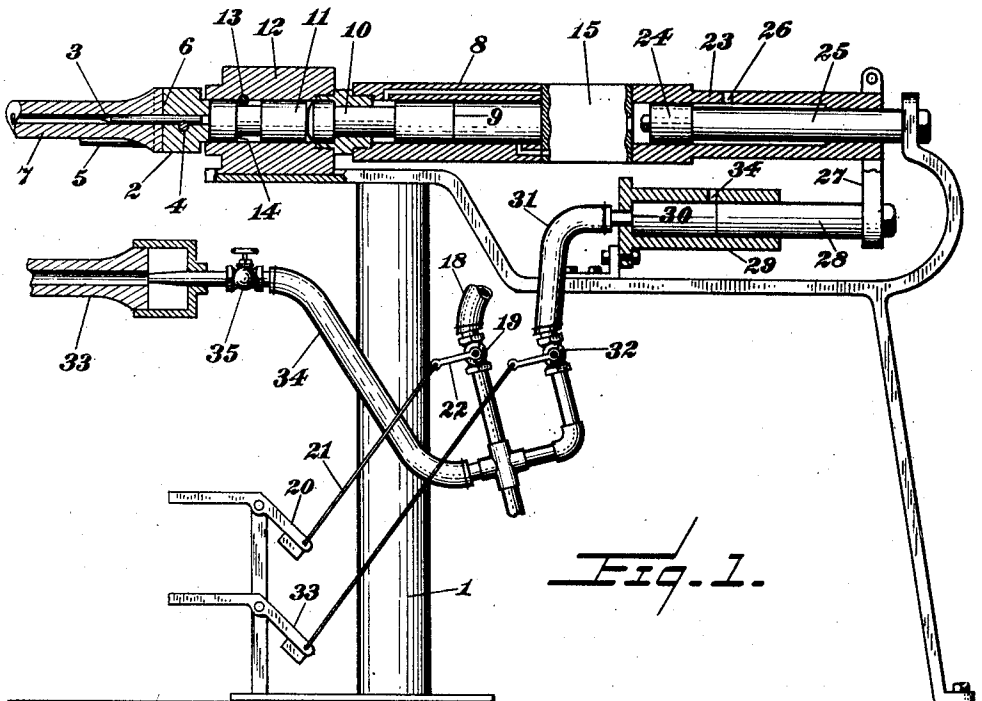
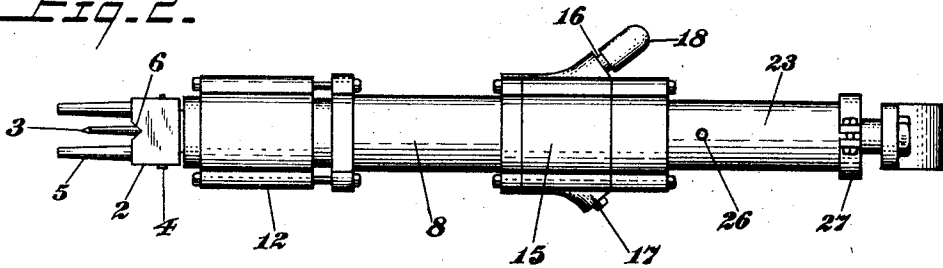


P. MASTERSON.  
PUNCHING MACHINE.  
APPLICATION FILED JULY 23, 1918.

1,327,720.

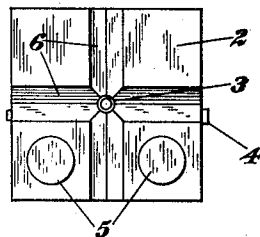
Patented Jan. 13, 1920.

*Fig. 2.*



*Fig. 1.*

*Fig. 3.*



Inventor,  
P. Masterson  
By J. Edward Maybee  
Att'y.

# UNITED STATES PATENT OFFICE.

PATRICK MASTERSON, OF SOUTH PORCUPINE, ONTARIO, CANADA.

## PUNCHING-MACHINE.

1,327,720.

Specification of Letters Patent.

Patented Jan. 13, 1920.

Application filed July 23, 1918. Serial No. 246,340.

### *To all whom it may concern:*

Be it known that I, PATRICK MASTERSON, of South Porcupine, in the District of Temiskaming, Province of Ontario, Canada, have invented certain new and useful Improvements in Punching-Machines, of which the following is a specification.

This invention relates to means for punching hollow metal bars or tubes to restore the proper tubular form after the bore has been wholly or partly closed at its end, as is frequently the case when hollow rock drills are sharpened by dies in the ordinary drill-sharpening machine, and my object is to devise a pneumatically operated punching machine which can be used in connection with any drill sharpener and which will perform the desired operation with accuracy and certainty and in a fraction of the time required for hand punching.

I attain my object by means of the constructions hereinafter more specifically described and illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of the apparatus partly in section;

Fig. 2 a plan view of the same; and

Fig. 3 a front elevation of the dolly.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 is a frame suitably shaped to support the different parts and adapted to be secured to the floor or otherwise held in proper relationship to other parts or any suitable device for holding a hollow drill or other similar piece of metal in position to be operated on.

The fundamental feature of the invention is the dolly 2, which is provided with a center punch 3 held in place by a transverse key 4 and a forked guide 5 extending from the face of the dolly substantially parallel to the punch and to one side thereof. Grooves 6 are preferably formed in the face of the dolly to receive corresponding projections on the end of a drill being punched.

The dolly shown is grooved for engagement with a drill bit with a cross shaped cutting face. In operation, the drill 7 is suitably held as hereinbefore referred to, the dolly advanced in alinement with the axis of the tool and driven forward against the drill by the action of a pneumatic hammer. For the purpose of so moving and actuating the dolly I have adapted mechanism com-

monly employed in rock drills comprising a pneumatic cylinder for pushing forward the dolly, a pneumatic cylinder for retracting the same, and a pneumatic hammer for hammering the dolly. These parts, being well known in the art, are neither illustrated nor will they be described in detail. Suffice it to say that 8 is the cylinder of a pneumatic hammer in which moves the plunger 9 adapted to strike the tup 10, which is adapted to engage the end of the shank 11 of the dolly. This shank is round so that the dolly may be rotated in the head 12 in which it has a sliding movement, and which head is secured to the end of the cylinder 8.

The shank is held in position by means of a pin 13, which is driven through the head and passes through an annular groove 14 formed in the shank, the groove being of sufficient width to permit of a limited longitudinal movement of the shank in the head. As the shank of the dolly is angularly adjustable in the head it may be set to suit the position of the drill bit in its holding means, which is more easily and accurately done than to attempt an angular adjustment of the bit.

The valve chamber 15 is provided with the intake 16 and the exhaust 17. With the intake communicates the air pipe 18 leading to a suitable source of compressed air. In this pipe is a valve 19 controllable by a pedal 20 connected by means of a connecting rod 21 with a rock arm 22 secured to the valve spindle. The pedal is weighted so that the valve is normally closed, but may be instantly opened by depressing the pedal.

The valve chamber opens into a cylinder 23 in which is fitted a piston 24 connected to a piston rod 25 secured at its end to the frame 1. An exhaust port 26 is formed in the side of the cylinder. The result of this construction is that when air is admitted to the valve chamber to operate the pneumatic hammer, air is simultaneously admitted to act against the piston 24 and thus push forward the head 12 carrying the dolly, which head is slidably supported on the frame. The exhaust port is uncovered by the piston when the dolly has been advanced to the limit, and the operation of punching the drill being then finished, the head carrying the dolly may be retracted by the means I will now describe.

A head 27 is connected with the cylinder 23 and a plunger 28 is connected thereto,

110

which fits a cylinder 29 connected to the frame 1. This cylinder is provided with an intake 30 with which communicates an air supply pipe 31, in which is located a valve 32 controllable by a pedal 33 located at a point convenient for the operator. The exhaust port 34 is formed in the side of the cylinder, which is uncovered when the plunger has been forced rearwardly a sufficient distance to withdraw the dolly from engagement with the drill being punched.

As a convenient means to blow the dust or muck from the hollow steel tools, I provide an air jet 33 connected by an air pipe 34 with the source of supply. This jet will be located in a suitable position to the drill sharpening machine for the operator's use. A controlling valve 35 of any suitable type is provided for controlling the jet.

This machine I find does its work perfectly and with a great saving in time.

What I claim as my invention is:—

1. In a punching machine, a dolly provided with a center punch and a forked guide, extending from the face of the dolly substantially parallel to the punch and to one side thereof.
2. In a punching machine, a dolly provided with a center punch and a forked guide extending from the face of the dolly substantially parallel to the punch and to one side thereof, grooves being formed in the face of the dolly to receive corresponding projections on the end of a drill being punched.
3. In a punching machine, the combination of a head; means for feeding the head to and from the work; a dolly having a round shank both rotatable and slidable in the head; a pneumatic hammer in connection with the head adapted to strike the end of the shank; and a center punch projecting from the face of the dolly.
4. In a punching machine, the combination of a head; means for feeding the head to and from the work; a dolly having a round shank both rotatable and slidable in the head; a pneumatic hammer in connection with the head adapted to strike the end of the shank; a center punch projecting from the face of the dolly; and a forked guide extending from the face of the dolly substantially parallel to the punch and to one side thereof.

5. In a punching machine, the combination of a head; means for feeding the head to and from the work; a dolly having a round shank both rotatable and slidable in the head; a pneumatic hammer in connection with the head adapted to strike the end of the shank; a center punch projecting from the face of the dolly; and a forked guide extending from the face of the dolly substantially parallel to the punch and to one side thereof, grooves formed in the face of the dolly to receive corresponding projections on the end of a drill being punched.

6. In a punching machine, the combination of a head; means for feeding the head to and from the work; a dolly having a shank slidable in the head and provided with an axial hole for the reception of the punch; a pneumatic hammer in connection with the head adapted to strike the end of the shank; a center punch set in said axial hole and projecting from the face of the dolly; and a transverse key adapted to be driven through a transverse hole in the dolly and to engage the center punch to hold it in place.

7. In a punching machine, the combination of a head; means for feeding the head to and from the work; a dolly having a round shank both rotatable and slidable in the head and provided with an axial hole for the reception of the punch; a pneumatic hammer in connection with the head adapted to strike the end of the shank; a center punch set in said axial hole and projecting from the face of the dolly; and a transverse key adapted to be driven through a transverse hole in the dolly and to engage the center punch to hold it in place.

8. In a punching machine, the combination of a head; a dolly having a shank slidable in the head; a pneumatic hammer in connection with the head adapted to strike the end of the shank; a pneumatic cylinder connected with the pneumatic hammer and fed from the same; a plunger in said cylinder secured at its outer end to the frame of the apparatus; a plunger connected at one end with the cylinder aforesaid; and a cylinder connected to the frame and within which said plunger is fitted.

Signed at South Porcupine this 9th day of July 1918.

PATRICK MASTERSON.