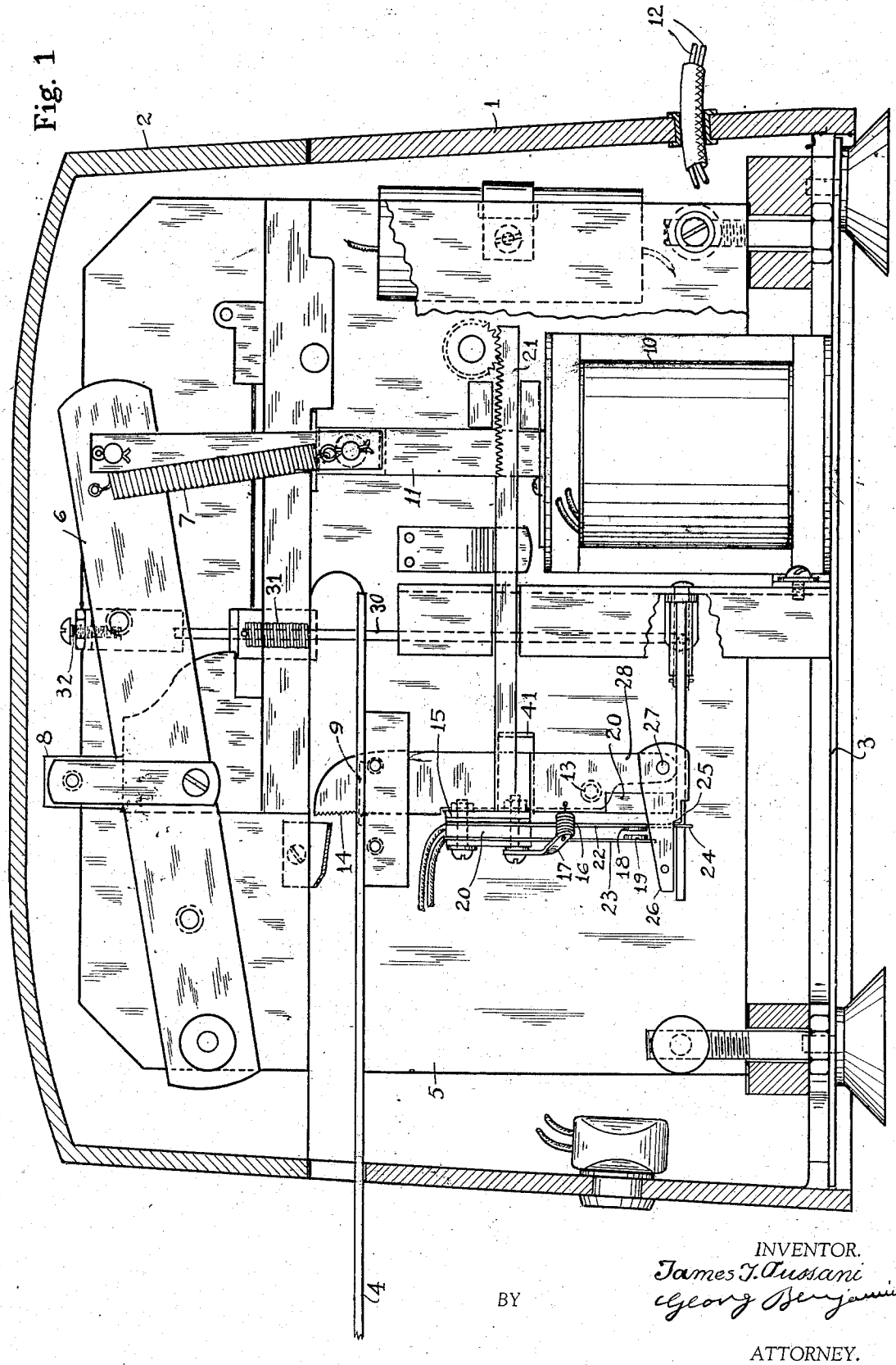
June 25, 1940. J. J. OUSSANI 2,205,861

ELECTRIC STAPLING MACHINE

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Fig. 1



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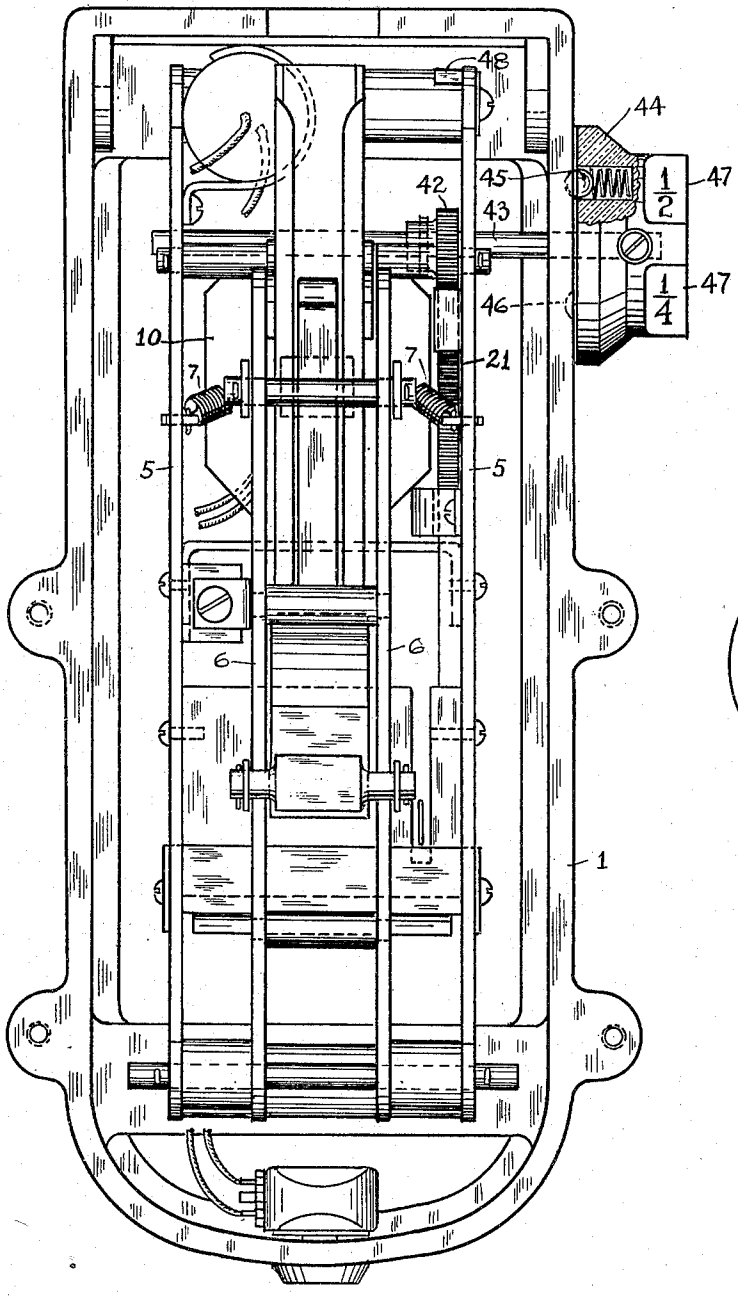
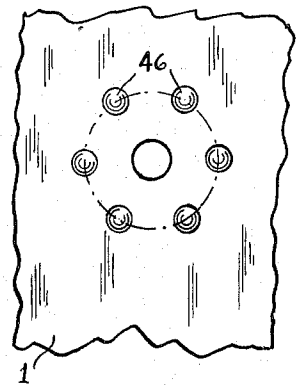


Fig. 2

Fig. 3



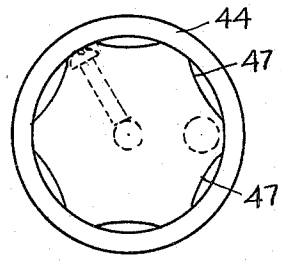


Fig. 4

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Fig. 6

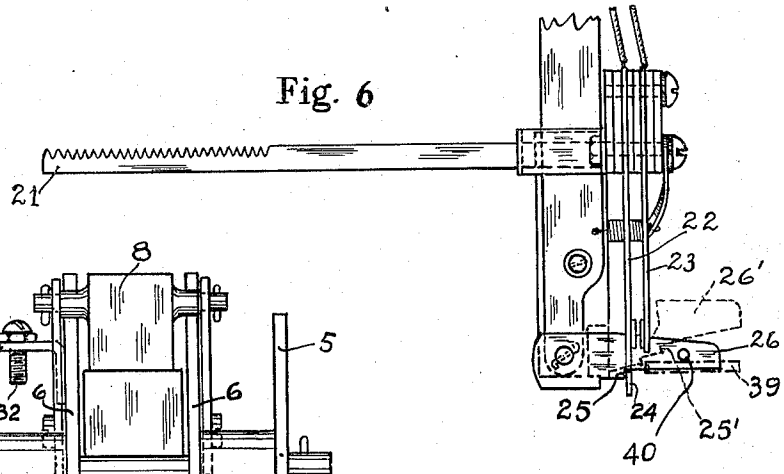


Fig. 5

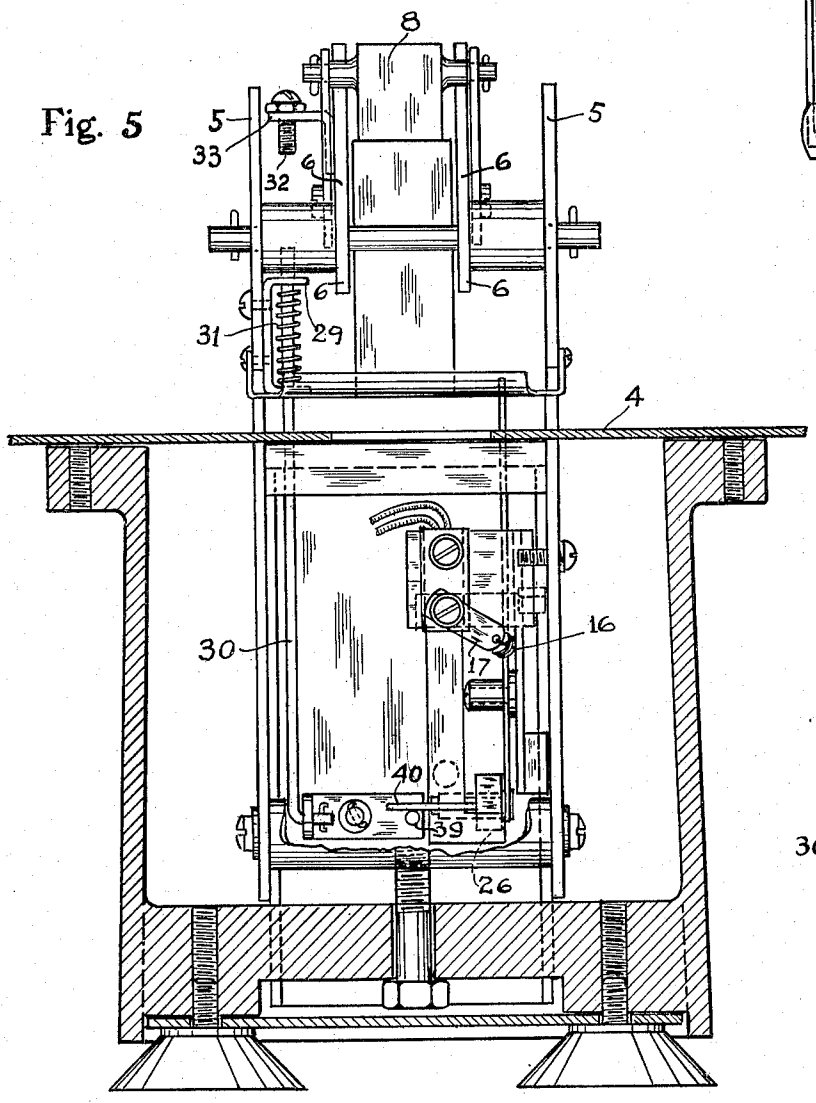
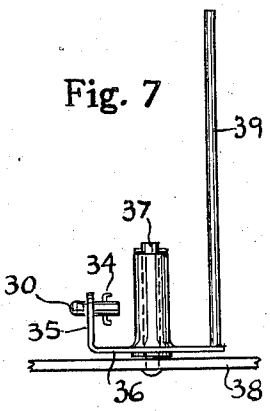


Fig. 7



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UNITED STATES PATENT OFFICE

2,205,861

ELECTRIC STAPLING MACHINE

James J. Oussani, Brooklyn, N. Y.

Application July 22, 1939, Serial No. 285,890

4 Claims. (Cl. 1—2.1)

The object of the invention is an electrically operated stapling machine to be started automatically, by means of a movable abutment and contacts controlled thereby, upon insertion of papers into the machine.

It is an object of the invention to make such machines simpler in construction, and more convenient, rapid and reliable in use.

With this object in view the inventor has provided the machine with only a single set of contacts serving for closing as well as for rapidly interrupting the working circuit and so arranged and controlled that undesired repetition of the working stroke is reliably prevented without need for any auxiliary contacts for this purpose.

With the same object in view the inventor has provided the machine with a device for accurately, conveniently and easily determining at least three different distances of said abutment from the stapling tools, and thereby at least three different distances of the staples from the edges of said papers, without need of the tedious and tiresome use of thumb buttons or even tools like screw drivers etc., and with a corresponding saving of time.

An embodiment of the object of the invention is shown in the drawings by way of example, several parts not essential for the invention being omitted.

Fig. 1 is a lateral elevation of the machine, the casing and some other parts being shown in section;

Fig. 2 is a top plan view of the machine, cap removed;

Fig. 3 is a lateral detail elevation of a part of the casing provided with sockets for predetermining six different distances of the staples from the edges of the papers;

Fig. 4 is a side view of the handle for adjustment of said distances;

Fig. 5 is a front elevation of the machine, cap removed, casing in section;

Fig. 6 is a side view of the contact device and part of the distance determination device;

Fig. 7 is a bottom plan view of connections, adapted to disengage said latch.

The machine is enclosed by a casing 1, provided with a removable cap 2, and a removable bottom plate 3, and a work table 4, for supporting the papers to be worked upon.

The machine is mounted between side plates 5, 5, suitable connected and secured in the casing. The working lever 6 is held in the elevated position, as shown, by the helical springs 7. It supports the punch 8 which is to cooperate with a stationary anvil 9. The stapling machine proper does not need any detailed description for it may be of any well known kind.

For giving the lever 6 a downward working stroke a stationary solenoid 10 is provided, adapted to draw downward its armature 11 upon being energized from the electric supply wires 12 by means of the contact device now to be described.

On a pivot 13 is rockably mounted an upright contact abutment 14 held in the forward position, shown in Fig. 1, against a stop 15 by a helical spring 16, secured to an arm 17. This abutment 14 is provided for controlling the terminal contacts 18, 19 of the solenoid 10. The parts 13 to 19, inclusive, are supported by a slide, designated generally by the number 20, and adjustable longitudinally by means of a toothed rack 21, guided on and between the shields 5. The contacts 18, 19 are supported by leaf springs 22, 23. The spring 22 extends farther downward than the spring 23 and has at its lower end a lateral arm 24, normally engaged by a shoulder 25 of a latch 26, preferably made of insulating material and mounted on a pivot 27, supported by a downward extension 28 of the abutment 14.

The slide 20 and rack 21 are used only for adjusting, before the operation of the machine, the desired distance of the staples from the edge of the papers. During the operation of the machine the members 20, 21 are stationary so that for the purpose of said operation the parts 13 to 19 and 22, 23 may be considered as mounted directly on the stationary frame of shields 5.

On the left shield 5, as viewed in Fig. 5, is secured a U-shaped bracket 29, in which is guided a vertical slidable rod 30, held in the elevated position shown by a helical compression spring 31. The upper end of the rod 30 is adapted to be struck, at the end of the working stroke of the machine, by an adjustable actuator screw 32 supported by a bracket 33 secured to the working lever 6. The hooked end 34 of the rod 30 projects through the ear 35 at one end of a two-armed lever 36 pivoted to an axle 37 secured to a brace plate 38 of the slide 20. The other end of the lever 36 is provided with a trip rod 39 underlying a pin 40 projecting from the latch 26. By the rod 39 and pin 40 the latch 26 can be lifted from the engaged position, shown in full lines in Fig. 6, to the disengaged position 26', shown in dash lines in Fig. 6. In this latter position the shoulder 25 is in the position 25', clear of the arm 24 of the leaf spring 23.

A stop 41 of the slide 20 limits the backward movement of the abutment 14.

For adjusting the distance of the front edge of the abutment 14 from the front edge of the stapling tools, e. g. of the anvil 9, the rack 21 is in mesh with a pinion 42 rigidly connected with a shaft 43 mounted in the shields 5. The right hand end of the shaft 43, as shown in Fig. 2, is rigidly connected with a handle 44 in the form of a substantially circular knob of a radius considerably longer than that of the pinion 42, whereby an amplification device for the applied force is formed. This knob 44 is provided with a snap ball 45 adapted to engage successively sockets 46 provided in a circular row in the vertical wall of the casing 1 beneath the knob 44, six of such sockets being shown in Fig. 3. The knob 44 is provided with six flat recesses 47 corresponding in position to the sockets 46. In these recesses are written numbers indicating the distances which the staples should have from the edges of papers inserted into the machine. By means of this mechanism the rack 21 can be moved, from the extremely advanced position shown in Fig. 2, backwards, until its rear end strikes a stationary stop 48 secured to the right hand shield 5, as shown in Fig. 2. During this movement the ball 45 snaps successively into the sockets 46 but slips out of them as soon as the force exerted on the knob 44 exceeds a predetermined amount.

Operation

After, by means of the knob 44, the desired stapling distance has been adjusted, the papers to be connected by staples are fed into the machine on the table 4. As the leading edge of the papers strikes the abutment 14 it is swung clockwise on the pivot 13 (Fig. 1), thereby moving the latch 26 towards the forward end of the machine and closing, by means of the shoulder 25 and arm 24, the contacts 18, 19 against the resistance of their springs 22, 23. Consequently, the solenoid 10 pulls down its armature 11, and the lever 6 goes through a working stroke. At the end of the latter the stop 32 knocks downward the rod 30, whereby, through the parts 34, 35, 36, 39, 40, the latch 26 is lifted to the position 26' (Fig. 6), releasing the arm 24. The contacts 18, 19 now are rapidly separated by the action of the springs 22, 23, so that the solenoid 10 is deenergized and all parts are returned to the positions shown in full lines by the return springs 7, 16, and 31, whereupon the machine is ready for another working stroke.

Should the papers by oversight be kept in the machine for any time after the working stroke no repetition of the working stroke and no waste of current can ensue because, as may be seen from Fig. 6, upon disengagement of the latch 26 the arm 24, by the spring 22, is moved so far towards the backward end of the machine that it can be reengaged by the shoulder 25 of the latch 26 not earlier than the latter has been returned completely backward to the position shown in Fig. 1. This return movement of the latch 26 is caused by the spring 16 and, hence, cannot be effected as long as the abutment 14 is held backward by the papers just stapled.

Thus, by a single set of contacts and a very simple mechanism a desirable rapid interruption of the circuit, foolproofness, reliability and economy of operation are secured. Any stapling device may be used in connection with the invention no matter whether such device works with continuous wire rolls or preformed staples.

What I claim is:

1. In an electrically operated stapling machine in combination a movable abutment for the papers to be operated upon, a single set of electric control contacts, a control member for said contacts, a part of said control member adapted to close said contacts upon movement of said abutment by said papers, means for disengaging said part from said contacts at once after substantial completion of the working stroke of said machine, and means for rapidly separating said contacts and rapidly causing such a change of the relative position of said part and said contacts, at once after said completion, as to prevent reengagement of said part and said contacts before an adequate return movement of said abutment.

2. A machine as in claim 1, comprising spring means adapted to hold said contacts normally separated, said control member having the form of a latch adapted, in closing said contacts, to tension said spring means which, upon disengagement of said latch, rapidly separate said contacts and cause said change of relative position.

3. A machine as in claim 1, comprising spring means adapted to hold said contacts normally separated, said control member having the form of a latch adapted, in closing said contacts, to tension said spring means, the means for disengaging said latch having the form of a slidable rod and a mechanical train coupling said rod with said latch, said rod being normally held in elevated position by a spring and being adapted to be depressed, near the end of the working stroke of the machine, by an adjustable stop connected with a working part of the machine.

4. A machine as in claim 1, in which said abutment has the form of a two-armed upright lever, and said control member, in the form of a latch, is pivoted to the lower arm of said lever, and said contacts are supported by leaf springs, one of which has a lateral arm underlying said latch, said latch having a shoulder adapted to engage said arm and to tension said leaf springs upon movement of said abutment by said papers, but adapted, upon substantial completion of the working stroke of the machine, to be lifted clear of said last mentioned arm with simultaneous release of the tension of said leaf springs and withdrawal of said last mentioned arm towards the normal position thereof.

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