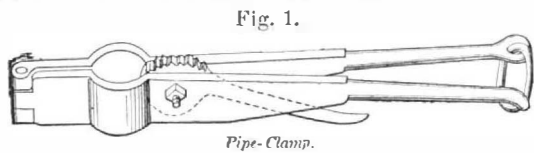


PIPE TOOLS.

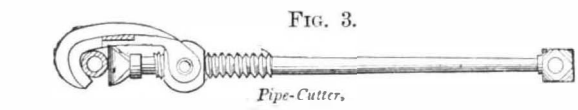
The implements represented in the annexed engravings (from Knight's "Mechanical Dictionary,") all relate to the manipulation of pipe. Fig. 1 is a pipe holder having a simple



corrugated cam clamp, whereby the work is tightly held. Fig. 2 is an implement for pushing obstructions out of bends

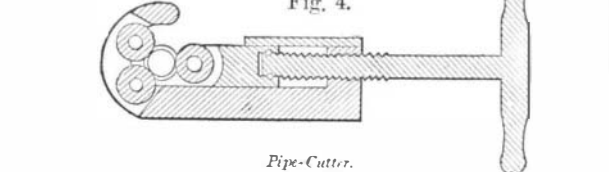
in pipe. A force pump is usually employed for this purpose; but, in some cases, a jointed thrusting implement, such as that illustrated, becomes necessary. Fig. 3 represents a pipe cutter in which a movable jaw is hinged to a nut which traverses the threaded shank, and operates in opposition, either to the socket end of the shank or to a cutter inserted therein. Figs. 4, 5, and 6 illustrate three other forms of this implement. Fig. 4 is a tool with three revolving cutters, so set that two cutters are in the body of the tool, and one adjustable cutter is held by a movable wrought iron

stock. Fig. 5 represents a tool in which a sharpened disk within a block is fastened to the end of the screw rod; and



the pipe, being clamped between the disk and the hook, is cut by turning the instrument around the pipe. In

Fig. 3 the tube and its bushing are made to encircle the pipe; and the cutter is forced into the side of the pipe by



turning the screw. The pipe is then severed by turning the instrument around upon it.

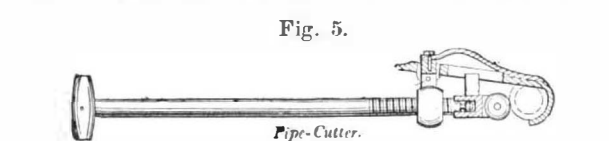
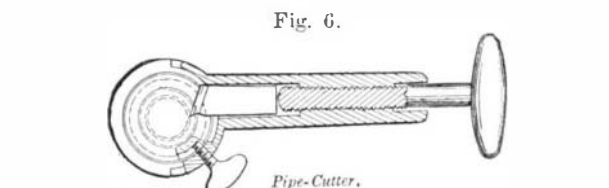
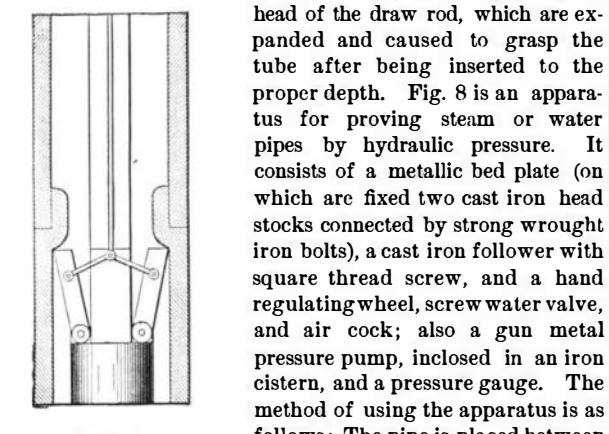


Fig. 5 the tube and its bushing are made to encircle the pipe; and the cutter is forced into the side of the pipe by

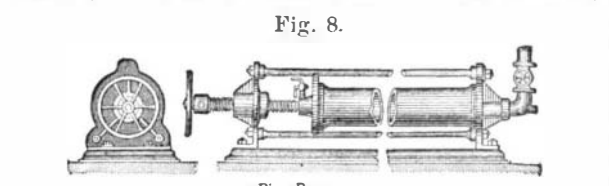


turning the screw. The pipe is then severed by turning the instrument around upon it.

Fig. 7 is a tool which is let down into a well pipe in order to hoist the latter to the surface. It consists simply of wedges on the head of the draw rod, which are expanded and caused to grasp the tube after being inserted to the proper depth. Fig. 8 is an apparatus for proving steam or water pipes by hydraulic pressure. It consists of a metallic bed plate (on which are fixed two cast iron head stocks connected by strong wrought iron bolts), a cast iron follower with square thread screw, and a hand regulating wheel, screw water valve, and air cock; also a gun metal pressure pump, inclosed in an iron cistern, and a pressure gauge. The method of using the apparatus is as follows: The pipe is placed between the head stocks in contact with rubber rings, and the joints are made by screwing up the follower by means of the hand wheel. The pipe is rapidly

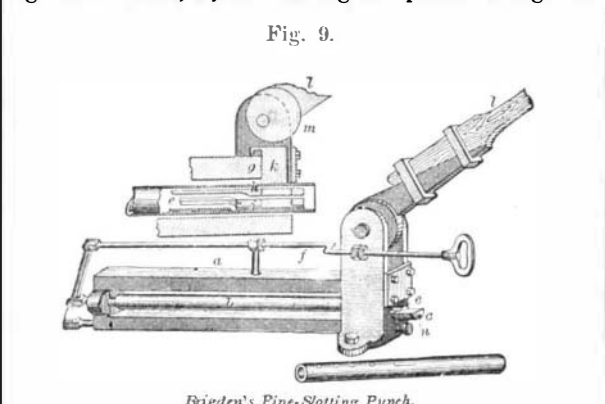


filled with water from any convenient source above the machine by opening the water valve, when the proof pressure may be applied by the pump.



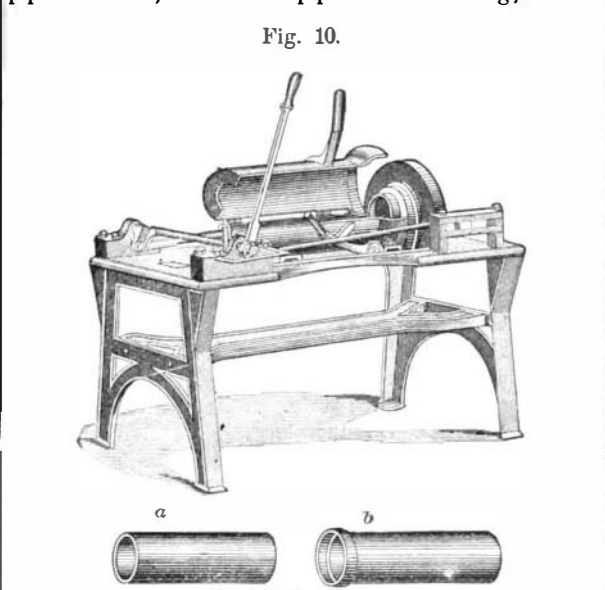
filled with water from any convenient source above the machine by opening the water valve, when the proof pressure may be applied by the pump.

Fig. 9 is a machine for punching holes or slots in metallic tubes, consisting of a frame, *a*, in which is fixed a strong hollow mandrel, *b*. A semicircular wedge, *c*, is fitted into the mandrel and connected by a rod, *e*, to a lever at the other end of the machine operated by the rod, *f*. The frame, mandrel, and wedge are slotted at *g h i*, forming a series of openings through which the punch, *k*, may work. In using the apparatus, the pipe is slipped over the mandrel, and by forcing the rod, *f*, inward, the wedge, *c*, is caused to enter the pipe and resist its tendency to be bulged inwardly under the action of the punch. The lever, *l*, is depressed, operating the eccentric, *m*, and forcing the punch through the



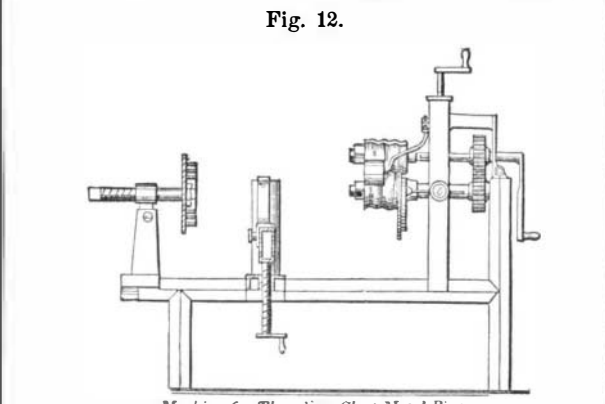
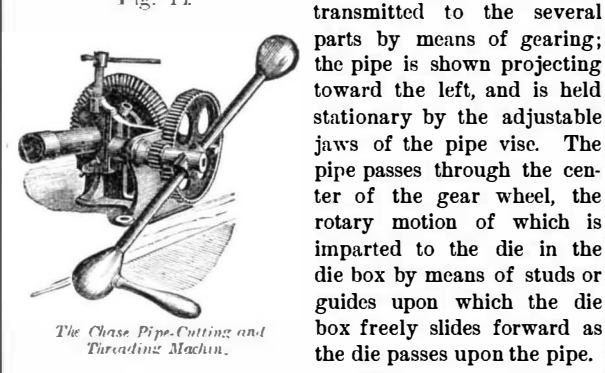
upper side of the pipe: the piece of metal cut out is driven through the aperture, *h*, in *i*. An upward movement of the lever, *l*, permits a spring to lift the punch, and the rod, *f*, is pushed inward to withdraw the wedge, after which the pipe may be removed. By a reverse movement of the rod, a small projecting pin on the frame, *a*, is caused to push the chip cut from the pipe out through the longitudinal slot, *n*, in the wedge.

In Fig. 10 is represented a machine for finishing the moulding process of clay or concrete pipes by making a socket on one end to receive the smaller end of an adjacent pipe when laid; *a* shows the pipe before socketing; *b* after-



wards. The pipe, *a*, is placed in the bed of the machine, and the upper clamp brought down and locked. The head-piece, which has the counterpart form of the socket, is then brought forward by the lever, expanding the clay into the shape of the former.

Fig. 11 is a machine of the nature of a screw stock to cut a thread on the end of a wrought iron pipe. It is fitted for hand power, motion being transmitted to the several parts by means of gearing; the pipe is shown projecting toward the left, and is held stationary by the adjustable jaws of the pipe vise. The pipe passes through the center of the gear wheel, the rotary motion of which is imparted to the die in the die box by means of studs or guides upon which the die box freely slides forward as the die passes upon the pipe.

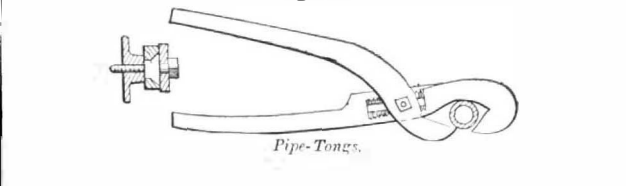


When cutting pipe, the tool post with the cutter has auto-

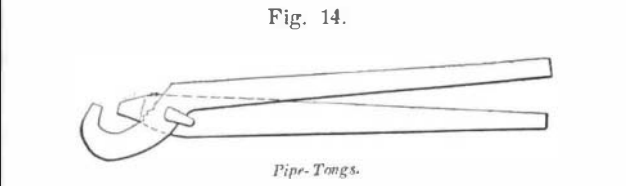
matic feed, cutting the ends of the pipe squarely and smoothly.

Fig. 12 is a machine in which sheet metal pipe is passed between the two rotating circumferentially ribbed cylinders, the ribs of the cylinders meshing together. As the cylinders rotate they impress the thread upon the pipe.

Fig. 13 represents a pair of tongs with one short jaw



adapted to grasp a pipe or rod. Their range of grasp is but limited, and a number are provided for varying sizes of pipes.



Their grasp is more tenacious than that of a monkey wrench. Varieties of the implement are illustrated in Figs. 14 and 15.

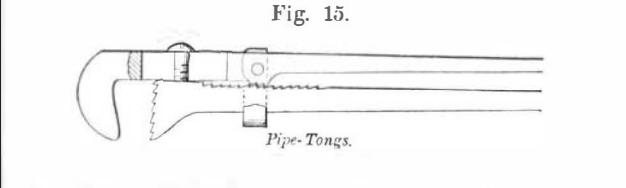
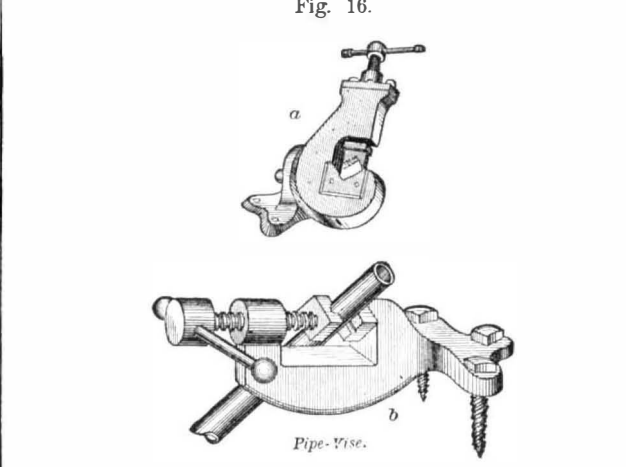
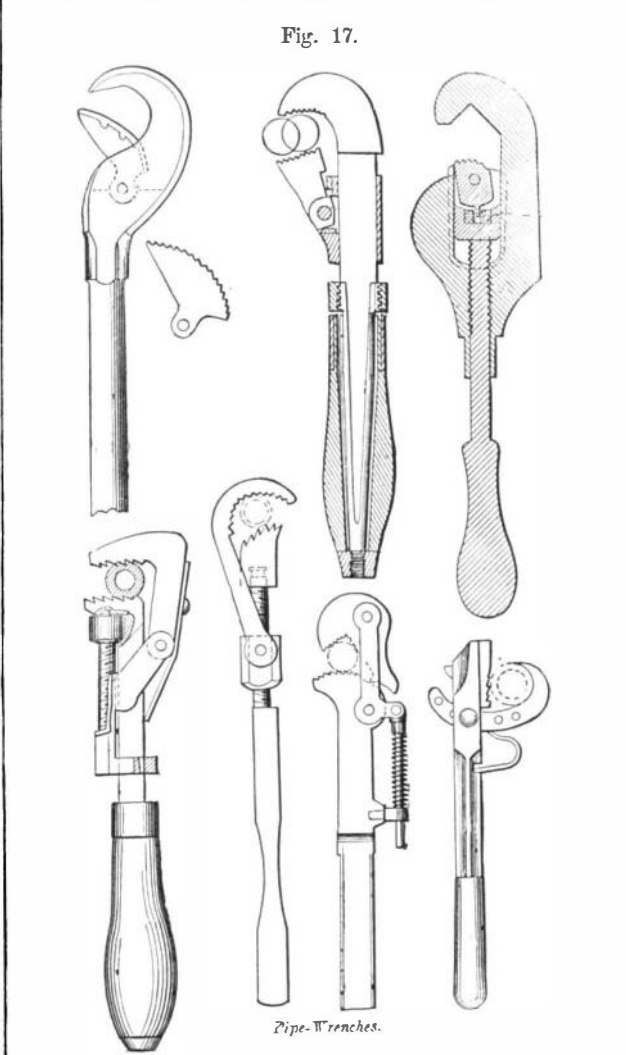


Fig. 16 is a pipe vise or implement for holding a pipe while being threaded or otherwise fitted; *a* and *b* are different patterns, both for bench use.



Various forms of pipe wrenches are illustrated in Fig. 17. The instrument is usually made with a movable and a relatively fixed jaw, so arranged as to bite together when



they are made to grip the pipe, and are revolved in a certain direction around it. The figure shows several kinds, which will be understood without specific description.

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