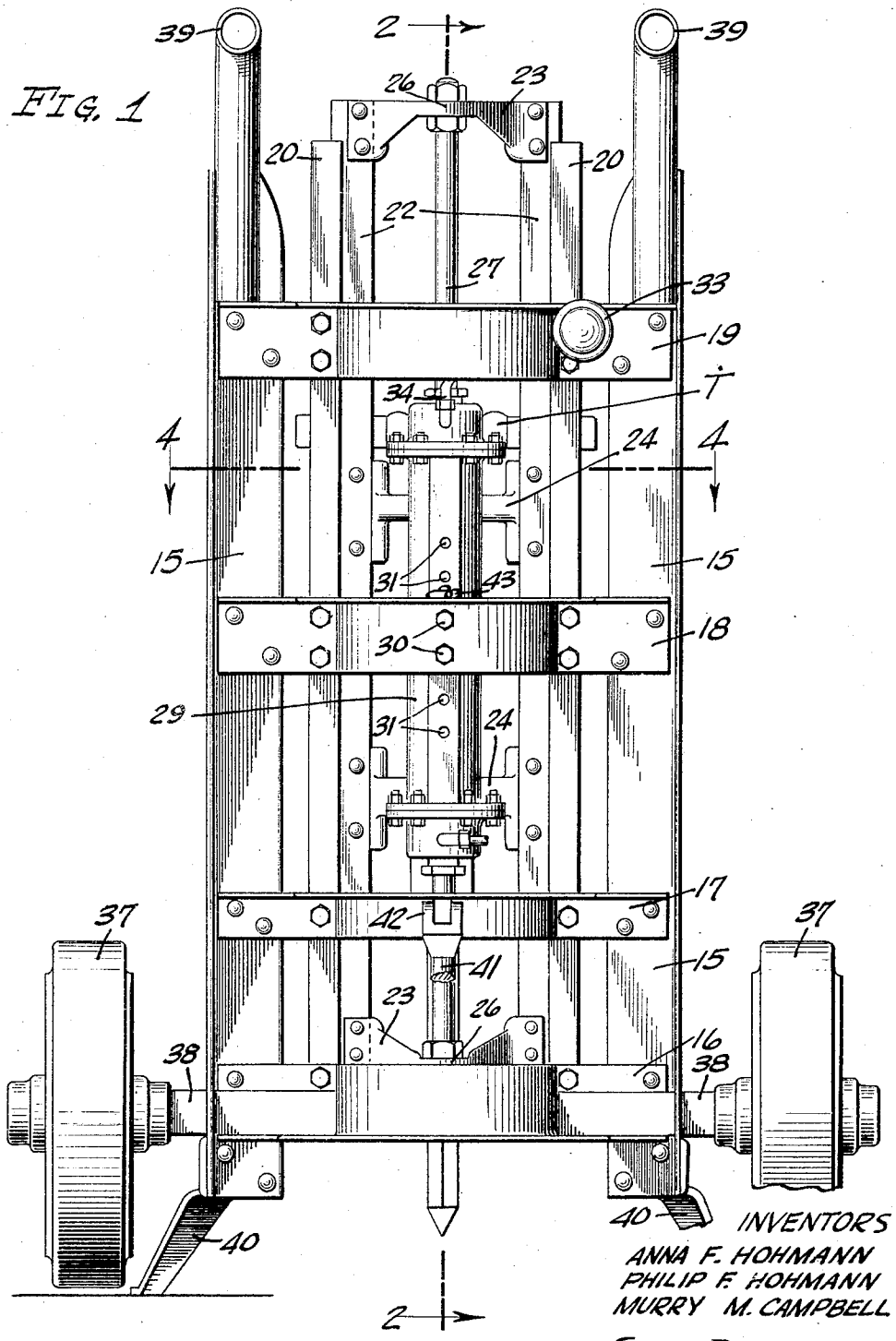
Feb. 21, 1933. A. F. HOHMANN ET AL 1,898,369

VEHICLE FOR PNEUMATIC TOOLS

Filed Feb. 12, 1932 3 Sheets-Sheet 1

FIG. 1



INVENTORS
ANNA F. HOHMANN
PHILIP F. HOHMANN
MURRY M. CAMPBELL

BY Edwin D. Jones.

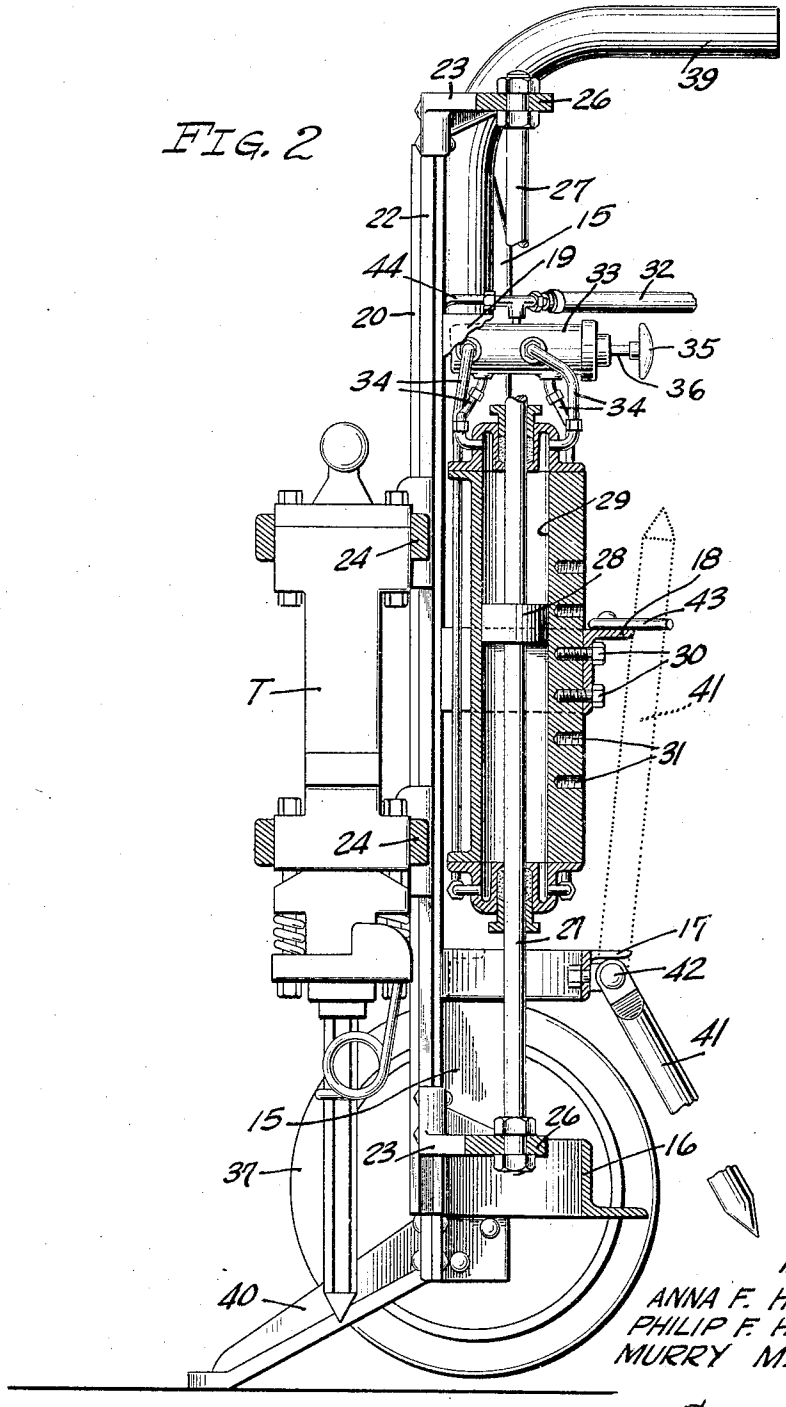
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VEHICLE FOR PNEUMATIC TOOLS

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FIG. 2



INVENTORS
ANNA F. HOHMANN
PHILIP F. HOHMANN
MURRY M. CAMPBELL

BY Edwin D. Jones.

ATTORNEY

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FIG. 3

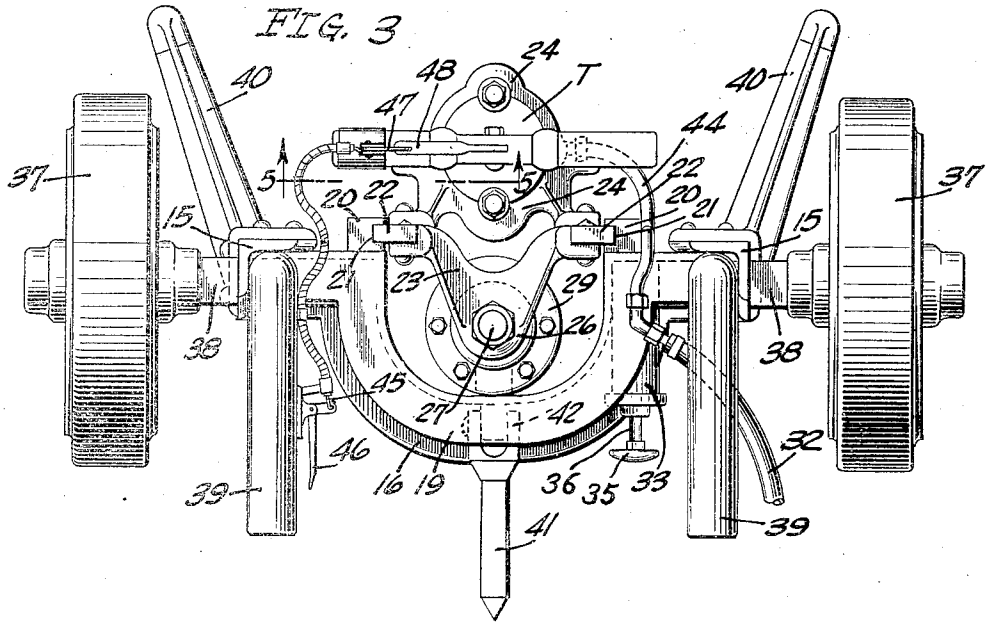


FIG. 4

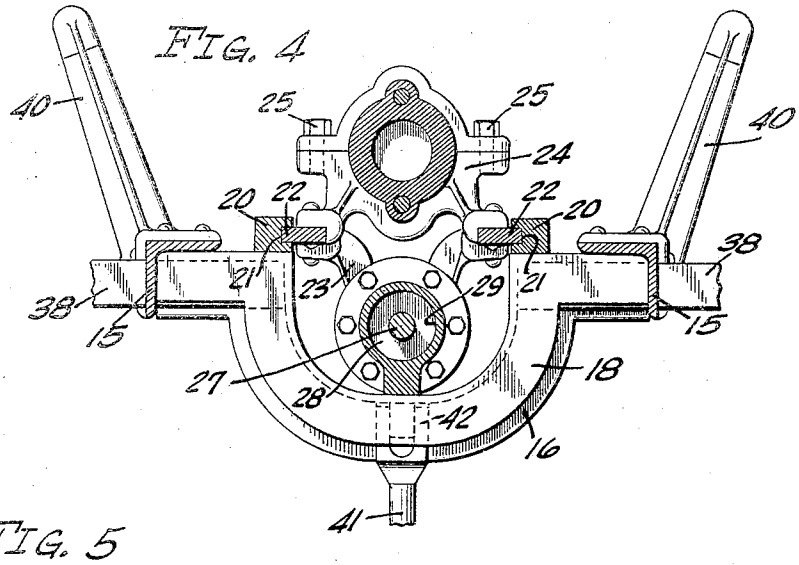
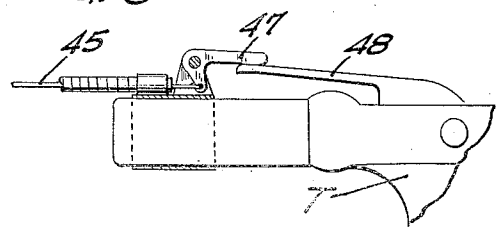


FIG. 5



INVENTORS
ANNA F. HOHMANN
PHILIP F. HOHMANN
MURRY M. CAMPBELL
BY Edwin D. Jones
ATTORNEY

Patented Feb. 21, 1933

1,898,369

UNITED STATES PATENT OFFICE

ANNA F. HOHMANN AND PHILIP F. HOHMANN, OF LOS ANGELES, AND MURRY M. CAMPBELL, OF LONG BEACH, CALIFORNIA

VEHICLE FOR PNEUMATIC TOOLS

Application filed February 12, 1932. Serial No. 592,566.

Our invention relates to reciprocating tools pneumatically operated or otherwise, and it has particular reference, although not necessarily, to pneumatic tools of the portable type as used for tamping, drilling, or demolishing.

It is a purpose of our invention to provide a vehicle for such pneumatic tools by which they can be readily moved from place to place, fixed in working position to cause the tool to operate on a definite spot of a surface, and operated in the usual manner but without the necessity of the operator actually holding the tool and being subjected to the intense vibrations of the tool.

It is also a purpose of our invention to provide a vehicle which includes mechanism by which the tool carried by the vehicle can be moved into and out of operative position with the surface or material being worked, and the range of movement varied to suit the requirements of the particular tool.

We will describe only one form of vehicle for pneumatic tools embodying our invention, and will then point out the novel features thereof in claims.

In the accompanying drawings:

Fig. 1 is a view showing in rear elevation one form of vehicle for pneumatic tools embodying our invention;

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1 and looking in the direction of the arrows;

Fig. 3 is a view showing the vehicle in top plan;

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is an enlarged fragmentary sectional view taken on the line 5—5 of Fig. 3 and looking in the direction of the arrows.

Referring specifically to the drawings, our invention comprises a frame including a pair of side bars 15 fixed in spaced parallel relation by a plurality of cross-bars which, in the present instance, are four in number and are designated, respectively, 16, 17, 18 and 19. The side bars 15 are of angular form and so are the cross-bars, but in the latter instance each cross-bar is formed with an outwardly curved intermediate portion connecting straight linear portions. The linear portions are riveted to the side bars 15, as best shown in Fig. 1, so that the curved portions are disposed between the side bars to accommodate certain parts of the vehicle as will be understood as the description proceeds.

Secured to the several cross-bars so as to be disposed in spaced parallelism to each other are a pair of guide bars 20. These guide bars are formed at their confronting sides with grooves 21 coextensive in length therewith, as best illustrated in Fig. 4. These grooves 21 slidably receive flat bars 22 fixedly secured to each other at their opposite ends by brackets 23, and between their ends by other brackets 24. The bars 22 and the brackets 23 and 24 constitute a carriage supported by the guide bars 20 for sliding movement longitudinally on the frame of the vehicle.

The brackets 24 of which there are a pair, are each made in two parts detachably secured to each other by bolts 25 (Fig. 4) to form clamps for securing a reciprocable pneumatic tool T to the carriage. The tool here illustrated is a demolition tool of a well known make, but it will be understood that the brackets 24 can be varied in construction to accommodate and securely clamp a tool of any make, so that the tool is fixedly secured to the carriage for movement therewith.

The brackets 23 have lateral extensions 26 to which are secured the opposite ends of a piston rod 27, the piston head 28 being secured to the rod at a point between its ends to operate within a cylinder 29 through which the rod extends. As best shown in Fig. 2, the cylinder 29 is fixed to the cross-bar 18 by means of screws 30 extending into screw holes 31 in the

cylinder. There is a vertical series of these holes 31 in any of which the screws are adapted to be received, and by this construction it will be evident that the cylinder 29 can be adjusted vertically for the purpose of varying the range of movement of the piston rod and in consequence the range of movement of the carriage.

The rod 27, the piston 28, and the cylinder 29 constitute a mechanism by which the carriage can be moved longitudinally to lower or elevate the tool T into or out of operative position or relation with respect to a surface therebeneath upon which the tool is adapted to work. By adjusting the cylinder 29 vertically, vertical movement of the tool T can be varied in point of range to insure positioning of the tool in operative relation when in lowered position, and conversely, positioning of the tool completely out of operative relation to the work when in elevated position. In this manner the vehicle is capable of accommodating tools of various kinds, makes, and sizes and the movement thereof into and out of operative relation to the work over which the tool is disposed.

The piston 28 can be moved longitudinally in the cylinder 29 by the admission of fluid under pressure to one side of the piston or the other depending upon in which direction the piston is to be moved, and simultaneously permitting fluid at the other side of the piston to be exhausted to atmosphere. In the present instance, we employ compressed air as the pressure fluid which is supplied to the cylinder from a supply pipe 32 through a valve mechanism contained in a cylinder 33 and from which latter extend a plurality of pipes 34 connected to opposite ends of the cylinder 29. The valve mechanism in the cylinder 33 forms no part of the present invention but is embodied in another application. Suffice it to say that through the operation of a handle 35 connected to a rod 36 extending into the cylinder 33, the valve mechanism can be operated to supply and exhaust compressed air to and from the cylinder 29 so as to lower or elevate the tool T and maintain it in either of these positions. It is important to note, however, that the piston is not fixedly held against movement in the cylinder when in either of these positions, because of the fact that the air employed can be compressed thus serving to cushion movement of the piston and, in consequence, providing a yielding support for the carriage which functions to absorb and hence prevent transmission to the frame of the vehicle of those vibrations produced by the reciprocating tool T. This is an important advantage in the actual use of our invention because it prevents the injurious vibrations of the tool from being transmitted to the operator holding the vehicle.

To facilitate movement of the vehicle to position the tool T over a particular spot to be worked a pair of wheels 37 are journaled on square axles 38 extending through the lower ends of the side bars 15 and welded or otherwise secured to the adjacent cross-bar 16. The inner ends of the axles terminate at opposite sides of the curved portion of the cross-bar, as best illustrated in Fig. 1.

At the upper end of the side bars 15, handle bars 39 are welded or otherwise secured to the side bars, and these handle bars extend to the rear side of the vehicle to be grasped by the operator for moving the vehicle as a whole, raising it and holding it, if necessary, in definite relation to a particular spot of the surface on which the tool is adapted to work.

In order to prevent the wheels 37 from rolling and the consequent shifting of the vehicle from a prelocated spot on a surface to be worked, we provide means on the vehicle for lifting the latter so that the wheels are now elevated and the frame of the vehicle supported independently of the wheels. In the present instance, this means comprises a pair of downwardly inclined arms 40 secured at their upper ends to the lower ends of the side bars 15, and a third arm 41 pivoted on the cross-bar 17 at the point indicated at 42 so that it can be swung from the elevated position shown in dotted lines in Fig. 2 downwardly to the lower position shown in solid lines. The arm 41 is held in the elevated position by means of a hook 43 on the cross-bar 18.

In practice, the vehicle can be rolled on the wheels 27 to any desired locality on a surface to be worked, it being understood that during such movement the vehicle assumes an inclined position, and which position can be maintained by the operator gripping the handle bars 35. Once the vehicle reaches the predetermined spot on the surface to be worked, it is swung to a vertical position as illustrated in Fig. 2 to position the bit of the tool precisely over the spot to be worked. In swinging the vehicle to upright position the arms 40 are moved downward to abut the surface upon which the wheels are supported and in consequence lift the vehicle so that the wheels are no longer on the ground. To maintain the vehicle elevated, the arm 41 is swung to lowered position in which its pointed end bites into the ground to coact with the arms 40 in maintaining the vehicle in upright position and the wheels elevated.

Now by actuating the valve mechanism contained in the cylinder 33 to admit air to the cylinder 29 and thus cause the piston 28 to move downward, the carriage is lowered to bring the tool T into operative relation to the surface to be worked, so that by supplying compressed air to the tool T, the latter is set into operation to tamp, drill, or demolish the material being worked depending upon the character of the tool employed.

For supplying compressed air to the tool, a hose 44 connects the cylinder of the tool with the supply pipe 32, as best shown in Fig. 3. As shown in this same figure, a pull wire 45 is operatively connected at one end to a bell-crank lever 46 mounted on one of the handle bars 35, while the other end of the wire is connected to a second bell-crank lever 47 mounted on the tool T to engage an actuating lever 48 for the air admission valve of the tool. By this arrangement the valve of the tool can be opened against its normal tendency to close by actuating the lever 46 to exert a pull on the wire 45 and thus operate the lever 47.

At such times when it is desired to frequently move the tool T over the surface being worked, the pivoted arm 41 is not employed. The vehicle can be readily shifted to new positions and the wheel elevated concurrently with the attainment of each new position, by first inclining the vehicle so that it is supported on the wheels, rolling the vehicle, and then moving it to upright position and maintaining a force in the direction of the arms 40 so that the vehicle is again elevated and supported solely by said arms.

Although we have herein shown and described only one form of vehicle for pneumatic tools embodying our invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of our invention, and the spirit and scope of the appended claims.

What we claim is:

1. In combination, a vehicle having a frame, a carriage slidable on the frame, means on the carriage for attaching a pneumatic tool thereto to extend lengthwise of the carriage and to move therewith, pneumatic means connected to the carriage for moving the latter, and means for securing the pneumatic means to the frame so as to permit adjustment of the pneumatic means to vary the range of movement of the carriage and tool.

2. In combination, a frame, a carriage movable on the frame, means on the carriage for attaching a pneumatic tool thereto, a cylinder, means for so securing the cylinder to the frame to permit longitudinal adjustment of the cylinder on the frame, a rod secured to the carriage, a piston secured to the rod and movable in the cylinder, and means for supplying fluid under pressure to the cylinder to move the piston and to thereby move the carriage.

3. In combination, a frame, a carriage movable on the frame, means on the carriage for attaching a pneumatic tool thereto, a cylinder, means for so securing the cylinder to the frame to permit longitudinal adjustment of the cylinder on the frame, a rod movable through the cylinder and secured at its opposite ends to the respective ends of the carriage, a piston fixed to the rod between its ends within the cylinder, and means for supplying fluid under pressure to the cylinder to move the piston therein and resiliently support the latter.

In testimony whereof, we have hereunto set our hands at Los Angeles, California, this 6th day of February, 1932.

ANNA F. HOHMANN.
MURRY M. CAMPBELL.
PHILIP F. HOHMANN.