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EXHAUST CONTROL FOR AIR HAMMERS

Original Filed May 19, 1938

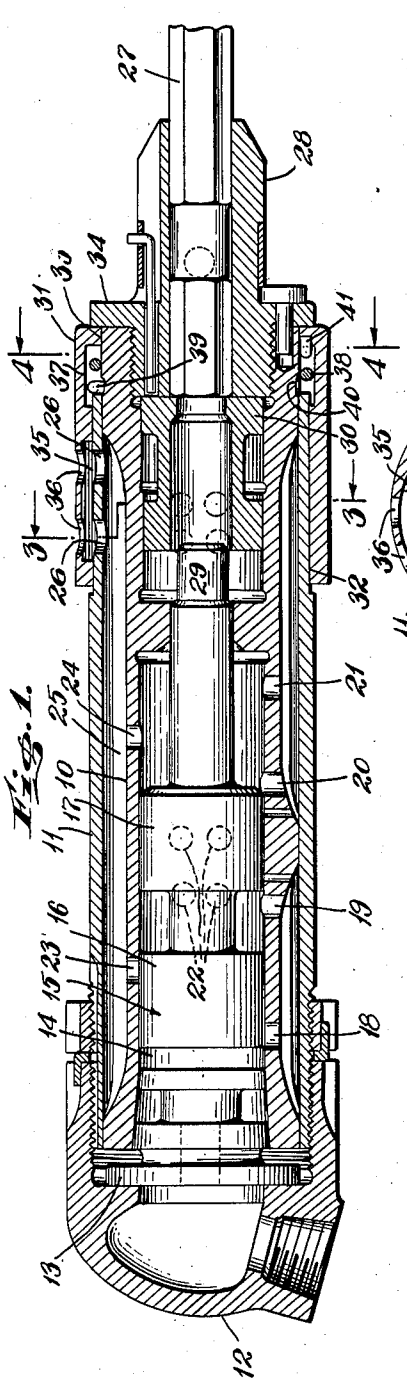


Fig. 1.

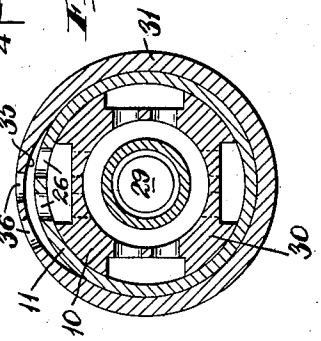


Fig. 3.

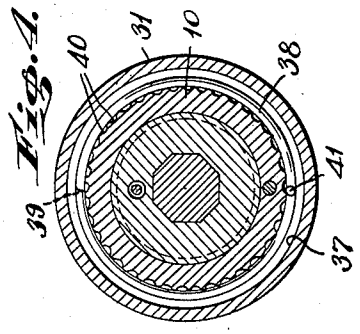


Fig. 4.

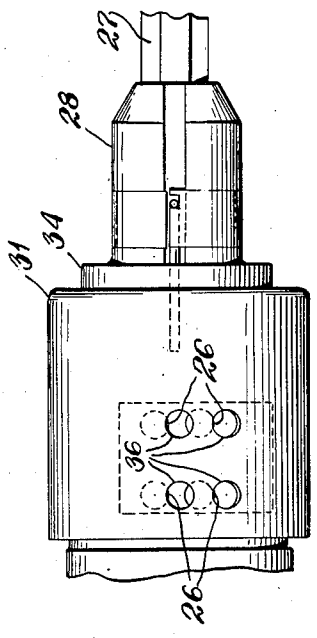


Fig. 2.

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EXHAUST CONTROL FOR AIR HAMMERS

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Original application May 19, 1938, Serial No. 208,773, now Patent No. 2,265,989, dated December 16, 1941. Divided and this application December 15, 1941, Serial No. 423,030

6 Claims. (Cl. 121—35)

This invention relates to what are commonly referred to as automatic hammers employing plungers actuated through the medium of compressed air or other pressure fluid, and the object of the present invention is to provide an improved means for controlling and regulating the exhaust of the hammer, thereby controlling the power of the hammer and adapting it to many different uses, in producing what might be termed light and heavy work, and with these and other objects in view the invention consists in an implement of the class described which is constructed as more fully hereinafter described.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my invention are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a longitudinal sectional view through an implement made according to my invention.

Fig. 2 is a plane view of one end portion of the implement.

Fig. 3 is a cross section on the line 3—3 of Fig. 1; and

Fig. 4 is a cross section on the line 4—4 of Fig. 1.

The present application constitutes a division of my prior application filed under the name of Oliver O. App, Ser. No. 208,773, May 19, 1938, now Patent No. 2,265,989, issued December 16, 1941, since which time my name has been legally changed to the name used in this application.

To illustrate the general structure of the implement or hammer, the following brief description is submitted.

10 represents the cylinder, 11 the casing or sleeve fitting on the cylinder and forming ports or passages longitudinally thereof which control the passage of air or other fluid pressure in the operation of the hammer. At 12 is shown the hollow cap on one end of the casing with which an air supply is adapted to be coupled in supplying air to the various ports or passages of the hammer. At 13 is shown a plug, seating in one end of the cylinder and on the cap, which controls the feed of air into the cylinder.

In the bore 14 of the cylinder is arranged a piston, plunger or hammer 15 having two cylindrical portions 16 and 17 controlling various ports 18, 19, 20 and 21 as well as intake ports 22 and exhaust ports 23 and 24. The ports 23 and 24 open into a long passage 25 which communicates with exhaust passages 26 arranged at the end portion of the cylinder in which the tool 27 is supported.

A chuck 28 is employed to retain the tool 27 against displacement from said end of the cylinder. The inner end of the tool 27 is adapted to be engaged by the end 29 of the plunger or hammer 15. Arranged upon said end portion of the hammer is a throttle valve 30 which controls passage of compressed air from the source of supply to the various ports 18, 19, 20, 21 and the ports 22 in accordance with the teachings in said prior application.

The present application deals with the construction of applicant's baffle in controlling the exhaust from the implement, and, therefore, such parts only of the implement as will give a general outline of the structure are herein included and reference to all other details of construction are omitted for sake of clarity.

At 31 I have shown an exhaust baffle in the form of a wide ring or sleeve freely rotatable on the outer reduced end 32 of the casing 11 and having an outer inturned flange 33 engaging a flange 34 on the chuck to prevent displacement of the baffle from the implement. The bore of the baffle has an eccentric or crescent shaped passage 35 forming a groove or channel adapted to register with the exhaust ports 26 of the casing. The baffle 31 has ports 36 centrally of the passage 35 and opening to atmosphere. With this construction, by rotating the baffle upon the casing, the ports 36 may be entirely shut off, or these ports partially opened. On the other hand, the direction of the exhaust may be diverted to different angles, with certain limits of adjustment of the baffle, to prevent the exhaust from contacting the operator directly. This is accomplished by the direction of rotation of the baffle.

In the accompanying drawing, certain of the ports are shown in pairs, but it will be understood that any number of single or multiple port arrangements may be provided as desired. In this connection four ports have been shown, both on the baffle and on the casing to control the exhaust, but here again the number of, and arrangement of, the ports may be varied, especially on different types of implements.

The outer end portion of the baffle 31 has an enlarged bore 37 in which is arranged a coil spring 38. One end 39 protrudes radially inward to engage ratchet teeth 40 formed on the outer end of the cylinder 10; whereas the other end 41 of the spring enters a socket formed in the inturned flange 33 of the baffle 31 as clearly seen in Fig. 1 of the drawing. With this construction, it will be apparent that the baffle may be held in different positions of adjustment upon the implement to maintain a predetermined regulated

exhaust. It is also preferred that the ratchet engagement be such as to permit adjustment of the baffle in either direction rather then in a single direction which can be governed by the construction of the teeth or projections of the ratchet employed.

It may be generally stated that my invention deals with an implement of the character described employing a rotatable adjustable baffle with means retaining the baffle in different positions of adjustment in controlling predetermined operations of the implement. The implement is relatively light in weight and yet capable of performing heavy duties, for example, the implement may be utilized in performing various types and kinds of operations upon various kinds and classifications of work-pieces, in the removal of cement, plaster, mortar and other materials, and in many trimming operations upon various metal workpieces, for example, in trimming excessive materials at welded joints. The implement may be further used in performing different types and kinds of riveting operations, in wood carving and in many other uses too numerous to name.

In connection with the different uses of the implement, it will be apparent that the baffle is adjusted to control and regulate the exhaust so as to increase or decrease the capacity of the exhaust or to entirely shut off the exhaust. These adjustments control the light and heavy impact of the hammer and adapts the hammer to a wide range of uses.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a fluid pressure operated implement of the character described having a plunger for actuating a tool supported in the implement, the tool end of the implement having an exhaust for the fluid pressure passed through the implement, means on the implement controlling said exhaust, said means being adjustable to regulate the power operation of the plunger to adapt the implement to the performance of different types and classes of work, means retaining said first named means in different positions of adjustment, the exhaust of said implement comprising circumferentially spaced ports, the first named means comprising a baffle ring, and said baffle ring having circumferentially spaced ports in registering alinement with said exhaust ports.

2. In a fluid pressure operated implement of the character described having a plunger for actuating a tool supported in the implement, the tool end of the implement having an exhaust for the fluid pressure passed through the implement, means on the implement controlling said exhaust, said means being adjustable to regulate the power operation of the plunger to adapt the implement to the performance of different types and classes of work, means retaining said first named means in different positions of adjustment, the exhaust of said implement comprising circumferentially spaced ports, the first named means comprising a baffle ring, said baffle ring having circumferentially spaced ports in registering alinement with said exhaust ports, and means on the baffle ring controlling the direction of the exhaust therefrom.

3. In a fluid pressure operated implement of the character described, an elongated cylinder, means mounting a tool in one end of the cylinder, said end of the cylinder having an exhaust for discharging the pressure medium from the implement, a ring type baffle circumferentially adjustable on said end of the cylinder in controlling said exhaust, and means retaining the baffle in different positions of adjustment.

4. In a fluid pressure operated implement of the character described, an elongated cylinder, means mounting a tool in one end of the cylinder, said end of the cylinder having an exhaust for discharging the pressure medium from the implement, a ring type baffle circumferentially adjustable on said end of the cylinder, in controlling said exhaust, means retaining the baffle in different positions of adjustment, said baffle having a crescent shaped passage in registering alinement with the exhaust in said cylinder, and said passage controlling the exhaust in the different adjustments of the baffle with respect to the cylinder exhaust.

5. In a fluid pressure operated implement of the character described, an elongated cylinder, means mounting a tool in one end of the cylinder, said end of the cylinder having an exhaust for discharging the pressure medium from the implement, a ring type baffle circumferentially adjustable on said end of the cylinder in controlling said exhaust, means retaining the baffle in different positions of adjustment, said baffle having a crescent shaped passage in registering alinement with the exhaust in said cylinder, said passage controlling the exhaust in the different adjustments of the baffle with respect to the cylinder exhaust, and the exhaust of the cylinder comprising circumferentially spaced ports and correspondingly spaced ports in the baffle and registering with said crescent passage.

6. In a fluid pressure operated implement of the character described, an elongated cylinder, means mounting a tool in one end of the cylinder, said end of the cylinder having an exhaust for discharging the pressure medium from the implement, a ring type baffle circumferentially adjustable on said end of the cylinder in controlling said exhaust, means retaining the baffle in different positions of adjustment, said baffle having a crescent shaped passage in registering alinement with the exhaust in said cylinder, said passage controlling the exhaust in the different adjustments of the baffle with respect to the cylinder exhaust, the exhaust of the cylinder comprising circumferentially spaced ports and correspondingly spaced ports in the baffle and registering with said crescent passage, said baffle retaining means comprising a ratchet on the cylinder, and a spring keyed to the baffle and operatively engaging said ratchet.

OLIVER O. APPTON.