June 10, 1941. F. C. SPENCER 2,245,018

APPARATUS ACTUATING MEANS

Filed Sept. 28, 1938

FIG. 1

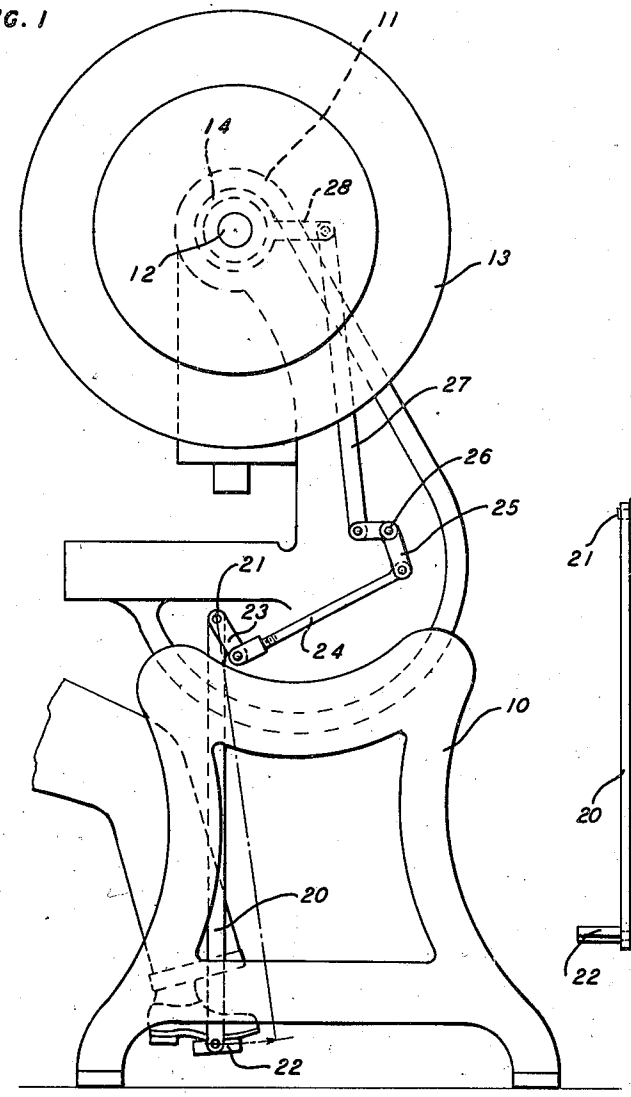
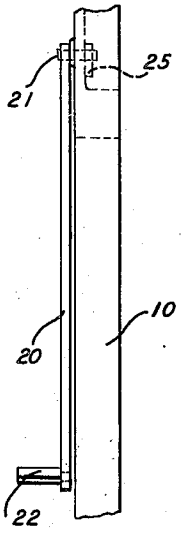


FIG. 2



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APPARATUS ACTUATING MEANS

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2 Claims. (Cl. 74—512)

This invention relates to an apparatus actuating means and more particularly to a tripping mechanism for clutches of shop apparatus.

It has long been a custom to provide foot operating means to actuate or cause actuation of various types of apparatus, especially those of the type which require the service of the operator's hands to advance the work or in other manners assist in the repeated performance of the apparatus. Considerable fatigue may, in some cases, result from the usual operation of such apparatus if the foot operating means requires other than the natural swing of the operator's leg, or even this for more than a certain distance, to actuate or cause actuation of the apparatus. Furthermore, such foot operating means when actuated by downward movement of the operator's foot unless properly protected may be hazardous, as they may be operated by accidental dropping of articles thereupon.

An object of the invention is to provide apparatus actuating means easily operable manually yet inoperable accidentally.

With this and other objects in view, one embodiment of the invention comprises an actuating lever normally hanging plumb from a rotary shaft and provided at its lower end with a rotatable foot rest for the manual movement of the lever with the shaft, the rotation of the shaft causing actuation of means linked to a clutch or other means of an apparatus to cause operation thereof.

Other objects and advantages will be apparent from the following detailed description taken in conjunction with the accompanying drawing, wherein

Fig. 1 is a side elevational view of a punch press embodying the invention, and

Fig. 2 is a fragmentary front elevational view showing the positioning of the actuating lever.

A punch press has been chosen as one of many machines which may be controlled through the aid of the actuating means. The press in general comprises a frame 10 supporting a yoke 11 rotatably supporting a shaft 12 upon which a fly-wheel 13 is mounted. A power means for rotating the shaft is not shown by it is connected to the shaft at will by means of a suitable clutch 14.

It is not believed necessary to show in detail the various features of the press, as these features are well known in the art and they are not of vital importance to establish a clear understanding of the invention.

That portion of the structure which embodies the invention lies in the means for actuating the clutch 14 in the present embodiment or for actuating suitable means to render effective an apparatus for operation. This means consists of a lever 20 mounted at its upper end upon a shaft 21 which is journalled in a suitable bearing at a convenient position in the frame 10. The term "frame 10" applies to the entire supporting structure although it may be of several parts. Adjacent the lower end of the lever 20 is rotatably mounted a foot rest 22 of any suitable structure, for example, one having friction surfaces to prevent slipping of the operator's foot thereon during operation of the apparatus. A lever 23 fixed at one end to the shaft 21 is pivotally connected at its opposite end to one end of a link 24. The other end of the link 24 is connected to the lower end of a bellcrank lever 25, pivoted at 26 to the frame 10, and connected at its other end to the lower end of a link 27. The upper end of the link 27 is pivotally connected to an arm 28 connected in a suitable manner to the clutch 14 so that clockwise movement thereof will actuate the clutch. The lever 20 hangs plumb from its shaft 21 so that the weight applied thereto when the operator's foot is upon the rest 22 in position for operation will not cause operation of the clutch. Furthermore, the operator, as far as the foot operation is concerned, may at all times be at ease, allowing the full weight of his foot and leg to be in a relaxed position. The distance necessary to move the lever 20 to cause actuation of the clutch is indicated by the dotted center line, this requiring little effort on the part of the operator to move his foot forwardly the required distance. Movement of the lever 20 to this position causes counter-clockwise movement of the lever 23 therewith and a similar movement of the lever 25 through its link 24, causing the link 27 to pull downwardly upon the arm 28, rocking the arm clockwise and causing engagement of the clutch, resulting in actuation of the press.

The lever 20 is positioned relatively close to the inner wall of the lower portion of the frame 10 (Fig. 2) and back of the front edge thereof (Fig. 1) to guard against articles engaging the lever accidentally and causing actuation thereof. Furthermore, by hanging the lever 20 plumb from its shaft 21 or in a direct vertical position, articles could drop upon the foot rest 22 without causing actuation of the lever.

It is therefore apparent that the lever 20 with the foot rest 22 will not actuate or cause actuation of the clutch, regardless of the amount of

weight applied to the foot rest. The lever is so positioned with respect to the frame 10 that it is guarded against accidental operation, such as by falling articles, and the lever requires movement an appreciable distance to cause actuation of the clutch but a distance short of that causing fatigue, thus producing an apparatus actuating means operable with minimum effort and free of hazardous accidental operations.

The embodiment of the invention herein disclosed is illustrative only and may be widely modified and departed from in many ways without departing from the spirit and scope of the invention as pointed out in and limited only by the appended claims.

What is claimed is:

1. The combination with an apparatus including power means connected to and disconnected from the apparatus by an actuatable unit, of a pivot, a swingable lever normally hanging vertically from the pivot whereby to be inoperable by weight but operable by swinging movement out of the vertical position, a foot rest mounted on the lower end of the lever, means to guard the lever and foot rest against accidental operation, and means operatively connecting the lever to the said unit to cause actuation of the unit upon movement of the lever.

2. The combination with an apparatus including a supporting frame therefor and power means connected to and disconnected from the apparatus by an actuatable unit, of a pivot, a swingable lever normally hanging from the pivot vertically adjacent an inner wall of the frame whereby to be inoperable by weight but operable by swinging movement out of the vertical position, a foot rest mounted upon the lever and positioned with the adjacent portion of the lever within the outer extremities of and guarded by the frame, and means operatively connecting the lever to the said unit to cause actuation of the unit upon movement of the lever.

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