

Science and Art.

History of Reaping Machines.—No. 21.

On the 6th of January, 1852, a patent was granted to Mahlon Garretson, of Bermuda, Pa., for a clover harvester, embracing the shear-cutting feature for severing the heads of clover. (see claim, page 142, Vol. 7, Sci. Am.) On the 20th of the same month, a patent was granted to Thomas Van Fossen, of Lancaster, Ohio, having two claims—one for teeth on the reel, the other for a sliding platform to arrest and relieve the grain alternately in combination with the reel, to keep the grain straight and constantly moving. (see claim, page 158, Vol. 7, Sci. Am.) On the 10th of February following, a patent was granted to Byron Densmore, of Sweden, N. Y., embracing four claims, three for operating the rake, and one for the manner of supporting the cutter blade, (see claim on page 182, Vol. 7, Sci. Am.) On the same date a patent was granted to Wm. F. Ketchum, of Buffalo, N. Y., embracing two claims, published on same page; the patent was assigned to Rufus S. Howard, of the same place. The nature of the improvements consisted, first, in projecting a stout bar from the frame parallel with, but behind and above the rack at a sufficient height to clear the grass, and having slim iron braces extending down from it to the rack in a line with the course of the machine, so as not to clog, while they sustain the rack; second, in connecting a shield or sheet iron plate, with the shoe in the frame in the front part of the machine. The object of this plate is to pass over the short stubble or loose grain, and tread it down when the end of the cutter bar is working, to prevent such grass or stubble being caught in the moving joint, and clog the machine. This patent was re-issued on the 28th of Feb. last year; on the 17th February a patent was granted to R. T. Osgood, of Orland, Me., for applying a toggle joint upon the end of the cutting arm, (see claim on page 190, Vol. 7, Sci. Am.)



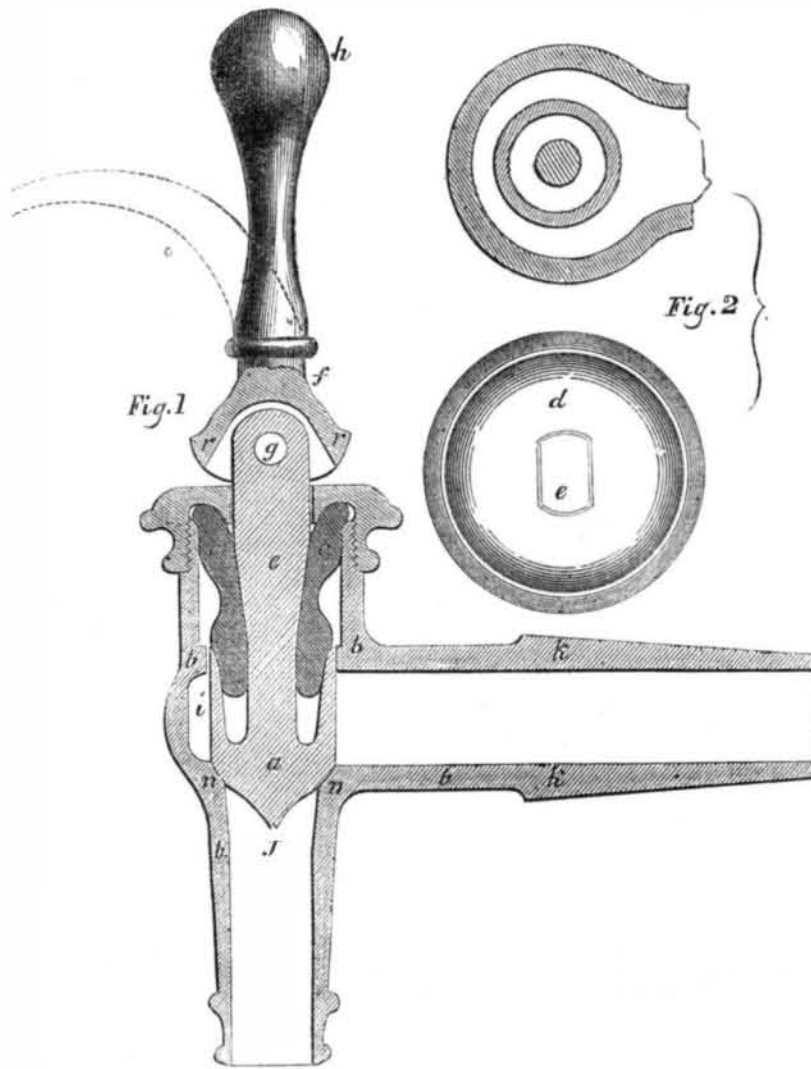
On the 8th of June following a patent was granted to Geo. H. Rugg, of South Ottawa, Ill., for an improvement in harvesters, embracing the feature represented in the annexed figure (47,) which exhibits a side elevation of a finger, and cutter. The nature of the invention consists in the peculiar shape and arrangement of the fingers which are set over the sickle, and by which the sickle, with the aid of the rivet, is prevented from being clogged; "O are the fingers; N is the sickle; the sickle is attached by rivets, n, to a metal strip, P, which is attached to the vibrating levers. The rivets, n, pass through the sickle and project a short distance below it; all the fingers, O, are driven into the front cross piece of the frame, and each has a semicircular curve, o; this curve, extending to all the fingers, is to allow the rivets to work clear, and by this means prevent the sickle from being clogged, as the rivets will draw out all the grass or straw that may happen to catch between the sickle and fingers, (see claim on page 318, Vol. 7, Sci. Am.)

On the 15th of the same month, William and Thomas Schebly, of this city (formerly of Hagerstown, Md., we believe, and who had early devoted their attention to reaping machines,) obtained a patent for an improvement in embracing an arrangement of bridges beneath the platform in combination with chain bands, having accommodating knee-formed fingers or rakes, working on pivots and attached thereto; also working the cutter between an under and an upper open guard or finger, (see claim on page 326 Vol. 7, Sci. Am.) On the 20th of July succeeding a patent was granted to E. B. Forbush, of New York, embracing four claims relating to a guard finger with an inside surface to cut against; the regulation of this finger; and a pivoted motion given to the rake, so that a person can remove the grain from the platform in bundles, and sit or

stand on the machine near the driving wheel. On the same date a patent was granted to J. S. and David Lake, of Smith's Landing, N. J., for coupling the wheel to the shaft with a universal joint, and toggle joint arms, to admit of a vertical motion, and with a gimble ring to allow of a wobbling motion. On the same date a patent was granted to Wm. Manning, of South Trenton, N. J., for suspending the cutting head and front part of the machine, to dispense with front wheels,

(see claims of these patents on page 366, Vol. 7, Sci. Am.) On the 10th of August, same year, Daniel Fitzgerald and D. Smith, of this city, obtained a patent, having three claims, embracing a floor in the center of the machine for the gatherer to stand on, a rim to which the knives are attached, and a spiral channel within the guard fingers, for gathering the grain, when cut, into the central space or platform;" (see claims on page 390, Vol. 7, Sci. Am.)

SELF-CLOSING STOP COCK.



The accompanying engravings represent an improvement in self-closing stop cocks, for which a patent was granted to David N. B. Coffin, Jr., of Lynn, or 292 Washington street, Boston, Mass., on the 9th of January last.

Figure 1 is a vertical longitudinal section of the cock, and fig. 2 is a horizontal section of the cock, *d* being the gland, and *e* the valve stem.

The cock represented does not differ materially in its external form and proportions from ordinary cocks, it having a chamber to contain the valve and its seat, which chamber communicates by the shank of the cock with the cistern or other source of supply of the liquid to be drawn off, and the discharge tube with the open air, or a receptacle into which the liquid is to be discharged.

The valve seat, *n*, and valve, *a*, are for the purpose of opening and closing the communication between these tubes through the chamber, *i*, so as to establish a current of the liquid through the cock from the source of supply, and to cut off the same at will.

The valve chamber is cylindrical and has its upper end closed by a screw gland, which serves the purposes of guiding the valve stem, permitting the same to protrude through the side of the cock, and of compressing an elastic packing of india rubber or other suitable material tightly around the valve stem, and against the sides of the chamber, to prevent leakage and also to support the packing against the valve, in order to press the same constantly towards its seat.

The valve, *a*, in this figure, is cylindrical, and is fitted into the chamber so as to slide freely towards and from its seat, *n*. The stem, *e*, of the valve extends through the gland, and is surrounded or packed by an annular piece of vulcanized india rubber, *c*. This packing also presses upon the valve

with sufficient force to cause it to close promptly, and to hold it closed. Whenever the valve is opened the spring will be forcibly compressed, and will tend to return the valve to its seat.

The upper extremity of the valve stem is jointed to the central part of a disk, cap, or foot, whose edges, *r*, project considerably beyond the sides of the stem, and rest upon the top of the gland; from the upper side of this foot, *f*, a handle, *h*, projects upward and stands erect when the valve is closed. By inclining this lever any way in which the joint will allow it to turn, the valve will be raised. Whenever the hand of the operator is removed from the handle, *h*, the cock will close of itself.

The resistance to the act of opening, being a steady spring force, it obviates the liability to open too far. The surfaces of the valve and its seat, which fit together to close the cock, being small and spherical in shape, are less difficult to be fitted, and as these form the only close fit required, and there being no tendency to grind, as in the taper plug cock, it is not likely to leak, and is easy to be kept in repair. When it is required to keep a reservoir or cistern filled, to a certain point, it is only necessary to elongate and curve the lever, as shown by the dotted lines in the figure, when a float of a given weight attached to its end by a cord, will operate the valve safely without the least attention, the cord being first adjusted to the proper length. The elastic packing, together with the space around the same, serves, to some extent, the purpose of an air chamber to relieve the strain when the valve is closed too suddenly; as the chamber, *i*, extends all around the valve, *a*, it, the valve, needs to be raised but little to fill the nozzle.

The patent embraces two claims, one for the handle, being turnable either way; also

the arrangement of the elastic packing to perform two duties, viz., packing the valve and pressing it down on its seat, making it self-closing when pressure of the hand is removed. Other modifications of this cock from that represented, may be employed, embracing the same main principles, which are excellent.

More information may be obtained by letter addressed to Mr. Coffin at either of the above-named places.

Slate Quarry in Virginia.

A quarry of green and purple slate has been opened in Albermarle county, Va. It is said that several Welsh quarriers give it as their decided belief that this slate is the purest they have ever seen in America, and only equalled by the slate obtained from the old quarry in North Wales.

We have entertained the opinion that Vermont slate is equal if not superior to the Welsh slate.

Our Inland Commerce.

The estimated value of commerce carried on in western steamboats amounts to \$330,000,000. What an inland commerce! There are 800 steamboats on the western lakes and rivers, averaging 200,000 tons.

LITERARY NOTICES.

THE EDINBURGH REVIEW—The first No. of a new volume of this world-wide famous Review, is just issued by its enterprising American publishers, Messrs. Leonard Scott & Co., No. 54 Gold street, this city; it contains articles on "Parliamentary Opposition," "Cardinal Mezzanin," "Charles the Fifth," the "Siege of Rhodes, 1480," with a map, "Mount Athos and its Monasteries," "Marsden's History of the Puritans," and "The War in the Crimea." This Review is the consistent advocate of rational reform when reform is required, and conservatism, when radicalism would be dangerous; it is always candid, and dignified, and generous. This is an excellent time to subscribe for any person who desires impartial and sound information respecting British politics and literature.

HALL'S JOURNAL OF HEALTH, for February contains very sensible articles upon the "Throat-Ail," "Functions of the Skin," "The Bible and Materia Medica," "How People Take Cold," and others of much interest to suffering and dying humanity; the cry is, "Oh for a long life," but "that life is longest which best answers life's great end." Dr. Hall's suggestions to this great end are eminently practical, and if regarded would yield their promised harvest. The Journal is published monthly at No. 41 Irving Place, at \$1 per annum.



Inventors, and Manufacturers

The Tenth Volume of the SCIENTIFIC AMERICAN commenced on the 16th of September. It is an ILLUSTRATED PERIODICAL, devoted chiefly to the promulgation of information relating to the various Mechanic and Chemic Arts, Industrial Manufactures, Agriculture, Patents, Inventions, Engineering, Millwork, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

Its general contents embrace notices of the LATEST AND BEST SCIENTIFIC, MECHANICAL, CHEMICAL, AND AGRICULTURAL DISCOVERIES, —with Editorial comments explaining their application; notices of NEW PROCESSES in all branches of Manufactures; PRACTICAL HINTS on Machinery; information as to STEAM, and all processes to which it is applicable; also Mining, Millwrighting, Dyeing, and all arts involving CHEMICAL SCIENCE; Engineering, Architecture; comprehensive SCIENTIFIC MEMORANDA: Proceedings of Scientific Bodies; Accounts of Exhibitions,—together with news and information upon THOUSANDS OF OTHER SUBJECTS.

Reports of U. S. PATENTS granted are also published every week, including OFFICIAL COPIES of all the PATENT CLAIMS; these Claims are published in the Scientific American in ADVANCE OF ALL OTHER PAPERS.

The CONTRIBUTORS to the Scientific American are among the MOST EMINENT scientific and practical men of the times. The Editorial Department is universally acknowledged to be conducted with GREAT ABILITY, and to be distinguished, not only for the excellence and truthfulness of its discussions, but for the fearlessness with which error is combated and false theories are exploded.

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and PEOPLE IN EVERY PROFESSION IN LIFE, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them HUNDREDS OF DOLLARS annually, besides affording them a continual source of knowledge, the experience of which is beyond pecuniary estimate.

The SCIENTIFIC AMERICAN is published once a week; every number contains eight large quarto pages, forming annually a complete and splendid volume, illustrated with SEVERAL HUNDRED ORIGINAL ENGRAVINGS.

TERMS: TERMS!! TERMS

One Copy, for One Year	\$3
" " Six Months	\$1
Five Copies, for Six Months	\$4
Ten Copies for Six Months	\$8
Ten Copies, for Twelve Months	\$15
Fifteen Copies for Twelve Months	\$22
Twenty Copies for Twelve Months	\$28

Southern, Western, and Canada Money taken at par for Subscriptions, or Post Office Stamps taken at their par value. Letters should be directed (post-paid) to

MUNN & CO.

128 Fulton street, New York.