W. H. KAPPES.

CLUTCH TRIP MECHANISM.

APPLICATION FILED AUG. 5, 1920.

1,391,190. Patented Sept. 20, 1921.

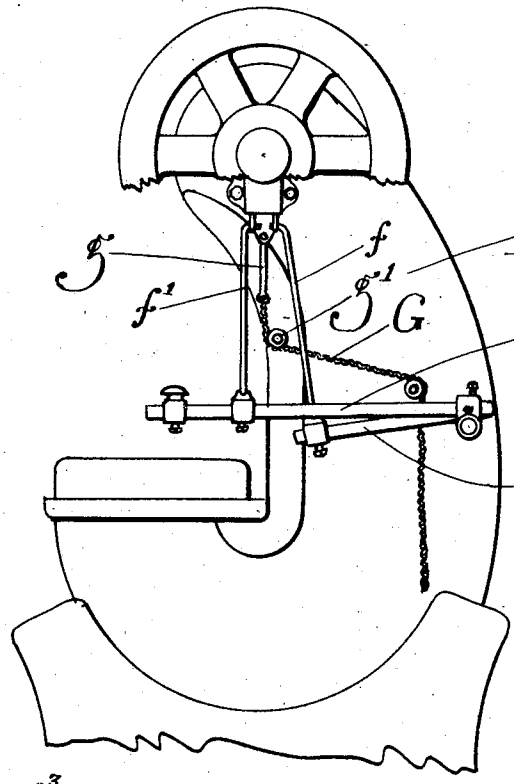


Fig. 1

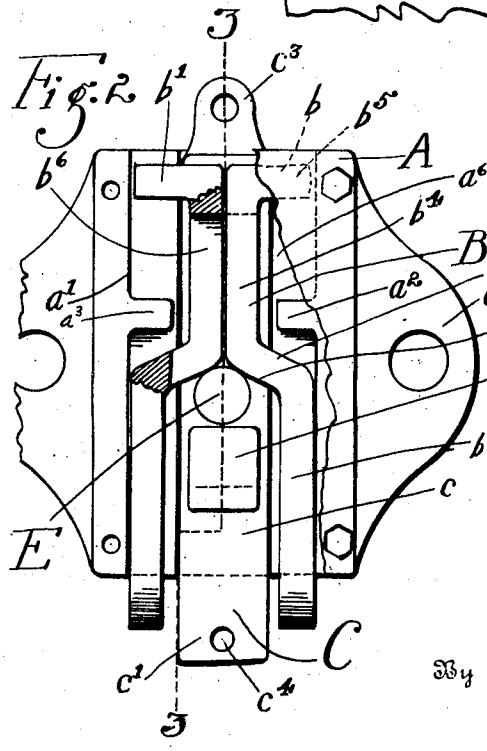


Fig. 2

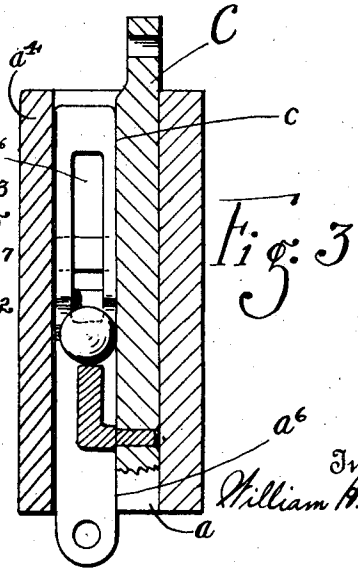


Fig. 3

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UNITED STATES PATENT OFFICE.

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CLUTCH-TRIP MECHANISM.

1,391,190. Specification of Letters Patent. Patented Sept. 20, 1921.

Application filed August 5, 1920. Serial No. 401,543.

To all whom it may concern:

Be it known that I, WILLIAM H. KAPPES, a citizen of the United States of America, and resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in a Clutch-Trip Mechanism, of which the following is a specification.

My invention relates to trip mechanisms of the type in which the operator must operate two hand levers jointly to trip the mechanism, thereby eliminating any possibility of the operator having one of his hands dangerously exposed.

An object of my invention is to eliminate several of the parts of such mechanisms heretofore used, thereby making the device safer, simpler and more efficient.

Another object is to eliminate possible sticking and jamming of the mechanism parts.

These and other objects are attained by the means described herein and disclosed in the accompanying drawing in which:

Figure 1 is a fragmental side elevation of a punch press to which my invention has been applied.

Fig. 2 is an enlarged elevation of the trip mechanism forming a detail of my invention.

Fig. 3 is a sectional view on line 3—3 of Fig. 2.

My invention comprises a housing A supporting the pull bars B adapted to actuate trip bar C when both pull bars are jointly actuated.

The housing A has formed in it a central way a in which the trip bar C is adapted to be reciprocated. A second way a' formed in the housing is adapted to accommodate the pull bars b and b', and has projecting into it the lugs a^2 and a^3. A cover a^4 is mounted upon the housing and incloses the pull bars and trip bar between itself and the housing. The perforated lugs a^5 are formed on the side of the housing and serve as a means of attachment of the housing to the machine D.

The pull bars b and b' are constructed similar to one another and comprise a perforated shank b^2, a shoulder b^3, the arm b^4, and finger b^5. A slot b^6 extends partly through the shoulder and the arm. The pull bars are adapted to slidably engage the bottom a^6 of the way a' and the top c of the trip bar C. The pull bar is so placed in the way a' that the lug a^2 may abut the shoulder b^3 and the fingers b^5. The side b^7 of the shoulder opposite to that portion that may engage the lug a^2 is inclined and extends upwardly toward the arm b^4 terminating immediately adjacent to a similar inclined surface b^7 formed on the adjacent pull bar, both inclined surfaces having a common point of convergence.

The trip bar C comprises a shank c' adapted to be reciprocated in the way a and has projected upward therefrom and extending into the way a' the lug c^2 adapted to assume a position immediately below the inclined surfaces b^7 formed on the pull bars.

A ball E is adapted to rest upon the lug c^2 and to engage the inclined surfaces b^7 upon the pull bars and to transmit the joint reciprocation of the pull bars to the trip bar. The slot b^6 in the pull bars is so placed that the pull bars may be moved toward the lug c^2 and will permit said lug to enter said slots.

The operation of my device is as follows:

The hand levers F and F′ mounted upon the machine D are attached to the pull bars b and b' by the rods f and f' respectively. When both levers F and F′ are actuated the pull bars are moved upon the ball E forcing the ball and the lug c^2 in the line of motion of the pull bars thereby moving the trip bar C downward. The trip bar is at its upper end c^3 attached to a clutch, not shown, upon the machine D, the said clutch being moved to a power transmitting position when the trip bar C is moved downward. When the pressure on the levers F and F′ is withdrawn, the spring mounted on the clutch and which normally withholds the driving from the driven clutch member, returns the parts to their normal positions.

If one of the levers, for example F, is moved downward, the pull bar b is likewise moved downward; such downward movement of the pull bar b pushes the ball E toward the pull bar b', the lug c^2 enters the slot b^6 in the pull bar b and consequently trip bar C retains its normal position.

The mechanism as thus far described is one which is intended for use upon work which could be manipulated by one hand of the operator. In case the work is of a size requiring the operator to use two hands

upon it, I have provided a means for operating the trip bar by foot, which consists in a link g movably connected to the trip bar C by being inserted in the hole c^4 therein, and connected preferably by means of a chain G with a foot lever not shown. When the foot control mechanism is out of commission the link g is unhooked from the trip bar and hung on the pulley spindle g'.

What I claim is:—

1. In a clutch trip device the combination with a trip bar, of means adapted to be separately reciprocated and a ball adapted to transmit the joint movement of the reciprocating means to the trip bar.

2. In a clutch trip mechanism the combination with a trip bar, pull bars adapted to be reciprocated in parallelism, each bar comprising a shank, a shoulder, and an arm, the adjoining surfaces of the arms being immediately adjacent, a ball, and means mounted on the trip bar adapted to support the ball between itself, the shoulders and the shanks of the pull bars.

3. In a clutch trip mechanism the combination with a trip bar, of a lug on the trip bar, reciprocatory pull bars mounted adjacent to the trip bar, and a ball adapted to transmit the joint reciprocation of the pull bars to the lug.

4. In a clutch trip mechanism the combination with a housing having two ways, of a trip bar adapted to be reciprocated in one of the ways, a lug on the trip bar extending into the second way, pull bars adapted to be reciprocated in the second way, and a ball adapted to transmit the joint reciprocation of the pull bars to the lug.

5. In a clutch trip mechanism the combination with a housing having two ways therein, of a trip bar adapted to be reciprocated in one of the ways, a lug mounted on the trip bar and projecting into the second way, slotted pull bars adapted to be reciprocated within the second way, the slots in the pull bars being in reciprocating alinement with the lug, and a ball interposed between the slotted portions of the pull bars and the lug, said ball being adapted to permit individual movement of any pull bar and to transmit the joint reciprocation of the pull bars to the lug.

6. In a clutch trip mechanism the combination with a housing having two ways therein, of a trip bar adapted to be reciprocated in one of the ways, a lug mounted on the trip bar and projecting into the second way, pull bars mounted in the second way and adapted to be reciprocated within the second way, a ball interposed between the lug and the pull bars and adapted to transmit the joint reciprocation of the pull bars to the lug, and a cover adapted to extend over the second way.

In witness whereof, I have hereunto subscribe my name this 3rd day of August, 1920.

WILLIAM H. KAPPES.