No. 813,921. PATENTED FEB. 27, 1906.

J. A. SHEPARD.

PNEUMATIC DOLLY.

APPLICATION FILED MAY 6, 1903.

2 SHEETS—SHEET 1.

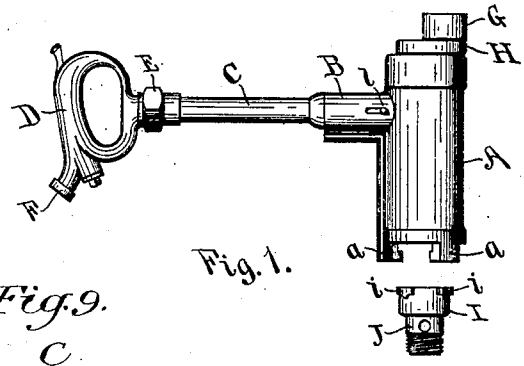
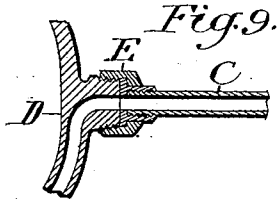


Fig. 1.

Fig. 9.



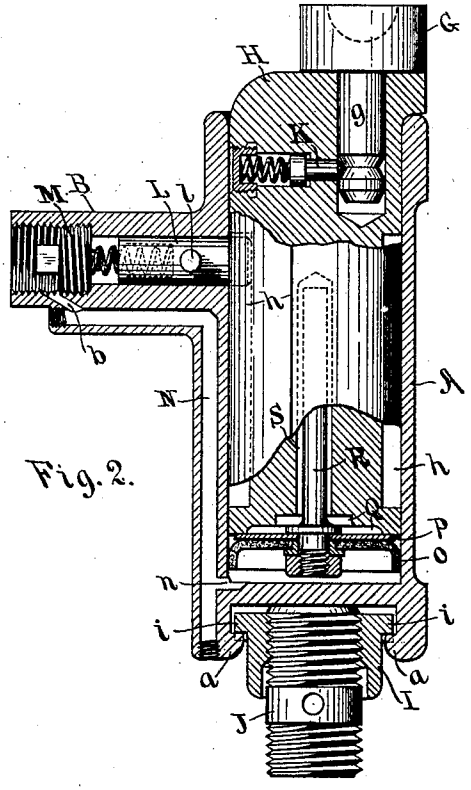


Fig. 2.

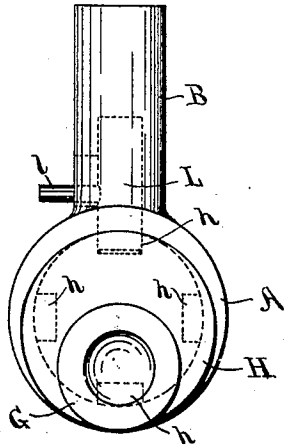


Fig. 3.

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2 SHEETS—SHEET 2.

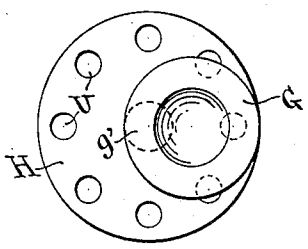

Fig. 4.

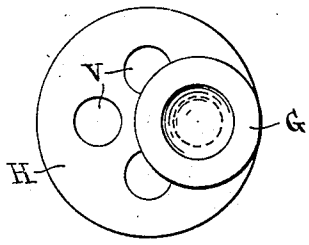

Fig. 6.

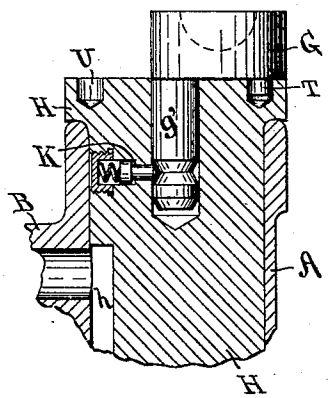

Fig. 5.

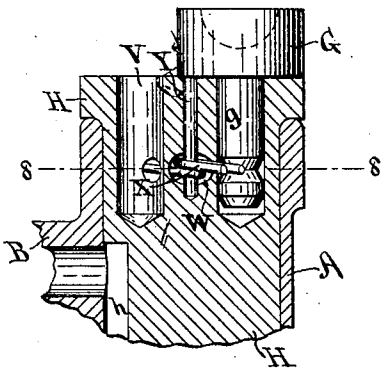

Fig. 7.

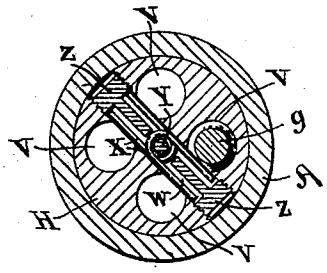

Fig. 8

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UNITED STATES PATENT OFFICE.

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PNEUMATIC DOLLY.

No. 813,921. Specification of Letters Patent. Patented Feb. 27, 1906.

Application filed May 6, 1903. Serial No. 155,866.

To all whom it may concern:

Be it known that I, JAMES A. SHEPARD, a citizen of the United States, residing at Montour Falls, in the county of Schuyler and State of New York, have invented certain new and useful Improvements in Pneumatic Dollies, of which the following is a specification.

This invention relates to improvements in dollies or dolly bars which are used for holding rivets in place when fastening together pieces and parts of structural and other iron and steel work; and the object of my improvements is to provide a dolly in which the riveting-die is held to place by pneumatic pressure and to so arrange and construct the parts that the dolly may be applied and manipulated with ease and convenience in all sorts of angles, corners, and awkward positions.

A further object is to provide a packing for the piston which shall be both durable and effective under the conditions prevailing in this class of tools.

I attain my objects by means of the arrangement and construction of the several parts of the device, as illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of the complete tool; Fig. 2, a longitudinal section of the barrel and working parts; Fig. 3, an end view of the same; Figs. 4 to 8, detail views showing modifications in the manner of applying the die to the piston; and Fig. 9 a sectional view of the handle-coupling, which is nothing more than the ordinary pipe-coupling.

Like letters of reference designate like parts in the several views.

A represents the barrel or cylinder of the tool, from the side of which projects an offset B, into which is screwed a tubular piece C of greater or less length, as may be desired. To the end of this tubular piece, by means of the coupling E, is fastened a handle D, provided with a valve and an air-hose connection F, as commonly arranged for pneumatic hand-tools, the valve being adapted to admit or exhaust the air to and from the barrel. By means of the coupling E different lengths of tube-sections C may be placed between the offset B and the handle D, and the handle may be set at any desired angle with reference to the barrel A for convenience in holding the tool and placing it at any distance from the operator that the work may require.

From one end of the barrel A projects the end of a piston H, into the end of which is set a die G to receive the head of a rivet. In order that different-sized dies may be used in the tool, each die is provided with a shank *g*, which enters a corresponding socket drilled into the end of piston H, said shanks being provided with grooves to receive the spring-actuated locking-bolt K. In order that the die may be set against a rivet which is located close to the web of an **I** beam or channel, the socket in the piston is positioned eccentrically therein, so as to place the outer edge of the die in line with the outer periphery of the barrel A. At the other end the the barrel A is provided with projecting lugs *a*, provided with inturned shoulders to receive the wings *i*, projecting from a coupling-sleeve I, into which sleeve is screwed a stud-bolt J, which when the parts are in place with wings *i* in engagement with lugs *a* is adapted to be set up against the head of the barrel by means of a spanner, so as to lock the parts securely in place. To the outer end of this stud J is screwed or coupled the brace-bar, (not shown,) by which the dolly is held up to its work. By this arrangement the tool may be readily knocked down for convenience in handling, and different lengths of brace-bars may be readily insert as the work may demand. As it may be also necessary in bringing the tool to the work to locate the die G in different positions around barrel A instead of directly opposite the handle D, as shown in Fig. 1, I provide means for shifting the piston H in the barrel, so as to turn the die to one side or to the other. For this purpose I provide the piston with longitudinal grooves *h*, which are engaged by a spring-actuated locking-bolt L, located in offset B. This bolt permits of longitudinal movement in the piston in any position it may be set, according to the location of the groove *h*, into engagement with which the bolt is brought. The locking-bolt also forms a stop to prevent the piston from being thrown out of the cylinder by the air behind it, the throw of the piston corresponding to the length of the grooves *h*.

A pin *l* projects through a slot in offset B, whereby the bolt L may be thrown out of en-

gagement with the piston when it is desired to change its position in the barrel or to remove it therefrom.

A plug M is screwed into the outer end of the offset B in order to close the end of the chamber or socket which receives the bolt L, and a port *b* leads from a point outside of this plug, whereby air will pass from tube C into passage N, which leads to the port *n*, opening into the end of the barrel A behind the piston.

For the piston I provide an improved packing which consists of a cup-leather O, fastened against a spring-disk P on the guide-rod R, which latter projects with a loose fit into the socket S, which is drilled into the center of the piston. Counterbores Q at the end of the piston permit of the inward play of the spring-disk and the shoulder on the guide-rod. By this arrangement of the packing when the die is forced up against a rivet and the rivet-hammer is in operation the blows struck by the hammer will not be transmitted directly to the screw or bolt by which the packing is held in place, but will be received by the spring plate or disk P, which will yield to the blows, thereby relieving the bolt or attaching means from shock. Heretofore much trouble has been experienced by reason of the jarring loose of the screws, nuts, or pins by which the packings have been secured to the piston in this type of tool. By my arrangement this jarring loose of the packing connection and the subsequent displacement of the packing is avoided, and by reason of the guiding-bolt R the packing is held in place in proper alinement with the piston at all times.

Instead of turning the piston in the cylinder to change the position of the die relatively to the cylinder I may retain the piston in a fixed position relatively to the cylinder and shift the die around the end of the piston, two ways of doing which I have illustrated in Figs. 4 to 8, inclusive. In this case I would provide but one slot *h* on the piston H to be engaged by the locking-bolt L, this slot being formed, as before described, to limit the throw of the piston.

In Figs. 4 and 5 I have shown the die G provided with an eccentrically-positioned shank *g'*, adapted to fit into a centrally-bored socket in the end of the piston H. This shank is provided with a beveled groove to be engaged by a locking-bolt K to hold the die in place on the end of the piston, as before described in connection with Fig. 2. At T is a dowel-pin which projects from the inner face of the die in position to engage any one of a number of sockets U, drilled around the face of the piston. By this arrangement it will be seen that by slightly withdrawing the die from the main socket it may be turned and set in any one of a number of positions around the face of the piston and will be subsequently held in such position relatively to the cylinder, since the piston is prevented from turning in the cylinder by reason of the slot *h*, engaged by the locking-bolt.

In Figs. 6 and 8 I have shown still another modification in which the die G is provided with a central shank *g*, as shown in Fig. 2, and the end of the piston H is provided with a number of eccentrically-bored sockets V, into which the shank *g* may be inserted to change the position of the die on the end of the piston relatively to the cylinder A, the piston being held from rotation in the cylinder, as before, by means of the slot *h*, engaged by the locking-bolt. In order to retain the shank of the die within the sockets, I would provide a different form of spring-lock, as illustrated more clearly in Fig. 8, which is a transverse section on line 8 8 in Fig. 7. This spring-lock comprises a pair of U-shaped springs X, set, as shown, in a transverse bore W, which cuts through the sides of the sockets V, so that the legs of the springs will lie across one side of said sockets in position to spring into the groove on the shank *g*. In order to prevent these springs from turning in the bore when the shank is slipped into place, a central pin Y may be provided, which is encircled by the bends of the springs X. These springs are held within the bore W by means of screw-plugs Z, and these plugs are provided with inward projections which hold the bends of the springs in their central positions. It will be understood, however, that I do not limit myself to any particular form of these locking-springs. While I have illustrated these modifications in the manner of shifting the die as being within the scope of my invention, I prefer to change the position of the die by shifting the piston within the cylinder by means of the plurality of slots *h*, as in this form the shifting means is entirely inclosed and protected, and it is also a more simple form of manufacture. Where the sockets are provided on the end of the piston, they are apt to become filled and clogged by scales which drop from the rivets. By this arrangement of the several parts of my complete tool it will be seen that by the substitution of different lengths of distance-pieces or tube-sections C and different lengths of brace-bars and by setting the handle and die in any desirable positions relative to the barrel A, I am enabled to place the dolly in position for effective operation in riveting, no matter how contracted or inaccessible the position of the rivet may be.

Having thus described my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a dolly, the combination of a barrel, a piston projecting therefrom, a die set eccentrically upon the end of the piston, a handle projecting from one side of the barrel, a longitudinal slot on the piston, a guiding member in the barrel in engagement there-

with, whereby the piston is held from rotation with freedom to reciprocate and the die is held in fixed relation to the handle, and means for admitting fluid under pressure behind the piston.

2. In a dolly, the combination of a barrel, a piston projecting therefrom, a die set eccentrically upon the end of the piston, a handle projecting from one side of the barrel, a plurality of longitudinal slots on the piston, a spring-actuated locking-bolt in the handle offset to engage any one of said slots, and means for admitting fluid under pressure behind the piston.

3. In a dolly, the combination of a barrel, a piston projecting therefrom, a die set eccentrically upon the end of the piston, a handle projecting from one side of the barrel, a plurality of longitudinal slots disposed around the periphery of the piston, a locking-bolt in the handle offset to engage one of said slots, and means for admitting fluid under pressure behind the piston.

4. In a dolly, the combination of a barrel, a piston projecting therefrom, a die carried eccentrically upon the end of the piston, a handle projecting from one side of the barrel, means whereby the piston is held from rotation with freedom to reciprocate in the barrel, means for changing the position of the die relatively to the handle and means for admitting fluid under pressure behind the piston.

5. In a dolly, the combination of a barrel, a piston projecting therefrom, a die carried upon the end of the piston, a handle attached to one side of the barrel, means for shifting the position of the die relatively to the axis of the handle, and means for admitting fluid under pressure behind the piston.

6. In a dolly, the combination of a barrel, a piston projecting therefrom, a die carried upon the end of the piston, a handle attached to an offset at one side of the barrel, a coupling between said handle and offset whereby the handle may be turned and set at different angles with reference to the axis of the barrel, and means for admitting fluid under pressure behind the piston.

7. In a dolly, the combination of a barrel, a piston projecting therefrom, a die carried upon the end of the piston, an offset at one side of the barrel, a duct leading therefrom to the barrel behind the piston, a handle provided with a controlling-valve and lever, a tubular distance-piece between the offset and handle, a coupling whereby the handle may be turned and set at different angles upon the distance-piece, and means for connecting the handle with the fluid-supply.

8. In a dolly of the type described, the combination, with the piston, of a packing member, a spring-plate between said packing member and the piston, and a recess in the end of the piston to permit said plate to vibrate.

9. In a dolly of the type described, the combination of a piston having a socket in its inner end, a packing member for said end of the piston separate therefrom, and a guide-rod to which the packing member is secured, said rod projecting into the piston-socket and being free to move therein.

10. In a dolly of the type described, the combination, with the piston, of a packing member, a spring-plate interposed between said packing member and the piston, a guide-rod to which the packing member and the spring-plate are secured, a socket in the piston to receive the guide-rod, and a recess or counterbore in the end of the piston to permit said plate to vibrate.

11. In a dolly of the type described, the combination, with the piston, of an independently-mounted packing member, and a spring interposed between the piston and the packing member for the purpose set forth.

12. In a dolly of the type described, the combination, with the barrel, of a brace-coupling comprising a sleeve provided with wings adapted to be brought into interlocking engagement with lugs projecting from the end of the cylinder, and a screw in the sleeve adapted to be set up against the barrel-head when the sleeve is in place.

In testimony whereof I have affixed my signature in presence of two witnesses.

JAMES A. SHEPARD.

Witnesses:
M. E. VERBECK,
EUGENE DIVEN.