

Oct. 27, 1931.

F. R. ROBINSON

1,829,609

PNEUMATIC HAMMER

Filed May 6, 1929

2 Sheets-Sheet 1

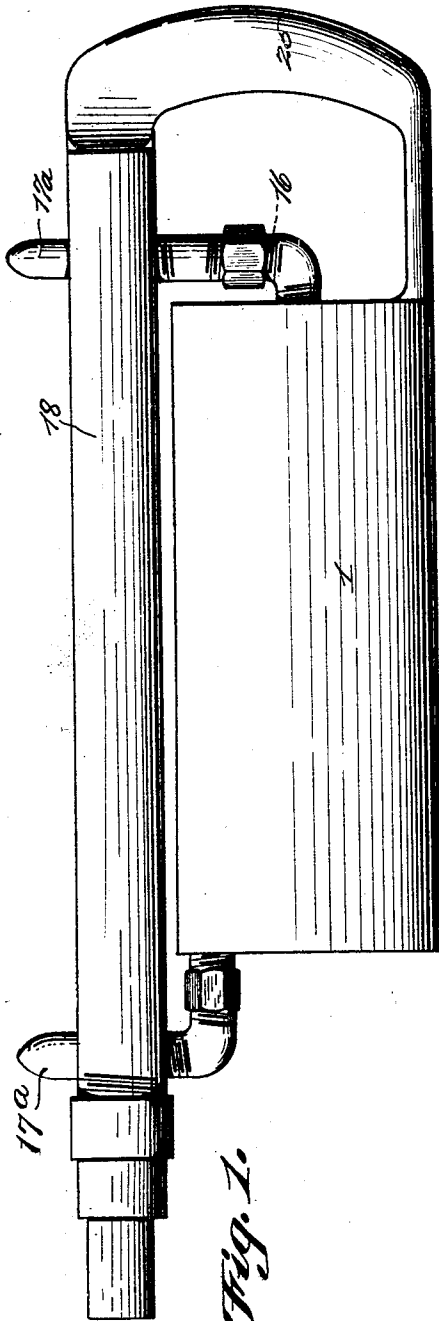


Fig. 1.

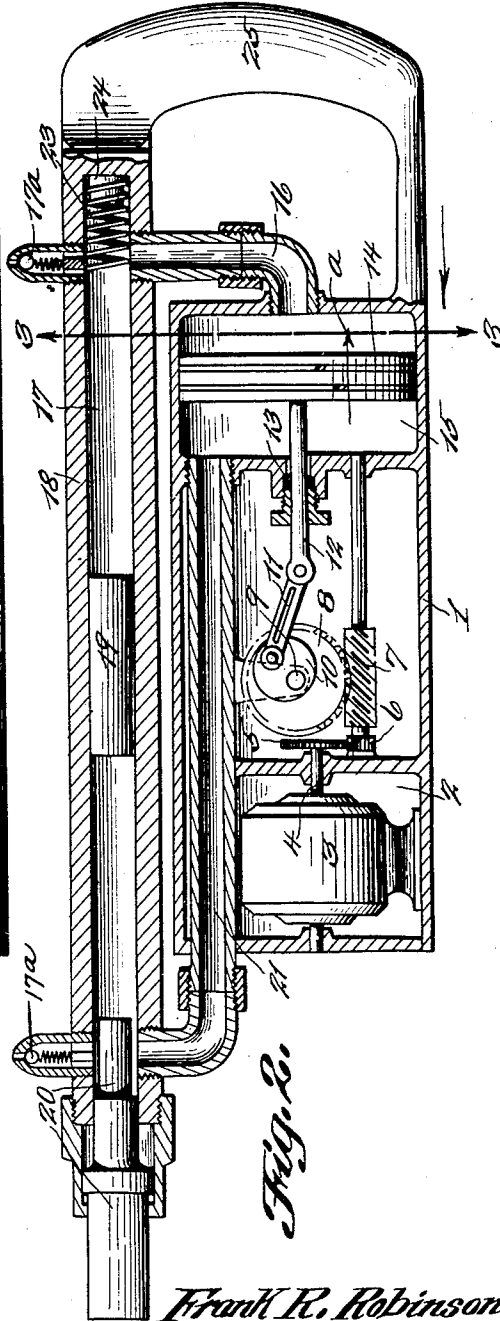


Fig. 2.

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2 Sheets-Sheet 2

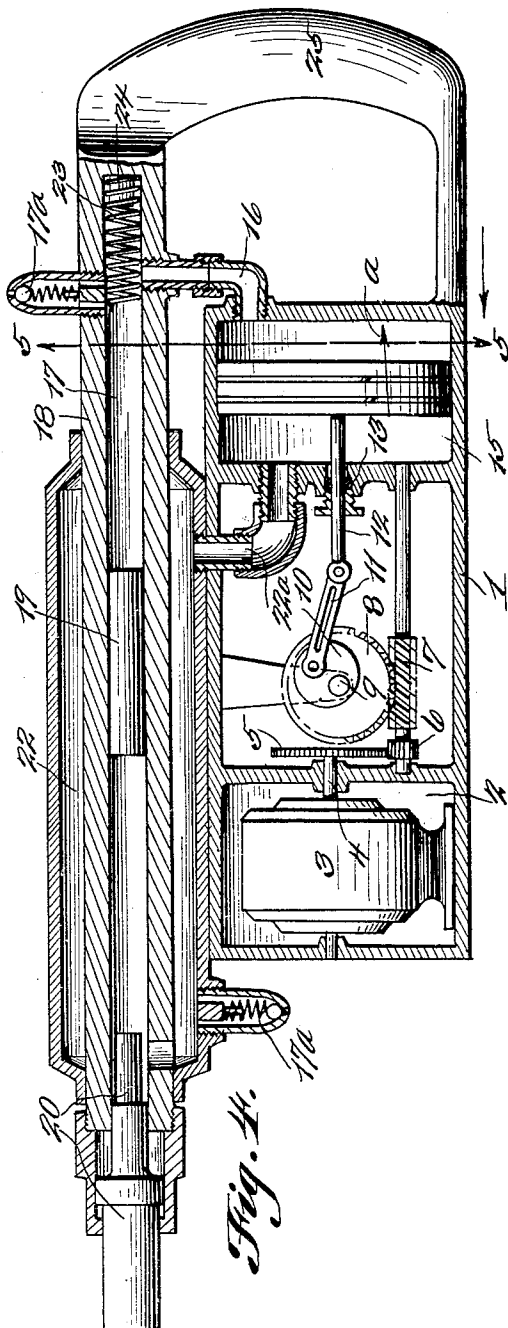


Fig. 4.

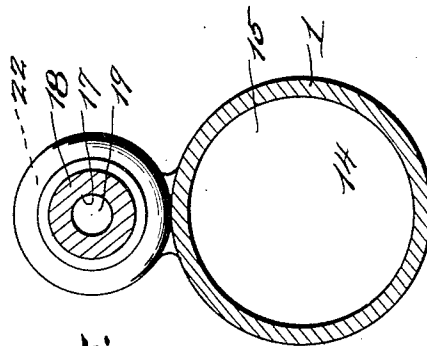


Fig. 5.

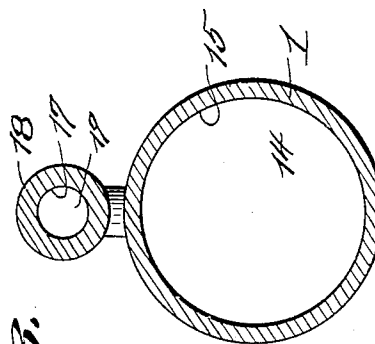


Fig. 3.

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PNEUMATIC HAMMER

Application filed May 6, 1929. Serial No. 360,810.

The present invention relates to an improved pneumatic hammer, and it is the purpose of the present invention to provide a tool of this kind possessing two cylinders, one having a chamber for a tool striking piston pneumatically actuated, the other having a chamber operatively connected with the first chamber at opposite remote points to the tool striking piston, said later chamber containing a piston to create pneumatic compression on one end of the tool striking piston, and to rarefy the air or create a vacuum in the first chamber on the opposite end of the tool striking piston, thereby imparting rapid consecutive movements to the tool striking piston to cause hammer blows on the tool.

Another purpose is to provide a pneumatic hammer having means in the first chamber to cushion the tool striking piston on its rebound stroke.

Still another purpose is to provide a pneumatic tool of this kind having means for operating the piston in the second chamber.

It is to be understood that the particulars herein given are in no way limitative, and that while still keeping within the scope of the invention, any desired modification of details and proportions may be made in the construction of the appliance according to circumstances.

The invention comprises further features and combination of parts to be hereinafter set forth, shown in the drawings and claimed.

In the drawings:—

Figure 1 is a view in elevation of the improved pneumatic hammer constructed in accordance of the invention.

Figure 2 is a longitudinal sectional view through the same more clearly showing the interior construction and arrangement of the parts.

Figure 3 is a cross sectional view on line 3—3 of Figure 2.

Figure 4 is a longitudinal sectional view through another form of pneumatic hammer, wherein the chamber for the tool striking piston is surrounded by a cylinder, which communicates with the first and second chambers.

Figure 5 is a cross sectional view on line 5—5 of Figure 4.

Referring to the drawings, 1 identified a cylinder having a compartment 2 for a high speed electric motor 3, which may be furnished with current from any suitable source not shown. The shaft 4 of the motor has a gear 5 meshing with a gear 6 on a worm 7, which meshes with a worm wheel 8 on a transverse shaft 9. This transverse shaft 9 carries an eccentric 10, to which a link 11 is connected, the link being in turn connected to a rod 12 operating through a bearing 13. The rod 12 carries a piston 14, which reciprocates in the chamber 15.

The chamber 15 communicates, by way of a passage 16 with a chamber 17, which is formed in the cylinder 18. This cylinder 18 carries a tool striking hammer 19, to impart hammer blows to the tool 20.

One end of the chamber 17 communicated, by means of a tube 21 in Figures 1, 2 and 3 and by means of a cylinder 22 in Figures 4 and 5 with the chamber 15. This tube 21 or cylinder 22 rarefies or creates a vacuum on one side of the piston 14 to create a suction on one end of the piston 19, while a compression action is created on the one side of the piston 14, in order to impart increased power on the tool striking piston 19. The chamber 17 at one end has a compression spring 23, supported on a lug 24, said compression spring acting to cushion the tool striking piston on its rebound stroke. A handle 25 is provided, whereby the pneumatic hammer may be supported when in use.

On the stroke of the piston 14 in the direction of the arrow A compressed air on one end of the piston 19 is applied, and a vacuum or a rarefaction of air on the other end of the piston 19, thereby providing increased power on the piston 19. A reverse movement of the piston 14 reverses the action on the tool striking piston 19.

The chambers 17 and 22 have the usual check valves 17a for taking care of the air in said chamber.

The invention having been set forth, what is claimed is:

In a pneumatic hammer, a pair of adjacent

cylinders, a tool loose in and having limited movement in one end of one cylinder, a piston hammer operative in the cylinder having a tool and adapted for striking cooperation with the tool, the other cylinder having a pressure chamber in communication with the first cylinder adjacent the ends of the piston hammer cylinder, said other cylinder having a compartment, a piston operable in the pressure chamber and adapted for creating air compression on one side of the piston hammer and for rarefying or creating a vacuum on the opposite side of the piston hammer, and a motor driven mechanism in said compartment for imparting movement to the piston in the pressure chamber, and means comprising check valves operative in communication with the interior of the first cylinder incident to the compression and the rarefaction adjacent opposite ends of the piston hammer, one of said check valves being located at the end of the first cylinder remote from the tool, said piston hammer adapted to substantially override the check valve remote from the tool and to override one of the communications between said other cylinder and the first cylinder, and means in the first cylinder to urge the piston hammer from overriding position of the remote check valve and the adjacent communication between the first and second cylinders.

In testimony whereof he affixes his signature.

FRANK R. ROBINSON.