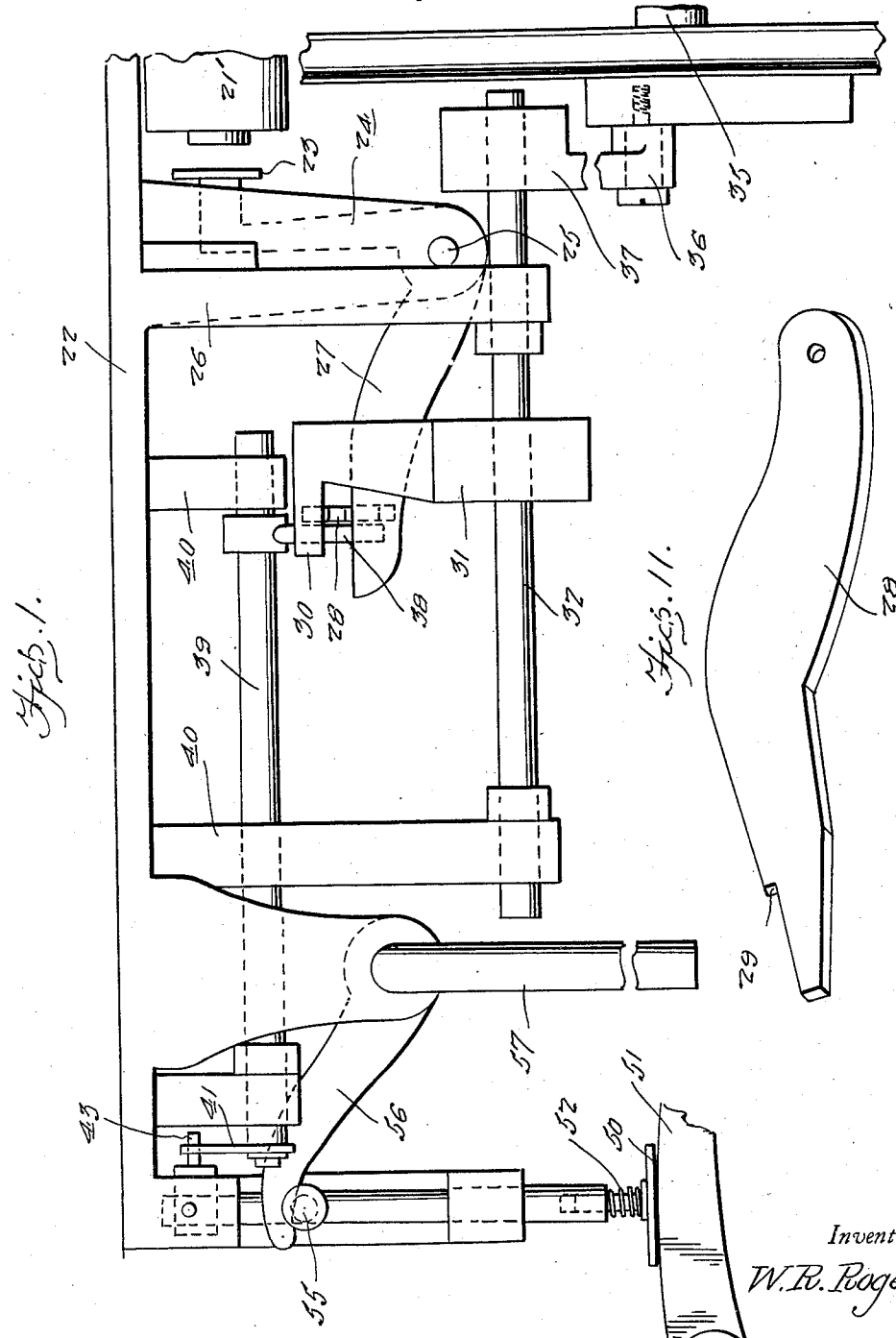
Jan. 21, 1930. W. R. ROGERS 1,744,678

AUTOMATIC LOCK STOP FOR SEWING MACHINES

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AUTOMATIC LOCK STOP FOR SEWING MACHINES

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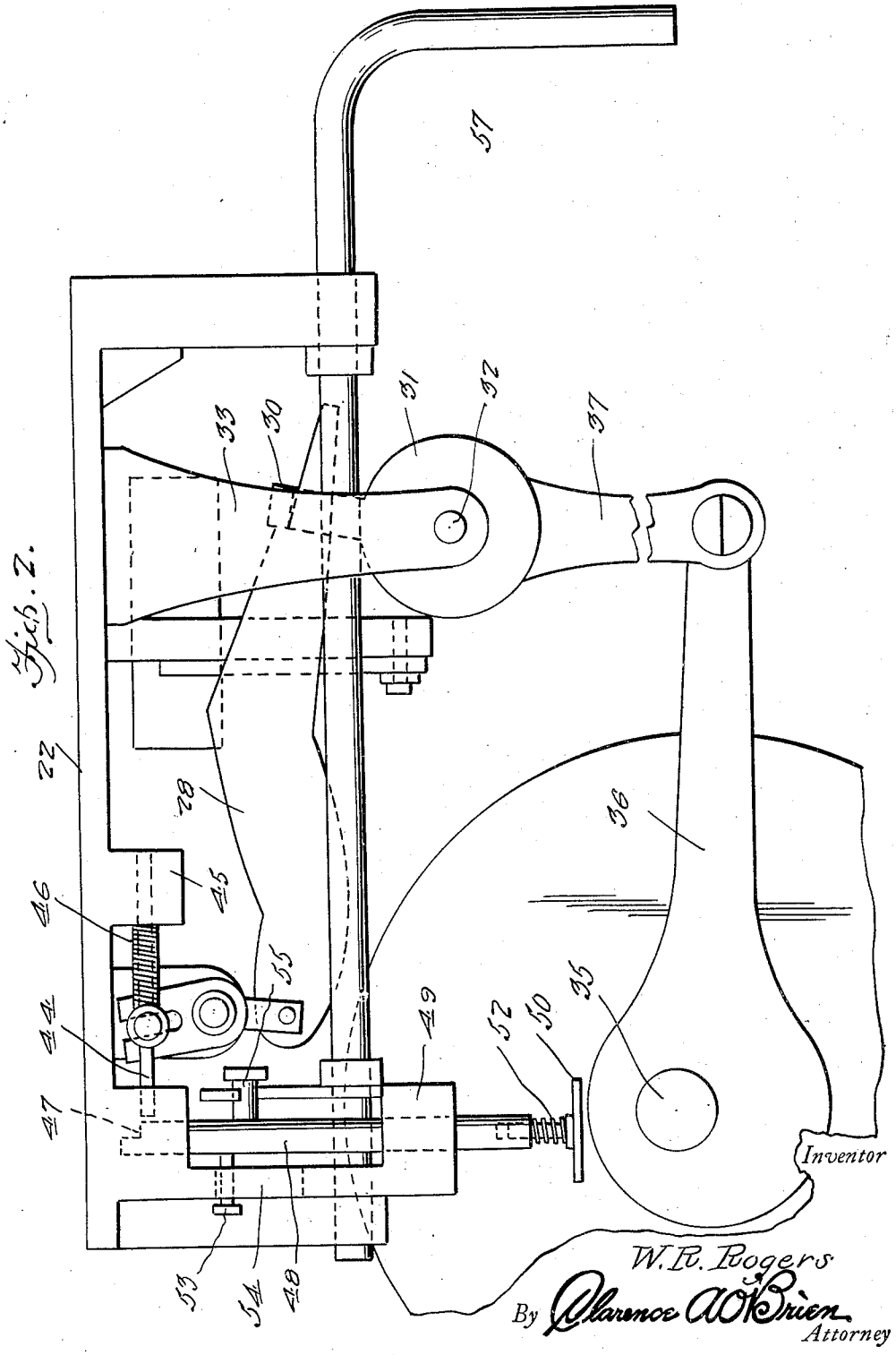


Fig. 2.

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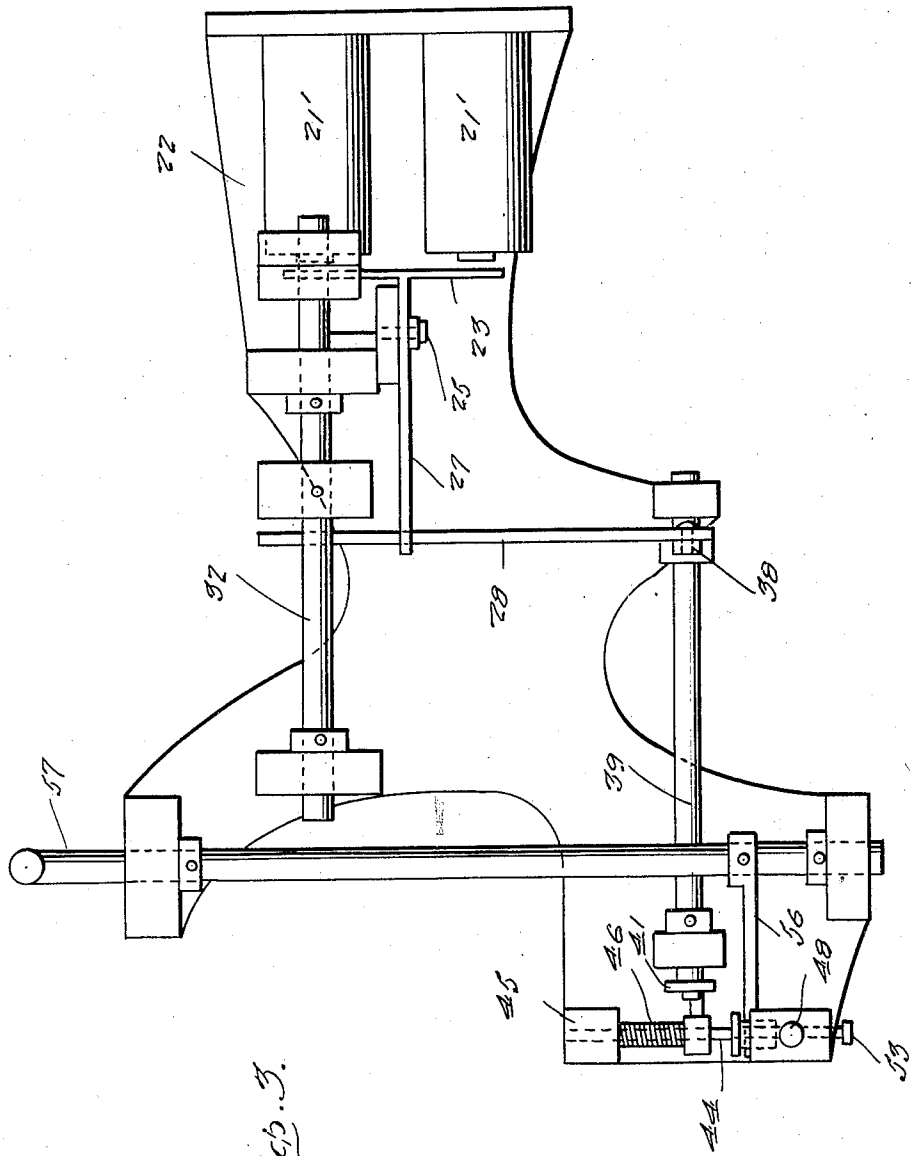


Fig. 3.

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Fig. 4.

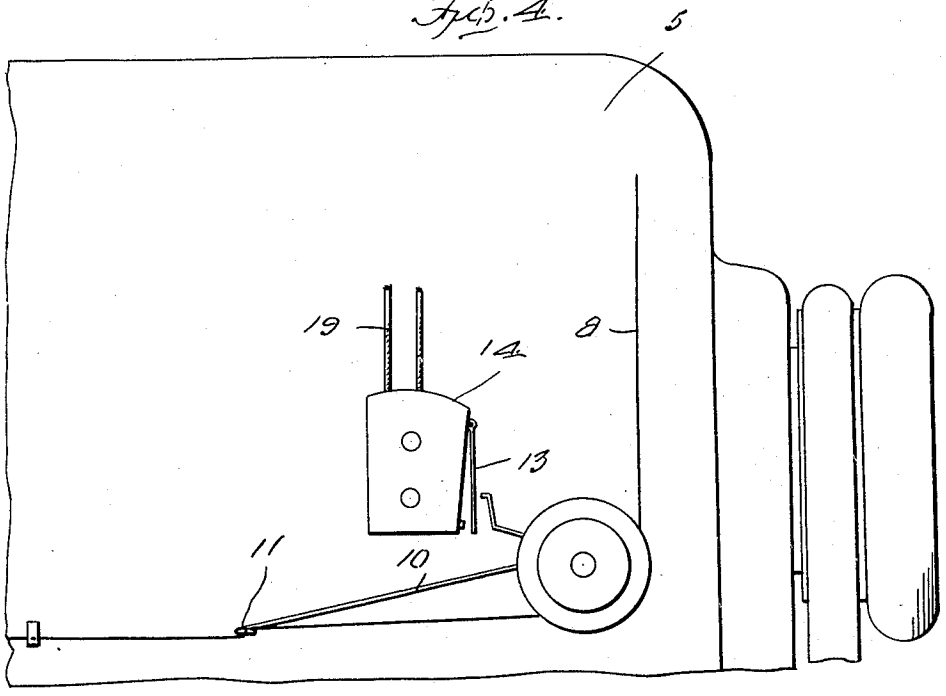


Fig. 6.

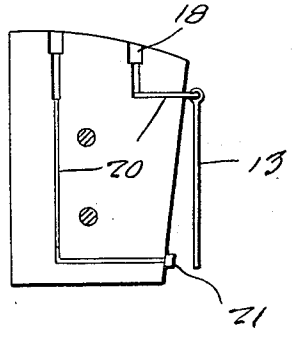
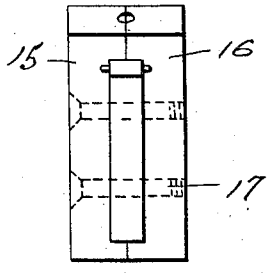


Fig. 7.



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AUTOMATIC LOCK STOP FOR SEWING MACHINES

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Fig. 5.

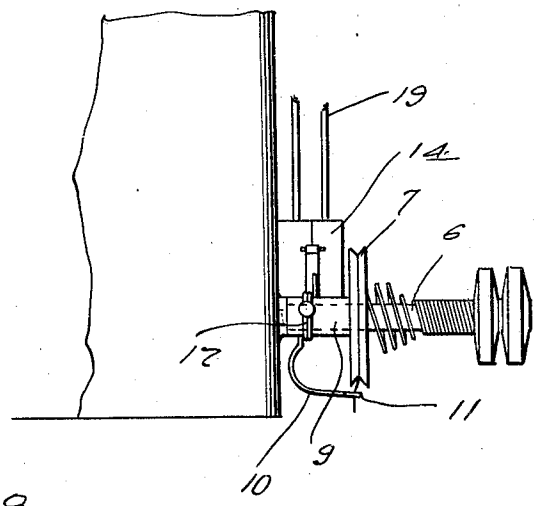


Fig. 8.

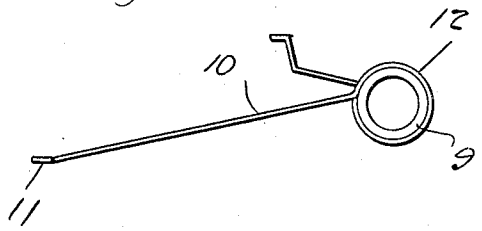


Fig. 9.

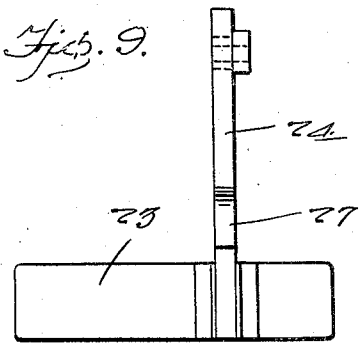
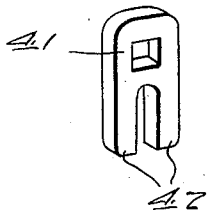


Fig. 10.



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Patented Jan. 21, 1930

1,744,678

UNITED STATES PATENT OFFICE

WILLIAM R. ROGERS, OF WESTFIELD, NEW JERSEY

AUTOMATIC LOCK STOP FOR SEWING MACHINES

Application filed April 12, 1928. Serial No. 269,369.

The present invention relates to an automatic lock stop for use in conjunction with power operated sewing machines, the principal object of the invention being to provide an automatically operated stop mechanism for the machine upon the breaking of the thread.

The invention comprehends the use of electro-magnetic actuating means for the locking mechanism of the sewing machine, said electro-magnetic operating means being included in a circuit with a circuit closer, normally maintained in an open position and operatively associated for circuit closing movement with an arm supported by the thread of the machine, said arm being arranged for releasing movement upon the breaking of the thread whereby to move the circuit closer in circuit closing position.

A still further object of the invention is to provide an apparatus of this character of a simple and practical construction, which is efficient and reliable in performance, which may be attached in operative position for use in conjunction with a conventional type of power operated sewing machine without necessitating any changes or alterations in the construction thereof, and to permit the operation of the sewing machine independent of the invention, if desired, which is relatively inexpensive to manufacture and otherwise well adapted to the purpose for which the same is intended.

Other objects and advantages reside in the special construction, combination and arrangement of the various elements forming the invention as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout and in which:

Figure 1 is a side elevational view taken from the side of the machine adjacent the operator and illustrating the electro-magnetically actuated brake arm engaging mechanism,

Figure 2 is an end elevational view thereof,

Figure 3 is a bottom plan view,

Figure 4 is a fragmentary rear elevational view of the sewing machine showing the position of the circuit closer actuating arm mounted upon the machine,

Figure 5 is an end elevational view thereof,

Figure 6 is an elevational view of the inner side of one of the sections of which the circuit closer is constructed,

Figure 7 is an end elevational view of the circuit closer,

Figure 8 is a detail of the thread supported circuit closer actuating arm,

Figure 9 is a detail showing the magnetically actuated plate in end elevation used for actuating the brake arm stop mechanism,

Figure 10 is a detail of the rockably mounted yoke provided for actuating the brake shoe releasing rod, and

Figure 11 is a detail in perspective of the link interposed between said yoke and the electro-magnetically operated plate.

Referring now to the drawing in detail, I have illustrated my invention adapted for use in connection with a power operated sewing machine indicated generally at 5 and from the rear side of which extends a shaft 6 having a pulley wheel 7 rotatably mounted thereon and about which the thread 8 is extended. The pulley wheel 7 is spaced from the machine by use of a sleeve 9 carried on the shaft, said sleeve providing a mounting for a trip member 10, preferably comprising a spring steel wire having one end formed into an eye 11 through which the thread is inserted for the free movement of the thread therethrough, the wire intermediate the end being wound about the sleeve 9 in one or more complete revolutions as shown at 12 whereby to provide a pivotal mounting for the trip, the opposite end of the wire extending from the sleeve in a direction toward a pivotally mounted contact member 13.

The contact member 13 is vertically disposed at one side of a sectional circuit closer mounting 14 of a construction clearly shown in Figures 6 and 7 of the drawings. The circuit closer mounting 14 is composed of a pair of spaced sections indicated at 15 and 16 secured together by screws 17 extending transversely therethrough and which screws

may also be utilized for attaching the mounting to the rear side of the machine 5.

A pair of sockets 18 are recessed in the upper edge of said mounting adapted to receive the plugs formed at the end of electric circuit wires 19, the inner ends of the sockets having a connection through wires 20 extending through the body of the mounting to the pivoted end of the contact member 13 and a stationary contact member 21 is formed at the side of the mounting adjacent the free end of the pivoted contact 13.

From an inspection of Figure 4 of the drawing it will be seen that the end of the trip 10 engaged by the thread is supported by said thread during the normal operation of the machine so as to maintain the end of the trip adjacent the pivoted contact member 13 out of engagement therewith whereby the contacts 13 and 21 will remain apart, the circuit communicating therewith being thus retained in open position. However should the thread 8 become broken, the end of the trip provided with the eye 11 will drop downwardly, to the back, as such end of the trip is longer than the opposite end thereof.

This causes said opposite end to move the contact 13 into engagement with the contact 21 to close the circuit. The circuit wires 19 are operatively connected with a pair of electro-magnets 21′, supported at the under side of the platform 22 upon which the machine is mounted, the energization of said magnets operating to draw the plate member 23 in a direction toward the magnets.

The plate member 23 is attached to the vertically disposed arm 24 of the bell crank pivotally mounted upon a shaft 25 supported upon a bracket 26 depending from the platform 22. The opposite arm of the bell crank, indicated at 27, is disposed substantially horizontally and with its free end disposed beneath the link 28 said link having one of its ends free and supported upon the upper edge of the arm 27.

As clearly illustrated in Figure 11 of the drawing, the link 28 has its upper edge formed with a shoulder 29, adapted upon the upward movement of the link through the arm 27 of the bell crank for movement into a path for engagement by the angular upper end 30 of a reciprocally actuated member 31 mounted on a rock shaft 32 supported by a bracket 33 depending from the under side of the platform 22. The shaft 32 is connected for actuation with the drive shaft 35 of the sewing machine through an eccentrically mounted pitman 36 and link 37.

The reciprocating member 31 is thus continuously operated through this connection with the drive shaft of the machine. The end of the link 28 opposite from its association with the reciprocating member 31, is pivotally attached to an arm 38 extending radially from a rock shaft 39 journaled for rotation within supporting brackets 40 depending from the under side of the platform 22.

At one end of the shaft 39 is mounted a yoke 41, of a construction as clearly shown in Figure 10 of the drawings, said yoke having its bifurcated end 42 extending radially with respect to the shaft and adapted for reciprocating movement upon the actuation of said shaft. The yoke end of the yoke member 41 is adapted for engaging a pin 43 at one end of which is arranged a brake arm releasing rod 44 extending transversely with respect to the pin 43, said releasing rod having one end slidably supported in a bracket 45 extending from the under side of the platform 22 and upon which rod is also arranged a coil spring 46 interposed between said bracket and the pin 43 whereby to normally urge the opposite end of the rod in a direction for engaging the shoulder 47 formed at one end of the vertically disposed brake arm retaining rod 48, slidably mounted for vertical movement within a bracket 49 extending from the under side of the platform and having a shoe 50 formed at its lower end arranged for engaging the upper side of the brake arm 51 whereby to urge the same into braking position for preventing the operation of the machine in a manner well known in the art.

The shoe 50 is yieldably carried at the lower end of the releasing rod 48 whereby to provide for a yieldable engagement between the shoe and the brake arm. A guide pin 53 extends from one side of the retaining rod 48, said guide pin being inserted through a slotted opening 54 formed in the bracket 49 whereby to prevent rotary movement of said pin.

A pin 55 also extends from the retaining rod 48, from the side thereof opposite from the guide pin 53, said pin 55 having one end of an arm 56 disposed thereabove and its opposite end oppositely connected with a manually operable lever 57 extending from the side of the platform 22 at which the operator of the sewing machine is positioned.

In the operation of the device, with the electro-magnet 21′ de-energized, the arm 27 of the bell crank will be disposed in a position as shown in Figure 1 and with the free end of the link 28 disposed downwardly out of contacting engagement with the end 30 of the reciprocating member 31. In this position the end of the brake arm releasing rod 44 is engaged with the shoulder 47 at the upper end of the brake arm retaining rod 48 and in such position the brake shoe 50 will be engaged with the brake arm 51 whereby to retain said brake arm out of braking position with respect to the sewing machine.

Accordingly the machine will continue with its sewing operation and the reciprocating member 31 will operate idly out of engagement with the shoulder 29 of the link 28.

However, upon the breaking of the thread 8 the electric magnet 21′ will become energized, as heretofore explained, thus causing the arm 27 of the bell crank to move the link 28 upwardly so that the shoulder 29 thereof will be in a position for engagement by the end 30 of the reciprocating member 31.

Accordingly the yoke 41 will be actuated through the link so as to cause the movement of the releasing rod 44 inwardly against the tension of the link 46 and disengage the same from the shoulder 47 of the brake arm retaining rod 48. The brake arm 51 will accordingly be permitted to move upwardly, the brake arm being actuated for upward movement to apply the brake to the machine in a manner well known in the art.

The machine accordingly will be thrown out of operative position until the thread 8 has been repaired. As soon as the thread has been repaired and the machine is ready to again operate, the brake arm 51 is depressed through the actuation of the lever 57 for moving the arm 56 downwardly until the shoulder 47 of the brake arm retaining rod 48 is engaged by the end of the releasing rod 44.

The machine will then be permitted to function in a normal manner. It is obvious that my invention is susceptible to various changes and modifications in construction without departing from the spirit of the invention or the scope of the appended claims, and I accordingly claim all such forms of the device to which I am entitled.

Having thus described my invention, what I claim as new is:

1. An automatic stop for power sewing machines comprising a slidably mounted brake arm retaining rod adapted to normally retain a brake out of braking position, a slidably mounted releasing rod for said retaining rod, spring means for normally urging said rod into engaged position, a reciprocating member operatively connected with the drive means of the machine, a link engageable with said reciprocating member for the releasing movement of said releasing rod and normally retained out of engaged position, and electro-magnetic actuating means adapted to move said link into engaged position with said reciprocating member, said electro-magnetic actuating means being disposed for energization upon a predetermined operating condition of the machine.

2. An automatic stop for power sewing machines comprising a slidably mounted brake arm retaining rod adapted normally to retain a brake out of braking position, a slidably mounted releasing rod for said retaining rod, spring means normally urging the rod in engaged position, a reciprocating member operatively connected with the drive means of the machine, a link engageable with said reciprocating member for the releasing movement of said releasing rod and normally retained out of the path of movement of said member, electro-magnetic actuating means adapted to move said link into the path of said member for actuating the same, a rock shaft operable by said link, and a yoke member connecting the shaft with the retaining rod for moving the same out of engagement with said brake releasing rod.

In testimony whereof I affix my signature.

WILLIAM R. ROGERS.