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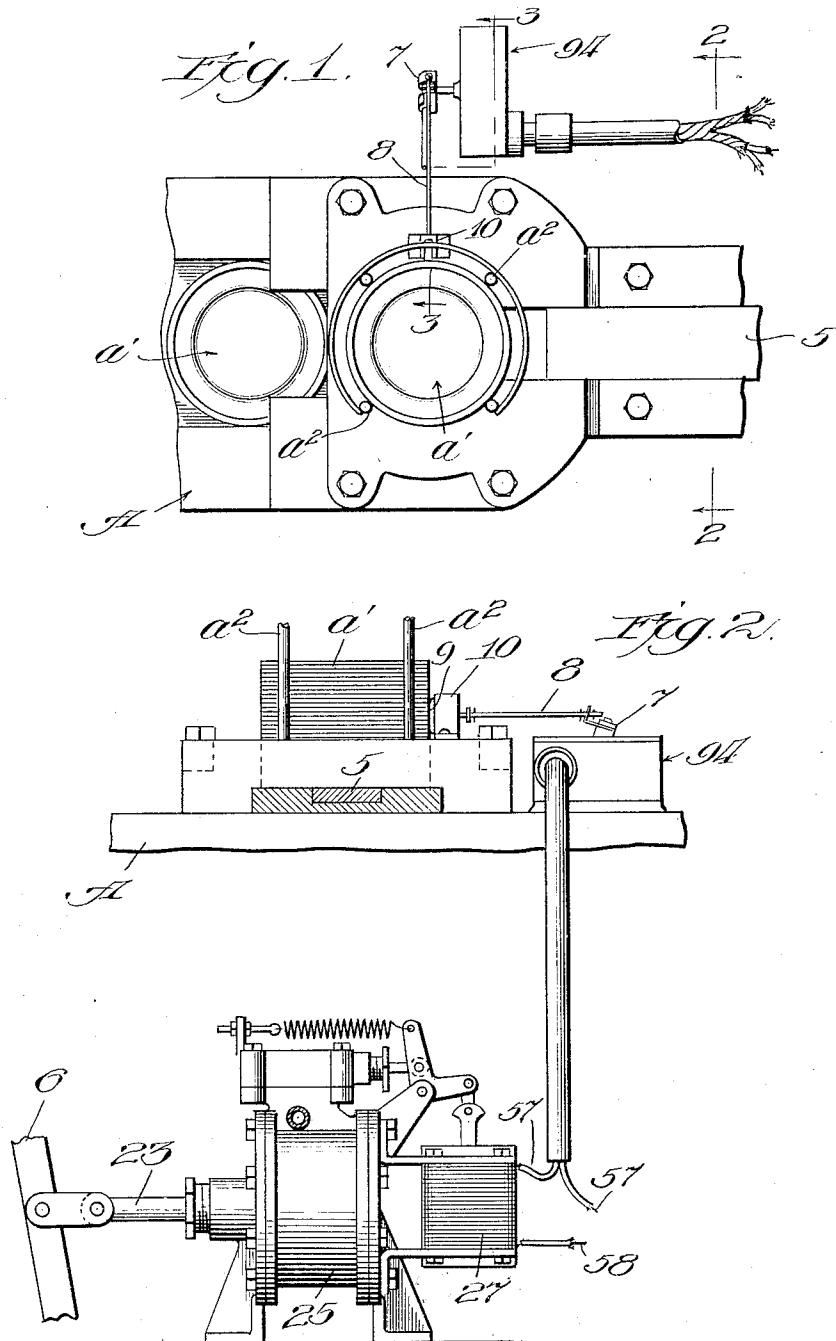
H. A. FINK ET AL

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CONTROL MECHANISM FOR CLINCHING MACHINES

Filed May 24, 1930

2 Sheets-Sheet 1



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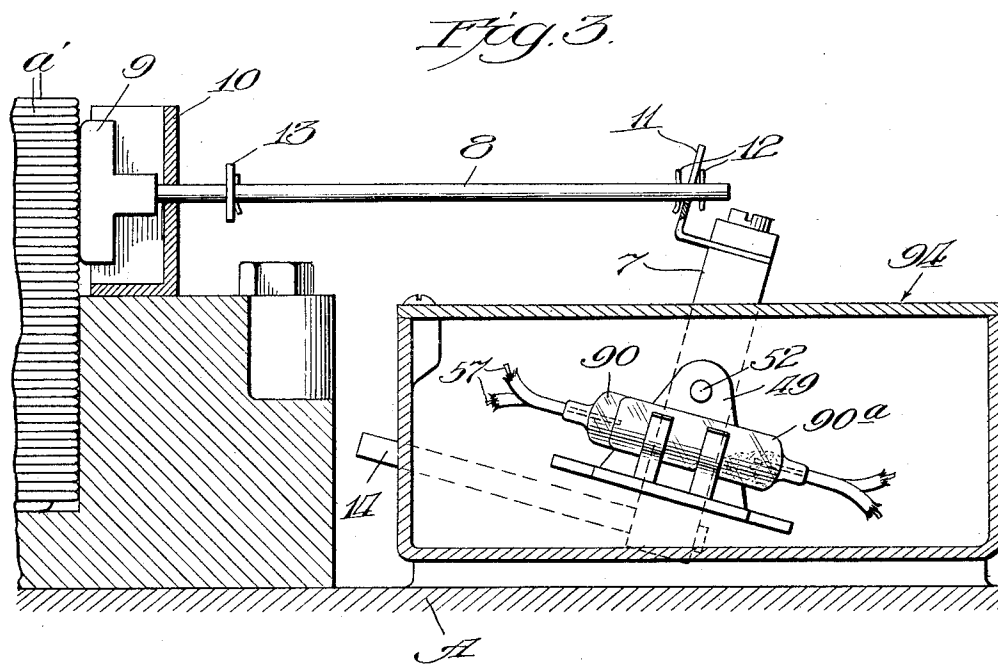
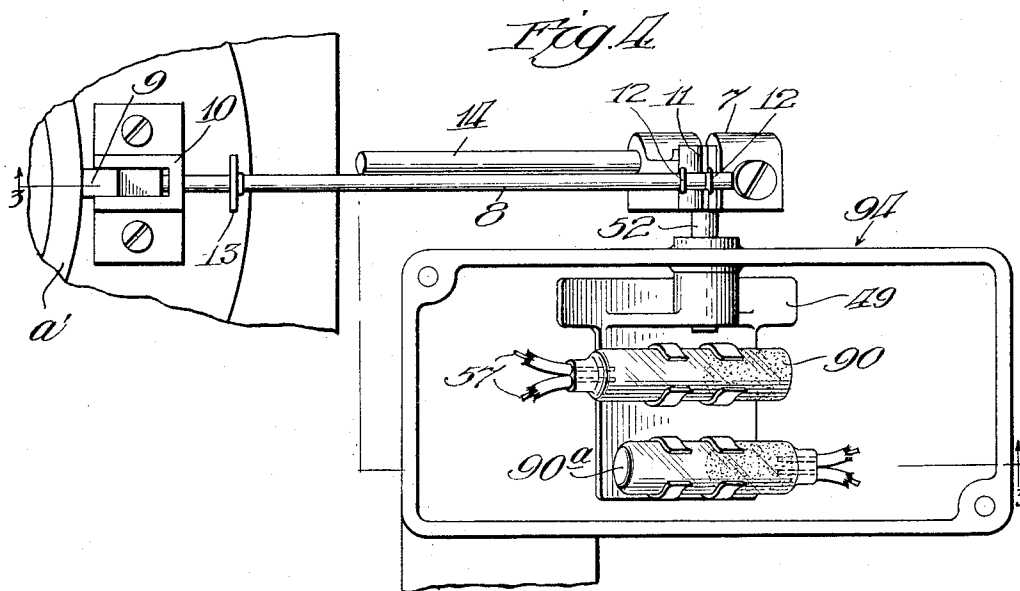
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UNITED STATES PATENT OFFICE

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CONTROL MECHANISM FOR CLINCHING MACHINES

Application filed May 24, 1930. Serial No. 455,432.

This invention relates to control mechanism for clinching machines and other machines of that type in which can ends, or other disk-like articles, are fed to can or other bodies for subsequent operations thereon. In clinching machines of this character, the can tops are usually contained in a stack and are fed from said stack to the can bodies one at a time, and occasionally the supply of can ends becomes exhausted and can bodies are fed through the machine without receiving can ends, which condition interferes with subsequent operations on the cans, and one of the objects of the invention is to provide automatically operating mechanism for stopping the operation of the machine before the supply of can ends becomes exhausted.

Clinching machines of this character are sometimes used in connection with a can closing machine, such as vacuumizing and seaming machines, to which filled can bodies, provided with can ends, are fed from the clinching machine for subsequent operations, and in case a filled can, unprovided with a can end, is fed to the vacuumizing and seaming machine, it becomes necessary to immediately stop the clinching machine otherwise serious difficulty is encountered in the vacuumizing and seaming machine. One of the objects of the present invention is to provide means under the control of the can ends for stopping the operation of the clinching machine when the supply of can ends becomes nearly exhausted without interfering with the operation of the vacuumizing and seaming machine.

The invention consists in the several novel features hereinafter fully set forth and claimed.

The invention is clearly illustrated in the drawings accompanying this specification in which:—

Figure 1 is a plan of a fragment of a clinching machine of conventional form and illustrating a simple embodiment of the present invention applied thereto;

Fig. 2 is a view, partly in said elevation and partly in vertical cross section of the control mechanism, the can end stack, and the clutch throwing mechanism of the machine;

Fig. 3 is a detail view, partly in side elevation and partly in vertical cross section, taken on the line 3—3 of Figs. 1 and 4; and

Fig. 4 is a fragmental plan of certain switch mechanism and operating mechanism therefor which forms part of the invention.

Referring to said drawings, which illustrate the invention in connection with a clinching machine of the type shown and described in my co-pending application on automatic control mechanism for can machinery, filed May 24, 1930, Serial No. 455,431, to which reference is hereinafter made, the reference character A designates a fragment of the clinching machine through which the cans and the can ends are conveyed to and through the clinching mechanism. The clinching machine is provided with a cage a^2 for receiving a stack of can ends a' and a feed bar 5 is provided for ejecting the lowermost can end from the stack and moving it to other mechanism (not shown) which conveys the can ends to the can bodies for subsequent operation.

The clinching machine is provided with a clutch lever 6 which is arranged to throw the clutch (not shown) which connects the operating mechanism of the clinching machine with the power element, and said clutch lever is thrown by clutch mechanism (see Fig. 2) which comprises a pneumatic cylinder 25 in which is contained a plunger, the stem 23 of which is operatively connected to the clutch lever 6. The cylinder 25 is provided with a suitable valve and valve actuating mechanism for controlling the admission of compressed fluid to said cylinder or in case a vacuum cylinder is employed for establishing communication with the vacuum supply, and said valve mechanism is actuated by a solenoid 27, as will appear more fully by reference to the above identified application. Briefly, whenever the solenoid is energized, the valve actuating mechanism is operated to establish communication between the interior of the cylinder and the source of vacuum or pneumatic pressure, and, as a result, the clutch throwing lever 6 is actuated and the clutch is thrown to stop the operation of the clinching machine.

The control mechanism comprises in gen-

eral an electric switch 94 which is contained in the circuit for the solenoid 27 and is actuated to close the circuit whenever the supply of can ends is nearly exhausted. In the simple form of control mechanism shown, the switch contains an inclined mercury tube 90 supported by an oscillatory bracket 49 mounted upon a short shaft 52 journaled in a wall of the casing of the switch. A body of mercury is contained in the mercury tube normally out of contact with the terminals of the electric conductors 57 which are contained in the circuit for the solenoid 27. It will be understood that by tilting the mercury tube 90 into a reversely inclined position, the mercury will flow to the lower end of the tube and close the gap between the terminals of the conductors, thereby closing the circuit to the solenoid 27.

The mechanism for actuating the switch comprises an arm 7 on the outer end of the shaft 52 and a push rod or finger 8 connected to said arm 7 and having a head 9 on one end arranged to engage with the edges of one or more can ends a' . The end of the push rod 8 which bears the head 9 is slidably supported in a bracket 10 having a vertically extending guideway in which the head 9 is guided. The connection between the push rod 8 and arm 7 is shown to comprise an angle plate 11 secured to the arm 7 and having a slot or aperture through which the push rod 8 extends. Pins 12 extending through the push rod on either side of the upright arm of the angle plate 11 connect the push rod with the angle plate, and a washer 13 on the other end of the push rod limits the forward movement thereof.

A counterweighted arm 14 is secured upon the lower end of the arm 7 and operates to lightly press the head 9 of the push rod against the edges of the can ends and also acts to swing the arm 7 and thereby move the push rod 8 in a direction towards the can ends whenever the supply of can ends above the head 9 is exhausted, thereby tilting the mercury tube 90 into a reversely inclined position and closing the circuit for the solenoid 27 of the clutch throwing mechanism.

In Figs. 3 and 4 of the drawings, a second mercury tube 90^a is shown, and this mercury tube is included in another circuit for the solenoid 27 which is controlled from switch mechanism associated with the vacuumizing and seaming machine with which a clinching machine is frequently employed.

In the operation of the control mechanism, the circuit for the solenoid is normally open at the mercury tube 90 and as long as any can ends remain in front of the head 9 of the push rod 8, the circuit remains open. In case the supply of can ends in the stack becomes nearly exhausted and a condition arises in which no can end is in position to hold back the head 9, the counterweighted

arm 14 swings the arm 7 towards the can ends, thereby tilting the mercury tubes into a reversely inclined position and causing the mercury in the tube 90 to make contact between the terminals of the conductors 57, thus closing the circuit to the solenoid 27, which being energized, opens the inlet port to the cylinder 25, whereupon the cylinder is placed in communication with the pressure or vacuum supply, and, as a result, the clutch lever 6 is actuated, thereby throwing the clutch and stopping the operation of the machine.

From the above it will be seen that in case the supply of can ends becomes low, the machine is stopped, thereby preventing cans from being fed to the clinching mechanism without having can ends supplied thereto. To restore the parts to normal position, the push rod 8 is drawn back and a supply of can ends placed in the cage a^2 .

We claim as new, and desire to secure by Letters Patent:

1. A control mechanism for a can machine comprising a clutch throwing mechanism including a magnetic device, a tiltable bracket, an electric switch mounted thereon and adapted to close the circuit for the electric magnetic device when said bracket is tilted in one direction, means attached to the bracket for moving the same to a position for closing the switch, a stack holder, a control rod connected to said bracket, a head carried by said rod and adapted to bear against the can ends in the stack holder, which can ends restrain the movement of the rod and the tilting of the bracket whereby when said can ends give out, the rod will move and permit the tilting of the bracket to stop the machine.

2. A control mechanism for a can machine comprising a clutch throwing mechanism including a magnetic device, a tiltable bracket, an electric switch mounted thereon and adapted to close the circuit for the electric magnetic device when said bracket is tilted in one direction, a weighted arm attached to the bracket for moving the same to a position for closing the switch, a stack holder, a control rod connected to said bracket, a head carried by said rod and adapted to bear against the can ends in the stack holder, which can ends restrain the movement of the rod and the tilting of the bracket whereby when said can ends give out, the rod will move and permit the tilting of the bracket to stop the machine.

In testimony whereof, we affix our signatures.

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