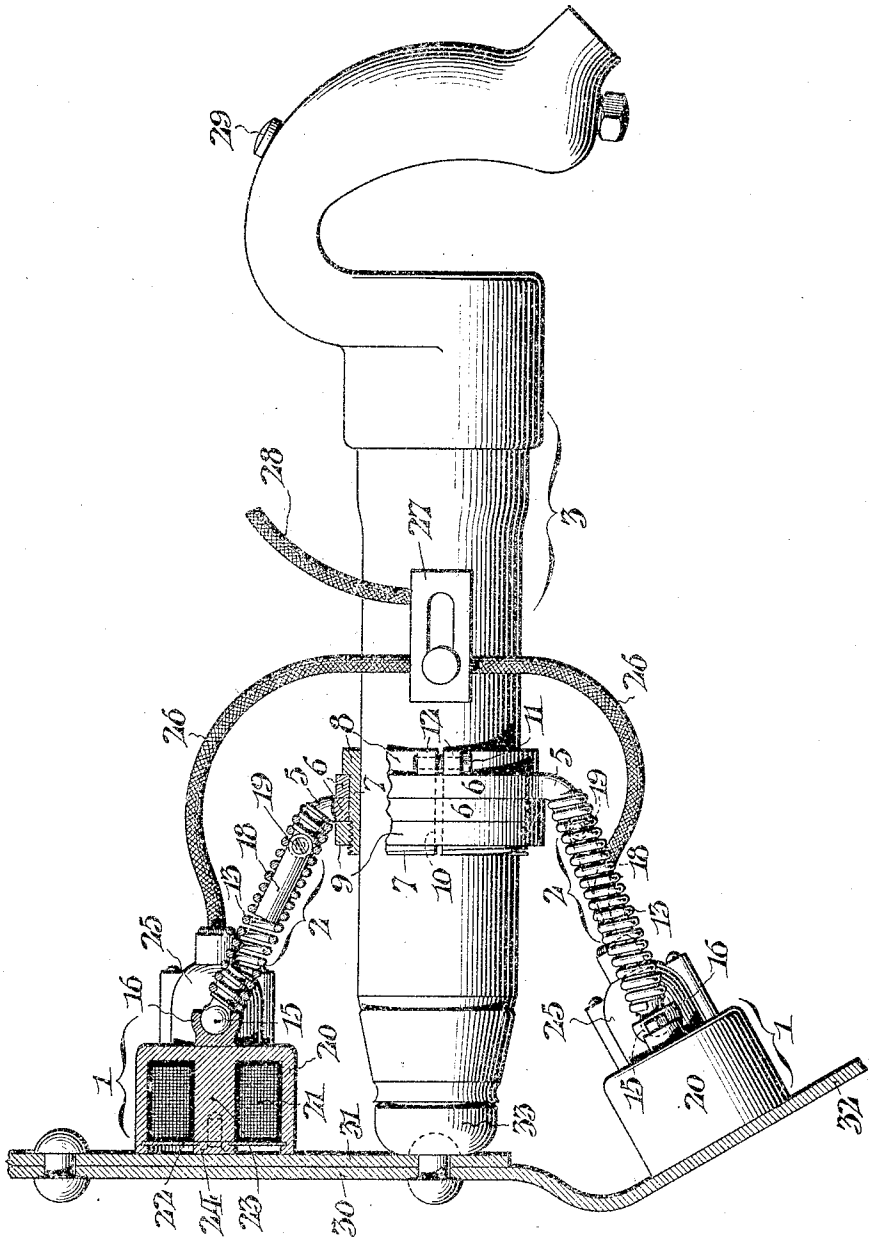
J. H. WAY.

PNEUMATIC RIVETING HAMMER.

APPLICATION FILED JAN. 28, 1920.

1,364,165. Patented Jan. 4, 1921.



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PNEUMATIC RIVETING-HAMMER.

1,364,165. Specification of Letters Patent. Patented Jan. 4, 1921.

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To all whom it may concern:

Be it known that I, JOHN HOWARD WAY, a citizen of the United States, residing in Philadelphia, in the county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Pneumatic Riveting-Hammers, whereof the following is a specification, reference being had to the accompanying drawing.

The invention relates to pneumatic riveting hammers, and more especially to means by which such implements are held to the work in the course of the riveting operation without any effort whatever on the part of the operative.

The invention is directed to a holding device of the stated classification in which electromagnetic force is employed to create the necessary resistance to the reaction of hammer blows.

The invention is also directed to a holding means which is universally applicable to surfaces of any configuration, and further capable of being so set initially, as to avoid any obstructions, for example, as flanges or previously placed rivets projecting from such surfaces.

The structure comprehending the characteristics above outlined will be better understood from the detailed description which follows.

In the drawing, I have shown in association with a pneumatic riveting hammer, a holding structure conveniently embodying my invention, the latter being illustrated partly in elevation, and partly in section, so as to set forth to better advantage, certain salient features of the organization.

The holder structure, as herein shown, comprises a number of magnetic attachment devices 1, (in the present instance two in number) which are supported at the outer ends of a corresponding number of flexible arms 2, 2, extending from a point of anchorage upon the shank of a pneumatic riveting hammer, which is comprehensively designated by the numeral 3. This hammer is of a standard type, and operative in a well known manner.

The arms 2, 2, are composite in structure, and have their source in integral lug projections 5, 5, of rings 6, 6, mounted for free independent rotation upon a collar 7, relative longitudinal displacement of the assemblage being prevented by the coöperation of a flange 8, formed upon one end of said collar, and a nut 9, threaded upon the other extremity of the same. The collar 7 is split as indicated at 10, and clampable in any desired position along the shank or body of the hammer, by means of a cap screw 11, which engages the projections 12, 12. Referring once more to the arms 2, 2, it will be seen that they consist mainly of coiled springs 13, 13, which are secured, preferably by threaded engagement, to the anchorage lugs 5, 5, on the collars 6, 6, and at their outer extremities supplemented with spherically headed, terminal members 15. These members, together with complementary socket members 16, constitute universal pivot fittings for the attachment devices whereby the latter are permitted to adjust themselves in conformity with various surface configurations in the work to be riveted, as will be better understood from further description. In order to preserve the alinement of the springs, and to sustain them against excessive lateral flexure, while the hammer is manipulated during the heading of rivets, core pieces 18, have been provided, these being pivotally attached as at 19, to the projections 5, in such manner as to be capable of swinging radially with respect to the axis of the riveting hammer.

Confining attention for a moment to the portions of the structure shown in section, it will be noted that each of the attachment devices consists of a casing or shell 20, of paramagnetic material, and of such cross sectional configuration as to conveniently accommodate an electromagnet coil 21, retained therein by a plate 22. Said plate is preferably of diamagnetic material, and is clamped against the core 23, by a removable pole piece 24, and secured by screws, or other fastening means. The attachment devices are further supplemented with terminal boxes 25, 25, from which protrude protected conductors 26, 26, capable of being connected, through an interposed control switch 27, with a lead conductor 28, extending from a convenient source of electric current supply. The switch 27, is preferably attached to the shank of the hammer at a point which is readily accessible to the left hand of the operative, the right hand being reserved for the manipulation of the trigger 29, of the hammer in the usual manner.

In the drawing I have shown the hammer, and the associated holding structure in the relative positions they would occupy

in actual operation during the heading of a rivet in uniting plates 30, 31, these plates being relatively overlapped and the inner one having an angular disposed extension 32. By virtue of the ball and socket fittings, the attachment devices 1, 1 adjust themselves very readily to the surface configuration of the work at the regions of their application. As soon as the current is permitted to pass to the coils by closing of the switch 27, the springs 13 of the arms 2, 2, are placed in tension, so that the riveting hammer is drawn forward and the rivet set, indicated at 33, held yieldingly in engagement with the head of the rivet. After such application, the attachment devices 1, 1, may be regarded as fixed elements during the entire heading operation; yet by virtue of the flexibility of the means by which they are connected with the hammer, the latter may be moved in any direction, about the rivet as a pivot, to permit the proper formation of the head in the well known manner,—the springs 13, yielding by contraction or expansion, in accordance with the movements induced. In the course of such manipulation, the core pieces 18, operate to preserve the alinement of the springs, and sustain them against undue lateral flexure, as already noted.

The free mounting of the collars 6, 6, permits independent bodily rotation of the attachment devices 1, 1, about the shank of the hammer during the application of the organization to the work, such freedom of motion permitting the ready avoidance of obstructions such as flanges or previously inserted rivets.

While I have shown only two attachment devices herein, it will be obvious from the structural characteristics of my invention as above set forth, that this number may be varied to meet different requirements of practice both in accordance with the nature of the work to be accomplished, and the size of the implement used in association.

Having thus described my invention, I claim:

1. The combination with a pneumatic riveting hammer, of a number of magnetic attachment devices; a corresponding number of flexible supporting arms extending outwardly from a point of anchorage upon the body of the hammer; and pivoted fittings by which the outer ends of said arms are connected to the attachment devices in such manner as to permit independent universal movement of the latter in accommodating themselves to varied surface configurations in the work to be riveted.

2. The combination with a pneumatic riveting hammer, of a number of magnetic attachment devices; a corresponding number of flexible supporting arms in the form of coiled springs extending outwardly from a point of anchorage upon the body of the hammer, and supplemented at their free ends with spherical terminal members, which, by coöperation with socket members on the attachment devices, constitute ball and socket fittings for permitting independent universal movement of the attachment devices in accommodating themselves to varied surface configurations in the work to be riveted.

3. The combination, with a pneumatic hammer, of a plurality of magnetic attachment devices; and flexible arms connecting the hammer with said attachment devices comprising coil springs secured at their inner ends to lugs on the hammer body and core pieces pivoted to said lugs so as to swing radially with reference to the hammer axis and preserve the alinement of said springs and sustain them against excessive lateral flexure.

4. The combination, with a pneumatic hammer, of a plurality of magnetic attachment devices, and arms connecting said devices to the hammer body independently rotatable about the axis of the hammer.

5. A holding device for a pneumatic hammer comprising a collar adapted to be adjustably set upon the shank of the hammer body, magnetic attachment devices, and arms connecting said attachment devices to the hammer and themselves anchored to said body by rings freely and independently rotatable about said collar.

6. A holding device for a pneumatic hammer comprising a collar adapted to be adjustably secured upon the hammer body, flexible arms secured to said collar, and magnetic attachment devices secured to the outer ends of said arms by universal joints.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this 24th day of January, 1920.

JOHN HOWARD WAY.

Witnesses:

JAMES H. BELL,

E. L. FULLERTON.