No. 855,907. PATENTED JUNE 4, 1907.

I. C. SHAW.

TAPPING MACHINE.

APPLICATION FILED JUNE 30, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

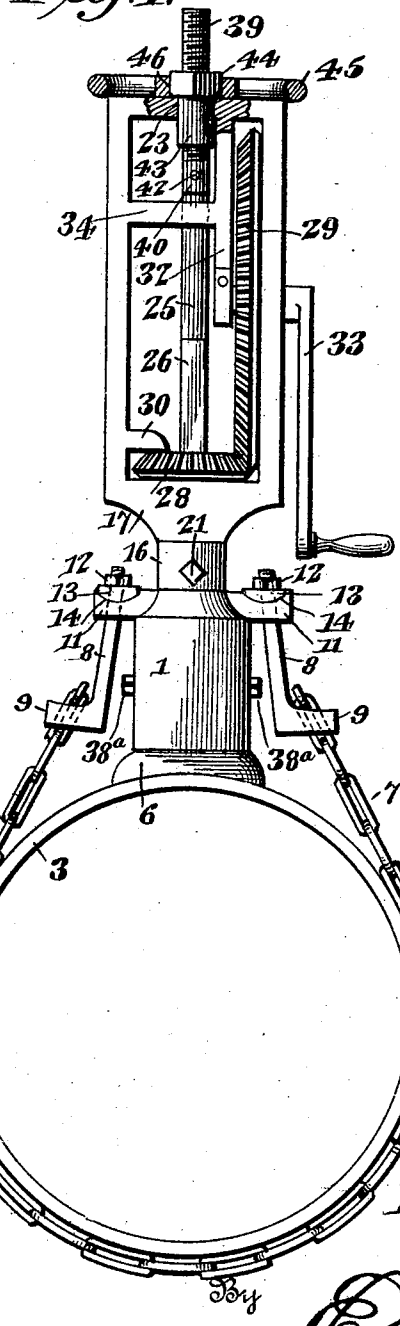


Fig. 4.

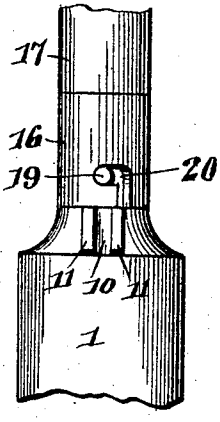
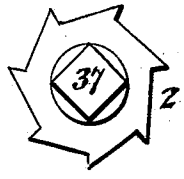


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 2.

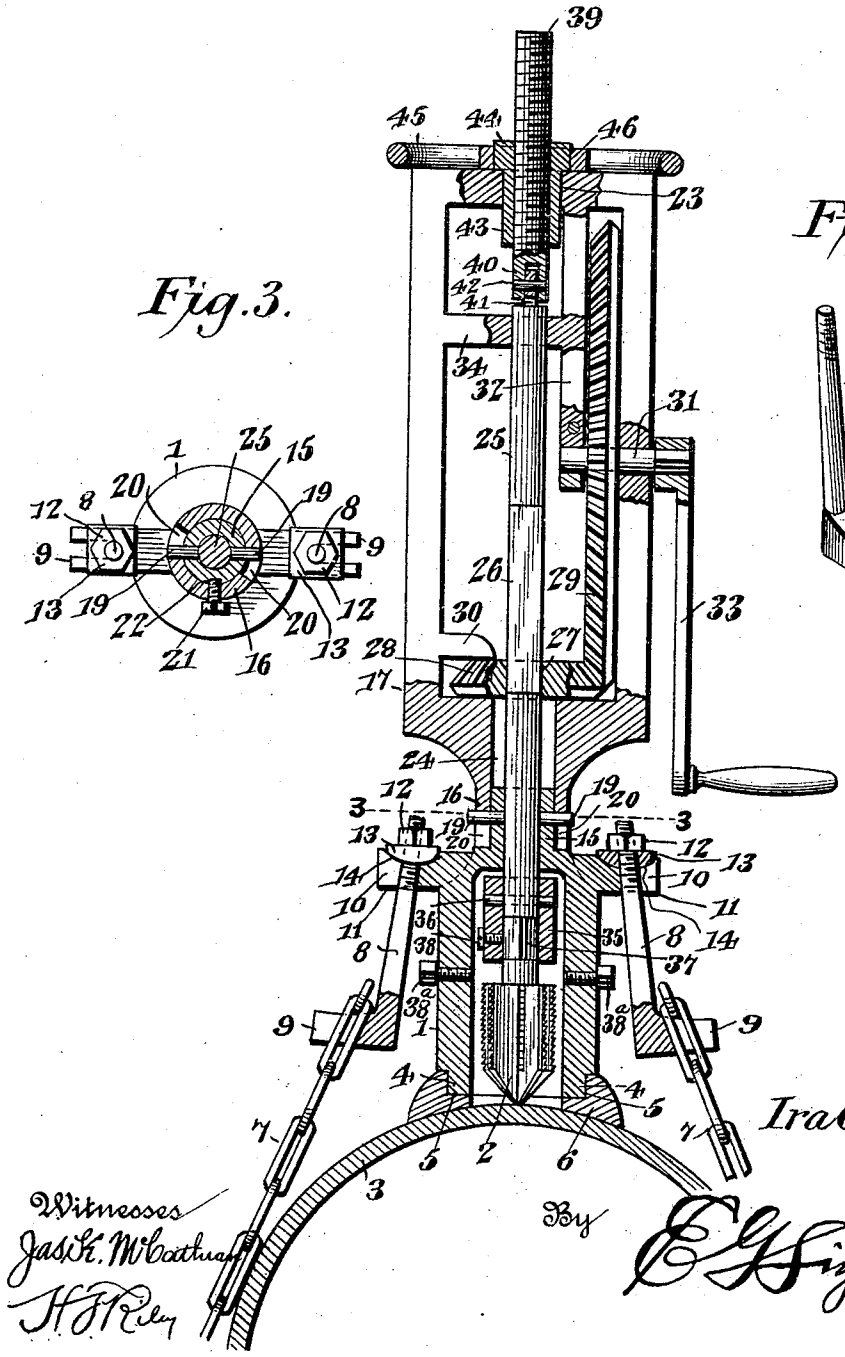
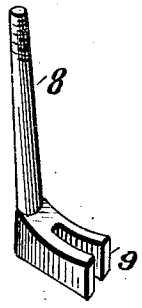


Fig. 3.

Fig. 6.



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UNITED STATES PATENT OFFICE.

IRA CLAYTON SHAW, OF MOUNT PLEASANT, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO CHARLES SANDUSKY AND ONE-THIRD TO WILLIAM PRICE, OF MOUNT PLEASANT, PENNSYLVANIA.

TAPPING-MACHINE.

No. 855,907. Specification of Letters Patent. Patented June 4, 1907.

Application filed June 30, 1906. Serial No. 324,237.

To all whom it may concern:

Be it known that I, IRA CLAYTON SHAW, a citizen of the United States, residing at Mount Pleasant, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Tapping-Machine, of which the following is a specification.

The invention relates to improvements in pipe tapping machines.

The object of the present invention is to improve the construction of pipe tapping machines, and to provide a simple, inexpensive and efficient one designed for tapping pipes and mains, and adapted to enable a pipe or main to be tapped with greater rapidity and ease than heretofore.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is an elevation of a tapping machine, constructed in accordance with this invention and shown applied to a main for tapping the same. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a horizontal sectional view taken substantially on the line 3—3 of Fig. 2. Fig. 4 is a detail view of the neck of the frame and a portion of the cylindrical casing, illustrating the construction for detachably connecting the same. Fig. 5 is a plan view of the combined tap and drill. Fig. 6 is a detail view of one of the adjusting screws.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a hollow cylindrical casing, which is adapted to receive a combined tap and drill 2 to render dry the operation of drilling and tapping a pipe or main 3. The lower end 4 of the cylindrical casing is exteriorly reduced to fit a seat 5 of an adjustable pipe saddle 6, which is adapted to fit upon the main 3 or other pipe, as clearly illustrated in Figs. 1 and 2 of the drawings. The saddle and the lower end of the cylindrical casing form tight joints or connections with each other, and with the pipe or main to prevent the escape of gas or water, when a gas or water main is tapped, and suitable gaskets may be employed if desired to provide an absolutely air tight or water tight joint or connection.

The cylindrical casing is detachably secured to the pipe or main 3 by means of a chain 7, and adjusting screws 8. The chain passes around the pipe or main 3, and its terminals are connected with the screws 8, which are provided with bifurcated heads or bills 9 to receive the ends of the chain and engage the links thereof. One link is arranged edgewise in the slot or bifurcation of the heads or bills of the screws, and the links above those in the slots or bifurcations are arranged transversely of the same to form stops. The bifurcated heads of the screws are adapted to engage the chain at any point. The adjusting screws are arranged in slots 10 of lugs 11, which project from opposite sides of the upper portion of the cylindrical casing. The upper portions of the screws are threaded to receive nuts 12, and washers 13 are interposed between the nuts and the lugs. The upper faces of the lugs are provided with concave recesses 14, and the lower faces of the washers are rounded to fit the recesses, whereby the bolts are adapted to swing inwardly and outwardly to suit the diameter of the pipe or main to be tapped. The hook-shaped bolts or adjusting screws 8, which are detachably mounted on the cylindrical casing, are adapted to engage the chain at any intermediate link thereof, and after the machine is applied to a pipe or main, the nuts of the adjusting screws are tightened by a suitable wrench to take up any slack in the chain and to make the machine as tight as desired.

The cylindrical casing is provided at its upper end with a reduced portion or extension 15, which fits within a cylindrical neck 16 of a substantially oblong frame 17. The extension 15 is provided at diametrically opposite points with projecting studs or pins 19, which detachably engage inverted L-shaped slots 20 of the neck 16 of the frame 17, whereby the cylindrical casing and the frame are detachably interlocked, and are adapted to be separated or disconnected

when desired. These slots have longitudinal and transverse branches, the latter being arranged at the upper ends of the longitudinal branches and receiving the studs or pins, when the frame and casing are interlocked. The frame and the cylindrical casing are locked against accidental uncoupling by means of screws 21, or other suitable fastening devices, which pierce the neck 16 and engages a depression 22 of the reduced extension of the casing. The frame 17 is composed of parallel sides, a connecting top portion and a base. The frame is provided with a top and bottom opening 23 and 24, through which passes a longitudinal shaft or stem 25. The opening 24 forms a continuation of the opening of the neck, and the opening of the reduced cylindrical extension 15 forms the bearing for the lower portion of the shaft or stem 25.

The shaft or stem is provided with an intermediate squared or polygonal portion 26, which is slidable through a squared or polygonal opening 27 of a horizontal pinion 28 and into the bottom opening 24 of the frame, and the said pinion meshes with a vertical gear 29, whereby the stem or shaft may be rapidly and continuously rotated. The cylindrical extension terminates short of the upper face of the bottom or base of the frame to provide an open space to receive the polygonal portion 29 of the shaft, when the latter moves downward through the horizontal pinion 28. The gears may be varied in diameter to secure the desired speed and to adapt the tapping machine to the character of work to be performed. The lower horizontal gear is arranged upon the bottom or base of the frame, being interposed between the same and a short horizontal arm 30, which extends from one side of the frame and which is arranged in spaced relation with the base of the same. The vertical gear 29 is located at opposite sides of the frame, and is mounted on a short transverse shaft 31, journaled in suitable bearings of the contiguous side of the frame and in a suitable bearing of a depending vertical arm 32. The outer end of the shaft is square to receive a crank handle 33 for operating the machine.

The arm 32 depends from the top of the frame and is arranged in spaced relation with the side of the frame to provide a narrow space for the vertical gear, and it is connected with the opposite side of the frame by a cross piece 34, which is provided with a bearing opening for the shaft or stem. The lower end of the shaft or stem is provided with a socket or chuck head 35, detachably secured to the said shaft or stem by a transverse pin 36 and provided with a polygonal opening, which receives a shank 37 of the combined tap and drill 2. The casing is provided at opposite sides with alined apertures, which receive threaded studs or screws 38^a, having polygonal heads and adapted to be engaged by a wrench or other tool for removing the studs or screws 38^a. When the studs or screws 38^a are detached, the pin 36 may be brought opposite the alined apertures of the casing, and driven out through one of the same by a punch or other tool, when it is desired to remove the chuck head or socket from the lower end of the shaft or stem. The combined tap and drill 2, which is designed to be constructed of various sizes, is secured in the opening of the socket or head 35 by a clamping screw 38, mounted in a threaded perforation of the socket or head and engaging the shank 37 at one of the side faces thereof.

The shaft or stem 25 is provided with an upper threaded section 39, which has its lower end 40 bifurcated to receive a reduced portion 41 of the body of the shaft or stem, and the reduced portion is secured in the slot or bifurcation of the section 39 by a transverse pin 42.

The threaded section 39 of the shaft fits within an interiorly threaded feeding sleeve 43, which is loosely arranged within the top opening 23 of the frame, and which is provided at its upper end with an exterior shoulder 44, adapted to rest upon the top of the frame for supporting the longitudinal shaft or stem. The upper end of the sleeve projects beyond the top of the frame, and is squared to receive a feeding wheel 45, which has a polygonal opening 46 to fit the upper end of the sleeve. The sleeve is adapted to be rotated by the feeding wheel to raise the stem or shaft, or to lower the same, and permit the combined tap and drill to feed its way into a pipe or main. Any suitable means may be employed for retaining the sleeve in the opening of the top of the frame.

It will be seen that the tapping machine is exceedingly simple and inexpensive in construction, that it is adapted to be readily applied in any position to a pipe or main for tapping the same to enable a smaller pipe to be connected therewith, and that the tapping drill may be rapidly rotated to drill a hole and thread the same. Also it will be clear that the combined drill and tap may be of any desired size, and that the machine may beemployed for general tapping and drilling purposes.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

A machine of the class described comprising a casing provided at the top with a vertical tubular extension having projecting studs, a vertical frame provided with a depending tubular neck fitted on the extension of the casing and provided with slots having longitudinal and transverse branches to receive the studs, and adjustable clamp-

ing means for locking the studs in the transverse branches of the slots, a shaft or stem slidable through the neck and the extension of the casing and provided with means for holding a tool, and means for rotating the shaft or stem.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

IRA CLAYTON SHAW.

Witnesses:
WILLIAM PRICE,
CARLS SANDUSKY.