

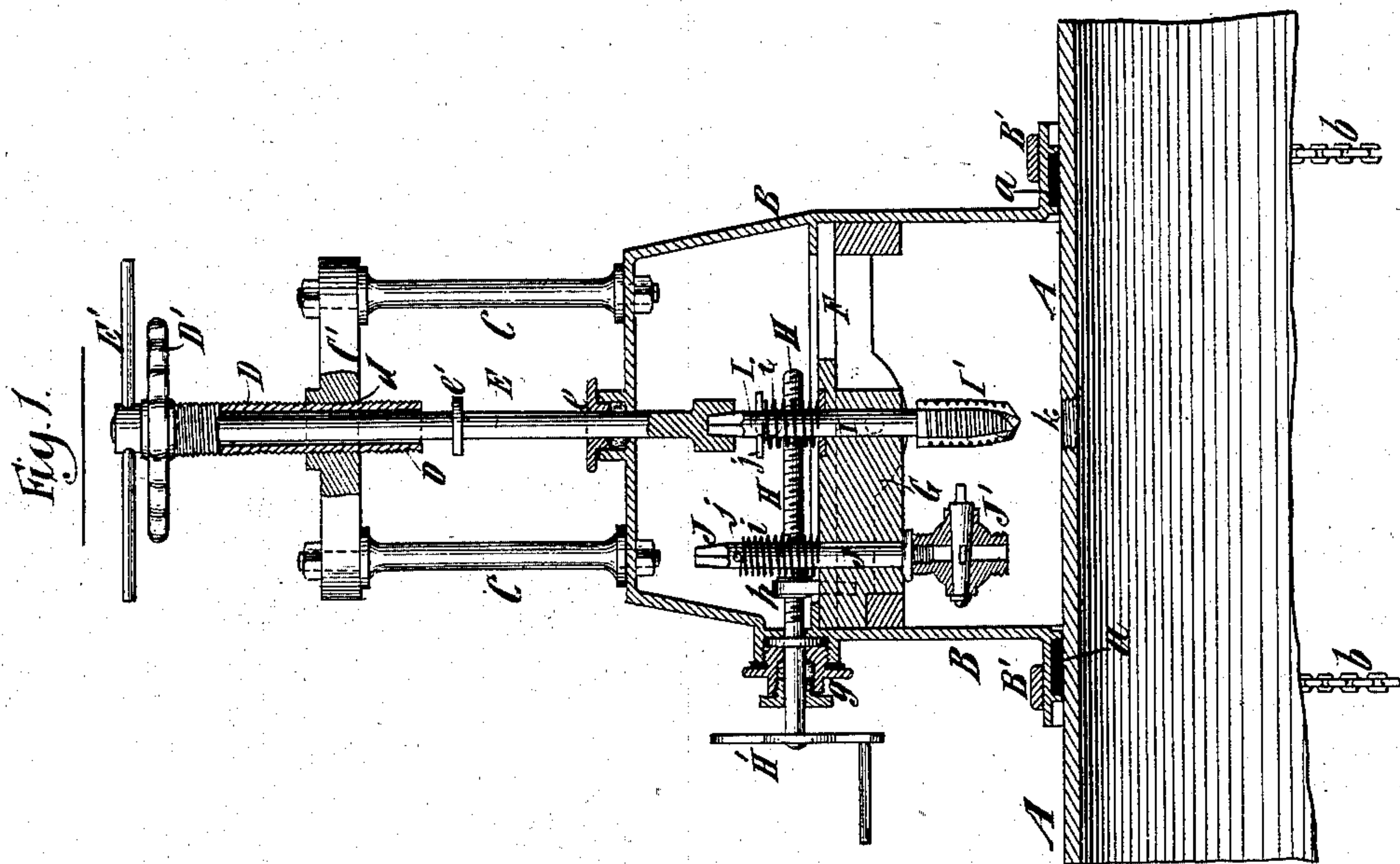
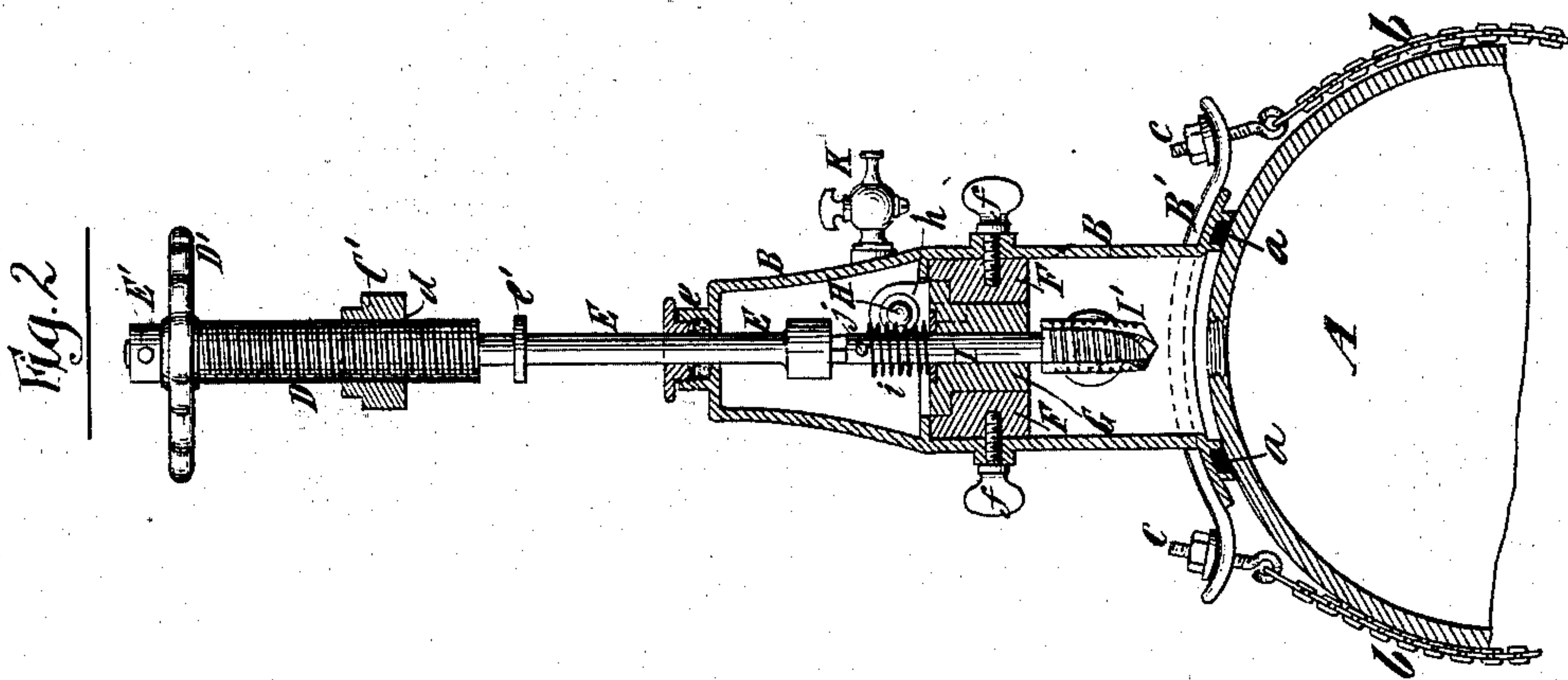
(No Model.)

D. T. HUBBELL.

MACHINE FOR TAPPING MAINS.

No. 249,526.

Patented Nov. 15, 1881.



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UNITED STATES PATENT OFFICE.

DAVID T. HUBBELL, OF BETHEL, CONNECTICUT.

MACHINE FOR TAPPING MAINS.

SPECIFICATION forming part of Letters Patent No. 249,526, dated November 15, 1881.

Application filed April 30, 1881. (No model.)

To all whom it may concern:

Be it known that I, DAVID T. HUBBELL, of Bethel, in the county of Fairfield and State of Connecticut, have invented certain new and
5 useful Improvements in Machines for Tapping Water and Gas Mains, of which the following is a specification.

My invention relates to machines which are employed for boring and tapping holes in water
10 or gas mains and inserting a stop-cock, or "corporation stop," as it is called, while the mains are filled with water or gas under pressure.

Such machines commonly comprise a box or case having an open bottom and adapted to be
15 secured upon the exterior of the main to prevent leakage, and two spindles or stems which carry, one a combined drill and tap and the other a corporation stop, and which may be shifted to bring first one and then the other under a
20 socket-wrench or spindle, whereby they may be turned.

The principal object of my invention is to enable the drill and tap and the spindle carrying the stop-cock to be readily shifted from outside
25 the case without any danger of wetting the workmen, and also to provide for readily removing the box or case and leaving the spindle carrying the stop-cock attached thereto when the plug of the stop-cock has not been previously
30 turned to close the same, or when the spindle cannot be readily unscrewed from the stop-cock without also unscrewing the stop-cock from the main.

The invention consists, essentially, in the combination, in a machine of the kind just described,
35 of a box or case adapted to be applied to a main, a socket-wrench or actuating-spindle supported in bearings outside and projecting into said box or case, a sliding carriage inclosed within
40 said box or case and arranged below the top thereof, so that pressure may act upon both its upper and undersides, and adapted to be moved from the outside thereof, and two or more tool-spindles inclosed entirely in said box or case
45 and supported in said carriage, either of which may be brought under the socket-wrench or spindle by the movement of the sliding carriage. One tool-spindle may constitute the
50 shank of a combination drill and tap, and the other may carry a corporation stop or stop-cock.

The invention also consists in the combination, with the box or case, the wrench, the movable carriage, and the tool-spindles supported therein, of guides for said carriage within said
55 box or case, which are detachably secured thereto, so that whenever desired the guides may be detached or disconnected from the box or case and the latter removed, leaving the carriage with one tool-spindle screwed into the
60 stop-cock and the latter screwed into the main.

The invention also consists in a novel manner of connecting the sliding carriage with a rod or screw, by which it is operated from the exterior of the case, and in details of construction to be hereinafter explained.

In the accompanying drawings, Figure 1 represents a longitudinal section of a portion of a main and a machine embodying my invention applied thereto, and Fig. 2 represents a transverse vertical section thereof.

Similar letters of reference designate corresponding parts in both figures.

A designates the main, and B designates the box or case of my machine, which is open at the bottom and curved to fit the exterior of the
75 main. Around the bottom of said box or case is a projecting flange, in which is a groove for the reception of a rubber or other packing, *a*, to make a water-tight joint between the box or case and the main. The box or case may be
80 secured to the main by chains *b*, passed around the main, and connected by bolts *c* with cross-bars *B'* upon the flange of the box or case.

Projecting upward above the box or case B are posts or uprights C, supporting a cross-
85 bar, C', which has a screw-threaded hole, *d*, in which is fitted an upright tube or sleeve, D, which is externally screw-threaded, and is provided with a hand-wheel or handle, D', whereby it may be turned. Within the tube or sleeve
90 D is an actuating-spindle, E, provided at the top with a handle, E', and having a recess at its lower end, the whole constituting a socket-wrench. The spindle E passes through a stuffing-box, *e*, in the box or case, and is provided
95 with a collar, *e'*, upon which the screw-threaded sleeve or tube D may bear when desired to advance the spindle and wrench E downward.

F designates guides or ways which extend horizontally upon opposite sides of the interior
100

of the box or case B, and are here connected at their ends, so that they form a rectangular frame of a size to fit snugly within said box or case. As here represented, the guides or ways 5 F are secured in place by the thumb-screws *f*, inserted from the outside of the box or case, as seen in Fig. 2, and by unscrewing said screws the guides or ways would be easily detached from the box or case. Said guides or ways 10 might, however, be otherwise detachably secured in place within the box or case.

G designates a carriage arranged below the top of the box or case B, and adapted to be moved along the guides or ways F, and it will 15 be observed that water-pressure within the box or case will act equally upon the upper and lower sides of said carriage, and hence but little frictional resistance is offered to the movement of the carriage.

In this example of my invention the carriage G is moved by a screw, H, which passes through a stuffing-box, *g*, in the box or case and engages with a nut, *h*, in the carriage. Outside the box or case B the screw H is provided with a handle, H', and thus it will be 25 seen that by turning said screw the carriage may be moved back and forth. The nut *h* engages with the carriage G by fitting in a recess in its upper surface, and when the carriage and its guides are moved downward or 30 are lowered in the box or case the nut *h* will be retained upon the screw and thus disconnected from the carriage.

Fitting loosely in bearings in the carriage 35 G are two upright tool-spindles, I and J, which are both held in an elevated position when not in use by springs *i*, surrounding them between the top of the carriage, and pins *j*, inserted through said spindles. The spindles I and J are both arranged entirely within the 40 box or case, and hence the only stuffing-boxes necessary are two—one for the feed or actuating spindle E and the other for the screw H. Both the spindles I J are squared or otherwise formed at the top to fit the wrench E, and 45 the spindle I constitutes the shank of a combined drill and tap, I', while the lower end of the spindle J is screwed into a stop-cock, J', which is commonly known as a "corporation stop." In the operation of my machine, after 50 the box or case has been secured upon the main, the spindle I is brought under and engaged with the wrench E, and by the screw-threaded sleeve or tube D acting on the collar *e'* the spindle I and its drill and tap I' are pressed down and then turned to drill and tap a hole, 55 *k*, in the main, and said tap is then turned backward out of the hole, thus allowing the box or case B to fill with water or gas under pressure. The sliding carriage G is then moved 60 along to bring the spindle J under the wrench E, which is turned down, as before, and thus screws the stop-cock J' into the hole *k*, after which the spindle is turned back to unscrew it from the upper end of the stop-cock. The 65 spindles I and J are, properly speaking, tool-

spindles, and more than two might be arranged in the carriage, if desired. If the try-cock K in the box or case be now opened, and water 70 or gas only escapes for a moment, or until the water is drained to the level of the try-cock, or the gas within the box or case is exhausted, the workman may be sure that the stop-cock J' is properly in place and the machine may 75 be disconnected from the main and removed. If, on the contrary, water or gas is ejected forcibly from the try-cock K, either the workman has neglected to close the plug in the stop-cock J', or the spindle J is so firmly fixed 80 therein that instead of being unscrewed therefrom when the spindle J was turned back it has unscrewed the cock from the hole *k*. In either case the spindle J should be again screwed into the stop-cock J' or the stop-cock 85 into the hole, and the thumb-screws *f* loosened, thus detaching the guides F from the box or case B and permitting the box or case to be moved away from the main, leaving the carriage G and the spindles I and J, and preventing any water or gas from escaping. The 90 plug of the stop-cock may then be closed and the spindle J unscrewed therefrom, or the stop-cock may be held by a wrench or tongs while the spindle is being unscrewed, thus completing the operation without wetting the workmen or other disadvantage, even if the plug 95 of the stop-cock has not been turned to close it, or if the spindle J has become stuck in the stop-cock.

In lieu of the screw H, a plain rod might be 100 substituted, and a lever or other means outside the case employed to move the rod in or out. In such case a simple lug, or even a head on the rod engaging with a recess in the carriage, would serve as substitutes for the 105 nut *h*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for tapping water or gas mains, the combination of a box or case adapted 110 to be applied to a main, and a socket-wrench or actuating-spindle projecting into said box or case, a sliding carriage arranged within said box or case below the top thereof, so that pressure may act upon its upper as 115 well as its under side, and adapted to be moved from the outside of said box or case, and two or more tool-spindles inclosed entirely within said box or case and supported in said sliding carriage, and either of which may be brought 120 under the said socket-wrench or actuating-spindle by the movement of said carriage, substantially as specified.

2. In a machine for tapping water or gas mains, the combination, with a box or case 125 adapted to be applied to a main, a wrench or actuating-spindle, a sliding carriage inclosed within the box or case, and two or more tool-spindles in said carriage, of guides for said carriage detachably connected with said box 130 or case, substantially as specified.

3. In a machine for tapping water and gas

5 mains, the combination of the box or case, a wrench or actuating - spindle, a sliding carriage arranged within said box or case below the top thereof, so as to receive pressure upon both its under and upper sides, two or more tool-spindles inclosed entirely in said box or case and supported in said carriage, guides for said carriage detachably connected with

the box or case, a nut or lug fitting in a recess in said carriage, and a screw or rod entering the box or case and engaging with said nut or lug, substantially as specified.

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