

Scientific American

A WEEKLY JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XII.—No. 17.
(NEW SERIES.)

NEW YORK, APRIL 22, 1865.

\$3 PER ANNUM
(IN ADVANCE.)

Rock Borer and Grooving Machine.

The peculiarity of this machine consists in the cutters by which the hole is bored. These cutters are in form like the domestic utensil known as a jaggling iron, with which housewives ornament the edges of pastry. They are shown at A, and are four in number, one at each corner. Inside the stock, B, to which the cutters are secured are four other wheels, the center two are set obliquely with reference to their axes, so that by "wabbling," to use a common phrase, they cut over a great deal of space, acting on a small portion of the surface only at one time. By this arrangement no standing core is left and the hole is bored complete at one operation. The boring rod, C, which carries these cutters, is made hollow for the admission of water to the tools; this water is forced in through the tube, D, and serves to keep the cutters cool during their action. As the depth of the hole increases the boring rod is also lengthened, so that it would be unsteady in action unless some guide was provided. To prevent this difficulty Mr. Sweeney attaches a triangular yoke, E, to the boring stock, said yoke having three or more rollers in it. These rollers are externally just the size of the hole, so that they bear against its circumference as the cutters descend, and keep them straight. The helix, F, is to facilitate the ascent of the chips, so that the bore will not choke up.

The machinery by which the cutters is operated is not peculiar, rotation being imparted by the bevel wheels, G; attached to the shaft of these there is a pulley over which a belt passes. The feeder shown at H, and one leg of the standard which carries the worm shaft is made to raise so as to throw the worm out of gear when necessary. The pulley, I, is both fast and loose; that is to say, one of each sort, are placed side by side, and when the belt is shifted to the one or the other, the screws, which are right and left-handed, raise or lower the drill rapidly.

These features are the principal ones, and in regard to the capacity of the machine the inventor asserts that in addition to rock drilling it can be applied to sink shafts of any diameter up to twelve feet; also to drive headings in tunnels, mines, etc. It is also

available in erecting light-houses or observatories; for all work in rocky bottoms where piles are to be used. It can likewise be used in submarine excavations for sinking piers for bridges and docks. Also for cutting down portions of rocks that may impede the channels of rivers, and thus render navigation dangerous and difficult. The machine is readily con-

Glass Trade at the West.

There are fifteen bottle and vial factories fifteen window glass factories, and fifteen flint glass works in Pittsburgh, being forty-five glass works in all, an increase of forty per cent in number in eight years. There are in addition three flint glass works at Wheeling, and one at Stubenville. Also, three window glass works in the neighborhood of Brownsville, sixty miles from Pittsburgh. To the east of the Allegheny mountains, there are in New Jersey nine window-glass works, and twelve in the State of New York; six flint-glass works in Massachusetts, two in Brooklyn, one in Jersey City, two in Philadelphia, being eleven in all making flint glass, and twenty-one making window and other glass.

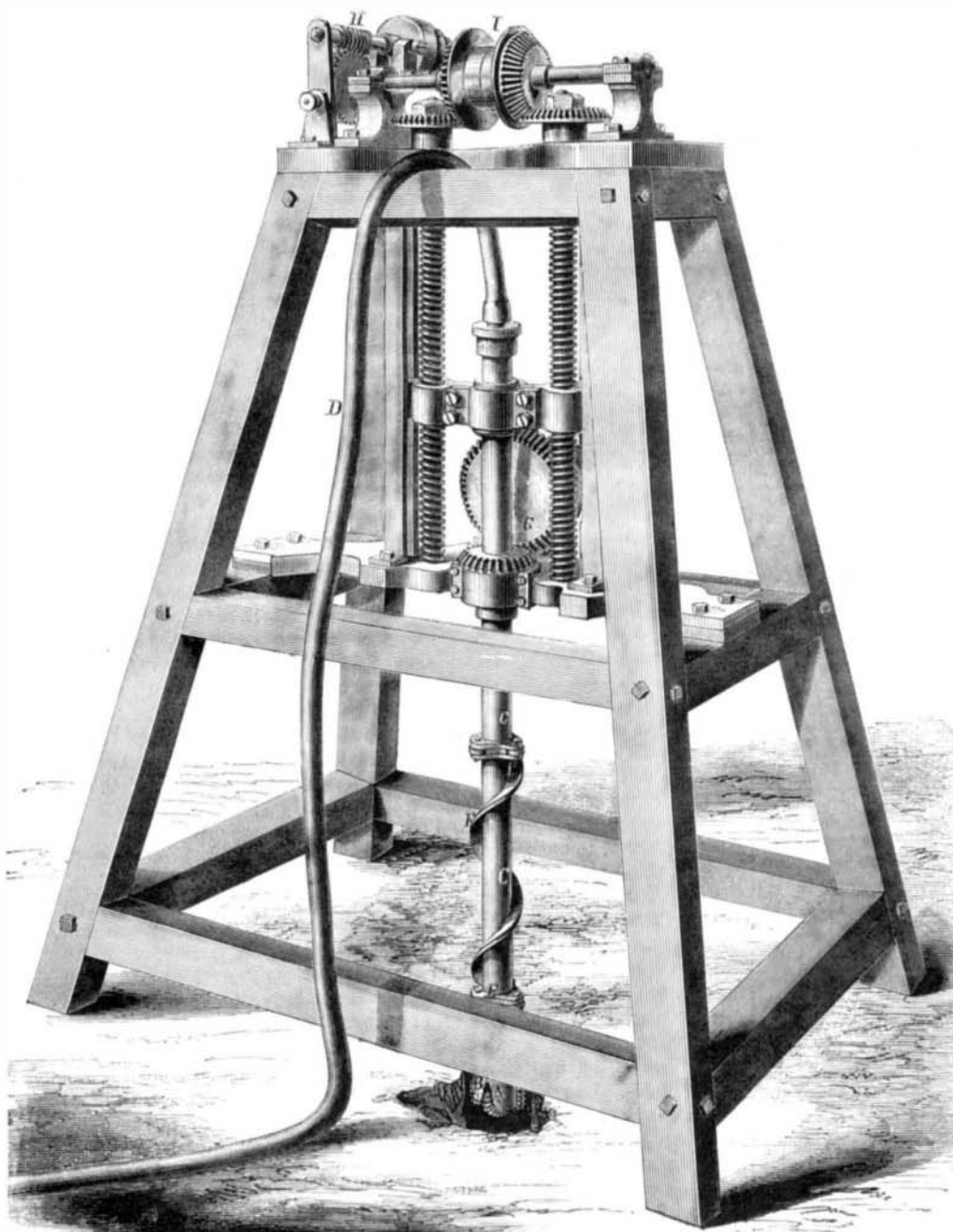
The fifteen window-glass works, located immediately at Pittsburgh, have a capacity to make 520,000 boxes of glass a year, but their average yield is about 400,000 boxes, whose entire value, at the present time, is \$2,600,000. The fifteen green or vial works produce annually about 420,000 gross, or 60,450,900 of vials and bottles, worth, at present rates, \$2,100,000. The pressure upon these works is best shown by the fact, that although only customary to run them for ten months in the year, yet many of them have ran twenty-one months without stopping.

The fifteen flint-glass works in operation at Pittsburgh, produce, at the present time, about 4,200 tons of glassware, worth at present rates, in round numbers, two millions of dollars. Their capacity is, however, double the amount produced, or about 8,000 tons. The quality of flint glass made in these fifteen works it is not necessary to note here, beyond the simple statement, that it is admitted by the trade,

that the handsomest and best glassware in the United States is made at Pittsburgh.

PROTECTION FOR FIREMEN.—Rev. Benjamin I. Lane, a Baptist clergyman at South Farmington, Mass., has invented a jacket and mask to protect firemen from the smoke and flame of a burning building while pursuing their arduous duties. The apparatus has had several trials in Boston and works well.

THEY have a factory in Danbury where they put springs into hat rims—hoop skirt them.



SWEENEY'S ROTARY ROCK BORER AND TUNNELING MACHINE.

controlled by persons of ordinary ability, and is not complicated in detail; any of the parts can readily be repaired in an ordinary machine shop.

A patent is now pending on it through the Scientific American Patent Agency. Peter Sweeney, of New York City, is the inventor, and for further information address J. F. Flanagan, No. 80 Broadway, New York City.

SHOW OF POULTRY.—A great poultry show will open at Barnum's Museum on the 24th inst.