Jan. 10, 1950 R. J. SCHEIDT 2,494,410

CONTROL DEVICE

Filed Oct. 13, 1947 2 Sheets-Sheet 1

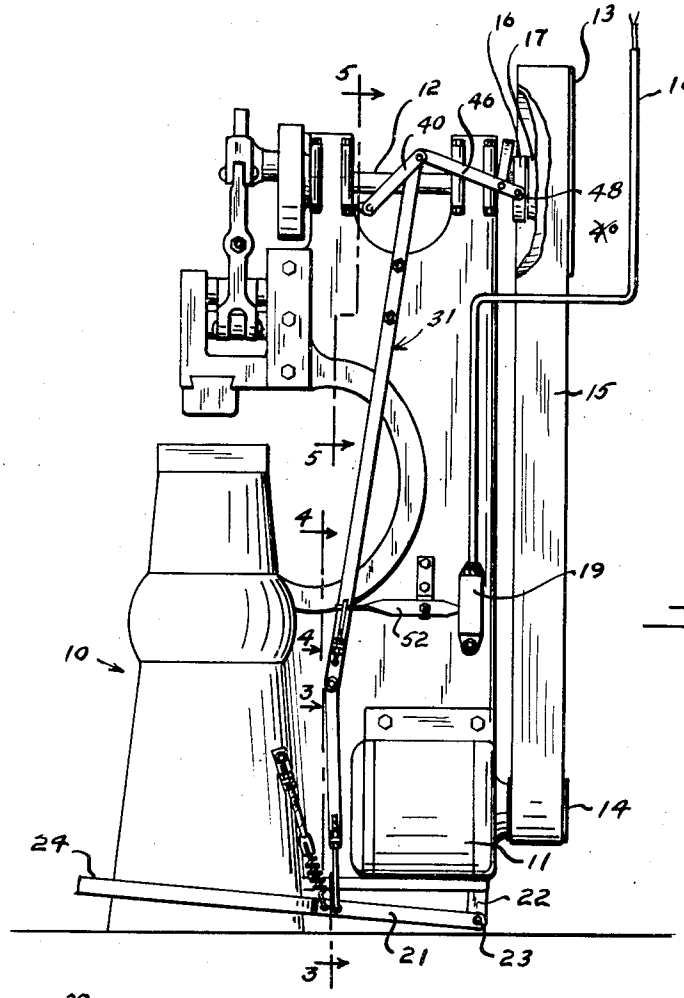


Fig. 1.

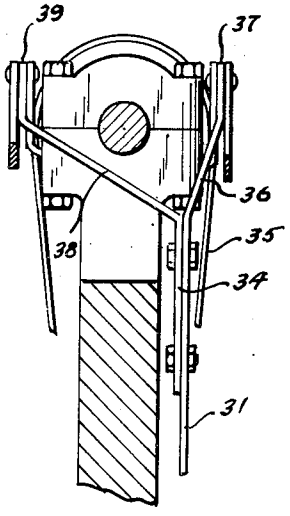


Fig. 5.

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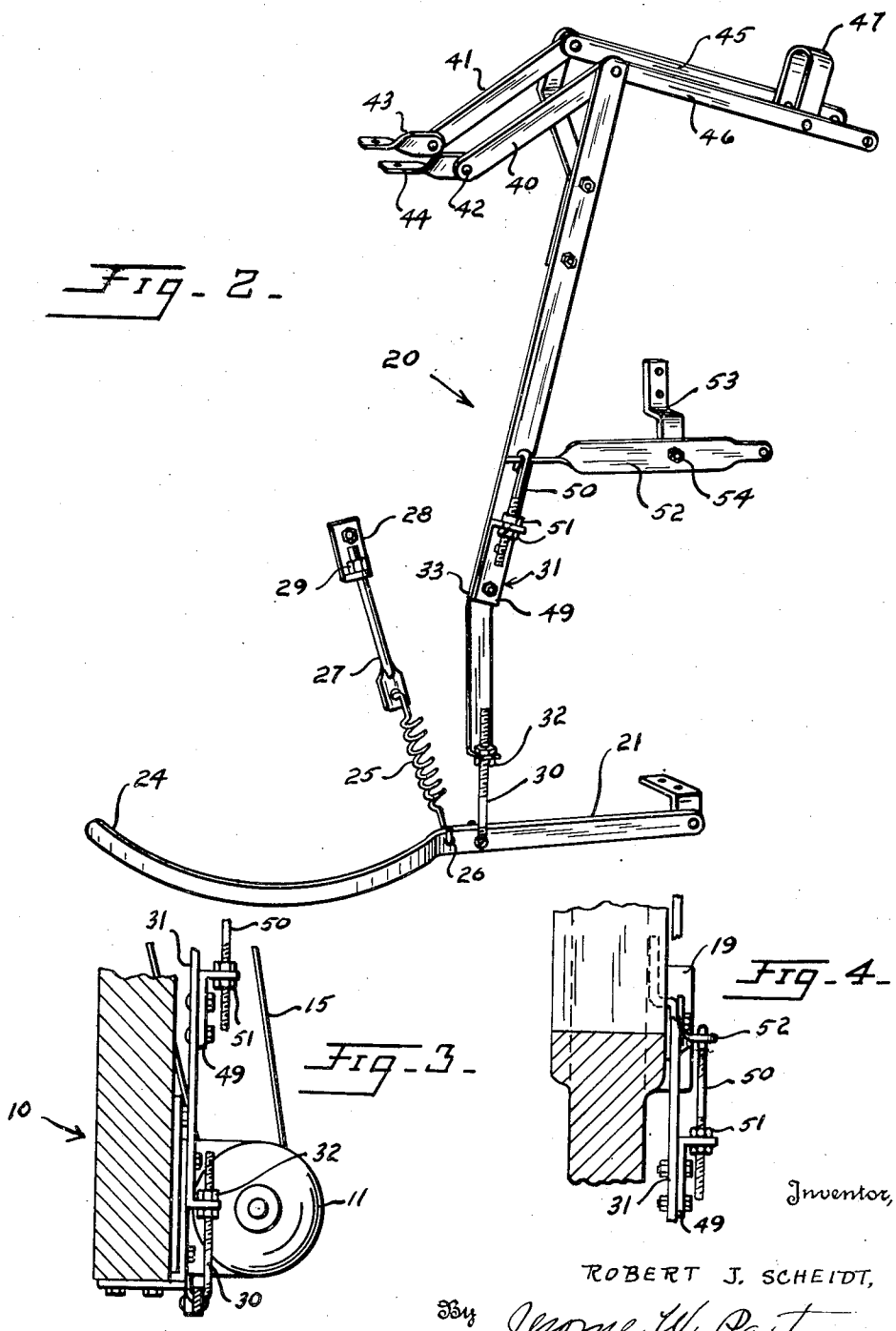


Fig. 2.

Fig. 3.

Fig. 4.

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CONTROL DEVICE

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4 Claims. (Cl. 192—.02)

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The present invention relates to control devices, and more particularly has reference to a linkage device for controlling the operation of a power hammer or the like.

More specifically, my invention comprises a linkage mechanism connected with the control switch for the power plant and also with the clutching mechanism which, in its inoperative position, maintains the circuit opened to the power plant and the clutch faces disengaged. Upon actuation of the linkage through a foot actuated member, the switch is manipulated to close the circuit to the power plant and simultaneously the clutch becomes effective, whereby the hammer is rendered operative. Upon release of pressure from the foot actuated means, the linkage is returned to its initial position, thereby opening the circuit to the power plant and disconnecting the clutching mechanism.

An object of my invention is to provide a linkage arrangement which may be incorporated with conventional power hammers for controlling the operation of the power hammer.

And a further object of my invention is to provide a linkage arrangement of the character described wherein actuation of the linkage simultaneously renders the motor and clutching mechanisms operative.

Yet a further object of my invention is to provide a linkage device of the character described which may be easily operated by foot pressure.

Yet a further object is to provide a linkage mechanism for controlling the operation of a power hammer which is simple in structural details, positive in operation, and which can be cheaply and easily manufactured.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein like characters denote corresponding parts in the several views, and in which:

Figure 1 is a view in side elevation of my linkage construction showing its relationship to a power hammer of conventional type.

Figure 2 is a view in perspective of the component parts of my linkage control.

Figure 3 is a sectional view taken along the line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a sectional view taken along the line 4—4 of Figure 1, looking in the direction of the arrows, and

Figure 5 is a sectional view taken along the line 5—5 of Figure 1, looking in the direction of the arrows.

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Referring to Figure 1, I have shown a power hammer 10 of conventional structure, wherein an electric motor 11 drives shaft 12 through upper and lower pulleys 13 and 14 by an endless belt 15. A sliding clutch collar 16 cooperates with a fixed collar 17 associated with the pulley 13 for rotating the shaft 12. Electrical leads 18 supply current to the motor 11, and a switch 19 mounted on the frame of the power hammer 10 controls the flow of current to the electric motor.

As above pointed out, my invention is directed to a linkage control for operating the switch 19 and the movable clutch collar 16 and this linkage I have designated generally 20, as shown in Figure 2.

Referring to Figure 1, it will be observed that a foot treadle 21 is pivoted to an angle bracket 22 supported by the frame of the hammer 10, as shown at 23. The opposite or free end of the foot treadle 21 is preferably arcuate in configuration and partially encircles that part of the hammer 10 which supports the anvil. It will be appreciated that by thus forming the free end 24 of the treadle, it may be readily actuated by the operator regardless of the location of the operator with respect to the hammer. A helical spring 25 has its lower end removably affixed to the treadle 21, as shown at 26, and the upper end secured to an eye bolt or the like 27. The upper threaded end of the eye bolt 27 threadedly engages an aperture provided in an angle 28 which is bolted or otherwise secured to the frame of the hammer. Lock nuts 29 maintain the eye bolt in proper position with respect to the angle 28 and by proper manipulation of these bolts, the spring 25 may be adjusted within very fine limits. Normally, the spring 25 holds the foot treadle 21 in the position shown in Figure 1 or moves it upwardly about its point of pivot 23.

A second eye bolt 30 is detachably connected to the treadle 21 adjacent the spring 25 and is adjustably secured to the lower end of an elongated link 31 by a pair of lock nuts 32. As perhaps best shown in Figures 1 and 2, the elongated link 31 is bent at a slight angle, shown at 33, and a bracket 34 is secured thereto at a point near the upper end by bolts 35. The link 31 is bent outwardly at a slight angle, as shown at 36, and terminates in a vertical extension 37. The bracket 34 is likewise inclined outwardly, as shown

at 38 and terminates in a vertical portion 39 which is in parallel relation to the vertical extension 37. Pivotally connected to the extensions 37 and 39 are parallel links 40 and 41 which in turn are pivoted, as shown at 42, to a pair of connectors 43 and 44. The connectors 43 and 44 are attached to the frame of the hammer in any convenient manner.

Also pivoted to the extension 37 and the vertical portion 39 are a pair of forwardly extending links 45 and 46 to which is secured an inverted U-shaped strap 47 adjacent the free ends of the links. The links are suitably attached to the sliding clutch collar 16, as shown at 48. As will later become more fully apparent, downward movement of the elongated link 31 will move the point of pivoting of the links 40, 41, 45 and 46 downwardly, thus straightening the links and effecting a sliding movement of the clutch collar 16 whereby it will engage the fixed clutch collar 17 to render said clutch mechanism operative.

As shown in Figures 2 and 4, an angle bracket 49 is suitably secured to the link 31 immediately above the bend 33. A bolt 50 is adjustably mounted in the flange of the bracket 49 by adjusting nuts 51. The upper end of the bolt 50 is connected with a horizontally disposed lever 52 which is pivotally mounted to the frame of the hammer 10 on a bracket 53, as shown at 54. The free end of the lever 52 is suitably connected with the switch mechanism to move such switch mechanism from its off and on positions.

With the linkage in the position shown in Figure 1, it will be appreciated that the clutch faces 16 and 17 are disengaged and the switch 19 is in the off position. The parts will thus remain as long as pressure is not applied to the treadle 21 by virtue of the spring 25 which tends to pull the treadle upwardly about its pivot point 23 to the frame. When it is desired to operate the hammer, the operator depresses the treadle 21 against the action of the spring 25, and the downward movement of the treadle will likewise effect a downward movement of the elongated link 31. This downward movement of the link 31 will cause a pivotal movement of the lever 52 about its pivot point 54, thereby actuating the switch 19 to start the motor 11. At the same time the pivot point of the links 40 and 41 and 45 and 46 to the link 31 will be displaced downwardly, thereby moving these links to an approximately horizontal position which moves the clutch collar 16 into engagement with the clutch face 17, whereby the hammer is caused to drop. Manifestly, upon release of foot pressure from the treadle 21, the spring 25 will move the link 31 and its associated parts to their initial position and stop operation of the hammer.

By virtue of my linkage control, it is thought obvious that considerable time and power is saved in the operation of the machine. In addition, the control is quite simple in structural details, since all that is required is the application of pressure to the foot treadle 21. The linkage for actuating the clutch collar 16 and the switch 19 is not complex in detail, which, of course, reduces to a minimum the cost of manufacture and any repair or replacement which may be required.

I claim:

1. In a control device for hammers having an electric motor, switching means therefor, and fixed and movable clutch faces, a frame, a foot treadle pivoted to the frame, an elongated arm pivotally connected at its lower end to the treadle, a bracket attached to the arm adjacent the upper end thereof and extending outwardly at an angle therefrom and terminating in an extension parallel to the upper end of the arm, a pair of parallel links pivotally attached to the upper end of the arm and the extension on the bracket, the free ends of said links being attached to the movable clutch face, a lever pivoted to the frame and having one end removably secured to the elongated arm and the opposite end connected with the switching means, and spring means normally maintaining said treadle in a position whereby said elongated arm, parallel links and lever maintain the movable clutch face out of engagement with the fixed clutch face and the switching means in the off position.

2. In a control device for hammers having an electric motor, switching means therefor, and fixed and movable clutch faces, a frame, a foot treadle pivoted to the frame, an elongated arm pivotally connected at its lower end of the treadle, a bracket attached to the arm adjacent the upper end thereof and extending outwardly at an angle therefrom and terminating in an extension parallel to the upper end of the arm, a pair of parallel links pivotally attached tothe upper end of the arm and the extension on the bracket, the free ends of said links being attached to the movable clutch face, a lever pivoted to the frame and having one end removably secured to the elongated arm and the opposite end connected with the switching means, and a spring having one end thereof attached to the foot treadle and the other end thereof secured to an adjustable bolt mounted on the frame, said spring being adapted to maintain the treadle in a position whereby the elongated arm, parallel links and lever maintain the movable clutch face out of engagement with the fixed clutch face and the switching means in the off position.

3. In a control device for hammers having an electric motor, switching means therefor, and fixed and movable clutch faces, a frame, a foot treadle pivoted to the frame, an elongated arm connected at its lower end to said treadle, a bracket attached to the arm and extending outwardly at an angle therefrom and terminating in an extension parallel to the upper end of the arm, a pair of parallel links pivotally attached to the upper end of the arm and the extension on the bracket, the free ends of said links being attached to the movable clutch face, a lever pivoted to the frame, an adjustable connection between one end of said lever and the elongated arm, means connecting the opposite end of said lever with the switching means, and spring means normally maintaining said treadle in a position whereby said elongated arm, parallel links and lever maintain the movable clutch face out of engagement with the fixed clutch face and the switching means in the off position.

4. In a control device for hammers having an electric motor, switching means therefor, and fixed and movable clutch faces, a frame, a foot treadle pivoted to the frame, an elongated arm connected at its lower end to said treadle, a bracket attached to the arm and extending outwardly at an angle therefrom and terminating in an extension parallel to the upper end of the arm, a pair of parallel links pivotally attached to the upper end of the arm and the extension on the bracket, the free ends of said links being attached to the movable clutch face, a lever pivoted to the frame, an adjustable connection between one end of said lever and the elongated arm, means connecting the opposite end of said lever with the

switching means, an adjustable bolt mounted on said frame, a spring having one end attached to said adjustable bolt and the opposite end to said treadle to maintain the treadle in a position whereby the elongated arm, parallel links and lever maintain the movable clutch face out of engagement with the fixed clutch face and the switching means in the off position.

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