March 30, 1943. J. J. BOOTH 2,315,151

SAFETY GUARD FOR PUNCH PRESSES AND THE LIKE

Filed Dec. 20, 1940

FIG. 1.

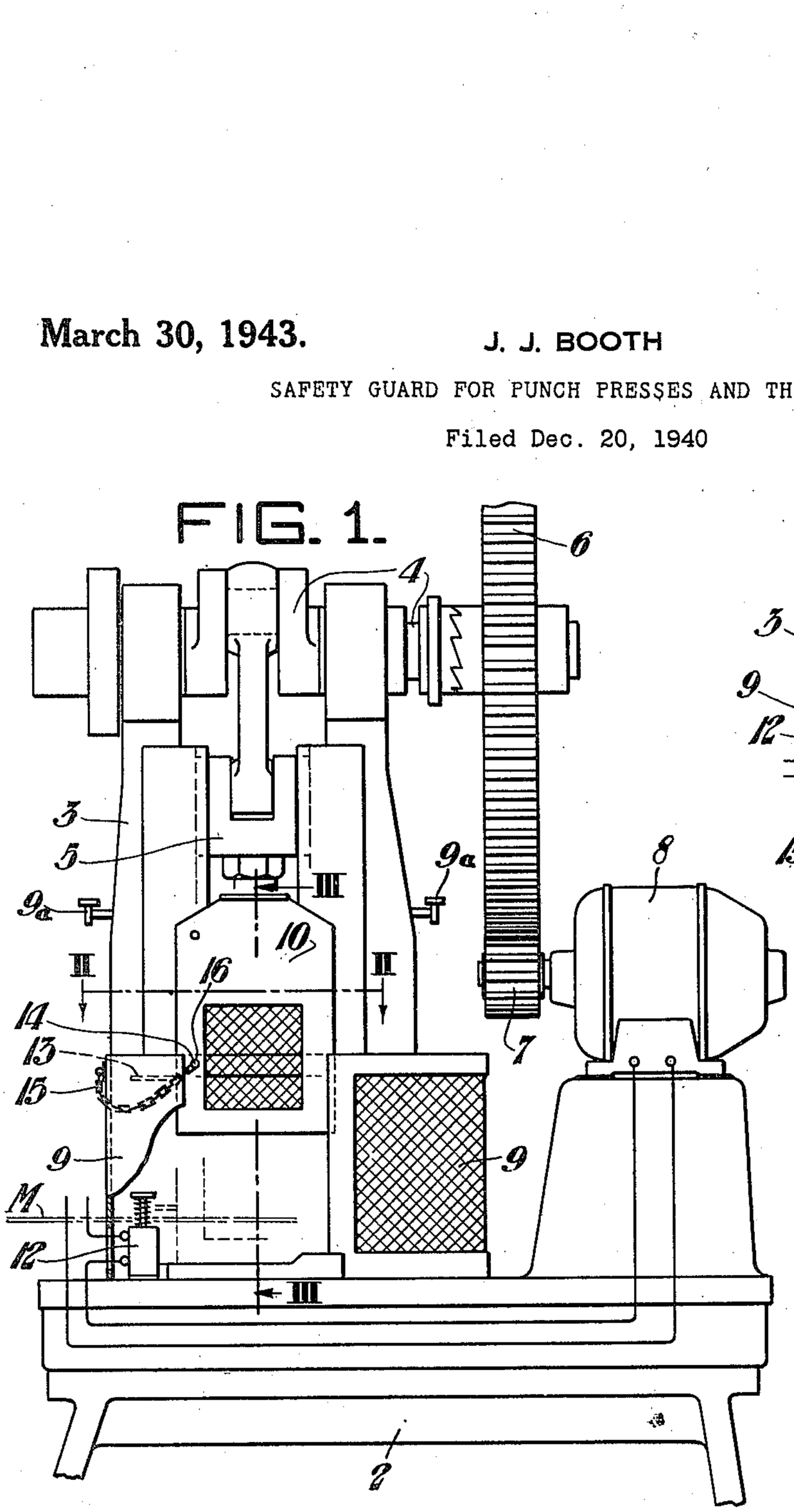
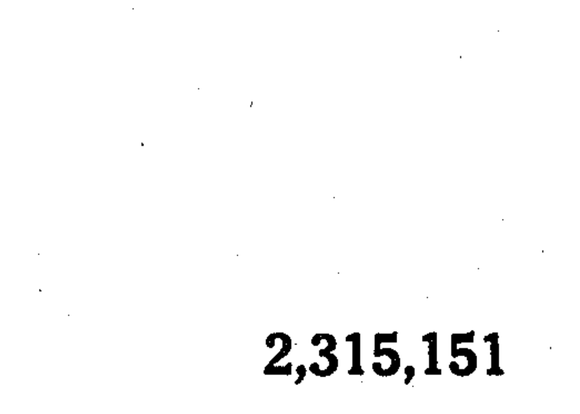


FIG. 2.



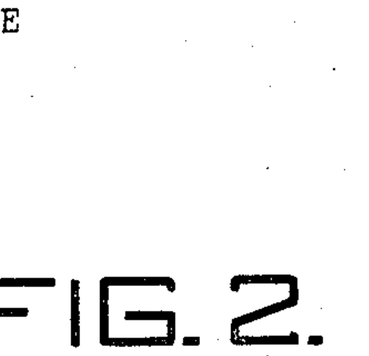
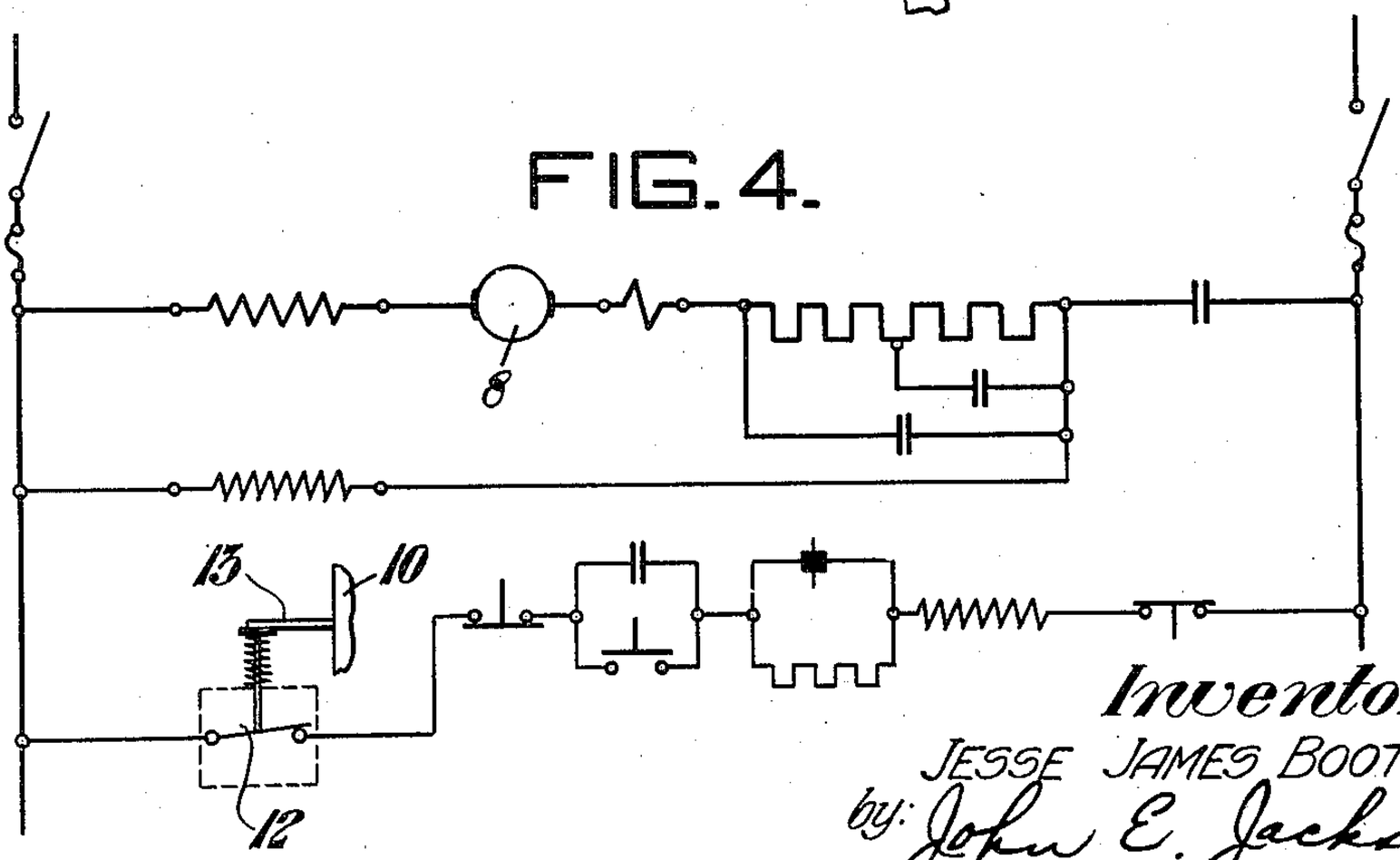


FIG. 3.

FIG. 4.



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SAFETY GUARD FOR PUNCH PRESSES AND THE LIKE

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4 Claims. (Cl. 192—134)

This invention relates to safety guards and particularly to an improved safety guard for punch presses, stamping machines and the like.

In punch presses for fabricating small metallic articles and the like, and in machines for stamping articles, it is necessary from time to time to remove the dies therefrom for the purpose of repairing the same or to change the dies entirely for different punching and stamping operations. Oftentimes, in removing the dies from such presses or machines, or in removing a piece of metal from the dies, the presses or machines are accidentally set in operation by the operator or other workmen in the vicinity thereof, thereby resulting in serious injury to the operator and usually injuring his fingers or hands, or both.

In the present invention, there is provided a safety guard for such presses and machines by which the machine cannot be operated unless the guard is in its proper position, thereby preventing unintentional operation of the particular press or machine with which the guard is incorporated, whereby the operator is protected from injury at all times.

Accordingly, it is one of the objects of the present invention to provide an improved safety guard for punch presses and the like which controls the operation of the press or machine so that the same cannot be operated until the guard is in its proper position relative to the working parts or dies of the machine, thereby eliminating any danger of injury to the operator.

It is another object of this invention to provide an improved safety guard for punch presses and the like which does not interfere with the operation of the machine and one which can be easily and quickly moved from position so as to permit free access to the working parts of the punch or machine with which it is incorporated, and a guard which can be easily and conveniently incorporated with existing punches and machines.

It is a further object of this invention to provide an improved safety guard for punch presses and the like which is simple and inexpensive in its construction and at the same time, one which is efficient and effective in its use.

Various other objects and advantages of this invention will become more apparent in the course of the following specification and will be particularly pointed out in the appended claims.

In the accompanying drawing there is shown, for the purpose of illustration, an embodiment thereof which my invention may assume in practice.

In the drawing:

Figure 1 is a front elevation of a conventional stamping press showing the improved safety guard of my invention incorporated therewith;

Figure 2 is a section taken on the line II—II of Figure 1;

Figure 3 is a section taken on the line III—III of Figure 1; and

Figure 4 is a schematic view showing the wiring diagram.

Referring more particularly to the drawing, the improved safety guard of my invention is shown incorporated with a press for stamping metal tags but it will be understood that this guard may be used with any type of punch press, stamping machine or any other similar machine.

The stamping press shown herein is of the conventional type and comprises a base or frame **2** on which there is disposed a lower stationary die (not shown). There is carried by the base an upwardly extending portion **3** on which there is rotatably arranged an eccentric shaft **4** adjacent the top thereof. There is slidably arranged for reciprocable movement on the upwardly extending portion **3** a head **5** which carries an upper die (not shown) oppositely disposed from the lower die with which it is adapted to cooperate, and having the upper end thereof journaled to the eccentric portion of the shaft **4**. There is securely arranged on one end of the shaft **4**, a gear **6** which meshes with a pinion gear **7** arranged on the armature shaft of a motor **8** suitably arranged at a point adjacent the press for actuating the same. The motor is controlled preferably by two lever arms **9a**, one arranged to either side of the press. Each of the arms controls a switch or relay arranged in the electric circuit as shown in the wiring diagram. Two lever arms are provided so as to keep both hands of the press operator occupied during which the press is in operation as an aid in order to prevent injury. The strip of metal M is continuously fed into the press and the metal tags are continuously stamped and fabricated therefrom by the cooperation of the dies in a well known manner when the motor **8** is energized to operate the machine.

According to the present invention, there is suitably mounted on the top of the base **2** of the press enclosing the dies and the lower portion of the movable head **5**, at least around the front portion of the press, a safety guard which comprises preferably a box or cage-like member **9** made from coarse wire mesh or any other suitable material having a door **10** incorporated

therewith directly opposite the head 5 and the dies of the press. The door 10 is arranged in any convenient manner preferably for slidable movement in a vertical plane relative to the remainder of the guard and so arranged that the dies can be conveniently removed and replaced in the press when the door is in its open position.

On the inside of the guard and to one side of the door 10 there is securely arranged on the base 2 of the press, a conventional type limit switch 12 or any other suitable type switch, which is adapted to control the energization of the motor 8. There is carried by the door 10 preferably adjacent the inner bottom side thereof, a finger-like member 13 which extends laterally from the door so as to be positioned above the limit switch 12 with which it is adapted to cooperate. The limit switch 12 is connected in series in the electric circuit with the motor 8 and the source of power as shown in the wiring diagram of Figure 4 of the drawing. When the door 10 is in its open position, the switch also is adapted to be in its open position thereby maintaining the electric circuit open and preventing the motor 8 from becoming energized to operate the press. When the door is moved to and is in its closed position, it will be understood that the finger-like member 13 engages with the limit switch 12 thereby closing the same and permitting the motor to be energized to operate the press.

There is preferably provided a pin 14 on the end of a chain 15 which is suitably attached to the guard for maintaining the door in its open position by inserting the pin 14 into and through a hole 16 arranged through the door and a corresponding hole arranged in the upper part of the guard so that the door will not fall and interfere with the removal and replacement of the dies by the operator.

As a result of my invention, it will be seen that there is provided a safety guard which prevents the operator from forcing his hands into the press and between the dies thereof when the same is in operation, thereby protecting the operator or any other workmen from the hazards of such a press. It will also be seen that there is provided a safety guard or means which is practically foolproof in that it prevents the press or machine from being operated unless the guard is in its proper position and closed.

While I have shown and described one specific embodiment of my invention, it will be understood that this embodiment is merely for the purpose of illustration and description and that various other forms may be devised within the scope of my invention, as defined in the appended claims.

I claim:

1. In combination with a punch press or the like, an electric motor for actuating said press, an electric circuit with said motor arranged therein, a safety guard arranged at least around the dies of said press, said guard consisting of a cage-like member having an opening arranged therethrough with a vertically actuated door arranged over said opening, a switch arranged in said circuit for controlling the energization of said motor, said switch being positioned to one side of the opening through said cage-like member and arranged on the base of said press, and a finger-like member carried by said door which cooperates with said switch, said switch adapted to be open so as to maintain the circuit in an open condition at all times when the door is raised and assumes an open position whereby the press is prevented from being operated with the finger-like member carried by said door adapted to close said switch when the door is lowered and assumes a closed position so as to permit the press to operate.

2. The combination with a punch press or the like as defined in claim 1, including means for holding the door in its open or raised position.

3. A safety guard for a machine of the class described comprising a box-like member consisting of a wire mesh structure which is positioned around the dies of the machine so as to enclose the same, said box-like member having an opening arranged therein at the front side of the machine opposite the dies for obtaining access thereto, a vertically actuated door arranged over said opening, a switch arranged adjacent said opening for controlling the actuation of said machine, and means carried by said door which is adapted to cooperate with said switch, said switch adapted to assume an open position when the door is raised to its open position whereby the machine is prevented from being operated when the door is open with the means carried by said door adapted to close the switch when the door is lowered to its closed position so as to permit the machine to operate.

4. In combination with a punch press or the like having an electric motor for actuating the same, an electric circuit with said motor arranged therein, a safety guard arranged around the dies of the press, said guard consisting of a cage-like wire mesh structure having an opening arranged therethrough opposite the dies in the front side of the press, a door arranged over said opening for movement in a vertical plane, a limit switch arranged in said circuit for controlling the energization of said motor, said switch positioned within said cage-like member to one side of the opening therein, an inwardly extending finger-like member arranged on the inner side of said door which is adapted to cooperate with said switch, said switch adapted to assume an open position when the door is raised to its open position whereby the motor and press are prevented from being operated when the door is open, said finger-like member carried by said door adapted to close the switch when the door is lowered to its closed position so as to permit the motor to be energized and the press to operate, and a pin member which is adapted to be inserted through aligned openings in said door and said cage-like member for holding the door in its open position.

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