

J. DITSON.
 FLUID OPERATED VISE.
 APPLICATION FILED JULY 22, 1919.

1,349,330.

Patented Aug. 10, 1920.
 2 SHEETS—SHEET 1.

Fig. 1.

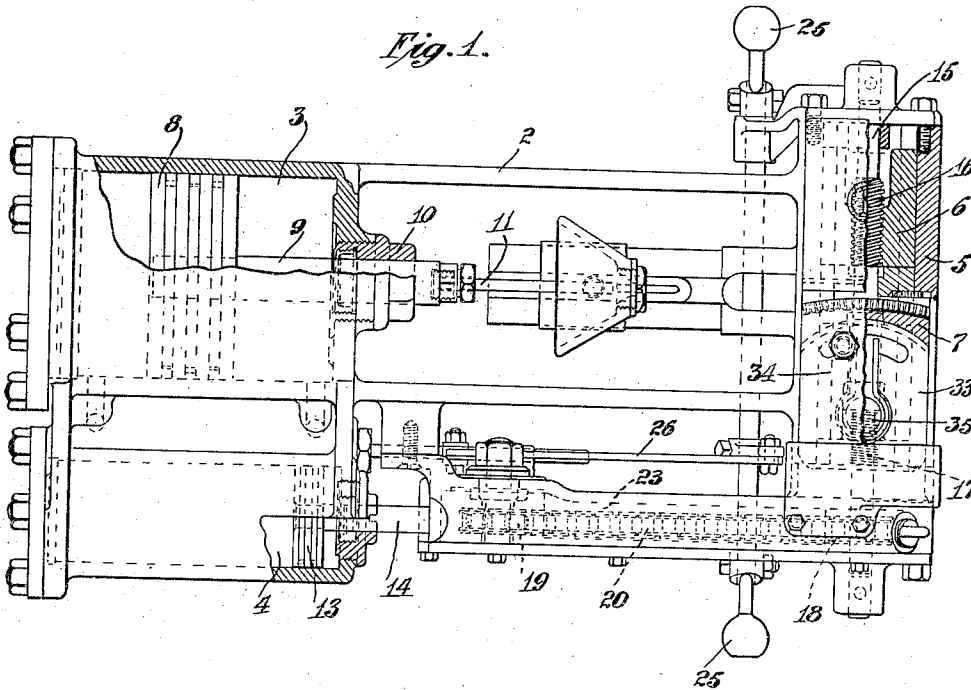
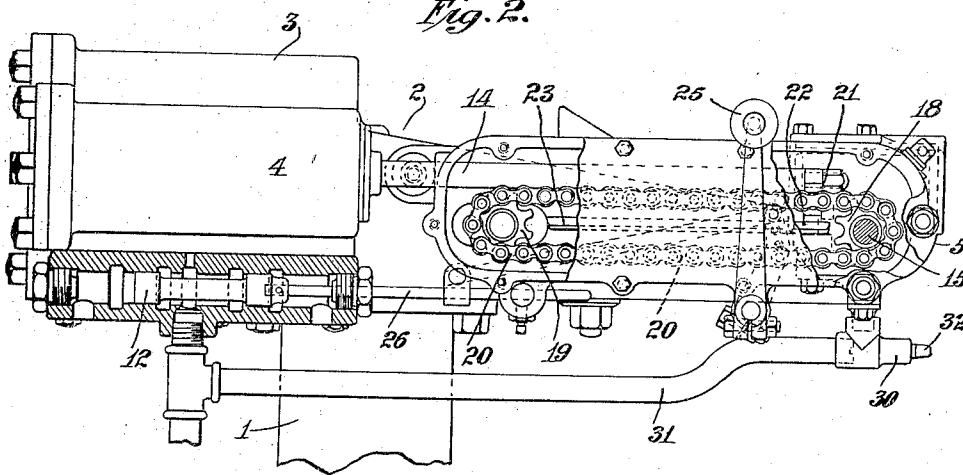


Fig. 2.



WITNESS:
S. Mitchell

INVENTOR
Jesse Ditson
 BY
Joseph H. Schfield
 ATTORNEY

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2 SHEETS—SHEET 2.

Fig. 3.

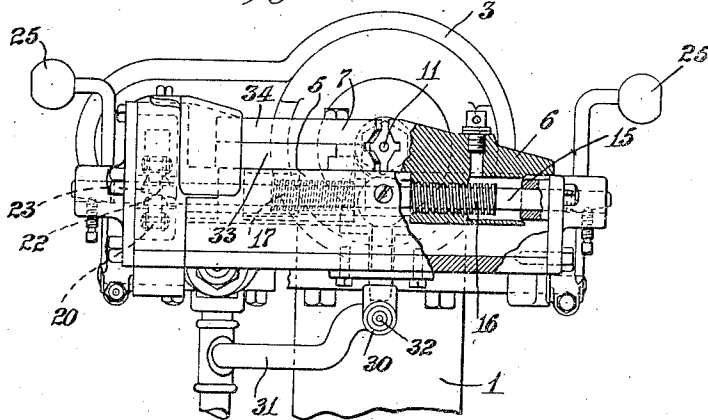


Fig. 4.

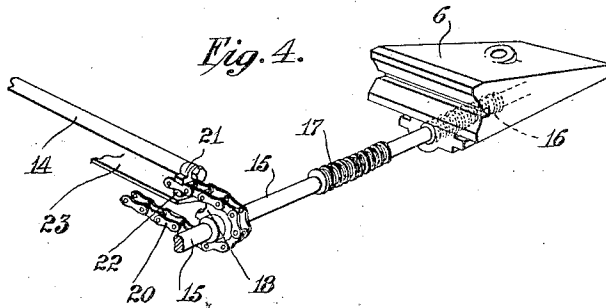


Fig. 5.

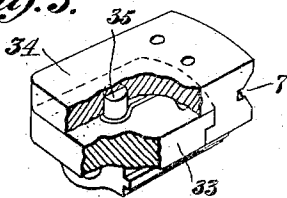
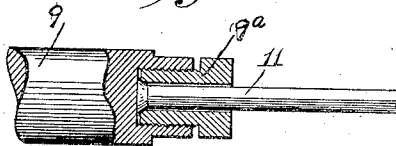


Fig. 6.



WITNESS:
E. Mitchell

INVENTOR
Josee Ditson
 BY
Joseph K. Schofield
 ATTORNEY

UNITED STATES PATENT OFFICE.

JESSE DITSON, OF LITTLETON, COLORADO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
INGERSOLL-RAND COMPANY, A CORPORATION OF NEW JERSEY.

FLUID-OPERATED VISE.

1,349,330.

Specification of Letters Patent. Patented Aug. 10, 1920.

Application filed July 22, 1919. Serial No. 312,570.

To all whom it may concern:

Be it known that I, JESSE DITSON, a citizen of the United States, residing at Littleton, in the county of Arapahoe and State of Colorado, have invented a certain new and useful Improvement in Fluid-Operated Vises, of which the following is a specification.

This invention relates to a pinning out device for drill steels and in particular to a fluid operated device for securely grasping the drill steel and holding it in alinement with a reciprocatory pin while the steel is being pinned out.

The objects of the present invention are to improve the form of pinning out machine described and claimed in my Patent No. 1,306,106 granted June 10, 1919.

A further object of the invention is to improve the device for closing and tightening the jaw members of the vise about the drill steel, furthermore to improve the method of operating the vise closing means by fluid pressure.

With these and other objects in view my invention consists in the features of construction and operation set forth in the following specification.

In the drawings annexed hereto and forming a part hereof:

Figure 1 shows a plan view of the device, parts being broken away to more clearly show the construction;

Fig. 2, the side elevation of the complete tool, the cover plate being broken away to more clearly show the operating means for closing the jaw members of the vise;

Fig. 3 is a front elevation of the complete device;

Fig. 4, a perspective view of one of the vise jaws and operating device;

Fig. 5, a view of one of the jaw members, and

Fig. 6, a view showing the pin retaining means.

Referring more particularly to the drawings, 1 refers to a suitable pedestal or support upon which the complete device may be conveniently mounted and secured by any well known means, or if desired, this mechanism may be conveniently mounted at one side of a drill sharpener. The body member of the pinning out device shown at 2 is provided with two cylinders at its rear end, one

being shown at 3, the other at 4, and at the forward end of the body member 2 is a cross member 5 in which are located the jaw members 6 and 7 of the device to be more definitely referred to, hereinafter.

Within cylinder 3 operates a piston 8 to which a piston rod 9 is attached, extending from its forward face. Piston rod 9 extends through the forward end of cylinder 3, through a suitable packing box or gland 10 and, at its forward end has attached thereto a pin 11. Pin 11 may be secured at the forward end of piston rod 9 in any suitable manner, the method shown in Fig. 6 being simple and may be readily operated to remove or replace pins as they become worn or damaged. Briefly this method of attaching comprises a clamping nut 9^a threaded into the forward end of the piston rod 9 and through which the pin 11 extends.

The piston 8 may be operated forwardly and backwardly in its cylinder 3 by any suitable valve mechanism which it is thought unnecessary to fully describe. A suitable valve for operating this piston as well as piston 13, is shown at Fig. 2 at 12 and comprises a double headed balanced valve, movement of which conveys fluid under pressure to the forward or back ends of the cylinder 3 as well as cylinder 4, and which may be readily controlled by a suitable handle 25 attached to one end of the valve stem 26.

Within cylinder 4 piston 13 operates to which is attached a piston rod 14. Preferably the lines of movement of piston rod 9 and piston rod 14 are in alinement respectively with piston 8 and piston 13. This piston 13 is moved forwardly and back as above described by the same valve 12 used to operate piston 8.

Referring now more particularly to the vise and the jaw members, the two jaw members 6 and 7 are oppositely disposed and equally distant from the axis on which the pin 11 operates and are slidably mounted within the cross member 5. A cross shaft 15 having left and right screw threaded portions 16 and 17 is threaded to jaw members 6 and 7 near the lower surface of these jaw members and thus by rotating the cross shaft 15 the vise members 6 and 7 will be brought together more closely or separated depending upon the direction of rotation of shaft 15.

Jaw member 6 comprises one rigid part slidably mounted on cross member 5 having a straight steel gripping face always parallel to the axis of the steel and pin.

- 5 Jaw member 7 is made up of two parts, 33 and 34; part 33 being slidably mounted on cross member 5, and part 34 pivotally mounted to swing on part 33 as at 35 and is provided with an arcuate steel gripping
10 face of long radius formed eccentric to the pivot 35 and thus by swinging in either direction brings the eccentric arcuate steel gripping surface of 34 closer to the oppos-
15 ing straight steel gripping surface of jaw 6 after rotation of shaft 15 has ceased and the pin 11 is being forced into or out of the drill steel.

- At one end of the shaft 15 is provided a small sprocket gear 18 made fast in any suit-
20 able way to the cross shaft 15. Another small sprocket wheel 19 is mounted rearward of and in alinement with sprocket wheel 18 at any convenient part of the body member 2 and a chain 20 is passed around
25 both sprocket wheels 18 and 19. The forward end of piston rod 14 is attached in any suitable manner to one of the links of chain 20 as shown at 21 so that movement of piston rod 14 will operate the chain 20 in either
30 direction and thus rotate the cross shaft 15. The sprocket wheels 18 and 19 are spaced sufficiently widely apart that the complete movement of piston rod 14 may take place without the linked connection 21 coming
35 in contact with either of the sprocket wheels 18 and 19.

- Preferably the connection between the chain 20 and piston rod 14 takes the form of a small cross head which has a part 22
40 sliding in or upon a suitable guide way 23 in order to keep the forward end of piston rod 14 in proper alinement.

- For convenience in blowing the scale from the hole in the drill steel a small blower is
45 mounted in the pinning out machine as shown at 30. This is in communication with the source of compressed air supply through a pipe 31. Preferably the blower is provided with an air pressed nozzle valve mem-
50 ber 32 so that a drill steel may be forced against the nozzle member 32 which serves to open the valve admitting a blast of air under pressure to thoroughly cleanse the hole in the drill steel.

- 55 From the above description of the construction of the device the operation is thought to be clear, however, a brief outline of the method of operation is given.

- A drill steel is inserted between jaw mem-
60 bers 6 and 7 and the valve 12 is operated by a suitable handle 25 to force the piston 13 and piston rod 14 forwardly thus rotating the chain 20 and sprocket wheel 18 to rotate cross shaft 15 thus closing the jaw
65 members 6 and 7 tightly about the drill

steel. A further movement of handle 25 forces piston rod 9 and the reciprocating pin 11 forwardly to enter the forward heated end of the drill steel. This movement of the pin and consequent thrust on the steel serves to swing the jaw member 7 on its pivot 35 to more securely grasp the steel. Usually one thrust forwardly of the pin is sufficient to open the central hole to the desired amount but if desired the pin 11 may be forced into the drill steel several times if found necessary.

Movement of the handle 25 in the reverse direction returns the piston 8 and pin 11 to their rearmost position thus removing the pin from the drill steel and further reverse movement of the handle 25 serves to bring the valve 12 back to its initial position which forces the piston 13 and rod 14 rearward thus opening the jaw members of the vise.

It is to be understood that the present showing and description disclose only one specific embodiment of my present invention, and that other forms and modifications are included within the spirit and scope thereof, as expressed in the appended claims.

What I claim is:

1. In a pinning out machine for drill steels, a pair of movable vise jaw members, a left and right screw threaded member for moving said jaw members, a gear on the end of said threaded member and piston and chain mechanism for rotating said threaded member.

2. In a pinning out machine for drill steels, a pair of vise jaw members, a screw threaded member for moving said jaw members toward and away from each other, a piston, a piston rod, a gear mounted on said threaded member and operatively connected with said piston rod whereby movement of said piston will rotate said threaded member and force the jaw members toward or away from each other.

3. In a pinning out machine for drill steels, a pair of vise jaw members adapted to grip a drill steel, a threaded member rotation of which is adapted to move said jaw members toward or away from each other, means for rotating said threaded member comprising a fluid operated piston, a piston rod, a chain attached to said piston rod and moved by said piston and a gear mounted on said threaded member and engaged by said chain.

4. In a vise construction, a pair of oppositely disposed relatively movable vise jaw members, a shaft having threaded portions engaging said jaw members, a gear on said shaft, a chain engaging said gear and fluid operated means for operating said gear and chain to move the jaw members toward and away from each other.

5. In a vise construction, a pair of op-

positely disposed jaw members slidably mounted and adapted to be forced toward or away from each other, one of said jaw members having a curved gripping face
5 and pivoted to swing slightly to more securely grip an article between said jaws.

6. In a vise construction, a pair of oppositely disposed jaw members slidably mounted and adapted to be forced toward or
10 away from each other, one of said jaw members having a straight gripping face, the opposite jaw member having a curved gripping face and adapted to swing about a

pivot to more firmly grip an article between said jaws.

7. In a vise construction, a pair of oppositely disposed jaw members slidably mounted and adapted to be forced toward or away from each other, one of said jaw members having a straight gripping face, 20 the opposite jaw member having an eccentrically pivoted gripping member to more firmly grip an article between said jaws.

In testimony whereof I have hereunto set my hand.

JESSE DITSON.