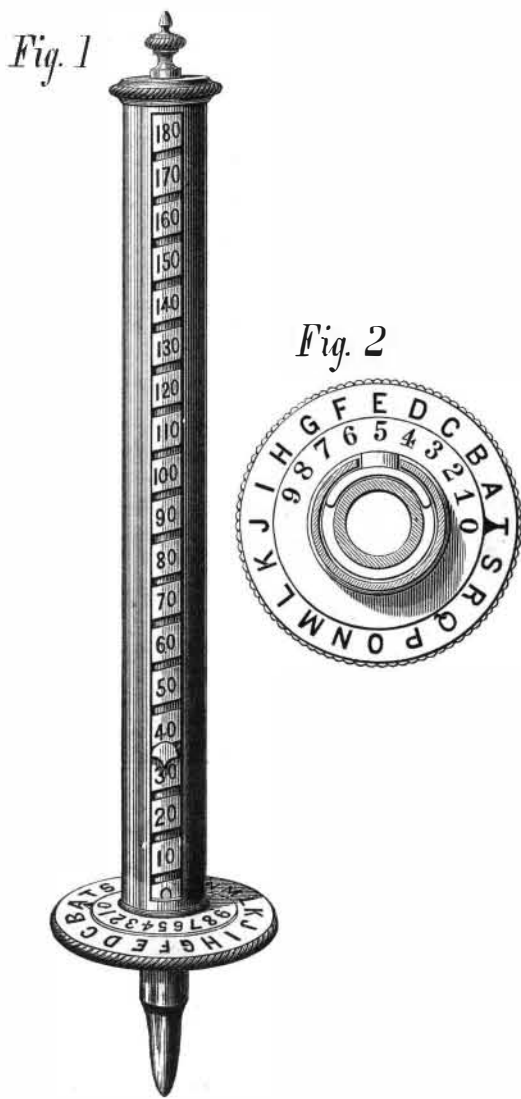


IMPROVED ADDING PENCIL.

In our issue of October 21, 1875, we published an illustration and description of a then recently patented adding pencil, the device of Messrs. Smith & Potts, of Verdi, Nevada. Our readers may remember that not long afterwards we printed a paragraph containing a request from the above named inventors that the public would withhold further letters, as so great was the interest excited by the very ingenious little device that the proprietors found themselves entirely unable to attend to the innumerable requests for further information and orders which poured in upon them. Nearly 5,000 pencils, we are told, have been sold, and the sale may be traced to that publication—a significant evidence not only of the value of the device but of the advantages of the SCIENTIFIC AMERICAN as a means of placing an invention before the people.

Very recently the inventors have hit upon a plan of simplifying the device, which practically amounts to a remodeling of the entire mechanism. This we illustrate herewith. By referring to the article relative to the earlier invention, the general capabilities will be found in detail. The device in brief is a miniature calculating machine, which does its work with unfailing accuracy and without requiring any thought on the part of the operator other than that involved in turning a disk to make coincidence between a figure and a letter. In shape the apparatus resembles a pencil, and its full size is shown in our engraving. It consists of a cylindrical case, closed above, and to the lower end of which is attached a circular flange, the upper side of which is numbered. Inside the hollow cylinder or case is a solid spirally grooved cylinder, and this carries at its lower end a milled disk which extends outside the flange, and is marked by a series of letters. The lower extremity of the pencil is merely used for pointing. The disposition of flange and disk will be more clearly understood from Fig. 2. In the groove of



the solid cylinder, which is numbered, is an index or traveler which projects through the longitudinal slot of the outer case.

Supposing the various parts to be disposed as in Fig. 1, the method of manipulation is as follows: The index, by rotating the inner cylinder, may be caused to travel up or down the slot; as shown, it stands at 30. To add, for example, 5, that number is first sought on the flange, and coinciding with it on the disk appears the letter, F. The disk is then turned by the thumb and finger until said letter F is brought to coincide with the zero mark. This, of course, at the same time rotates the solid inner cylinder so that a distance measured on the groove between the parts marked 30 and 35 travels beneath the index. The latter, therefore, ascends in the slot, and, when the movement is finished, remains pointing at 35.

To add another number, the next in a long column, for instance, the letter which happens to correspond thereto is as before carried around to zero, and this is continued until the column is finished, when the sum is shown by the index.

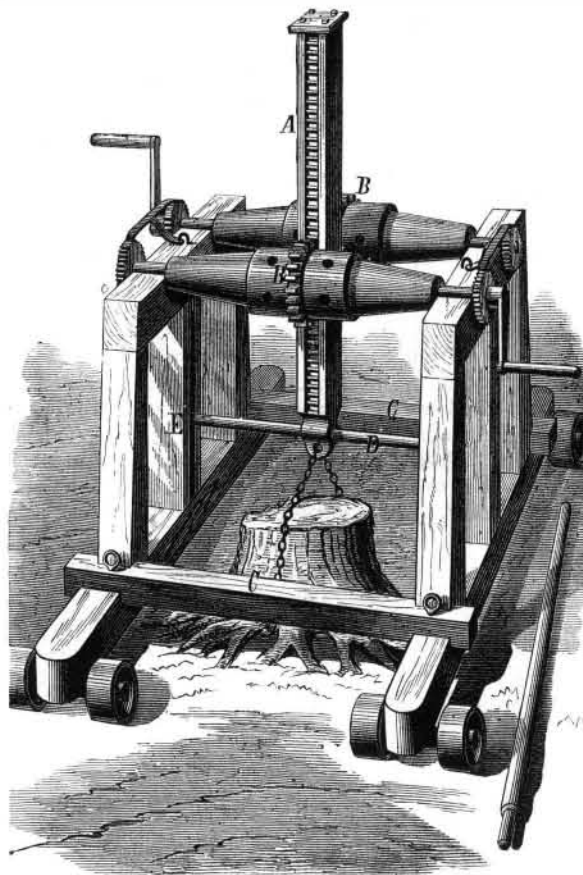
The advantage of the present over the older device is that the spring, rack, and cog wheel mechanism is abolished, rendering the pencil much cheaper, less complicated, and more reliable. It can be used about as fast as a good accountant can cast up a column of figures mentally; but time is saved from the fact that the first footing is always correct, and hence no second or check process is needed. The pencil can

be used after very little practice. Interruption during the computation is no annoyance; and indeed the motion may proceed almost mechanically while the operator is engaged in conversation; or he may stop work in the middle of a column attend to other matters, and resume it after any period of time.

Patented through the Scientific American Patent Agency, April 4, 1876. Patents on improvements pending. The price of the pencil is \$5, mailed free. For further information address the Adding Pencil Company, St. Louis, Mo.

FICHT'S IMPROVED LIFTING MACHINE.

We illustrate herewith a new lifting apparatus well suited for pulling stumps, raising buildings, or similar heavy work. The power is applied to great advantage, and after the weight is raised it can be moved anywhere by the machine.

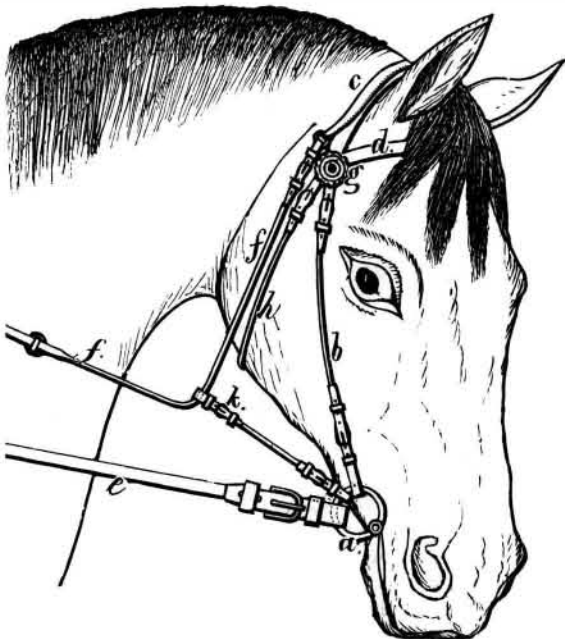


A is the lifting bar which is toothed on opposite sides and disposed between guide ribs, which keep it in gear with a couple of toothed wheels, B. These wheels are arranged on shafts journaled in the top of the supporting frame, which shafts are provided with ratchet and pawl-holding mechanism, and also cranks or levers (one of which is shown at F) for turning them. The frame is composed of two parts made of sills, posts, and beams, each mounted on trucks and detachably connected by cross beams, C, which are fastened by pins, so that the end parts of the frame may be separated to adjust the machine around a stump or other object to be raised. The lower end of the lifting bar has a guide rod, D, through it, and extending to guides, E, to prevent the bar from being drawn sideways by the load. The latter is attached to the bar by the chains, as shown. The top of the lifting bar is adapted for placing underneath any load to be elevated. The manipulation simply consists in rotating the cranks, when the lifting bar is caused to rise.

Patented through the Scientific American Patent Agency, June 13, 1876. For further information address the inventor, August Ficht, Bella Sylva, Wyoming county, Pa.

IMPROVED CHECK REIN.

Mr. W. U. Selover, of Rahway, N. J., has invented an improved check rein, which is connected at its ends to the up



per part of the headstall, and passes through bit loops that are made of adjustable straps connected with the rings of the bit. By this construction the bit is not drawn forcibly

against the upper portions of the horse's mouth. The movement of the head is free and easy, and there is no tendency to protrude the animal's nose, as is often the case when the check rein is drawn too tightly; and the check rein loops, being variable in length, can be adjusted to direct the pull of the check rein in any desired manner, and hence hold the head in the proper position.

The bit, a, is of the usual character. The side straps, b, head strap, c, front strap, d, and throat latch, h, are of the usual character, and the reins, e, are attached to the rings at the end of the bit. The check rein, f, is made adjustable in length in the usual manner; but the ends thereof, instead of being attached to the bit rings, are connected at or near the rosette, g, of the headstall, and at k are loops passing from the bit and around the check rein, so that said check rein may slide through these loops. These loops are, by preference, made as straps that are adjustable in length, and hence the place of intersection of the loops, k, with the rein, f, may be more or less forward or backward, and at any point the horse's head is free to swing up or down, but it is prevented from moving forward; thereby the animal's head is positioned so as to curve the neck gracefully and prevent him projecting his nose too far forward. The invention was patented February 8, 1876.

GAS WORKS ON THE KITCHEN RANGE.

Here is a device whereby any one may manufacture gas for his house with no more trouble than is taken in setting a clothes boiler on the range or cooking stove. Mr. John S. Thomas, of Maryville, Tenn., has patented the invention (June 13, 1876), through the Scientific American Patent Agency. It consists of a hollow cylindrical retort, A, Fig. 1, made of iron, with an iron cap, C, ground to fit the top. Over this cap there passes a strong iron ball, E, through which there passes a perpendicular screw pressing on the top of the cap, thus holding it firmly to its place. In this retort is to be placed fine or small broken bituminous coal. The retort is made to fit the hole of a stove, or it may be

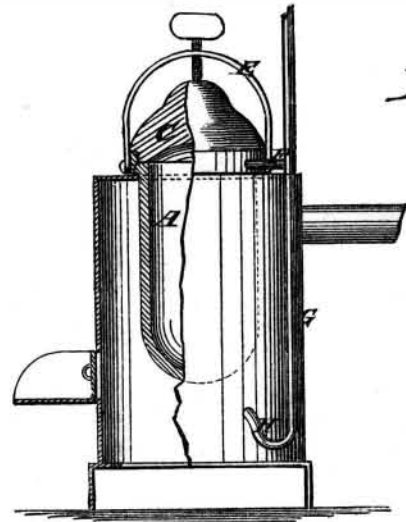
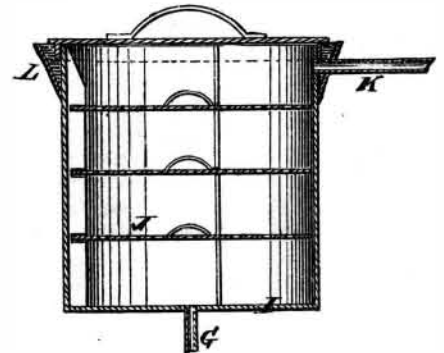


Fig. 2.



used in a furnace made for the purpose. From the retort and near the cap is a pipe, F, extending a short distance intersecting with a perpendicular pipe, G. At the intersection of these two pipes the gas and tar separate, the tar falling below into the tube, which descends below the bottom of the retort, on the outside of the stove, then crooks upward at H, and goes into the stove, fire, or furnace (the accumulation of gas and tar forcing it into the fire, and helping to create the heat necessary to manufacture the gas), or may be conducted elsewhere if desired.

The upper part of the pipe, from the intersection above mentioned, conveys the gas any distance that may be desired to a tin purifier, I, Fig. 2, which is packed alternately between sheets of perforated tin, J, made fast by catches to pieces fastened within, with lime and sawdust, or any material that will purify the gas. At the end from which the gas escapes there is applied a band, L, flaring from the body of the purifier, thus making a channel in which water is to be kept, and a lid, covering the main part of the purifier extending down into the water, prevents the escape of gas. From this purifier extends another pipe running into an ordinary gas reservoir, or it may be direct to a gas burner.

With this apparatus every family can manufacture their own gas, with which they can light their buildings, at the stove on which they cook their meals, in the fire or heater by which they warm themselves, or in the furnace made for the purpose, without any expense except for the apparatus with which it is manufactured, not even losing the heat with which it is made, but rather, on the contrary, utilizing it.