F. WHITE AND J. B. BARDO.

CONTROL MECHANISM.

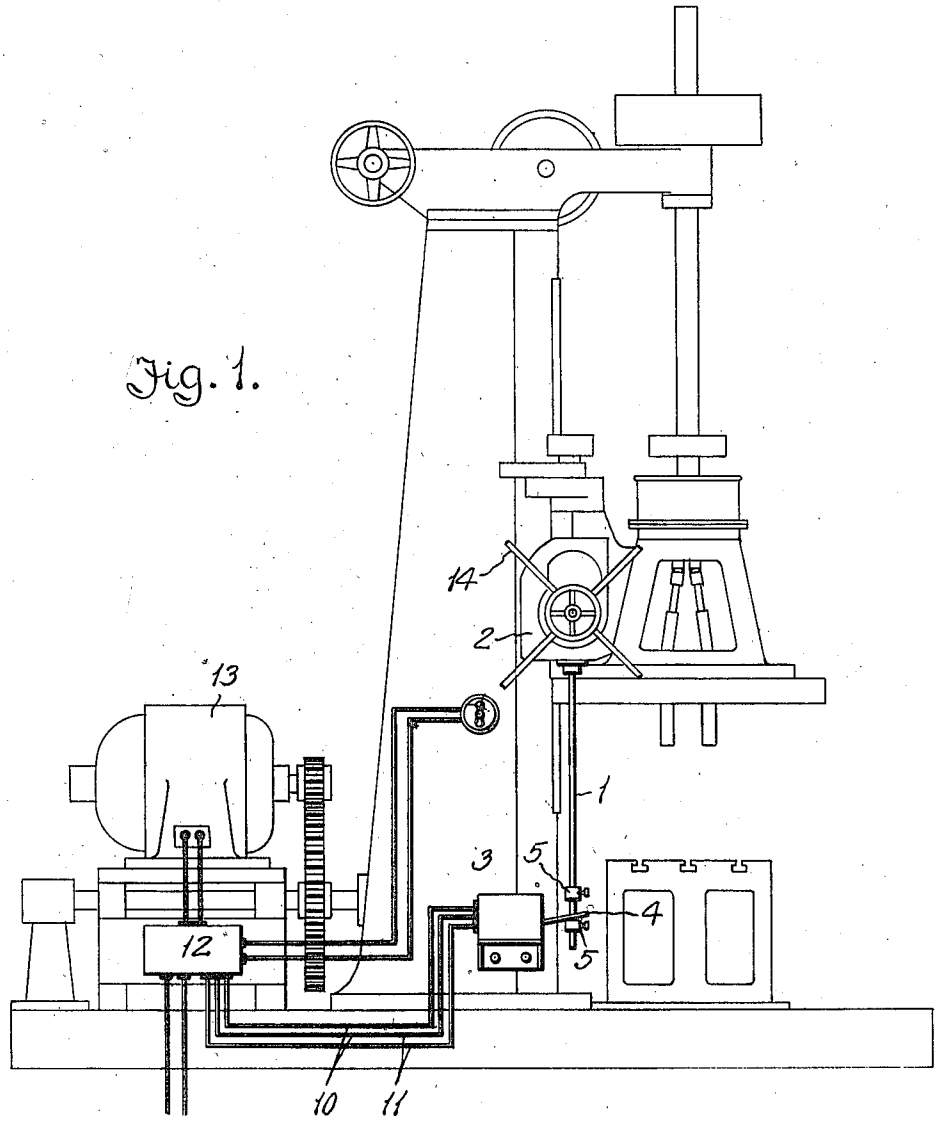
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3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 2.

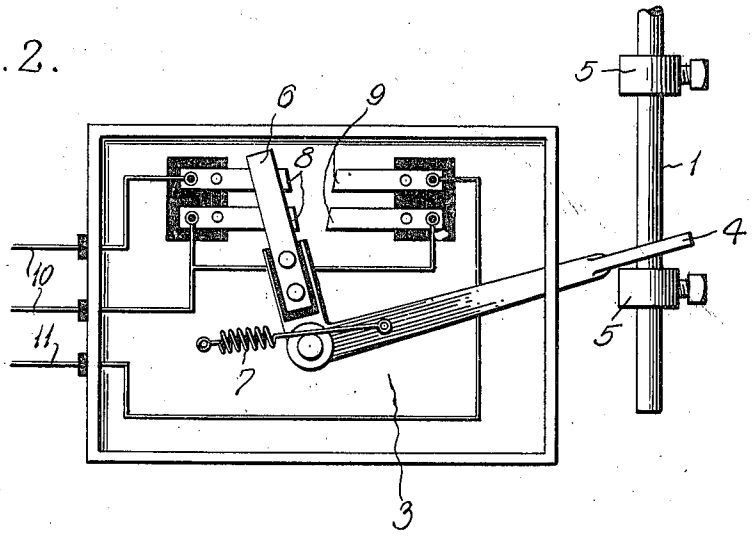
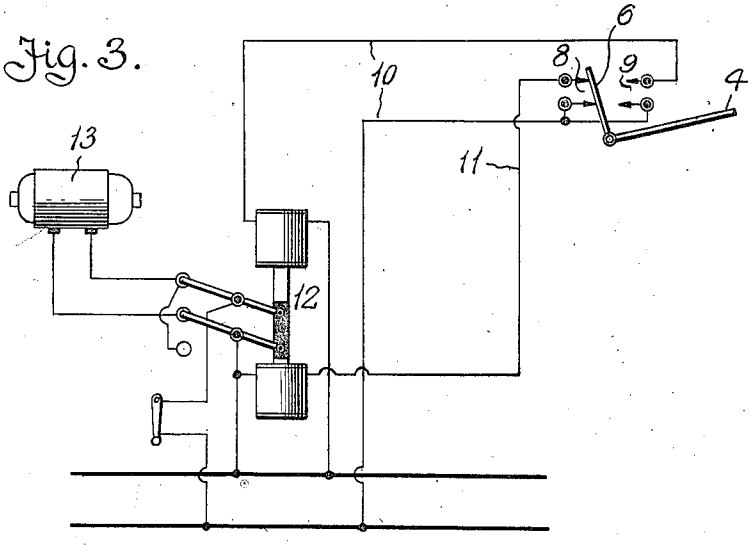


Fig. 3.



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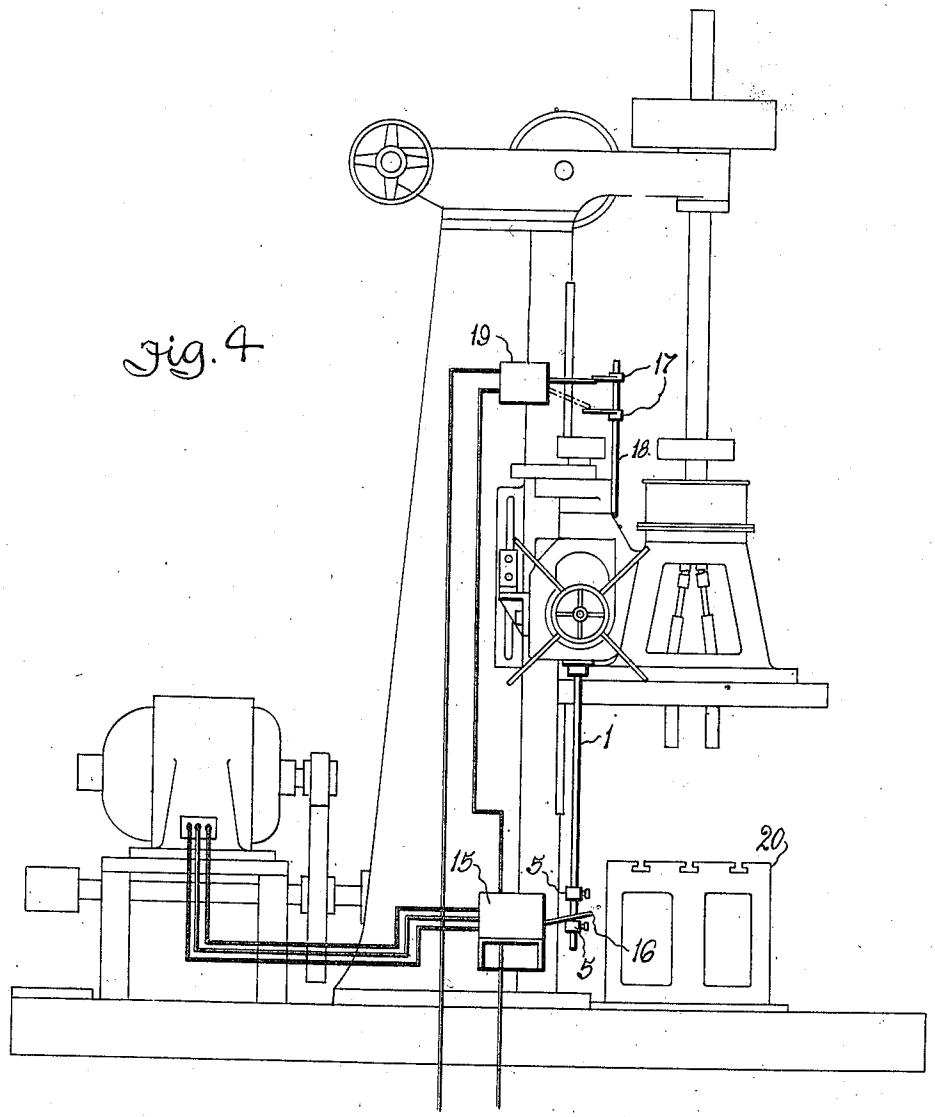
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3 SHEETS—SHEET 3.

Fig. 4



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FIELD WHITE AND JOHN B. BARDO, OF DETROIT, MICHIGAN.

CONTROL MECHANISM.

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To all whom it may concern:

Be it known that we, FIELD WHITE and JOHN B. BARDO, citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Control Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

In the operation of tapping machines, particularly those of the multiple type and of like machines in which taps are brought to the work manually and then feed themselves in the openings, it is difficult to make the screw threads of uniform length, as manual control is based on the judgment of the operator and the machine platen or head frequently "drifts" past the desired point.

This invention relates to means for automatically defining the length of cut or period of travel of a tool of the character described and includes automatic reversing control.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a view of a device embodying the invention applied to a multiple drill press;

Fig. 2 is a view in detail of a quick throw master switch that may be used with the device;

Fig. 3 is a view in diagram showing the connection between the master switch and a reversing switch together with the motor that operates the drill press or other machine to which the device is applied, and

Fig. 4 is a view of a modification of the device.

As herein indicated, a rod 1 is secured to the part 2 of the tap operating head or member which advances with the tap toward the work. A master switch 3 of any approved quick throw or snap-action type has the operating lever 4 thereof disposed in the path of a pair of adjustable stops 5 which are carried by the rod 1. As one convenient form of switch the member 4 may be one arm of a bell crank, the other arm of which carries a contact plate 6 which is snapped, after the member 4 has moved past the pivot member, by a suitably devised spring 7 across either a pair of forward contact points 8 or a corresponding reverse pair 9, according to the advance or regression of the member 2 as the taps on the spindles thereof work into or back away from the work.

The switch 3 controls through suitable circuits 10—10 and 11—10, a reversing switch 12 of any preferred type adapted to control and reverse a motor 13 that is positively connected through suitable means to the drive shaft of the drill press. A cut off switch is also conveniently located to stop the motor.

In operation the spindles and taps are brought to the work by suitable movement of the head 2, carriage or platen by the usual manual means such as a hand wheel 14 or the like and thereafter the taps draw themselves into the work with the platen to a point where the stops 5 throw the switch and reverse the motor thereby permitting or causing the taps to back out and carry the member 2 with them until the motion is again reversed by the action of the stops in throwing the master switch.

In order to avoid the necessity of turning the cut-off switch 14 by hand to stop the machine from alternately feeding up and down, the modification shown in Fig. 4 may be used. In this instance a master controlling switch 15 which may embody both the features of the switches of the other device, that is, be a master and reversing switch in one, has its operating member 15 thrown by the stops 5 on the spindle 1 as in the first instance. In addition, a pair of cut-out stops 17 are adjustably secured on another member 18 to move with the machine head or platen and thereby throw a cut-out switch 19 off on the retrograde movement of the machine. By this arrangement the machine may be set to stop itself at either limit of movement of the taps. Fig. 4 may also be considered as representing one of a line of machines having a common bed 20 along which the work may be advanced and by proper adjustment of the controlling mechanism these machines may be regulated to feed in synchronism or in order as desired.

Consequently, machines of this type may be controlled by devices embodying the invention to accurately feed and withdraw drills, taps or the like to any predetermined depth without attention on the part of the operator.

It is also plain that the device may be used on any machine in which very accurate

reversal of the feeding mechanism is desirable.

Obviously changes in detail of construction may be made without departing from the spirit of our invention and we do not care to limit ourselves to any particular form or arrangement of parts except within the scope of the appended claims.

What we claim is:—

1. The combination with a power tool feeding machine and reversible electric motor positively driving the same, of a reversing switch controlling the motor, a master switch controlling the reversing switch, stops adjustably secured to reciprocating parts of the machine to move in synchronism with a longitudinal movement of the tool feeding part of the machine and arranged to throw the reversing switch at predetermined points in either direction of travel of the reciprocating parts.

2. The combination with a power drill press and reversible electric motor positively driving the same, of a reversing switch controlling the motor switch, a master switch controlling a reversing switch, stops adjustably secured to the reciprocating parts of the press to move in synchronism with the longitudinal movement of the drill spindle and arranged to throw the reversing switch alternately into reverse and direct position at predetermined points in either direction of travel of the reciprocating parts and stops adjustably secured to the reciprocating parts of the press to move in synchronism with the longitudinal movement of the drill spindle and arranged to throw the master switch into cut out position at either limit of movement of the drill spindle, as predetermined.

In testimony whereof we affix our signatures in presence of two witnesses.

FIELD WHITE.
JOHN B. BARDO.

Witnesses:
OTTO F. BARTHEL,
ANNA M. DORR.