

THE
Scientific American,

PUBLISHED WEEKLY

At 128 Fulton Street N. Y. (Sun Buildings.)

BY MUNN & COMPANY.

O. D. MUNN S. H. WALES A. E. BEACH.

Agents.

Federhen & Co., Boston. Dexter & Bro., New York
A. Winch, Philadelphia. E. E. Fuller, Halifax, N.
A. G. Courtenay, Charleston. S. W. Pease, Cincinnati, O.
Responsible Agents may also be found in all the principal cities and towns in the United States.

Single copies of the paper are on sale at all the periodical stores in this city, Brooklyn, and Jersey City.

TERMS—\$2 a year,—\$1 in advance and the remainder in six months

The Seconds of Eternity.

Prof. Mitchell in one of his recent lectures, describing the gradual tendency of the earth's orbit to assume a circular form, used the following magnificent illustration:—

"Its short diameter was gradually lengthening and would continue so to expand until it should become perfectly circular, when it would again contract to its original shape and dimensions. And so the earth would vibrate periodically, and these periods were measured by millions upon millions of years. Thus," said Prof. M., "the earth will continue to swing back and forth, and to and fro in the heavens, like a great pendulum beating the seconds of eternity."

An Irish Toad.

The Dublin (Ireland) *Medical Express* details a case which confirms the opinion that the toad can eject a venomous fluid from its mouth. A boy aged six years, while throwing stones at a large toad, felt something spirted into his eye. He was attacked soon after with spasmodic pain in his eye—then with coma; at times he would try to bite everything near him; at times he was in a state of apathy, and at times in a state of madness.—On the tenth day the only symptoms were stupor and inability to speak, a condition which has lasted for two years.—[Exchange.]

[A pretty fair toad story that. To (a) ddy often attacks grown people much in the above manner, but such young children are generally spared.]

Life Preservers.

Inflated life preservers, made of india rubber, or such material, were condemned at the meeting of Steamboat Inspectors held last year. In the case of the burning of a steamboat on the Mississippi, which had a number of them on board, they were found totally useless in the hour of need. At the recent burning of the steamboat *Northern Indiana*, on Lake Erie, numbers of the inflated life preservers on board, it was discovered, had been rendered useless by being punctured with pins, by ladies using them for pincushions in the cabin on retiring at night.

Metallic life preservers, made of thin sheet copper, are the safest and best. It would be very easy to make every seat, table, and mattress, used on a steamboat, a life-preserver, and steamboat proprietors should be compelled to do this.

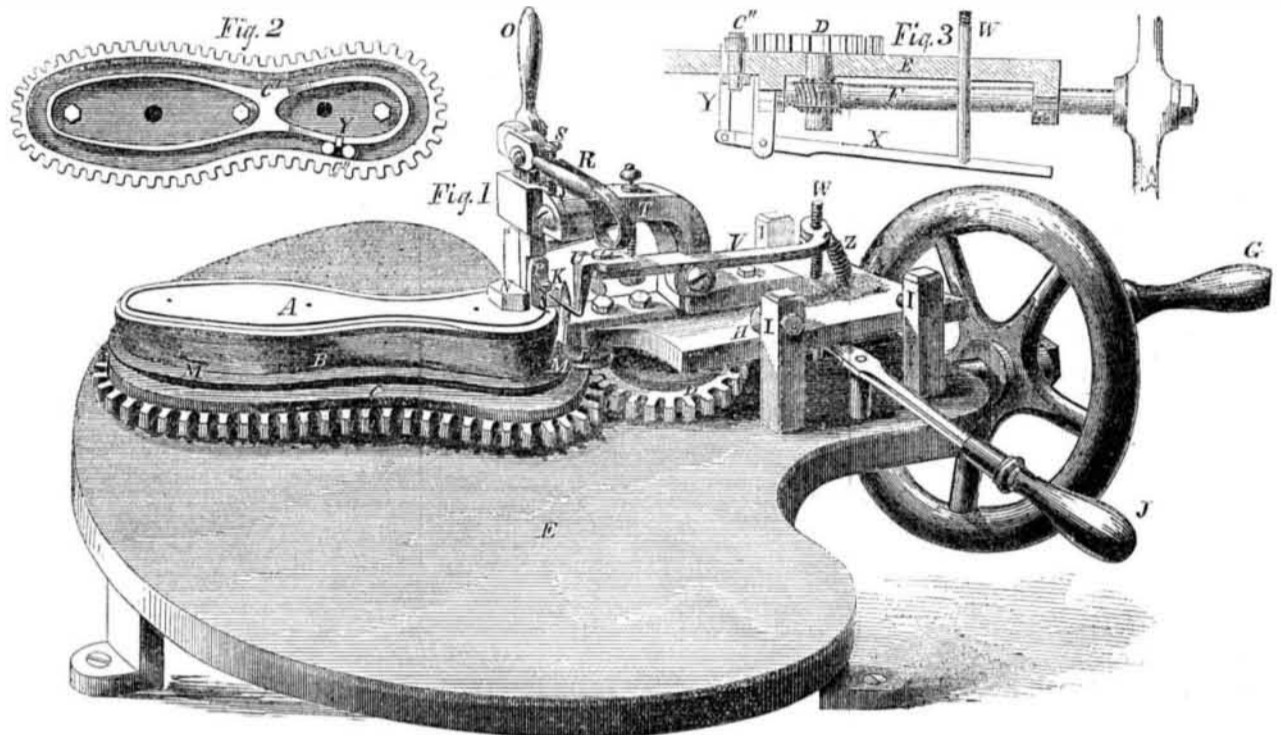
A Great Gun.

A wrought-iron cannon has been manufactured in Liverpool, Eng., which weighs 22 tons, and sends a ball of 300 pounds weight a distance of 4 miles.

The first exhibition of the Farmers and Mechanics Institute, of Northampton County, Pa., will be held in September next, on the 23d, 24th, 25th and 26th.

A bug resembling the lightning bug, and about the same size is committing serious depredations on the potato crop in Wilson co., Tenn. They get upon the vines by thousands, and strip them of vegetation from top to bottom.

MACHINE FOR CUTTING OUT BOOT AND SHOE SOLES.



Boot and Shoe Sole Machine.

Those who have witnessed the movements of a dexterous workman, in cutting out soles, would hardly suppose that there was any room or necessity for the assistance of mechanism. He places the leather upon a thin metallic pattern, and follows it around with a sharp knife; then he skives its edges, cuts the channel for the thread, and it is done. Can anything be better, more simple, or quick? We shall show that there can. Our engraving exhibits an invention which does the work about ten times faster, and in a far superior manner.

The leather, A, previously cut out into the usual rough form, is laid upon the block, B, which rests upon the cogged sole carriage, C. D is a driving pinion, which gears with C, and causes it to move around on the surface of the table, E, and bring the leather in contact with suitable knives, as will be presently described. Pinion, D, is put in motion by means of a worm wheel and screw, below the table, E, on the fly wheel shaft, F; power is applied to crank G. The sectional view, fig. 3 shows the manner in which pinion D receives motion.

The cutting knives are all attached to a sliding bed plate, H, which is moved up so that the cutters will act on the leather, or back out of the way, by means of the lever, J. I are the guide posts of the bed plate, H. K is an upright knife attached to the front end of bed plate H. This knife cuts out the sole. When bed plate, H, is moved up towards, B, the friction wheel, L, which is attached to the lower side of H, meets the edge of a thin pattern, M, which is placed between B and C. Pressure is maintained by the hand, on lever J, and the friction wheel thus kept constantly against pattern M; the knife, K, is, in this manner caused to follow the peculiar form of pattern, M. When a different formed or sized sole is required, a corresponding pattern, M, will be necessary.

N is a pressure pad, which presses lightly upon the leather, so as to keep it smooth while it is being cut. N is raised and lowered by means of the lever eccentric, O. P is a small cutter which does the channeling. It cuts on the top of the leather, and is attached to a plunger which is raised and lowered by eccentric lever Q. R is a spring that presses cutter P down, and S is a set screw by which the depth to which cutter P enters the leather, is

regulated. T is an arm attached to H, which supports the levers and cutters described.

U is the skiving knife, and as the heel part of the sole must not be skived, it is necessary that the skiving knife should lift at the proper moment, so as not to cut the heel. Before this movement can be understood we must more fully explain the construction of the sole carriage, C. Figure 2 shows the under side of this device; it contains a path, C', into which two guide pins, C'', fit. These pins are attached to table E (see fig. 3) and serve as the fulcrum for C, when it moves about on table E. The heel edge of path C', observe, is not quite as high as the front end.

We now return to the skiver, U, and its movements. It is attached to the front end of a lever, V, which is pivoted to arm T. The back end of lever V connects with rod W, which unites, below the table, with lever X (fig. 3) and the forward end is joined to rod Y, which projects above the table and touches the edge of the follower path, C'. The heel part of the path edge is depressed, as shown, so that when Y reaches that depression it rises, and the skiver knife, U, is thus raised from the leather, leaving the heel part unskived. Z is a spring which pulls down lever V. Immediately below the end of V, where it unites with W, is a screw nut, by which the depth of the bevel which the skiver cuts, may be conveniently changed. The various cutters may be readily adjusted so as to suit different kinds and styles of soles, sewed or pegged work.

This machine operates with great rapidity, does the work with unerring certainty, and imparts a handsome finish. It surpasses handwork in every respect. It is strong and substantial; none of its parts are complicated or liable to get out of order. Single machines are sold at \$25 and \$30 leaving a large profit to the manufacturer. Invented by Wells and Bray, of Turner, Me., of whom, or of J. A. Knight & Co., 334 Broadway, N. Y., further information can be had. Patented March 11, 1856.

A Cheap Deodorizer.

MESSRS. EDITORS—At this season of the year, when the effluvia from sinks is not only disagreeable, but highly deleterious to health, perhaps it might be of service to some of your numerous readers to know that the refuse lime, from the dry lime purifiers of coal gas works, is a most effectual disinfectant.

In the early part of this spring I had occasion to remove an old offensive place, when the emanations became overpowering. The idea then struck me, to try the effect of gas lime; its action was almost miraculous. Since that time our workmen are in the habit of sprinkling small quantities of this lime to keep down such emanations. The smell of the lime itself soon disappears. I consider this lime to be an effectual and cheap disinfectant for such putrid odors. THOS. HOADLEY, Engineer of the Cleveland Gas Co., Ohio.

A Powerful Fire Engine.

Messrs. Wm. Jeffers & Co., Pawtucket, R. I., have lately built a fire engine for the Common Council of Adrian City, Mich. The engine is in possession of Alert Engine Co., No. 1, of that city. It is of the piano style, 10-inch cylinders, with changeable stroke of five to nine inches.

At a recent trial of the machine, it threw four 5-8 in. streams, simultaneously, 113 feet high. One, inch and a quarter stream, was thrown 143 feet. One, inch and a half stream, was thrown nearly 113 feet. One, inch and an eighth stream, was thrown 186 feet horizontally. One, inch and an eighth stream, was thrown 202 feet horizontally. One inch stream was thrown 215 feet 6 inches horizontally.

Artificial Formation of Minerals.

Professor Houseman, of Gottingen, Germany, has published an interesting scientific paper on the formation of minerals in and about furnaces, by furnace action. He enumerates the following varieties observed by him: silver, lead, copper, iron, bismuth, lead glance, blend, oxyd of zinc, red copper ore, iron glance, and magnetic iron ore.

The Atlantic Ocean Telegraph.

We would direct the attention of our readers to the article on the above subject on another page. Its author discusses the feasibility of the project with ability and scientific acumen. All those interested in the success of the ocean telegraph should read it with attention.

The boiler of the cotton factory at Little Falls, N. Y., exploded on the 1st inst. The factory was terribly shattered. One man was killed and three women badly wounded. The boiler was shot to an immense distance from the factory.