3 Sheets--Sheet 1.

J. L. POPE.

Machines for Tapping Pipe Fittings.

No. 139,476. Patented June 3, 1873.

Fig. 1.

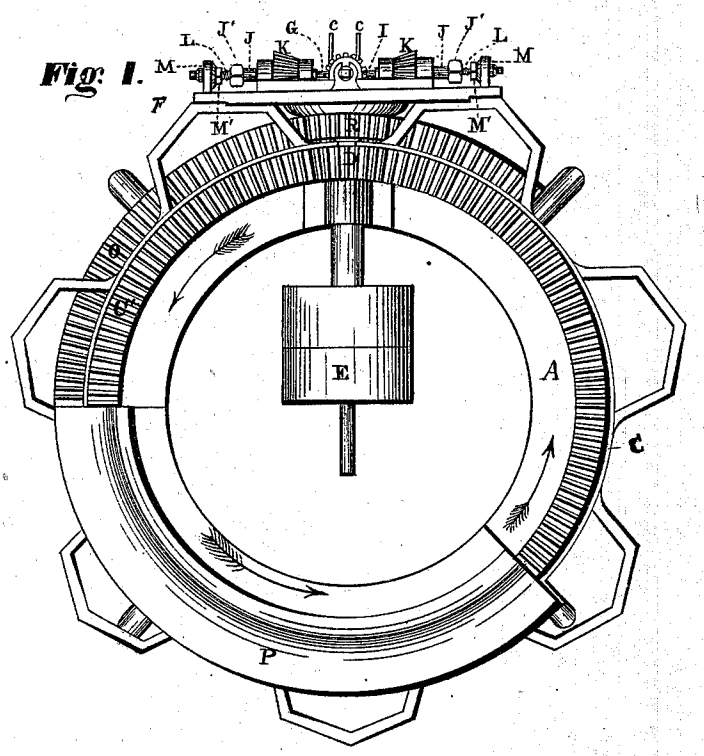
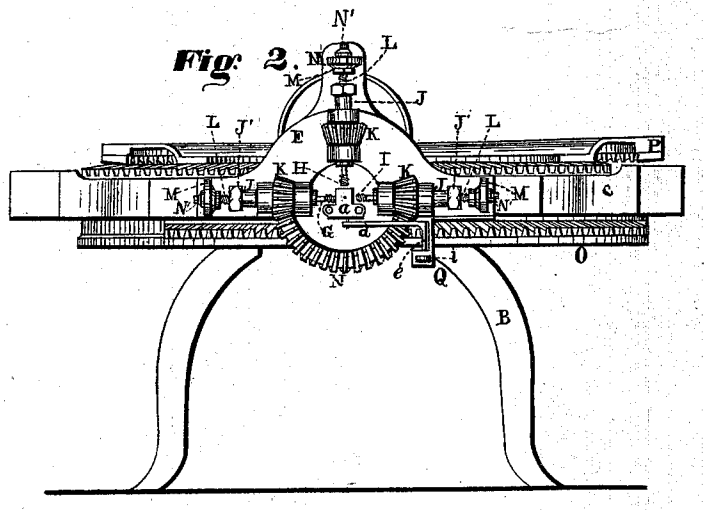


Fig. 2.



Witnesses.

A. F. Connell.

S. Bigelow

Inventor.

John L. Pope.

Per. Burridge & Co.

Attys.

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J. L. POPE.

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Fig. 3.

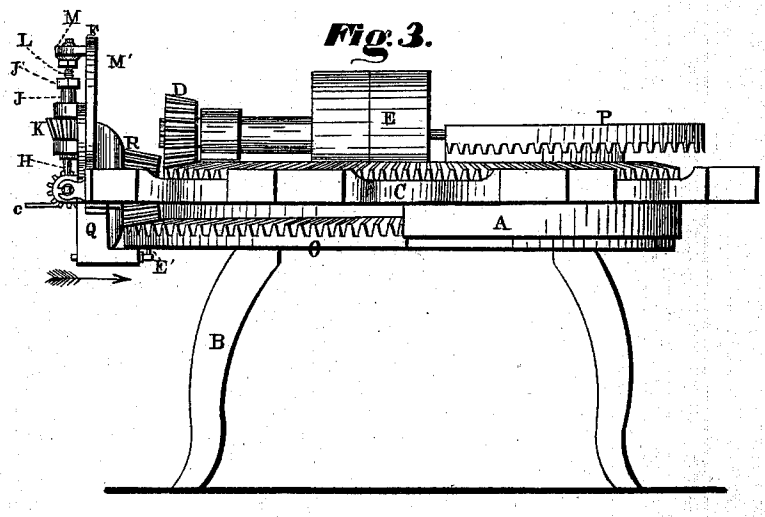


Fig. 4.

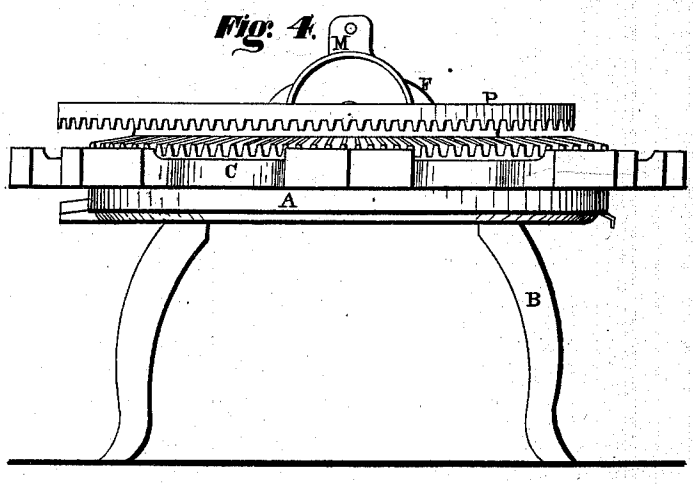
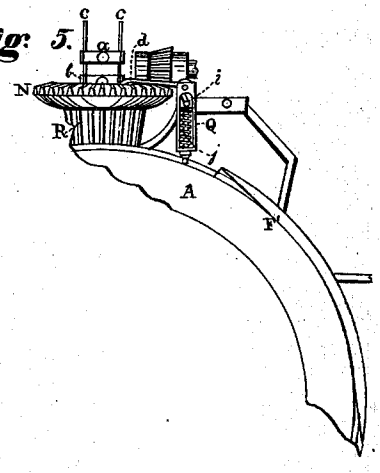


Fig. 5.



Witnesses.

S. Bigelow

A. F. Connell.

Inventor.

John L. Pope.

Per. Burridge & Co.

Attys.

3 Sheets--Sheet 3.

J. L. POPE.

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Fig. 6.

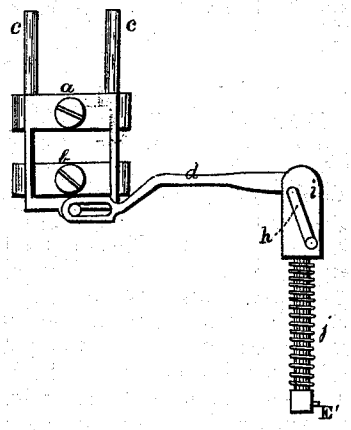


Fig. 7.

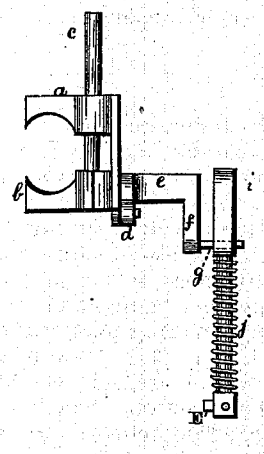


Fig. 8.

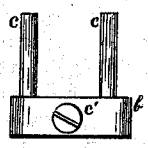


Fig. 9.

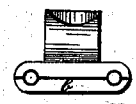


Fig. 10.

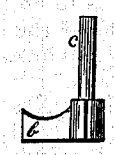
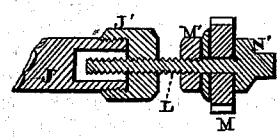


Fig. 11.



Witnesses.

A. F. Connell.
C. Bigelow

Inventor.

John L. Pope.
Per Burridge & Co.
Attys.

UNITED STATES PATENT OFFICE.

JOHN L. POPE, OF CLEVELAND, OHIO.

IMPROVEMENT IN MACHINES FOR TAPPING PIPE-FITTINGS.

Specification forming part of Letters Patent No. **139,476**, dated June 3, 1873; application filed December 12, 1872.

To all whom it may concern:

Be it known that I, JOHN L. POPE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Machine for Tapping Gas-Fittings, &c.; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings making part of the same.

Figure 1 is a plan view of the machine. Figs. 2, 3, and 4 are side elevations. Fig. 5 is a detached section. The figures on plate 3 are enlarged detached sections.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to a machine for tapping gas-fittings, &c.; and the object thereof is to facilitate the work of tapping, and to effect the same in a uniform manner. Of said machine the following is a detailed description.

In the drawings, A is a circular frame mounted upon the legs B. In the upper outer edge of said frame is closely fitted a rotating carriage, C, in the face of which is a circle of cogs or leaves, C′, whereby it is made to revolve by means of miter-wheel D, actuated by a belt and pulley, E, Figs. 1 and 3. To the periphery of said carriage, and vertical to the plane thereof is secured a stay, F, Fig. 2, in which are arranged the taps G H I. The taps G I have a horizontal relation to each other, whereas the tap H has a vertical position, and a right-angle relation, to the taps G I, as shown in said Fig. 2. Each of said taps is fitted in a mandrel or spindle, J, driven by a miter-pinion, K, secured to the mandrel by means of a groove and feather, so that the mandrel can work backward and forward in the pinion, and at the same time be rotated therewith for operating the taps. In the outer end of each mandrel is fitted a feed-screw, L. Said screws are fixed in the studs M by a nut, M′, and screw-head N′, Fig. 11, so that they cannot turn, hence the mandrels run upon the screws. Said screws work in a nut, J, Fig. 11, screwed on the end of the mandrel, as shown in said figure. The pinions K, referred to, are actuated by an engagement with the wheel N, Fig. 2, which wheel N is rotated by the miter-pinion R meshing in segment O, Fig. 1, projecting from the side of the frame A, above described. On the upper side of the frame A is secured a segment of gear, P, the teeth thereof being on the under side, as shown in Figs. 3 and 4, the purpose of which will presently be shown. The device for holding the couplings or gas-fittings while being tapped is a clamp, consisting of the jaws *a b*, Fig. 5. Said figure represents the under side of a detached section of the machine, a detached view of which is also shown in Fig. 6. The jaw *b* is rigid but adjustable, whereas the jaw *a* is movable, and held in proper relation to the rigid jaw *b* by the guide-rods *c*, Figs. 1, 5, and 6, and on which it is made to slide toward and away from the fixed jaw by an arm, *d*, Figs. 2 and 6, to which it is attached. Said arm projects from one end of a shaft, *e*, Fig. 7, having its bearings in the stay Q, Figs. 2 and 5. From the opposite end of the shaft depends a short arm, *f*, Fig. 7, which represents a detached view of the shaft and the two arms. From the short arm projects a pin, *g*, into a slot, *h*, Fig. 6, made in the end of a slide, *i*, a detached view of which is shown in Figs. 6 and 7. Around the stem of said slide is coiled a spring, *j*, the purpose of which will presently be shown.

Having described the construction and arrangement of the several parts of the machine the practical operation of the same is as follows: For illustration, a gas-fitting or coupling of a T-shape is secured in the clamp with the stem end upward. The position of the coupling when thus held in the clamp will be such as to bring the stem thereof in direct line with the vertical tap H, and the arms of the T in direct line with the two horizontal taps G I. In this relative position of the T to the taps said taps are fed into the coupling by the screws L at the same time the taps are revolved by the wheel and pinion K N, said wheel N being rotated by the pinion R in its engagement with the induction segmental gear O. The engagement of the pinion R with the segmental gear O is effected by the revolution of the carriage C by means of the pinion D and the circle of cogs or leaves C′, the revolution thereof being in the direction of the arrows, Fig. 1. By the time that the carriage has revolved the distance of the segment O, the taps

have been worked into the coupling to the depth required for the thread therein. A reverse movement is now required for the withdrawal of the taps from the coupling. This is accomplished by the eduction segmental gear P, under which the pinion R is carried by the rotary movement of the carriage. By the time that the pinion R has traversed the length of the segment P, the taps have been withdrawn from the T or coupling, which is now discharged from the clamp by the pin E′, Figs. 3, 6, and 7, being caught by, and running along the inside of, the cam F′, Fig. 5, attached to the under outside edge of the frame A, at the instant that the taps, or the pinion D operating the taps, leaves the segment P. The effect of the cam on the pin or stud is to draw inwardly the slide *i*, as indicated by the arrow in Fig. 3. This inward movement of the slide pushes back the arm *f* in consequence of its slotted connection therewith, as shown in Figs. 6 and 7. During the time that the short arm *f* moves back the arm *d* moves outward, thereby forcing back the movable jaw *a* from the fixed jaw *b*, between which the gas-fitting was held. This opening of the jaw allows the fitting or coupling to drop out, which is immediately replaced by another, during the time that the taps are passing from the eduction-segment P to the induction-segment O. By the time that the pinion R reaches the segment O, the pin or stud of the slide slips from its engagement with the cam, and spring *j* reverses the movement of the arms *f d*, thereby drawing back the jaw *a* and clamping the fitting between them for being tapped, which is immediately done by the taps operated as above described, *i. e.*, during the time that the pinion R is passing over the induction-segment O, and which are again withdrawn from the fittings by a reverse action of the taps effected by the pinion R in traversing the eduction-segment P, as above said.

In the above-described machine one system of three taps only is shown, which is thought to be sufficient for illustrating its construction and operation; whereas, in practice, seven systems of three taps each will be used, as will be evident on examination of the drawings. A greater or less number, however, can be employed, as the size of the machine may demand.

This machine represents a capacity for seven systems of working-taps of three taps each. One or more of the seven systems are at once tapping into the fittings, while the same number at the same time are being withdrawn therefrom; whereas one system is in transit from the eduction-segment P to the induction-segment O, during which time the clamp is opened, the tapped gas-fitting drops out and is replaced by another.

The fixed jaw *b* is made in two sections, as shown in Figs. 9 and 10, which sections are secured to each other, and also to the guide-rods *c*, by a screw *c′*, Fig. 8. By this means the jaw *b* can be easily adjusted in its relation to the taps for the accommodation of different couplings.

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

1. The rotating carrier C, having, or provided with, a system of teeth, C′, and pinion R, in combination with the segmental gears O and P, substantially as and for the purpose set forth.

2. The frame or bed A, constructed as described, in combination with the rotary carrier C and pinion D, as and for the purpose specified.

3. The gears N R and gears K in combination with taps G I H, as arranged, and operating in relation to, and in connection with, the rotary carrier, as and for the purpose substantially set forth.

4. The spindle or mandrel J, nut J′, in combination with the feed-screw L, pinion R, and gear N, as arranged and operating substantially as set forth.

5. The cam F′, lug E′, spring *j*, and slide *i*, in combination with the arms or levers *d f* and jaw *a*, substantially as specified, for the purpose set forth.

6. The spindles J, gears K, driving-gears N R, in combination with the rotary carrier C and segmental gears O P, all constructed and arranged to operate in the manner as and for the purpose set forth.

7. The stationary feed-screw L, in combination with jam-nut M′, spindle J, and nut J′, as and for the purpose substantially described.

JOHN L. POPE.

Witnesses:
W. H. BURRIDGE,
S. BIGELOW.