July 24, 1928. 1,678,464

P. DIEBOLD

IRONING STEAM PRESS

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Fig. 1.

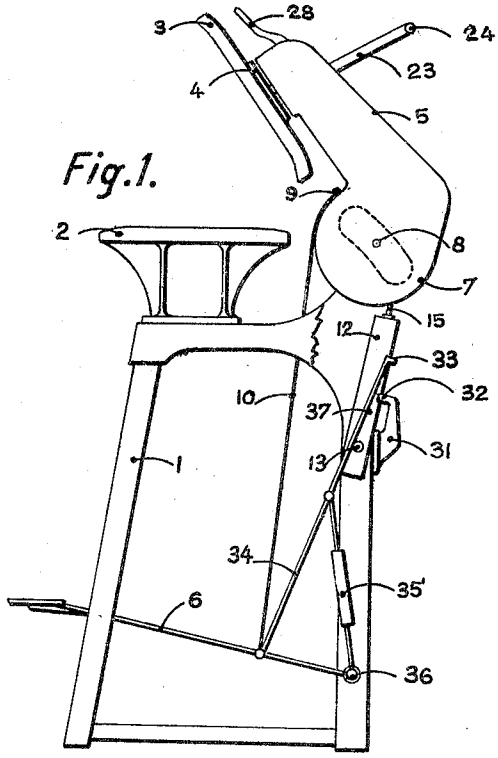


Fig. 2.

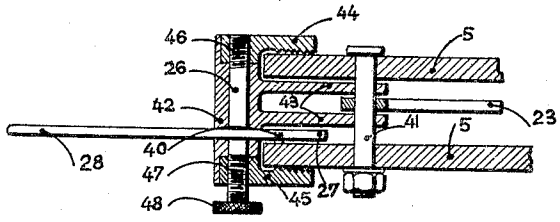
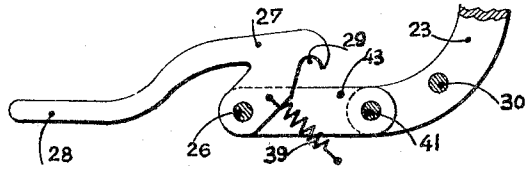


Fig. 3.



INVENTOR
PIERRE DIEBOLD
By P. Watts
Attorney

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P. DIEBOLD

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Fig. 4.

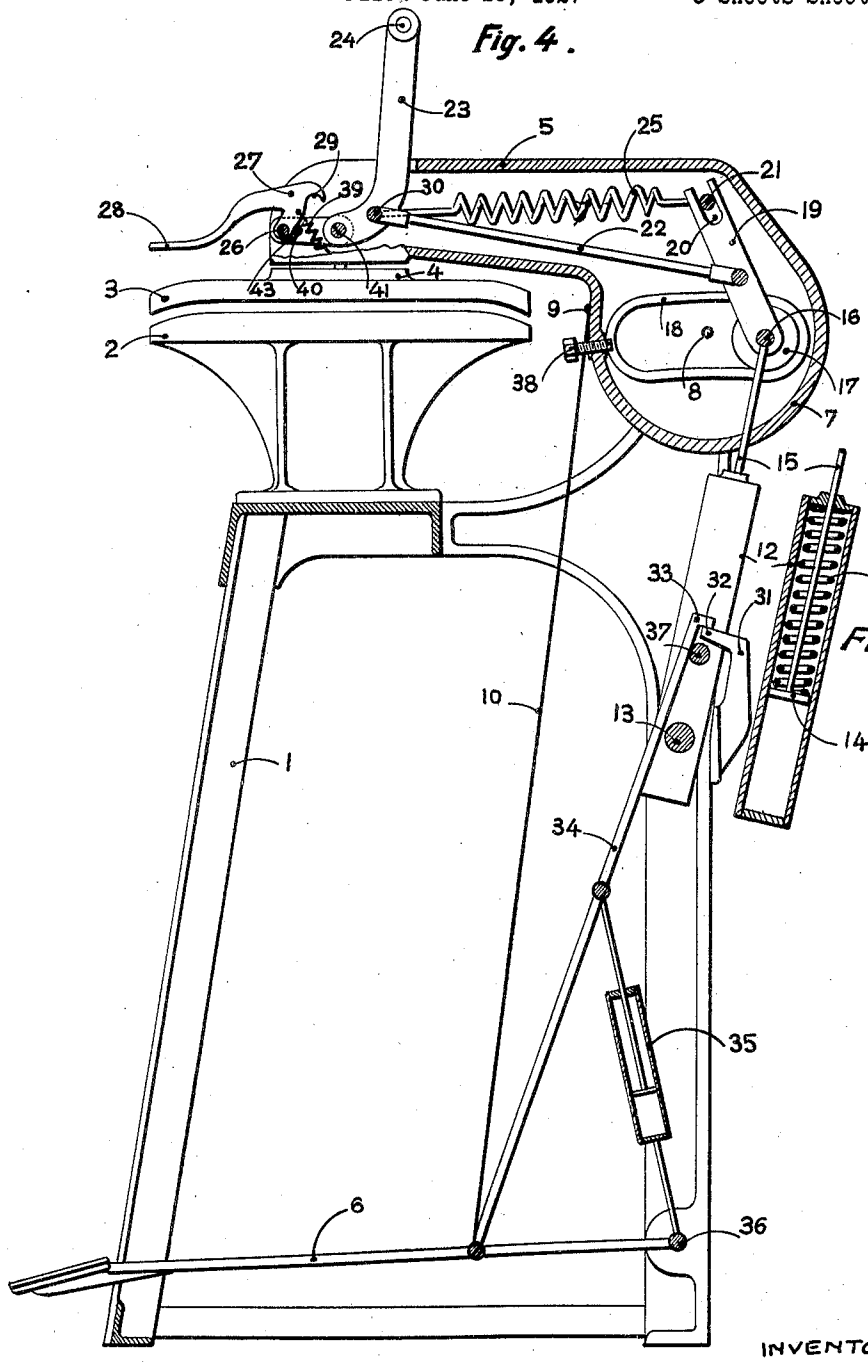


Fig. 6.

INVENTOR
PIERRE DIEBOLD
By
Attorney

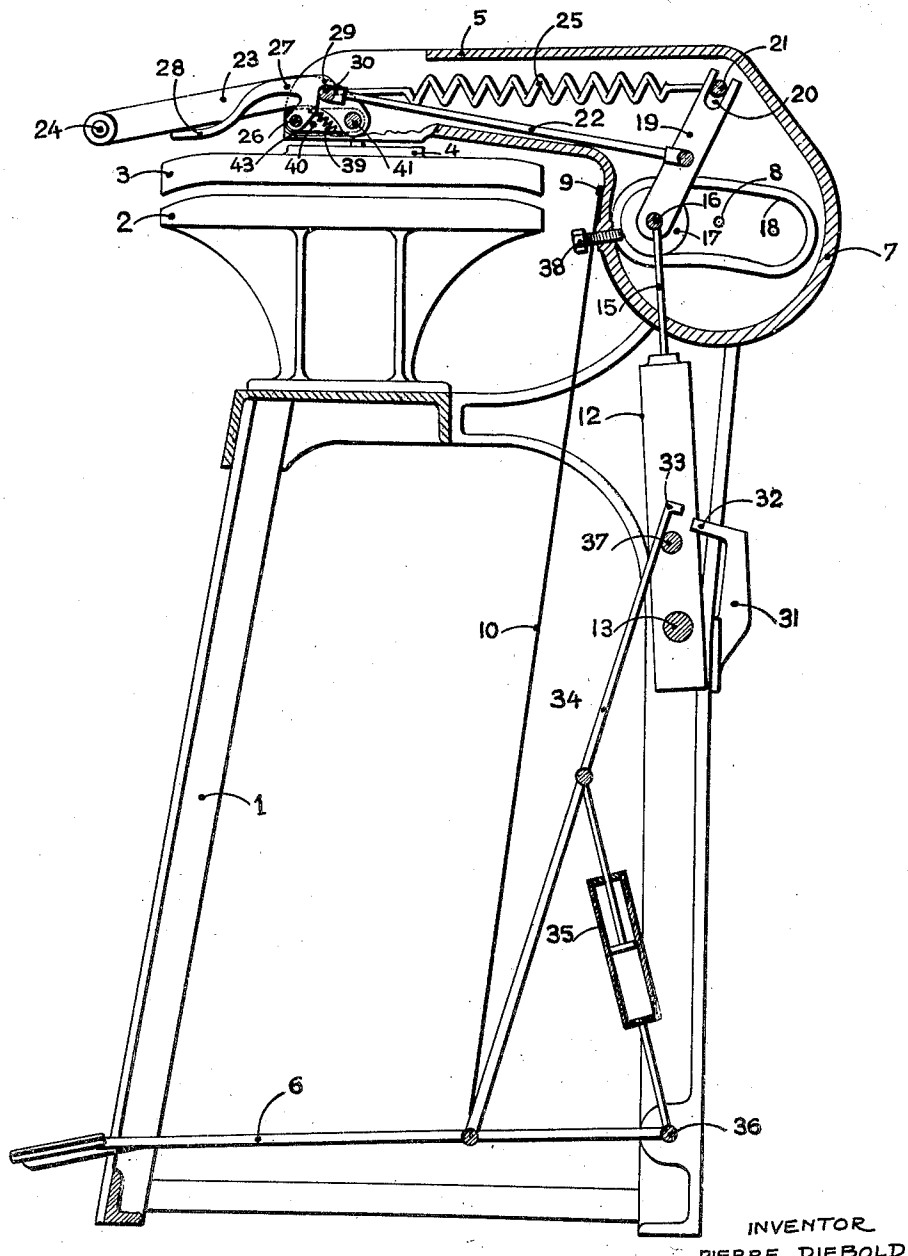
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P. DIEBOLD

IRONING STEAM PRESS

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Fig. 5.



INVENTOR
PIERRE DIEBOLD
By
Attorney

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UNITED STATES PATENT OFFICE.

PIERRE DIEBOLD, OF NANCY, FRANCE.

IRONING STEAM PRESS.

Application filed June 18, 1927, Serial No. 199,851, and in France September 27, 1926.

Existing steam or other presses for ironing clothes and other articles have a number of drawbacks, namely excessive weight and bulk due to the existence of a heavy balance weight or similar member projecting at the back of the machine and used to balance the weight of the movable plate of the press and of its support, with the consequent result that the operator or the auxiliary motor has to make a considerable effort for operating the press; risk of accident to the operator on account of premature closing of the ironing plates; finally, the absence of means allowing of an accurate adjustment of the pressure developed by the press to suit the variable nature of the garments or other objects to be pressed.

This invention has for its object to remedy the drawbacks referred to, and to produce a very light press which occupies little space and requires from the operator only a minimum effort for working it, and is moreover provided with the necessary safety devices eliminating all risk of accident and also with suitable devices required for regulating the pressure.

Such a press, of a weight and size reduced to a strict minimum, will be more particularly suitable for small workshops and even for use in ordinary households.

In the accompanying drawings:

Fig. 1 shows diagrammatically the press in its open position;

Figures 2 and 3 show, respectively in horizontal section and in elevation, a pawl gear which is adjustable to suit the pressure to be developed,

Figures 4 and 5 are detail views, on an enlarged scale, of the mechanism of the press in two different positions, and

Figure 6 is a cross sectional view through a portion of a balancing and pressure applying device for the head carrying lever of the machine.

In the said figures the piping for the admission and discharge of the steam or other heating medium, has been omitted in order to show more clearly the essential parts of the invention.

The press comprises as usual (see Fig. 1) a frame or stand 1, a stationary bottom plate 2, a movable upper plate 3, a plate holder 4, a supporting arm or bracket 5 and the operating pedal 6. With reference more particularly to detail Figures 4 and 5, it will be seen that the supporting arm 5 is entirely hollow and secured to a drum 7, the center of rotation of which is at 8. To the said drum is attached at 9 a flexible strip, chain or cable 10 connecting the said drum to the operating pedal 6. The traction member which balances the weight of the supporting arm 5 and of the upper plate 3 of the press, is constituted, in the construction illustrated, by a spring 11 which is preferably mounted in a cylinder 12 which can swing about the pivot pin 13 on the frame of the machine. The spring 11 acts on one hand against one of the covers of the cylinder 12, and on the other hand, against a disc or piston 14 secured to the end of a rod 15 terminating in a pin 16 situated in the interior of the drum 7. This pin has at each end a roller 17, and the rollers 17 travel in a guide 18 in the form of an arc of circle, formed by ribs which project on the inner faces of the sides of the drum. To the pin 16 of the rollers is pivoted a balance beam 19 terminating at its free end in a fork 20 engaging with a finger 21 secured to the drum. The balance beam 19 is connected by a rod 22 to the operating lever 23 provided at its end with a handle 24, and the lever 23 is in its turn connected to the finger 21 by a return spring 25.

To a pin 26, the position of which may be varied, as will be explained later on, is pivoted a pawl 27 terminating outside the arm 5 in a lever 28; the lip 29 of said pawl is in the travel of the pin 30 which connects the rod 22 to the lever 23. The said pawl is controlled by the action of a spring 39 which tends to keep it in engagement with a stop 40 in its position of rest.

At the level of the guide 18, through the drum 7, passes a regulating or set screw 38 which limits the travel of the rollers 17 and therefore makes it possible to regulate the pressure between the two plates of the press to suit the nature of the garments to be pressed. In order to ensure in a reliable manner engagement between the lip 29 of the pawl 27 and the pin 30 for the various positions which may be given to the regulating screw 38, it is necessary that the position of the pivot pin 26 of the pawl may be varied in a corresponding manner and moved along a circular trajectory having for its center the pivot pin 41 of the lever 23. To that end (see Figs. 2 and 3), the pin 26 is supported by a shackle or bracket 42—43 which

swings about the pivot pin 41 of the lever 23, and the fixing of the said shackle in any position desired by the operator and determined by the position of the screw 38, is effected by means of two dogs 44—45 mounted on portions 46—47 of the pin 26, which are screw threaded in opposite directions, the said dogs being pressed against the lateral faces of the arm 5 by turning the knurled head 48 which terminates the pin 26.

To the leg of the frame to which is pivoted the cylinder 12, is secured a small bracket 31 terminating in a lip 32 which forms a stop for a tappet 33 provided at the end of a rod 34, the lower end of which is connected to the operating pedal 6. A spring or preferably a pneumatic piston and cylinder 35 connected on the one hand to said rod 34, and on the other hand to the pivot pin 36 of the pedal 6, always tends to press the rod 34 against a projecting finger 37 on the oscillating cylinder 12.

The operation is as follows:

In the position of Fig. 1, that is when the press is open, the rollers 17 which constitute the movable point of attachment of the spring 11 to the drum, are at the right-hand (relatively to the said figure) end of their guide 18, therefore on the right of the pivot pin 8 of the drum. In this position, the torque developed by the spring 11 balances that of the weight of the supporting arm 5 and of the plate 3, and develops even a sufficient preponderance to keep the said arm raised. The operator can therefore arrange the garment or other article to be pressed, on the bottom plate 2.

The first movement of the operator will then be to lower the supporting arm by depressing the pedal 6, with or without the assistance of the handle 24. It is at this moment that the safety device will come into action and prevent the two plates of the press from coming together completely and pinching the fingers of the operator.

The working of this device is as follows: In the position shown in Fig. 1, the tappet 33 which terminated the rod 34, is situated at a certain height above the stop 32. When the pedal is depressed, this tappet 33 meets the stop 32, and therefore stops the pedal 6 in a position which leaves a space of about one inch between the plates 2 and 3 of the press, which position is shown in Figure 4. As the spring 11 practically balances the weight of the supporting arm 5 and of the plate 3, it will be understood that this lowering of the arm 5 will require from the operator only a slight effort, much smaller than that required in ordinary presses for moving the heavy balance weight.

In order to be able now to close the press completely the operator must turn down the lever 23 by means of the handle 24. This movement has for its result, owing to the connecting rod 22 and the balance beam 19, that the rollers 17 will be brought to the opposite end, that is to the left hand end (Fig. 5), of the guide 18. The point of application of the force of the spring 11 thus being brought to the opposite side of the pivot pin of the drum 7, the torque developed by the spring 11 will be added to the weight of the supporting arm 5 and of the plate 3, and will assist in pressing the latter against the bottom plate. Simultaneously with this movement of the point of application of the spring 11, the spring 25 has been cocked, as it has a fixed point of attachment 21 to the drum, and a movable point of attachment 30 to the lever 23. At the same time, the pin 30 of the lever 23 has engaged with the lip 29 of the bolt or pawl 27, this latter being held in the engaged position by the small spring 39 (Figs. 4 and 5). During the movement of the rollers 17, the cylinder 12 has swung from right to left about its pivot pin 13. During the said oscillation the finger 37 has pushed the rod 34 to the left and disengaged the tappet 33 from the stationary stop 32. The rod 34 thus being released, the operator will be able to exert on the pedal 6 as well as on the handle 24 the additional pressure required to close the press completely. To open the press, it is sufficient to lower the lever 28 which terminates the pawl 27. The operating lever 23 is then released, and as the return spring 25 is cocked (Fig. 5), it will act at once and raise the lever 23 and bring the rollers 17, that is to say the cylinder 12 with its spring 11, back to the original position (Fig. 4) in which the said spring will again develop the preponderating torque which will automatically raise the supporting arm 5 with the plate 3. By means of the flexible strap 10, the pedal 6 follows the movements of raising and during this movement the rod 34 is raised, and the tappet 33 replaced in position above the stop 32 (Fig. 1). And since the finger 37 on which slides the rod 34, has been pushed to the right, the system 34, 32, 33 will be brought to the initial or safety position. Permanent contact between the rod 34 and the finger 37 of the oscillating cylinder 12 is ensured by the pneumatic cylinder 35 which at the same time brakes the movement and avoids excessively quick raising of the pedal 6 and of the supporting arm 5. The press having now been brought back to the position described with reference to Fig. 1, is ready for the next operation.

What I claim is:

1. In an ironing press, a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted to the machine frame, a pedal for lowering the arm, a connection between the pedal and the arm consisting of a flexible steel band at-

tached to the pedal and partly wound around the drum, and means for balancing the arm and assisting it in its downward and upward motions.

2. In an ironing press, a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted to the machine frame, a flexible band connection between the drum and the pedal of the press, and means for balancing the arm and assisting it in its downward and upward motions, consisting of a traction member having a stationary point of attachment on the machine frame and a movable point of attachment on the drum.

3. In an ironing press, a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted to the machine frame, a guide in the form of an arc of a circle on the inner face of each side of the drum, said guides extending right and left from the center of the drum, a roller movably arranged in each guide, a connecting pin between the rollers, a traction member extending from said pin to a stationary pivot on the machine frame, below the center of the drum and an operating lever pivoted on the front end of the hollow arm to close the press.

4. In an ironing press, a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted to the machine frame, a guide in the form of an arc of a circle on the inner face of each side of the drum extending right and left from the center of the drum, one roller movably arranged in each guide, a connecting pin between the rollers, and a traction member extending from said pin to a stationary pivot of the machine frame below the center of the drum consisting of a cylinder oscillating on a stud on the machine frame, a piston in the cylinder, a coiled spring within the cylinder surrounding the piston rod and bearing against the piston and the upper cylinder head, a piston rod extending from the piston to the roller pin and pivoted to said pin, and an operating lever pivoted on the front end of the hollow arm to close the press.

5. In an ironing press, a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted on the machine frame, an operating pedal pivoted on the machine frame, a flexible strip attached by one end to the drum and by its other end to the operating pedal to lower the arm, a guide in the form of an arc of a circle on the inner face of each side of the drum, said guides extending right and left from the center of the drum, one roller movably fitted in each guide, a connecting pin between the rollers, a traction member extending from said pin to a stationary pivot on the machine frame below the center of the drum, and means for moving the rollers from one end to the other end of their guides.

6. In an ironing press, a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted to the machine frame, an operating pedal pivoted on the machine frame, a flexible strip attached by one end to the drum and by its other end to the operating pedal to lower the arm, a guide in the form of an arc of a circle on the inner face of each side of the drum, said guides extending right and left from the center of the drum, one roller movably fitted in each guide, a connecting pin between the rollers, a traction member extending from said pin to a stationary pivot on the machine frame below the center of the drum, and means for moving the rollers from one end to the other end of their guides, consisting of a balance beam pivoted to the roller pin and having an outer forked end, an operating lever pivoted near the outer end of the hollow arm, a handle at the upper end of said lever, a connecting rod extending from a pin of the balance beam to a pin of the operating lever, and a tension spring extending from said pin on the operating lever to the forked end of the balance beam.

7. In an ironing press having a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted to the machine frame, roller guides in the drum, rollers moving in the guides, a stationary pivot on the frame of the machine, a traction member extending from the movable rollers to the stationary pivot, a pin connection between the rollers and the traction member, means for locking the hollow arm in the lowered position comprising a pawl pivotally secured to the hollow arm, a lever integral with the pawl, a spring connected to the pawl and to the hollow arm to hold the pawl in the locked position, a lever to operate the press, a pin on the operating lever of the press to engage the lip of the pawl when said operating lever has been pressed down, and a connection between the operating lever and the movable rollers, comprising a balance beam pivoted on the roller pin, a pin on said hollow arm, a forked end on the balance beam engaging the pin on the hollow arm, and a connecting rod extending from the balance beam to the operating lever of the press.

8. In an ironing press having a hollow arm supporting the upper pressing plate and a device for locking the arm in the lowered position, comprising a pawl engaging the operating lever of the press when depressed, means for automatically raising the arm after the pawl has been unlocked, comprising a coiled spring attached by one end to the operating lever of the press, a pin within the hollow arm to which is attached the other

end of the coiled spring, a balance beam having an upper forked end engaging said pin, rollers moving in the hollow arm and to which is connected the lower end of the balance beam, and a connecting rod extending from the balance beam to the operating lever of the press.

9. In an ironing press having a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted to the machine frame, roller guides in the drum, rollers moving in the guides and a traction member extending from the movable rollers to a stationary pivot on the machine frame, means acting on the drum to rotate the arm, consisting of a flexible strip attached by one end to the drum and by its other end to an operating pedal, and means for adjusting the pressure developed by the press, consisting of a set screw on the drum, engaging the roller guides so as to limit the travel of the rollers in their guides.

10. In an ironing press having a hollow arm supporting the upper pressing plate, a drum integral with the arm and pivoted to the machine frame, arcuate guides in the drum, rollers moving in the guides, a connecting pin between the rollers, a traction member extending from the roller pin to a stationary point on the machine frame, a set screw engaging the roller guides to limit the travel of the rollers in their guides so as to adjust the pressure developed by the press and a pawl for locking the hollow arm in its lowered position, means for adjusting the position of the pawl correspondingly to the position of the set screw, comprising a bracket which supports the pawl, a stud for the pawl passing through the bracket and threaded right and left hand at its two ends, and a pair of jaws on the threaded ends of the stud, engaging with the lateral sides of the hollow arm, means acting on the drum to rotate the arm, consisting of a flexible strip attached to the drum by one end and to an operating pedal by its other end, and means to lock the arm in its lowered position consisting of a balance beam pivoted on the roller pin, a forked end on the balance beam engaging a pin on the hollow arm, and a connecting rod extending from the balance beam to the operating lever of the press.

11. In an ironing press having a hollow arm supporting the upper pressing plate, a drum integral with the arm pivoted to the machine frame, a pedal for depressing the arm, a flexible hand connection between the drum and the pedal, rollers moving in arcuate guides in the drum and a traction member between said rollers and a stationary point on the machine frame comprising a piston rod and a cylinder oscillating on the machine frame, a spring within the cylinder and surrounding the piston rod, a safety device for preventing the press from being completely closed as long as the movable rollers have not accomplished their complete travel in their guides, comprising a bracket secured to the machine frame, close to the oscillating cylinder, a lip at the end of the bracket, a stud projecting from the oscillating cylinder below the lip of the bracket, a bar pivoted to the pedal, resting against the projecting stud, a lip at the end of said bar arranged to engage the lip of the bracket in one angular position of the oscillating cylinder to stop the downward motion of the pedal and clearing the said lip in the other angular position of the oscillating cylinder, and an air cylinder or brake between the bar and the pivot pin of the pedal, to secure a permanent contact between the bar and the projecting stud on the oscillating cylinder.

PIERRE DIEBOLD.