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J. I. ROBIN.

SAFETY DEVICE FOR CONTROLLING THE OPERATION OF AUTOMATIC MACHINES.

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Fig. 1.

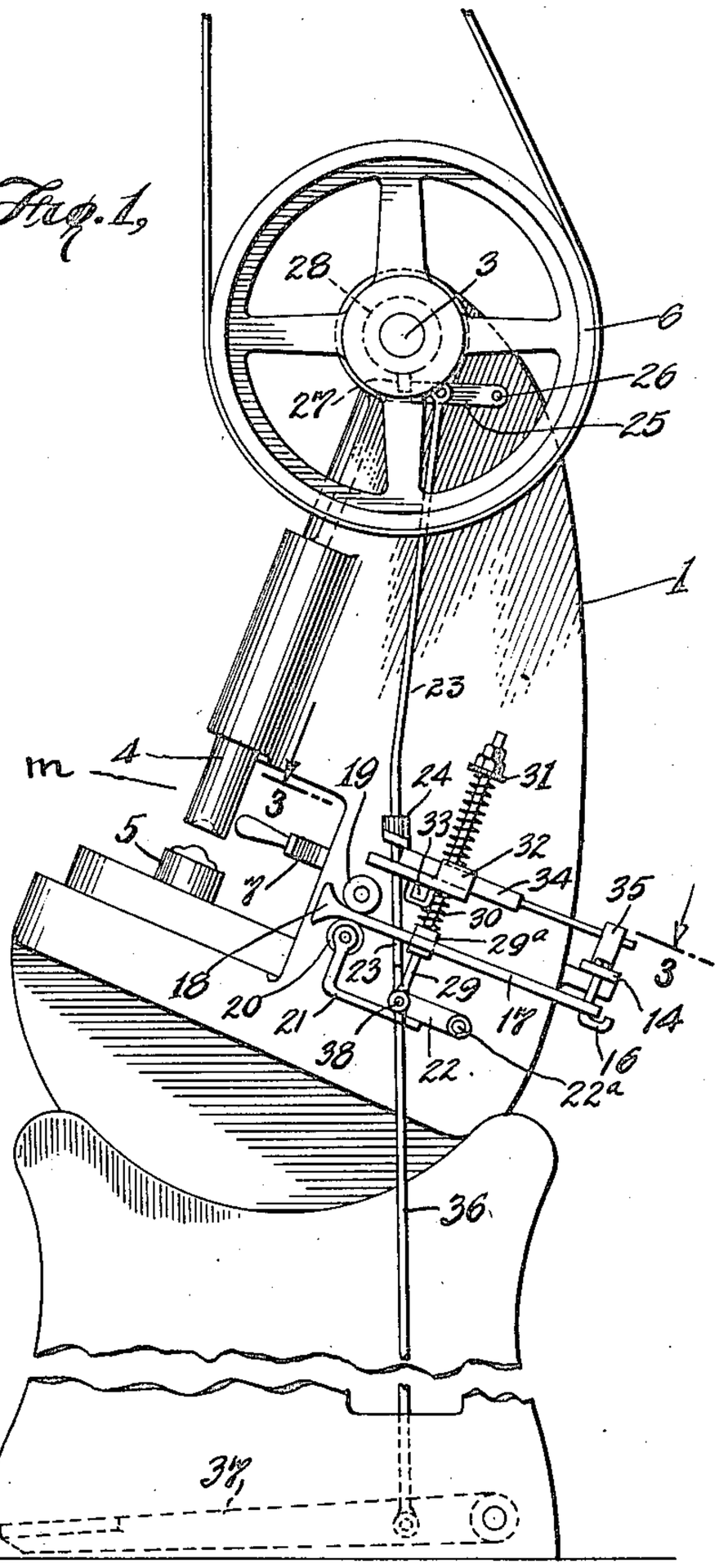


Fig. 2.

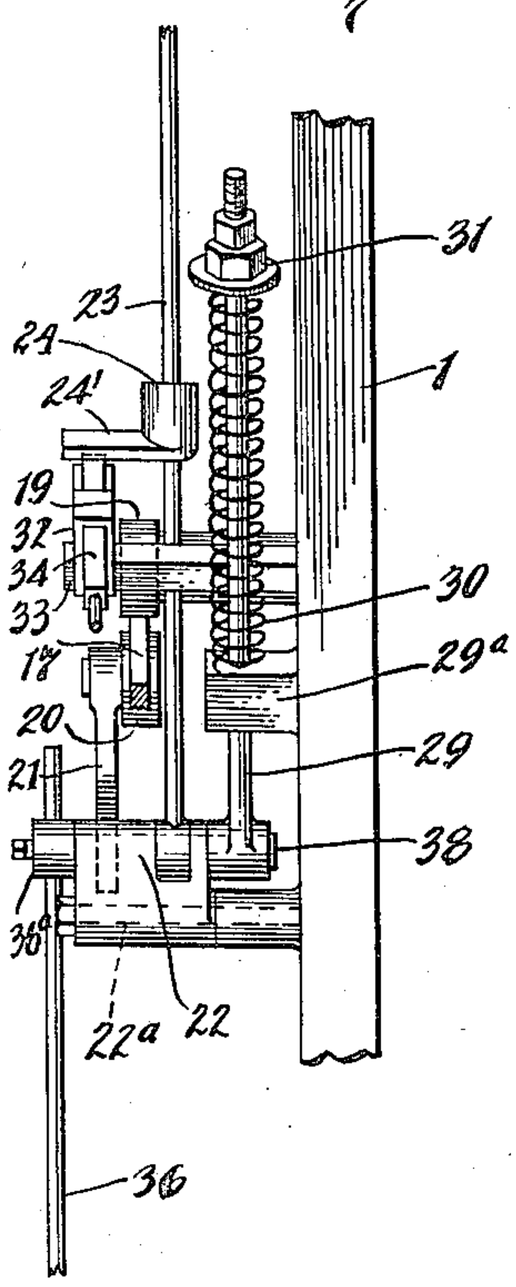
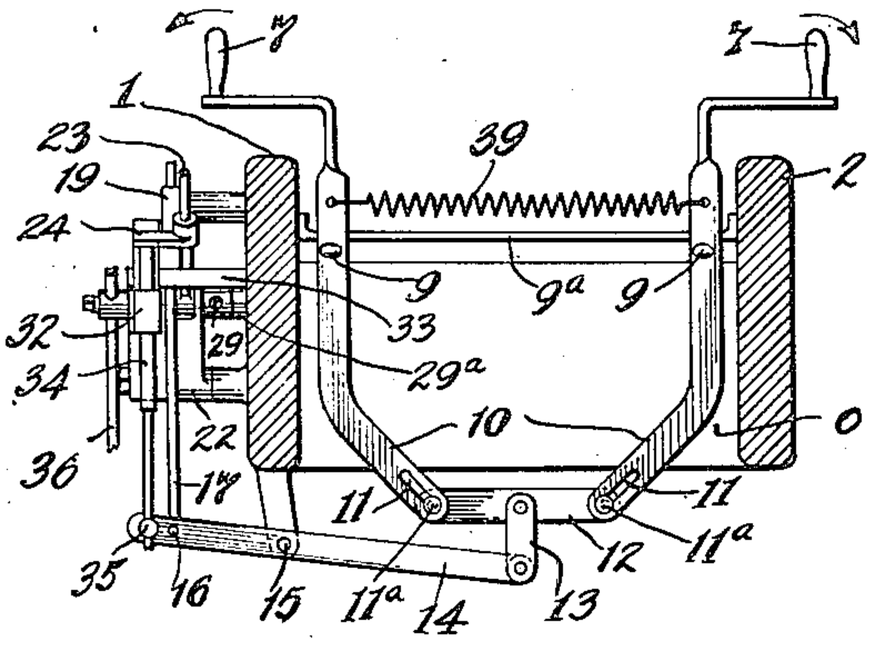


Fig. 3.



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UNITED STATES PATENT OFFICE.

JACOB I. ROBIN, OF NEW YORK, N. Y.

SAFETY DEVICE FOR CONTROLLING THE OPERATION OF AUTOMATIC MACHINES.

Application filed February 17, 1921. Serial No. 445,607.

To all whom it may concern:

Be it known that JACOB I. ROBIN, citizen of the United States of America, residing at 130th Street and Park Avenue, in the county of New York and State of New York, has invented certain new and useful Improvements in Safety Devices for Controlling the Operation of Automatic Machines, of which the following is a specification.

The present invention relates to machines the operation of which is controlled by the workman through the operation of a pedal or hand lever. With machines of this character, particularly stamping and punching machines or the like, frequent injuries to the operator occur through his accidentally putting his hand or hands between the dies or other operating parts while feeding the material to be treated by the machine or through his failure to withdraw his hands before the operation takes place.

The object of my invention is to provide a safety device for controlling the operation of the machine which will necessitate the simultaneous use of his both hands for its manipulation, so that while the operation is performed both hands of the operator will be occupied and injury will be entirely excluded.

My invention consists in the construction of said device and in the novel combination and arrangement of parts as will be hereinafter more fully described and defined in the appended claims.

In the accompanying drawing in which similar reference characters denote corresponding parts, Fig. 1 is a side elevation of a metal punching machine equipped with my device, Fig. 2 is a rear end elevation of a part of said machine and of my device, and Fig. 3 a cross section on line 3—3 of Fig. 1.

In the following I shall describe my device as applied to a metal stamping device, but it will be clear from the detailed description that my device can be applied to various other machines and apparatus where the operation is controlled by the operator himself.

In the drawing the punching machine of the example shown, which in itself is of well known construction, comprises a frame of which 1 and 2 are the lateral walls between which an opening or recess *o* is formed extending from the mouth portion into which the material is fed to lie between a stationary die 5 and a vertically movable die 4. The latter is actuated in a well known manner by mechanism (not shown) through a shaft 3 driven from a pulley 6.

The operation of the die 4 is usually controlled through a stop 25 in the form of an arm pivoted at 26 to the frame and which cooperates with a nose or projection 27 on a revolving part 28 of the mechanism operating said die 4 so that at each full revolution of the part 28 the die 4 will be automatically stopped in its raised position to permit the operator to place the material to be treated on the stationary die 5. Having done this the operator usually releases the stop by his foot operating a pedal 37 connected to the stop 25 by a rod 36.

Since his hands after feeding and placing the material are free, it often happens, that while operating the pedal, the operator forgets to remove or accidentally puts his hand or hands underneath the die 4 as a result of which he becomes injured. My new device will prevent such accidents.

Fixed between the walls 1 and 2 and extending transversely through the recess *o* is a bar 9ª on which are fulcrumed as at 9 near its ends, horizontally swinging handles 7. The rear ends 10 of said handles are bent inwardly toward one another and provided with longitudinal slots 11 adapted to act as cam grooves. Connected to said handles 7 by pins 11ª slidably engaging said cam slots 11 is a cross piece 12, which when the arms 7 are swung outwardly away from one another will be caused to move forwardly. This cross piece 12 by a link 13 is centrally connected to an arm 14 which is fulcrumed at 15 to a stationary part of the frame and to the free end of which is attached by a hook pin 16 or the like a bar 17. The latter extends outside the frame and parallel to one of the side walls thereof. The forward end of said bar 17 is formed to a cam 18 and is guided between two rollers 19 and 20, of which 19 is stationarily supported on the wall 1 of the frame while the roller 20 is carried by an arm 21 fixed to or formed integrally with a vertically tiltable member 22 mounted on a pin 22ª projecting from the wall 1. The member 22 carries a pin 38 on which is pivoted a rod 23 which is connected to the

aforenamed movable stop 25. At an intermediate point between its ends the rod has fixed to it a sleeve 24 formed with a laterally extending projection or finger 24′ which is adapted to cooperate with a slide 34 to lock the rod 23 so as to retain the stop 25 in engagement with the nose 27 of the die actuating mechanism. Also pivoted on the pin 38 of the arm 22 is a rod 29. The latter is rectilinearly guided in a bracket 29ª fixed to the wall 1 and is actuated by a spring 30 mounted between said bracket and a head piece 31 fixed to the free end of said rod 29. The tendency of said spring is to pull the said arm 22 upwardly thereby holding the rod 23 and consequently the stop in raised or operative position, and the roller 20 tightly against the cam bar 17. The locking bar 34 is guided in a bracket 32 carried by a member 33 fixed to the wall 1 of the machine. The rear end of the locking bar 34 through a member 35 or the like is suitably connected to the lever 14. The connection of the bar 34 and rod 17 to the lever arm 14 and the arrangement of the cam 18 and rod 34 relative the arm 21 and finger 24′ respectively, are such that when the arm is swung rearwardly the bar or lock 34 will first be withdrawn from contact with the finger 24′ releasing the rod 32 and then the cam will come into engagement with the roller 20 of the arm 21 to pull said rod downwardly and disengage the stop 25 from the nose 27. When the arm 14 is swung in the opposite direction the cam 18 of the bar 17 will be first removed from the roller 20 permitting the rod 36 under the action of the spring 30 to return into locking position and then the locking bar 34 will pass under the finger 24′ locking the rod 36 in its elevated position.

The pedal 37 need not be removed but may be disconnected from the rod 36.

The two handles 7 are connected by a spring 39 tending to restore the same to their initial position.

At the time the operator passes the piece to be treated by the machine into the mouth *m* to rest under the movable die 4 the latter is locked against movement by the stop 25 and the auxiliary lock 24, 34. In order to unlock the machine he must grasp the two handles 7 one with each hand and turn them outwardly in opposite directions as indicated by the arrows in Fig. 3. By such turning of the handles 7 the cam shaped recessed ends 10 thereof cause the member 12 to advance thereby tilting the lever 14 around its fulcrum 15. As a result of the swinging of the lever 14 the locking bar 34 will be first moved to disengage the finger 24 and immediately thereon cam 18 of bar 17 will be moved to actuate the roller arm 21. The latter will be depressed against the tension of spring 30 and draw with it the rod 23 swinging the stop 25 out of engagement with the projection 27 and permitting the movable die to perform its operation on the piece lying on the stationary die 5.

It will be understood that during the operation of the die 4 the operator must hold the handles 7 spread apart and thus both his hands will be occupied while the die descends, whereby injury to his hands will be rendered impossible.

The details of the construction described and shown and the manner of applying the device to the machine may be variously modified without departing from the principle of my invention.

What I claim is:—

1. In a safety device for an automatic machine, the combination with a movable stop controlling the operation of said machine, of a rod for moving said stop, a cam member for moving said rod, a locking bar to lock said rod against movement, a swinging lever to which both said locking bar and member are operatively connected and manually operated means for swinging said lever capable of manipulation only by the simultaneous use of both hands of the operator.

2. In a safety device to control the operation of a machine, a movable stop, cam operated means for moving said stop, a locking member to temporarily prevent movement of said means, common means for imparting movement to both, said first named means and said locking member, and a two handle mechanism for operating said common means by the use of both hands of the operator.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB I. ROBIN.

Witnesses:
THELMA BUETTNER,
MAX D. ORDMANN.