F. M. REIMANN.

SAFETY ATTACHMENT FOR PRESSES.

APPLICATION FILED MAR. 16, 1914.

**1,105,695.**

Patented Aug. 4, 1914.

4 SHEETS—SHEET 1.

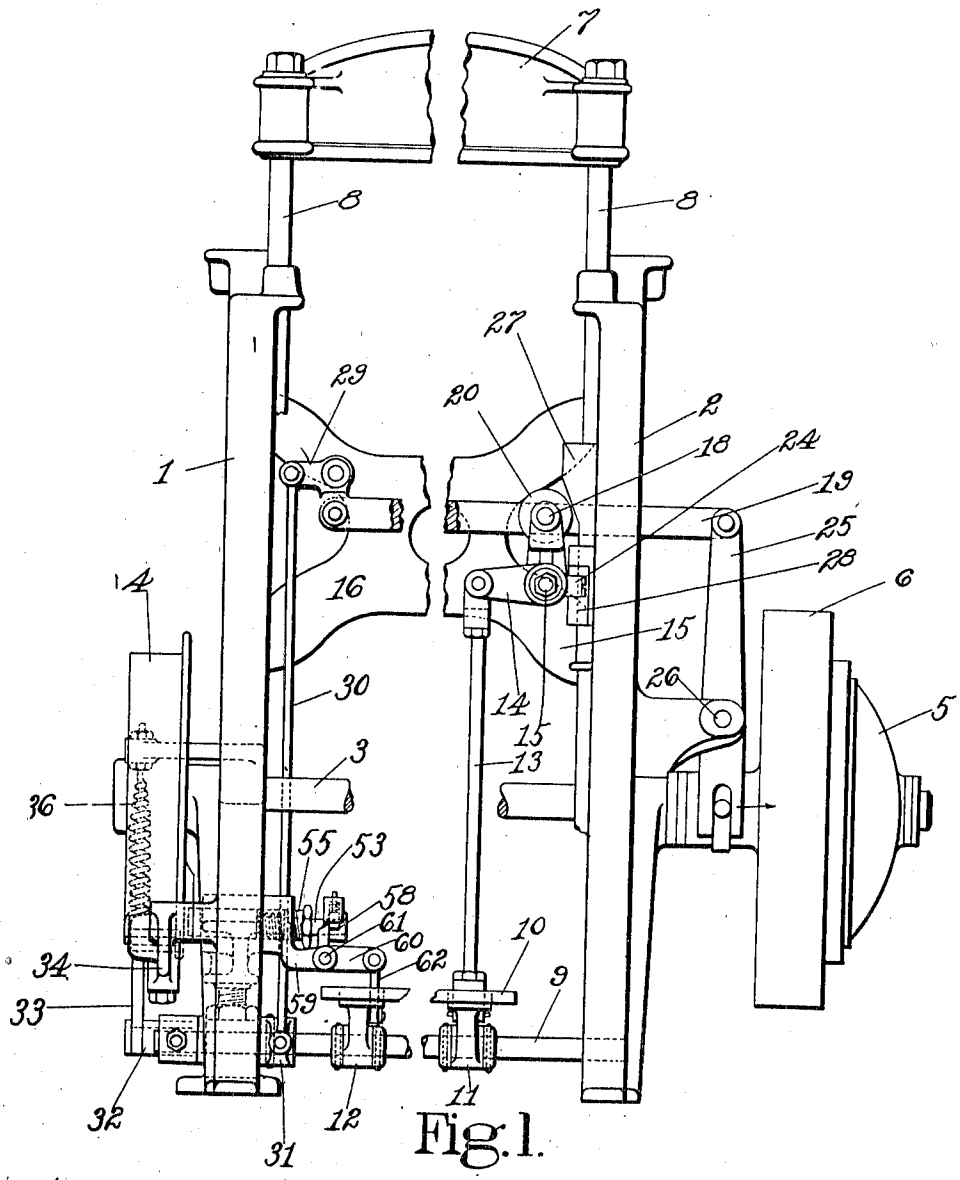



Fig. 1.

WITNESSES.

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4 SHEETS—SHEET 2.

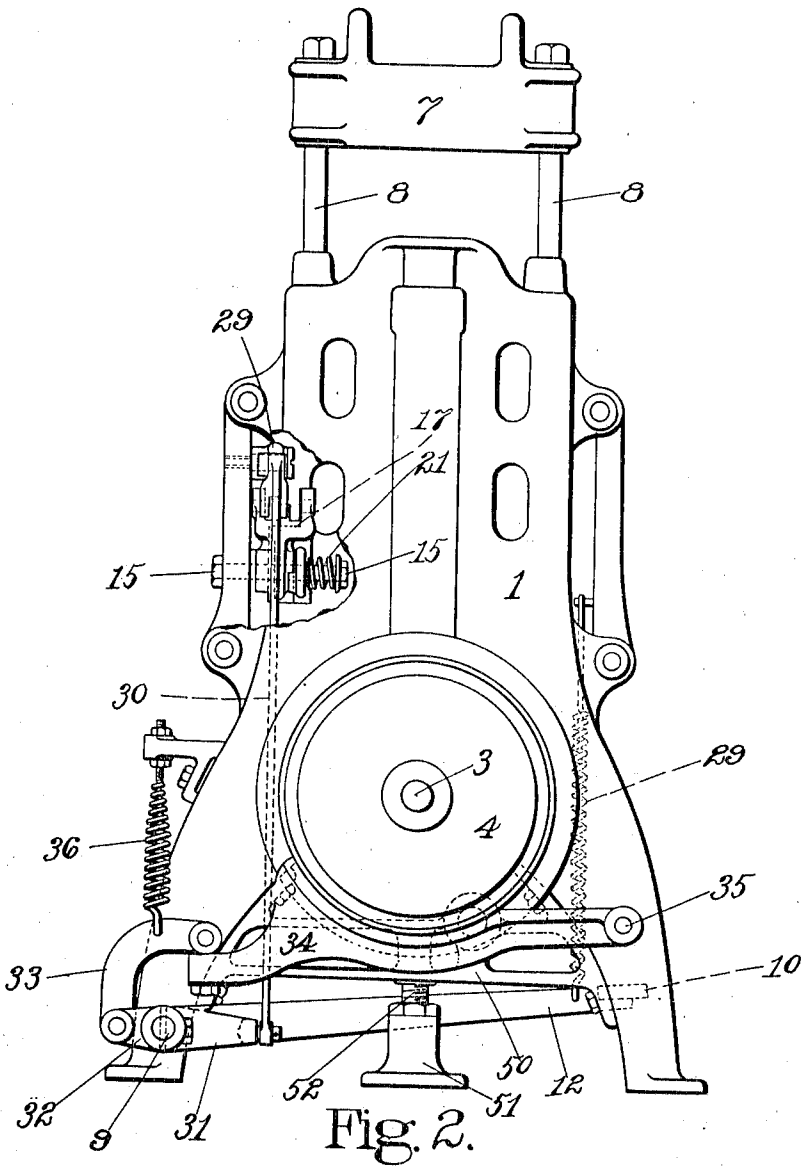



Fig. 2.

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4 SHEETS—SHEET 3.

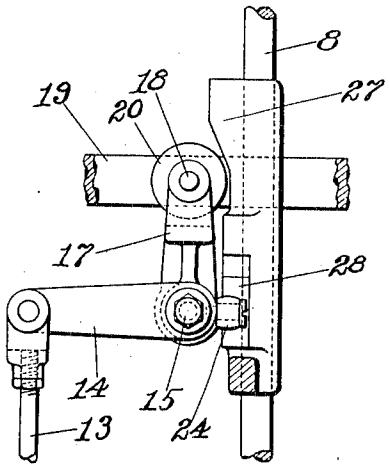



Fig. 3.

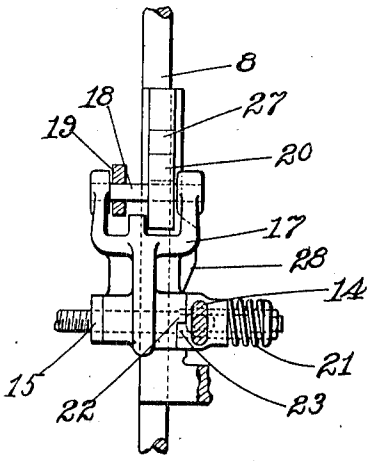



Fig. 4.

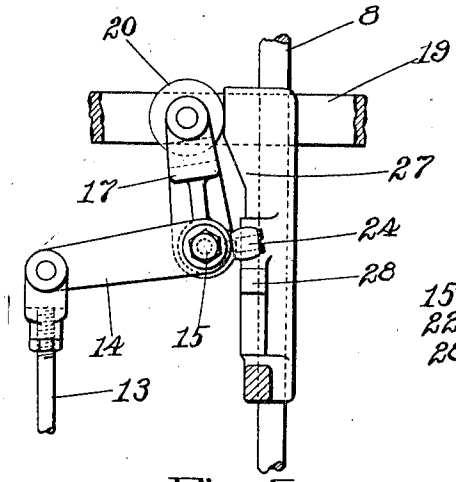



Fig. 5.

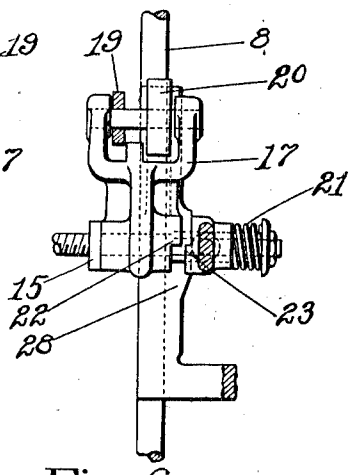



Fig. 6.

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4 SHEETS—SHEET 4.

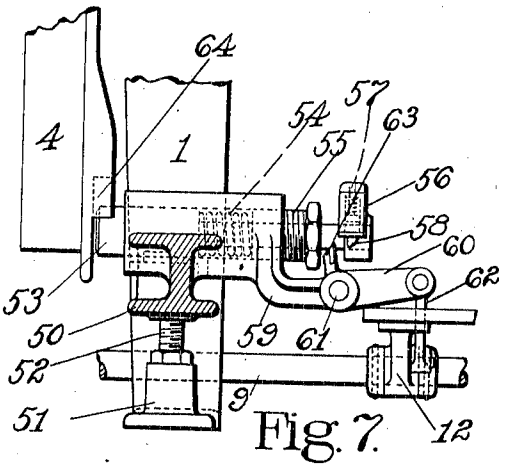



Fig. 7.

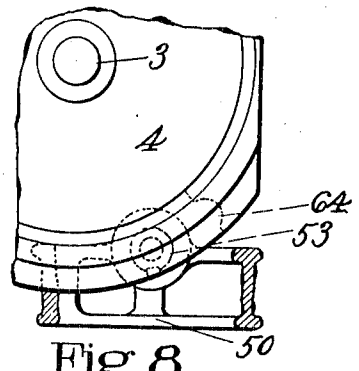



Fig. 8.

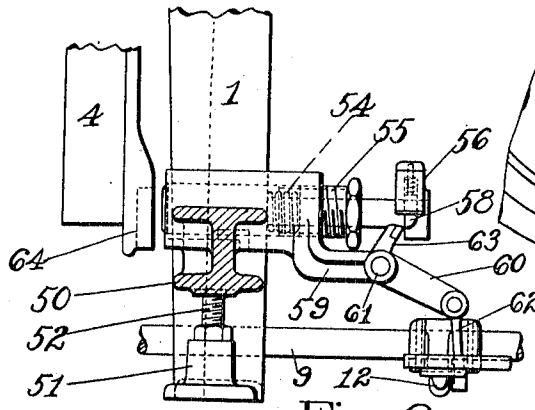



Fig. 9.

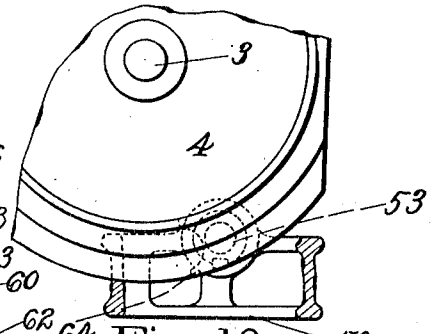



Fig. 10.

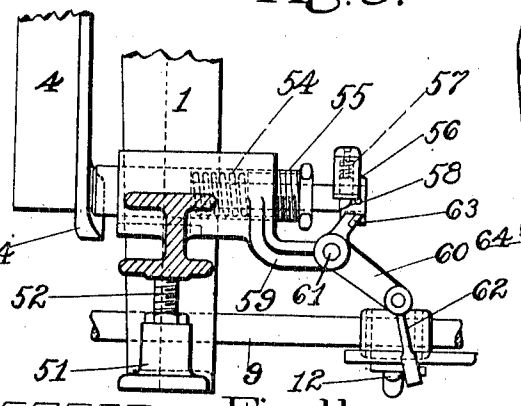



Fig. 11.

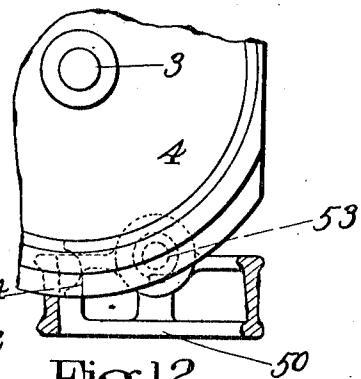



Fig. 12.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

FRANZ MAX REIMANN, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## SAFETY ATTACHMENT FOR PRESSES.

1,105,695. Specification of Letters Patent. Patented Aug. 4, 1914.

Application filed March 16, 1914. Serial No. 825,033.

*To all whom it may concern:*

Be it known that I, FRANZ MAX REIMANN, a subject of the King of Saxony, residing at Frankfort-on-the-Main, in the Kingdom of Prussia, Germany, have invented certain Improvements in Safety Attachments for Presses, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

In the manufacture of boots and shoes it is customary to employ so-called "momentum presses" or revolution presses for dying out soles and other parts of the boots or shoes. Presses of this type comprise usually a vertical guided cross beam and a power driven fly wheel or pulley and operating mechanism for the beam which may be clutched to the pulley and which is operated principally by the momentum of the pulley to cause the beam to descend into engagement with the die upon the work, then to rise again to its normal position of rest, at the end of which movement the operating mechanism is again disconnected from the pulley. As these machines are usually arranged to perform the dying out operation during a single revolution of the momentum pulley, they are sometimes called "revolution presses".

To avoid accidents with these machines it has been proposed to provide connections between the actuating treadle and the clutch such that the beam can descend only once for a single actuation even though the operator, through carelessness, keeps the treadle depressed. The usual construction for this purpose comprises a latch in the connections between the treadle and the clutch which is automatically unlatched as the beam operating mechanism begins to move after the clutch has been connected, thus insuring the disconnection of the clutch at the end of one revolution. This latch is also so arranged that the clutch cannot again be rendered operative until the treadle has been allowed to return to its highest position or to its normal position of rest. To prevent the beam from passing beyond its normal position of rest it has been proposed, and is customary in presses of this type, to provide a brake which brakes the movement of the beam when its operating mechanism is disconnected from the fly wheel and prevents the momentum of the parts from starting the beam again toward the stock supporting bed.

The known means for preventing accidents just referred to have not been found so reliable in operation that accidents due to the repetition of the operation of the press are prevented. When for any reason the braking action is not strong enough, the beam can pass beyond its upper position to an extent sufficient to cause injury to the operator when shifting the die with his hand. Various attempts have been made to prevent such repetition in presses of this type, and the present invention offers a solution of this problem.

According to the invention, a stop mechanism coöperates with the unlatching mechanism in the clutch connections and with the brake mechanism, but is independent of both of these mechanisms and prevents with certainty a substantial overthrow of the beam beyond its normal position of rest. The stop mechanism consists of a bolt which may be projected into the path of a projection upon the fly wheel, being normally held in its operative position by a spring but, when the machine is actuated, being withdrawn from its operative position. The mechanism for retracting the bolt is connected with the treadle, so that the operator does not need to pay especial attention to this mechanism for preventing repetition. Shortly after the projection upon the fly wheel passes the end of the bolt, the bolt is again moved into the path of said projection, even if the treadle be held in its depressed position, and stops the shaft with certainty if for any reason the brake should fail.

One embodiment of the invention is illustrated in the drawings, in which—

Figure 1 is a front elevation of such parts of a press of the type hereinabove referred to as are necessary to illustrate the invention; Fig. 2 is a side view; Figs. 3 to 6 inclusive are detail views showing the latch connection between the treadle and the clutch controlling mechanism; Figs. 7 to 12 inclusive are detail views illustrating the mechanism for preventing repetition of the operation of the machine.

The press consists, as usual, of two lateral supports or standards 1 and 2 which are connected with each other by a bridge 16 and in which the four rods 8 which carry the beam 7 are vertically guided. The up and down movement of the rods 8 is effected, as usual, through eccentrics which are fastened to the main shaft 3 having its bearings in the standards 1 and 2, said eccentrics being connected to cross-heads on the lower ends of the rods 8.

Upon one end of the main shaft 3 is fastened one half 5 of a friction clutch, the other half of this clutch being formed in one piece with the driving pulley 6. Through lateral movement of the driving pulley the clutch is thrown in or out. Upon the other end of the shaft 3 is fastened the brake disk and fly wheel 4. Upon a rock-shaft 9 having its bearings in the lower part of the frame members 1, 2, two arms 11 and 12 are loosely mounted, these arms being connected to each other by a foot board 10. The arm 11 is connected by a link 13 with an arm 14, see Figs. 3 to 8, which is arranged to turn and to slide upon a fixed stud or shaft 15. Upon the same stud or shaft 15 a second arm 17 is loosely mounted, the arm 17 being connected by a stud 18 with a rod 19. The rod 19 is connected at one end to a lever 25 which is arranged to turn upon a fixed shaft 26 and effects the movement of the pulley 6 into and out of clutching relation to the clutch member 5. The arms 17 and 14 are normally connected with each other by an interlocking coupling 22, 23, see Figs. 4 and 6. A spring 21 tends to move the arm 14 in such a direction that the interlocking lugs 22, 23 are brought into engagement with each other. The arm 14 also carries a friction roll 24 which coöperates with a cam and wedge surface 28 upon one of the rods 8. When the friction roll 24 is in engagement with the high part of this cam, see Figs. 5 and 6, the coupling between the arms 17 and 14 is broken and when it is in engagement with the low part the parts are coupled. The arm 17 also carries a friction roll 20 which engages a second cam or wedge guide 27 on the same rod 8. If the high part of the cam 27 is in engagement with the roll 20, then the driving clutch 5, 6 is held in its operative condition. The other end of the rod 19 is connected with a bell crank 29 which turns about a fixed shaft upon the bridge 16. The other arm of this bell crank is connected by a link 30 with an arm 31 fastened upon the rock-shaft 9. The rock-shaft 9 extends through the standard 1 and has fastened to the end which projects outside said standard a two-armed lever 31, 32. The arm 32 is connected by a link 33 with the brake lever 34 which turns about a fixed shaft 35 and carries a brake shoe which bears against the periphery of the brake disk 4. A spring 36 connected to the link 33 produces the braking pressure. A spring 29, Fig. 2, holds the treadle arms 11 and 12 normally in their uppermost position.

The brake disk 4 is provided on the side which is presented to the standard 1 with a projection 64, see Figs. 7 and 8. Into the path of this projection 64 extends a stop bolt 53 which is slidable in a heavy cross piece 50 attached to the standard 1. This cross piece 50 is still further supported at its middle point by a special jack or pedestal 51 which, by means of a screw 52, presses on the under side of the cross piece in order to prevent the cross piece from being broken by the shocks of the engagement of the two stop members in the event of accidental overthrow of the machine. A spring 54 which engages at one end a shoulder on said bolt and at its other end an adjustable screw-threaded sleeve or bushing 55 tends to hold the bolt 53 at the left-hand limit of its movement, Figs. 7 and 9.

The bolt 53 is provided with a reduced portion or neck which projects through the bushing 55 and carries at its end an arm 56. In the arm 56 a latch member 58 is normally pressed downward by means of a spring 57. With the latch 58 coöperates a bell crank 60, 63, which turns about a pivot 61 carried in a projection 59 of the cross piece 50. The arm 60 of the bell crank is connected by a link 62 with the treadle arm 12.

The operation of the hereinabove described press is as follows: The work to be operated upon is laid upon a cutting block, not herein shown, but which is located beneath the beam 7, and the die is placed in the proper location upon the work. The operator then depresses the treadle 10, thereby drawing down the rod 13 and turning the two arms 14 and 17 which at this time are coupled to each other. As the arms 14 and 17 are turned, the rod 19 is moved horizontally toward the left, the lever 25 is turned and the clutch members 5 and 6 are brought into clutching engagement. The shaft 3 is thus set in operation and the beam 7 moved down to effect a pressing operation.

During the downward movement of the beam, a cam piece 27 acts upon the friction roll 20 and moves the arm 17 and with it the rod 19 into their extreme position toward the left, if this has not already been reached, so that the clutch is held tightly in its operative condition. Upon the further downward movement of the rod 8, the cam piece 28 acts upon the friction roll 20 in such manner that the arm 14 is shoved to one side upon the stud 15 and the interlocking lugs 22, 23 are moved out of engagement with each other. The operator can now release the treadle to permit it to be returned to its uppermost position by the action of the spring 290. Even if the operator does

release the treadle, the clutch 5 and 6 will not be released until the rods 8 have again moved up and the cam piece 27 has released the arm 17. During this upward movement of the rods 8 the cam piece 28 also releases the friction roll 24 so that the spring 21 again presses the lever 14 back toward the arm 17. When the treadle is depressed for the second time the arm 17 can be moved again. If, however, through oversight the treadle has not been raised to its highest position, then the lugs 22 and 23 remain out of engagement and it is not possible to set the machine in operation again.

When the rod 19 is moved toward the left as the machine is actuated, the rod 30 and the arm 31 are moved upward by the bell crank 29 and the arm 32 is correspondingly depressed. As a result, the brake lever 34 is moved away from the brake disk 4 and remains out of braking relation to said disk as long as the friction roll 20 is pressed toward the left by the cam piece 27. When, however, the friction roll 20 is released by the cam piece during the upward movement of the beam 7, the spring 36 again applies the brake.

In the construction just described, if the braking surfaces of the brake have become smooth or if the brake spring 36 is not properly adjusted, it might happen that in spite of the action of the braking mechanism the momentum of the shaft 3 and of the parts connected therewith would carry the beam 7 again down after the unclutching of the clutch members 5 and 6, and thus through the operation of the cam piece 27 again effect the clutching of the said clutch members. Such accidental repetition of the operation of the machine is prevented by the stop mechanism 53, 64. When the treadle arm 12 is moved down, the arm 63 of the bell crank 60, 63 engages the latch 58 as the treadle approaches its lowest position. The bolt 53 is thus drawn into its guide and moved out of the path of the stop 64 upon the brake disk 4. The brake disk 4 can therefore complete its turning. As soon, however, as the treadle arm 12 has reached its lowest position, the bell crank 60, 63 snaps past the latch 58 and the bolt is again shoved out by the spring 54. If the treadle is released, the bell crank 60, 63 is moved past the yielding latch 58 into the position shown in Fig. 7. The stop mechanism is therefore drawn back into inoperative position during an instant only as the treadle is depressed and moves again quickly into operative position as soon as the stop 64 has passed the stop bolt 53, see Fig. 10. The stop mechanism therefore prevents, with complete certainty, more than one revolution of the driving shaft. The brake must naturally be so adjusted that the brake disk 4 usually comes to rest in the position shown in Fig. 8 in order that the stop mechanism will not operate at every operation of the machine. The stop mechanism should be built so strong that it cannot be broken by the hard blows which it receives in operation.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a machine of the class described, a driving member and a driven member, a clutch for connecting said members, a treadle, and connections between said treadle and said clutch for operating said clutch, said connections comprising a latch arranged to be automatically unlatched as the clutched parts begin to move, a stop yieldingly projected normally into operative position in the path of movement of the driven member, connections between said treadle and said stop for withdrawing said stop from the path of movement of said driven member as said driven member is clutched to said driving member, said connections comprising a latch arranged to be automatically unlatched as the treadle completes its clutch operating movement.

2. In a machine of the class described, a driving member and a driven member, a clutch for connecting said members, and a brake for stopping said driven member when said members are disconnected, a stop projecting normally into the path of movement of said driven member to prevent a repetition of the operation of said driven member in the event that said brake fails to stop said member, a treadle for operating said clutch, and connections between said treadle and said stop for withdrawing said stop from the path of movement of said driven member as the clutch is operated, said connections comprising a latch arranged to be automatically unlatched independently of the operation of any other part of the machine as the treadle completes its clutch operating movement.

3. In a machine of the class described, a driving member and a driven member comprising a reciprocating part, a clutch for connecting said driving member to said driven member, a treadle for operating said clutch, connections between said treadle and said clutch comprising a lever made up of two relatively movable parts normally locked together, and means connected to said reciprocating part for automatically interrupting said connection between the treadle and clutch, as the driven member begins to move, by separating said two-part lever into its relatively movable parts.

4. In a machine of the class described, a driving member and a driven member, a clutch for connecting said driving member to said driven member, a treadle for operating said clutch, connections between said treadle and said clutch comprising a lever

formed of two relatively movable parts normally locked together, means connected to said driven member for automatically separating said lever parts as the driven member begins to move, and means also connected to said driven member for completing the clutch operating movement of that part of said lever which remains connected with the clutch in the event that such movement has not been completed before the lever parts are separated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANZ MAX REIMANN.

Witnesses:

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WALLACE ELLISON.