through 1,000 feet of lead pipe.

W. H., of Ill.—The evaporation of a cubic foot of water per hour is considered to be the horse-power of a boiler; but by using steam expansively, the horse-power of an engine does not require this amount of water evaporated. About 12 pounds of water have been evaporated with one pound of coal.

W. B., of Pa.—We are in favor of employing insulators on houses for fastening lightning-rods. Iron staples, being conductors, are not so suitable for staying the rods as non-conductors; they are safe, however, if driven into dry wood or some other good non-conductor, but not otherwise.

ANTI-STRIKE.—We prefer not to publish any communications upon the subject of strikes. The facts stated in your case are no doubt correct.

S. A., of Pa.—Your suggestions in regard to steam-engines are not founded upon a correct knowledge of what Watt and others have done. If you procure Bourne's "Catechism of the Steam-engine" you will get some ideas on this subject with which you are not familiar.

J. P. H., of Va.—You state that the feed-water for your boiler comes through coal seams, and that it corrodes the metal at the water level of the boiler in such a manner that it requires to be patched about once every year. In all likelihood the feed-water contains sulphur (taken up from the iron pyrites in the coal), which is converted into dilute sulphuric or sulphurous acid in the boiler, and thus corrodes the iron rapidly. The remedy for you is to change your feed-water by collecting rain in a pond, if you cannot get suitable water from a well.

R. I. L., of Minn.—By combining bismuth, in and lead in various proportions, alloys are formed of various degrees of fusibility above and below the temperature of boiling water. Eight parts of bismuth, five of lead and three of tin form an alloy which melts in boiling water. This was discovered by Sir Isaac Newton.

G. E. R., of Ohio.—Sulphurous acid is a gas taking on the liquid form only at a temperature of zero or below. Water, however, absorbs some 40 times its bulk of this gas, and the solution is sometimes called liquid sulphurous acid. It retains, in the solution, its bleaching properties. A solution of the sulphite of soda forms a similar bleaching liquid. Sulphurous acid does not produce a permanent white as chlorine does.

L. E., of N. Y.—The best way to lay a pipe of varying diameter for carrying water from an elevation is to place the end of greatest diameter at the spring and the narrow end of the outlet near your house.

H. S., of Conn.—You will find a letter to your initials in the post-office, upon the subject of coal-oil.

J. W., of N. Y.—The glass water-gage on the outside of a steam boiler secures the object you desire to attain by a long metal tube inside, connected with the gage-cocks. We consider the glass gage reliable in indicating the height of water.

G. K., of Conn.—Boilers are placed in a horizontal position in steamships and down in the lower deck or floor. We have seen a vertical boiler used on a steamboat, but the horizontal tubular are in general use, and are the best for such purposes.

M. V. C., of Ala.—There is no possible way of detecting poison in spirituous liquors but by analysis.

W. L. B., of Mass.—When air is compressed its latent heat becomes sensible; but in grinding tools, this action, we think, will not account for the sensation experienced in grinding by the correspondent to which you refer.

D. N. & Co., of Md.—The cement for mending broken china-ware and glass is made by stirring finely powdered quicklime among the white of eggs.

W. L., of C. W.—We think the place you name is healthy, but before deciding to remove there, you had better make it a visit and learn from observation all about it.

E. F., of Wis.—We do not know where you can procure the "Tinner's Guide."

R. H., of Mass.—You should stamp the date of your copyright upon each article sold. This will be a warning to all who undertake to infringe your right.

J. A., of Wis.—If the person you refer to has had the cement you described in use for 22 years, of course it is now public property, as he did not take proper measures to secure a patent.

P. Rr, of Mo.—Iron is the proper metal for a pump to pump mercury with. The india-rubber manufacturers say that rubber-packing would be serviceable and unobjectionable for packing such a pump.

S. F. S., of Wis.—Exhibitions of the magic lantern and microscope have been tried, but perhaps with insufficient effort and enterprise. Microscopes are exhibited daily in fine weather in the Park, New York. There is no more interesting study than the wonders of the invisible world, and it is attracting a great deal of attention. Lardner, on the microscope, is a good book to begin with.

G. C. J., of N. Y.—Engravings are transferred to wood by the photographic process; to glass, by cutting out the engraving and pasting it on the inside of the glass vessel, and then painting the whole inside of the vessel. This is the potichomanie which was so fashionable a few years since.

J. P., of Cal.—We can send you the bound volumes of the SCIENTIFIC AMERICAN by Wells, Fargo & Co.'s express. The price will be—For subscription, \$2; binding two volumes in one, \$1; total, \$3; you to pay the express charge.

S. M. B., of Mass.—Your patent is for a door hinge, and you claim the roller between two inclined planes in the manner and for the purpose described. By the terms of your patent your invention applies to hinges only, so that the use of analogous parts in the formation of a screw press, or other machines, would not be an infringement of your patent.

W. T. T., of N. Y.—Asks the following question: "If I patent a machine and dispose of the right, and then make an improvement which I also patent, does that improvement belong to me or to the purchaser of the original right? and can said purchaser use said improvement without my consent?" We answer: Unless there is a previous agreement by which the patentee stipulates to convey all subsequent improvements made by him, he would have entire control of the patent for the improvement, and no one could use it without his consent.

G. C. T., of Pa.—All marble, chalk, and nearly all shells, are limestone. It is composed of carbonic acid and lime. There is no distinctive mark by which you can distinguish limestone suitable for hydraulic cement; the only way is to burn a quantity and try it. This variety contains various foreign substances, the essential one being siliceous. To make 12 gallons of black ink take 12 lbs. of nutgalls, 5 lbs. of green sulphate of iron, 5 lbs. of gum senegal and 12 gallons of water. Put the bruised nutgalls into a copper kettle of a depth equal to its diameter, and boil during three hours with three-fourths of the above quantity of water, taking care to add fresh water to replace what is lost by evaporation. The decoction is to be emptied into a tub, allowed to settle, and the clear liquor being drawn off, the lees are to be drained. The skins which thicken on the top of open vessels of paint (called paint-skins) are the best application to prevent a shingle roof from leaking at the seam where it joins a neighboring building.

P. H. W., of N. Y.—The "New York Belting and Packing Company," No. 38 Park-row, inform us that they do not recommend rubber for packing the pistons of pumps; but for packing the piston-rods and valves they consider it better than leather. The amount of pressure required to raise water in a tube is 15 lbs. to the inch for every 34 feet, which would give 102½ lbs. for 236 feet. In order to ascertain the pressure required to throw a jet to this height in the open air, many circumstances would require to be taken into account—the length, size and material of the hose, the shape and size of the pipe, the shape of the nozzle, &c. In the case you mention, the pressure was probably not less than 150 lbs. to the inch.

## Money Received

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, Oct. 1, 1859:—

A. E., of Mich., \$30; J. G., of Ky., \$55; J. H. S., of Canada, \$30; C. H. D., of Wis., \$30; J. W., of Ohio, \$30; H. C. F., of Pa., \$55; W. H. L., of N. Y., \$55; R. & S., of Ohio, \$30; D. W. C., of Ill., \$30; W. & C., of Ind., \$25; A. & D., of Ala., \$25; G. J. P., of Mass., \$25;

W. C. C., of N. Y., \$30; J. C. L., of Conn., \$12; S. B., of Wis., \$25; J. E., of N. Y., \$30; T. C. McK., of Tenn., \$25; J. J. M., of Fla., \$35; S. S., of N. Y., \$30; S. F. L., of Conn., \$25; N. & B., of Tenn., \$25; B. B., of Md., \$30; W. J. J., of Ala., \$35; T. W., of Conn., \$25; O. E. W., of Mass., \$20; W. H. H., of Cal., \$35; N. S., of Mass., \$30; D. W., of Mass., \$30; S. P., of Mass., \$25; J. C. R., of N. Y., \$30; E. K., of Conn., \$25; C. L. G., of N. Y., \$30; C. C. B., of Ohio, \$30; G. M. A., of Ill., \$30; F. F. B., of Iowa, \$30; D. P., of N. Y., \$12; G. C., of Maine, \$30; R. C. C., of Ga., \$25; W. E., of Maine, \$25; C. & C., of Pa., \$30; L. A. B., of N. Y., \$35; F. & S., of N. Y., \$250; H. B., Jr., of Pa., \$35; J. T. R., of Pa., \$15; J. E. S., of Maine, \$35; E. T. W., of N. H., \$30; C. W. R., of Ga., \$30; W. T., of Mass., \$30; B. F. D., of Pa., \$30; W. E., of Texas, \$30; W. P. C., of Ind., \$25; J. Y. S., of Pa., \$35; T. M., of N. Y., \$25; M. F., of Ind., \$30; G. W. B., of Ala., \$30; G. F. P., of N. H., \$25; P. L., of N. Y., \$30; T. C. H., of Ga., \$25; J. S. D., of N. J., \$100; H. B., of Ill., \$15.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 1, 1859:—

H. & B. of England; H. & F. of Pa.; J. G. K. of N. Y.; J. C. L. of Conn.; D. P., of N. Y.; T. C. McK. of Tenn.; H. C. R. of Mass.; W. H. L. of N. Y.; G. J. P. of Mass.; A. & D. of Ga.; N. G. S. of N. Y.; T. R. of Conn.; W. & C. of Ind.; S. P. of Mass.; S. F. L. of Cal.; W. E. of Maine; R. C. C. of Ga.; G. C. of Maine; C. & C. of Pa.; S. B. of Wis.; D. M. C. of N. H.; H. B. F. of N. Y.; L. A. B. of N. Y.; J. L. of R. I.; N. & B. of Tenn.; H. B., Jr., of Pa.; G. S. A., of N. Y.; S. & H. of N. Y.; J. B. A. of N. Y.

## Literary Notices.

LIFE AND TRAVELS OF HUMBOLDT.—Rudd & Carleton, publishers, No. 130 Grand-street, New York.—This is a neat volume and a very good compilation, and contains much in little space regarding the great philosopher and traveler. It describes his education, manhood and whole life in a brief and interesting manner. It is a most attractive book, and contains much that is fascinating to the admirers of the curious and learned.

DICTIONARY OF LOVE.—Dick & Fitzgerald, No. 18 Ann-street. Price \$1.—A book interesting to love-sick swains, to which class only do we recommend it.

BLACKWOOD'S MAGAZINE.—Leonard Scott & Co., No. 54 Gold-street.—The number for this month is as attractive as usual. This magazine stands in the front rank of literature. One article on voluntary and involuntary actions, contains much that is very curious about the "mechanism of machines"—the human body.

THE TELEGRAPH MANUAL.—This is a noble volume, devoted to the history and practice of telegraphing, by Tal. P. Shaffner, Esq., and published by Putney & Russell, John-street, New York. It is illustrated with a great number of wood-cuts, representing nearly all the telegraphs which have been invented; and it has also quite a number of steel plates, portraits of those who have been distinguished in American telegraphy, such as Morse, Kendall, Swain, &c. It is the best, most comprehensive and most handsome work on the subject which has yet been given to the public, and it appears to be edited with much ability and candor.

## History of the Scientific American and Important Information to Patentees.

We have printed a supplementary edition of the SCIENTIFIC AMERICAN, in which there is a history of its rise and progress, with illustrations of the building, externally and internally, showing the spacious rooms in which our immense patent business is conducted, and with life-like representations of the artists, engineers and specification writers at their daily labors. The same paper contains information on the many intricate points arising in patent law and practice, and comprises the best popular treatise on the subject ever published; it should be in the hands of all who are interested either in procuring, managing or using patented inventions. The legal information contained in this paper is the result of FOURTEEN YEARS' experience as patent solicitors, and it cannot be found in any other treatise on patent law. It also contains information in regard to Foreign Patents and Extensions. It is published in octavo form, sixteen pages, and mailed upon receipt of two three-cent stamps. Address MURN & Co., publishers of the SCIENTIFIC AMERICAN, New York City.

BACK NUMBERS.—We shall hereafter commence sending the SCIENTIFIC AMERICAN to new subscribers from the time their subscriptions are received, unless otherwise directed; the back numbers can be supplied from the commencement of the volume to those who may order them. It is presumed most persons will desire the back numbers, and such as do will please to so state at the time of sending in their subscriptions; they can, however be supplied at any subsequent period.

INFALLIBLE RULE.—It is an established rule of this office to stop sending the paper when the time for which it was prepaid has expired, and the publishers will not deviate from that standing rule in any instance.

INVENTORS SENDING MODELS to our address should always enclose the express receipt, showing that the transit expenses have been prepaid. By observing this rule we are able, in a great majority of cases, to prevent the collection of double charges. Express companies, either through carelessness or design, often neglect to mark their paid packages, and thus, without the receipt to confront them, they mulct their customers at each end of the route. Look out for them.

GIVE INTELLIGIBLE DIRECTIONS.—We often receive letters with money inclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post-office at which they wish to receive their paper, and the State in which the post-office is located.

SUBSCRIBERS to the SCIENTIFIC AMERICAN who fail to get their papers regularly will oblige the publishers by stating their complaints in writing. Those who may have missed certain numbers can have them supplied by addressing a note to the office of publication.

PATENT CLAIMS.—Persons desiring the claim of any invention which has been patented within 14 years can obtain a copy by addressing a note to this office, stating the name of the patentee, and date of patent when known, and enclosing \$1 as fee for copying.