IMPROVED PIPE CUTTING AND THREADING MACHINE.

Messrs. Joseph B. Eaton and Charles Latham, of Shamokin, Pa., have patented (July 4, 1876), through the Scientific American Patent Agency, an improved pipe cutting and threading machine, that may be worked effectively in a very narrow space, so as to produce a saving in time and labor in the digging and the working of the machine. Fig. 1 is a top view of the cutter and threader, and Fig. 2 a sectional end view of the same.

The shell or casing, A, is made of two hinged sections, which are applied around the pipe to be worked upon, and locked firmly together by a suitable device. The threading dies, B, and the cutters, C, are guided in interior recesses of the shell, and adjusted or fed forward to the required depth of cutting by means of set screws worked from the outside of the shell. The shell is cast at the ends with raised ratchet teeth, D^1, along which an operating handle, D, is guided at both ends by an outer arc-shaped part, *b*, and an inner concentric piece, *d*, that slides in a recess of the shell below the ratchet. The outer guide pieces of the handle, D, lock, by spring pawls, D^2, into the ratchets, to take hold of the shell, and turn it in one direction, while releasing it when turned back in opposite direction. A drawing pipe, with threaded end, fits into the threaded end of the shell, and is attached by clamp screws tightly to the pipe to be threaded, drawing by the screw the threading machine forward for cutting the thread on the pipe.

When the pipe is threaded, the machine is returned for clearing the thread by a semicircular handle with hook end, that is inserted into the small socket holes, *e*, of the shell.

It is claimed that thus a deep or shallow thread may be cut on water and gas pipes of different sizes with ease and rapidity while the cutting is done in perfect manner without leaving a shoulder at the end of the pipe.

Fig. 1.

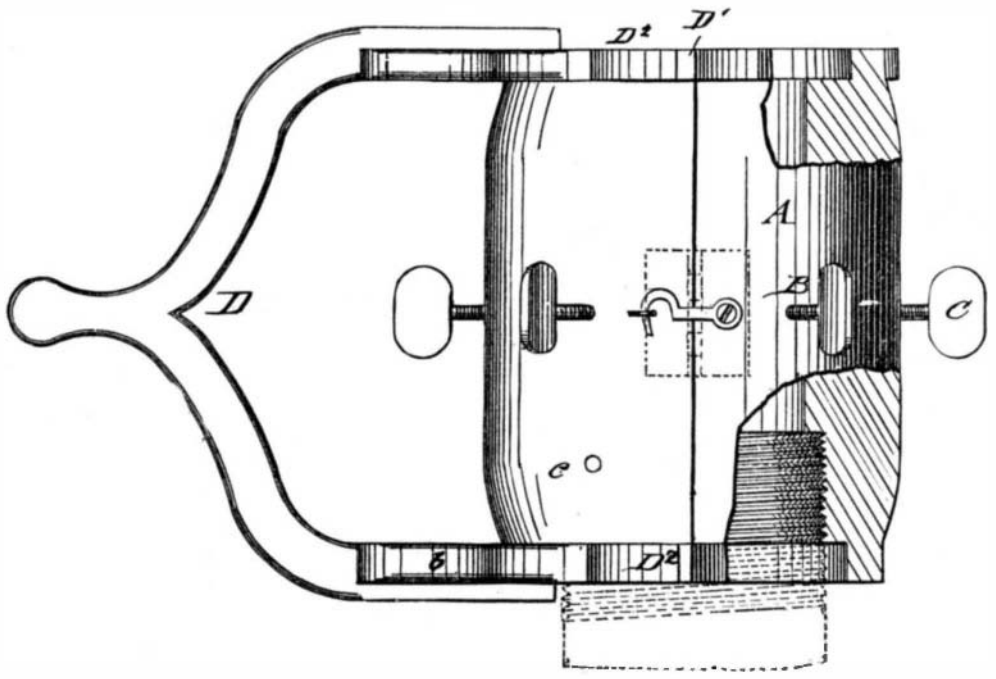
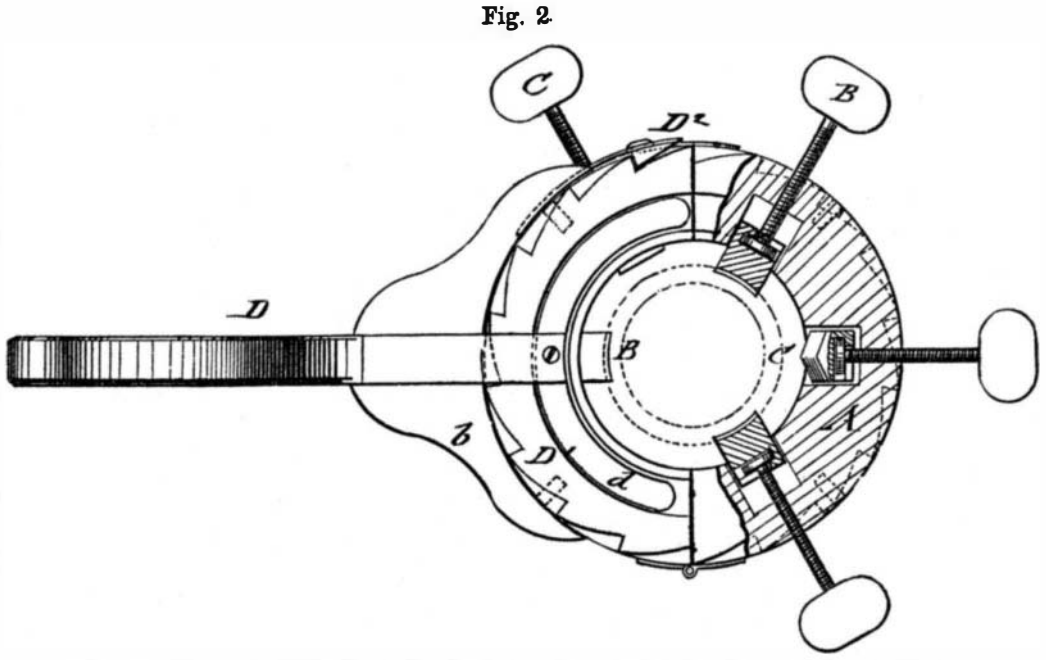


Fig. 2.



EATON & LATHAM'S PIPE CUTTING AND THREADING MACHINE.

South African Railways.

A line of railway 120 miles in length was recently opened between Cape Town and Worcester, South Africa. The road is an extension of the Cape Town and Wellington Railway, purchased by the government some years ago, and is part broad and part narrow gage. It is intended eventually to make the whole line of the latter description. Railway work in other parts of the colony is being vigorously prosecuted; 65 miles of road are nearly complete on the eastern line from Port Elizabeth, 60 miles on the border line, from East London, will be ready by the end of the year, and a similar distance on the Midland line will shortly be finished. The estimated cost of the new works was about $30,000 per mile, but this has been exceeded by as much as $3,500 per mile in some cases, the increase being accounted for chiefly by the deficient supply of labor, enhanced rate of wages, and high cost of provisions.

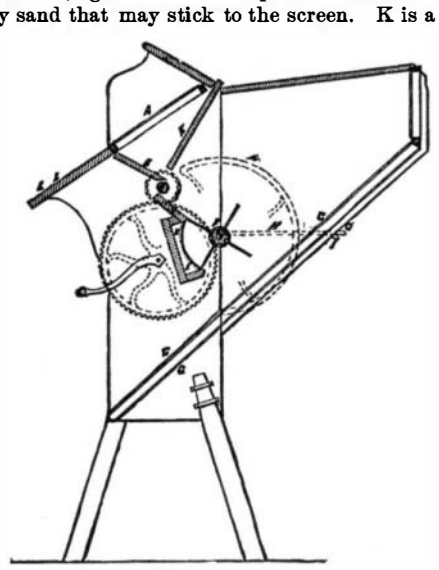
Meteoric Iron in our Church Steeples.

On August 10, the earth passed through the great belt of meteors; and on about November 13, it will again plunge into the midst of these vagrant bodies. People who are curious about meteoric iron, or who desire to investigate that substance, will probably therefore find the present a good time to look for it. M. Tissandier has lately shown that the metal is constantly found in the cosmical dust, which often may be collected from rain, and which exists in the atmosphere of elevated regions. Most of the meteors which strike our atmosphere are at once dissipated by the heat of intense friction, and the iron, melting, falls like shot, in the globular or nearly globular form in which M. Tissandier has found it, and which, he thinks, is one convincing proof of its celestial origin. M. Yung recently told the French Academy of Sciences that the best places in which to look for meteoric dust is an old church steeple. Collect all the dust which has become deposited in out-of-the-way corners, where the wind has not been able to reach it, and examine it under the microscope. Apart from learning how many curious things are floating about invisible in our atmosphere, the student may be able to get together sufficient of the iron to examine it by chemical means.

IMPROVED SAND AND GRAVEL SEPARATOR.

Builders, masons, roadmakers, contractors, and others will doubtless be interested in the invention herewith illustrated, which is adapted for screening sand and separating gravel, overcoming the slow and tedious process now in use. It is claimed to screen sand, no matter how wet, when it cannot be screened by any other process. It separates the gravel entirely from the sand, and deposits the roofing gravel and coarse gravel for walks, etc., in separate places from the sand, thus saving the necessity of a second screening when roofing gravel is in demand. It can be worked to screen thirty yards a day, by one man throwing the sand and a boy to turn the crank. It works rapidly, and will supply any grade of sand.

A is a coarse screen on which the sand is thrown and which keeps large pieces from passing into the machine. The sand passes down to the feeder, B, which carries it down to the cylinder, E. The latter is made with four rows of pins, and revolves with velocity, spreading and separating the sand and gravel and throwing it against the screens, G G. These screens are placed one over the other. The roofing gravel and sand pass through the upper screen (which is made of half inch mesh or any other size needed) to the lower, which is six meshes to the inch, or any size required. The roofing gravel passes down between the legs, which are inclosed, and the sand through the fine screen. The coarse gravel passes down in front of the machine. H is a wrapper or beater, which strikes eight times with every revolution of the crank, against the under part of the screens, and loosens any sand that may stick to the screen. K is a feed



board which can be raised or lowered to regulate the flow of sand to the machine. L is a shelf for carrying off coarse gravel. A single screen is made of four meshes to the inch, or any other size required, to be used for screening sand when roofing gravel is not wanted, allowing all the gravel to pass down in front of the machine.

The manufacturers also make a large-sized machine to be run by horse or steam power, having one elevator to raise sand and another to carry the sand into bins, cars, or other places of deposit.

For further information address the manufacturers, Messrs. Chambers & Quinlan, Decatur, Ill.

The Human Voice Transmitted by Telegraph.

Several weeks ago we gave a sketch and description of the thread telegraph, consisting of two small tin or wooden cylinders, each having a membrane stretched over one end, the two membranes connected by a stout thread. Two persons may readily communicate the sounds of the voice by means of these instruments over a thread fifty or a hundred feet in length. The person sending speaks within one of the cylinders, which causes the membrane to vibrate; the vibration passes along the stretched thread to the membrane of the other cylinder; which being held to the ear of the ear of the person receiving the message, the vibration is duly heard, or, in other words, the voice of the sender is made audible.

Professor Graham Bell, by a device somewhat analogous, has succeeded in transmitting the tones of the human voice by telegraph. Instead of the thread he connects the membranes of the two cylinders or drums with the armatures of the electro-magnets, one drum being placed at each end of the telegraph wire. In fact, he not long ago demonstrated the possibility of conveying vocal sounds by means of the ordinary telegraph wires and special appliances for transmitting and receiving the sounds. The apparatus used by Professor Bell is thus described: Two single-pole electro-magnets, each having a resistance 10 ohms, were arranged in circuit with a battery of five carbon elements—the total resistance being about 25 ohms. A drumhead of goldbeater's skin, about 2¼ inches in diameter, was placed in front of each electro-magnet, and a circular piece of clock spring was glued to the middle of the membrane of each drumhead. One of these telephones was placed in the experimental room, and the other in the basement of an adjoining house. Upon singing into the telephone the sounds of the voice were reproduced by the instrument in the distant room; and if two persons sang simultaneously, the two notes were audible at the other telephone.

At the time of the lecture, an experiment was made to show the transmission of articulate speech, an assistant going into the adjoining building where one of the telephones was placed. Several familiar questions were, it is said, understood after a few repetitions. The vowel sounds alone are those faithfully reproduced; dipthongal sounds and rotund vowels are readily distinguished, but consonants are generally unrecognizable. Now and then, however, a sentence comes out with almost startling distinctness, the consonants as well as the vowels being clearly audible. Professor Bell stated that telephonic effects can be produced with three varieties of currents—the intermittent, the pulsatory, and the undulatory. The first are characterized by the alternate presence and absence of electricity in the circuit; the pulsatory current by sudden changes in intensity, while undulatory currents are obtained by gradual changes analogous to the changes of density of air produced by vibrations of a pendulum.

The most recent trial of Professor Bell's instrument was at his residence, Brantford, Canada, August 11. The Toronto *Globe* states that instruments were placed, one in the porch of the residence and the other in an outhouse on the grounds, and communication between these made by ten miles of wire. Musical notes, the human voice, and songs spoken and sung before one instrument were plainly audible by placing the instrument to the ear at the other. By this invention, too, any number of messages can be conveyed over one wire in either direction, provided they have a different pitch; the tones of the voice can pass over the electric wire, enabling the hearer at any distance to hear distinctly what is said, and to distinguish the voice of the speaker. On August 10 the professor had communication made with his instrument on the common telegraph wire between Brantford and Mount Pleasant (five miles), and was spoken with, while in Mount Pleasant, by Professor D. C. Bell and Mr. Griffin from the *Dominion* office in Brantford. On the evening of August 12, the professor tried a new experiment, having had an instrument made so that three persons could sing different tunes or different parts of the same tune into the instrument at the same time. The trial was perfectly successful, the different voices coming