No. 680,665. Patented Aug. 13, 1901.

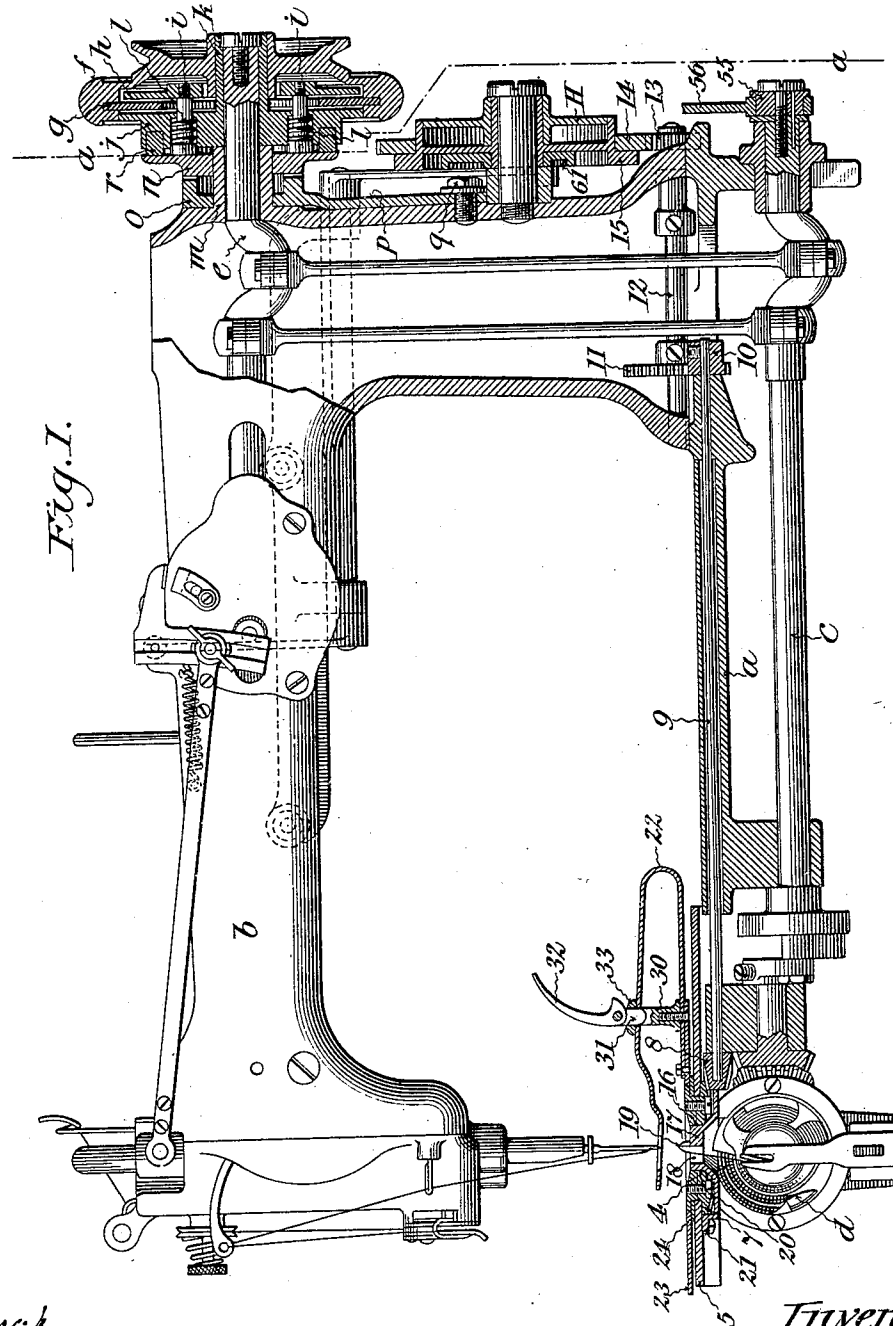
D. NOBLE.

STOPPING MECHANISM FOR SEWING MACHINES.

(Application filed Aug. 16, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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Fig. 2.

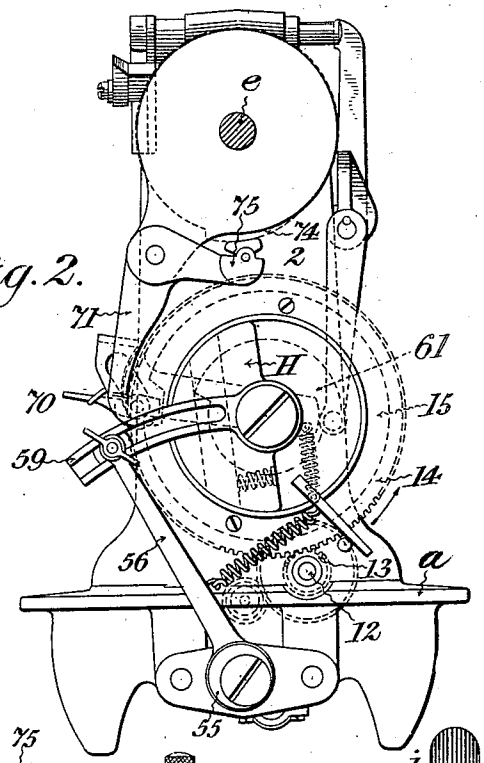


Fig. 4.

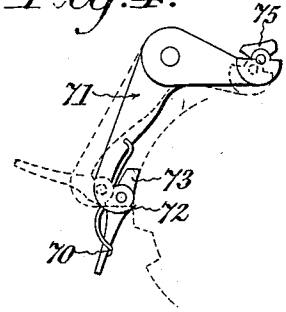
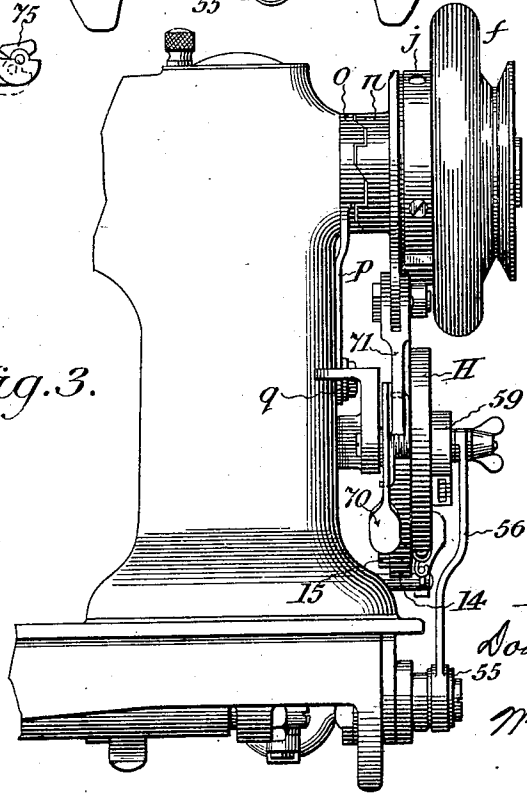


Fig. 3.



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UNITED STATES PATENT OFFICE.

DONALD NOBLE, OF LONDON, ENGLAND, ASSIGNOR TO WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT.

STOPPING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 680,665, dated August 13, 1901.

Original application filed April 4, 1900, Serial No. 11,495. Divided and this application filed August 16, 1900. Serial No. 27,111. (No model.)

To all whom it may concern:

Be it known that I, DONALD NOBLE, a subject of the Queen of Great Britain, residing at Finsbury, London, England, have invented a certain new and useful Improvement in Stopping Mechanisms for Sewing-Machines, of which the following is a full, clear, and exact description.

This invention relates especially to stopping mechanism, or, as it is familiarly termed, a "stop-motion" for sewing-machines; and the subject of this case is divided out of my application for patent for eyelet-sewing machines, filed April 4, 1900, Serial No. 11,495, in accordance with the requirement of the Patent Office.

The invention comprises a stop-motion in connection with a stitch-counting mechanism, whereby after a predetermined number of stitches have been made the machine will be stopped. In connection with such a stop-motion I employ an emergency stop by which the machine may be brought to a stop irrespective of the state of completion of the cycle of movements, so that in case of breakage of the thread or such other difficulties, the operator may stop the stitching instantly, all as I will proceed now more particularly to set forth and finally claim.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation, partly in section, of parts of the well-known Wheeler & Wilson sewing-machine equipped with my improvements. Fig. 2 is a section taken in the plane of the line *a a* of Fig. 1. Fig. 3 is a side elevation of the right-hand end of the sewing-machine. Fig. 4 is a detail elevation of the brake-lever or emergency stop used in connection with the stop-motion and counting mechanism, whereby the movements of the machine may be arrested, the needle-vibrating mechanism being omitted.

The stop-motion device and the counting mechanism, herein in part shown and which may be employed in this machine, form the subjects of Patents Nos. 656,852 and 656,853, dated August 28, 1900, and therefore only such limited reference will be made to these parts as is deemed necessary to a proper understanding of my present invention. Also the stitch-forming mechanism employed may be and so far as shown is of the usual construction found in the well-known Wheeler & Wilson machine, having a horizontally-vibrating needle-bar, with the exception of the mechanism for imparting the horizontal vibration to the needle-bar.

The bed-plate *a*, overhanging arm *b*, main shaft *c*, loop-taker *d*, needle-operating shaft *e*, and the pitmen connecting the said two shafts may be of the usual Wheeler & Wilson construction. The needle-bar is arranged in vertical bearings in a vibrating gate, and has a vertically-reciprocating motion imparted to it, all in any usual way. The vibrating mechanism may be of any approved construction, but is here shown as of the particular construction set forth in application Serial No. 11,495, hereinbefore referred to.

The clutch mechanism herein shown is the same as that shown in my Patent No. 656,853, before referred to, and comprises the combined fly-wheel and hand-wheel *f*, having a friction-ring *g*, of leather, metal, or other suitable material, applied thereto. *h* is a movable clutch-disk arranged within a recess within the fly-wheel and having headed bolts or rods *i* applied thereto, and these bolts or rods extend through the friction-ring and through the clutch-disk *j*, also arranged within the recess in the fly-wheel and having a sleeve *k*, which encircles the shaft *e* and upon which sleeve the fly-wheel turns freely, said sleeve being rigidly secured to the shaft *e*. Springs *l* are interposed between the heads of the bolts or rods and the clutch-disk *j* and normally tend to draw the clutch-disk *h* into contact with the friction-ring *g*. Mounted loosely upon a bearing *m*, projecting from the arm of the machine, is a brake-disk *n*, having a series of inclines on its left-hand face, which coöperate with similar inclines on the right-hand face of the disk *o*, which is likewise loosely mounted upon the bearing *m*, and this last-

mentioned disk *o* has an arm *p*, which is adjustably secured by the screw *q* to the arm of the machine. Interposed between the brake-disk *n* and the clutch-disk *j* is a brake-ring *r*, seated in a recess in the clutch-disk *j*. In Fig. 1 this clutch mechanism is shown in the released position, which position is effected by a movement of the brake-disk *n* against the heads of the bolts or rods *i*, which moves them toward the right, and thus releases the clutch-disk *h* from engagement with the friction-ring *g*, and subsequently the brake-disk *n* comes into contact with the brake-ring *r*, and thus accomplishes the stopping of the needle-bar shaft. Any other clutch mechanism having this capacity of motion may be substituted for the clutch mechanism described.

The feed mechanism herein shown is the same as in my case, Serial No. 11,495, referred to, and forms the subject of a divisional application thereof, filed July 14, 1900, Serial No. 23,639, and so far as shown comprises the rotary circular feed-disk 4, journaled within the plate 5.

7 is a bevel-gear which is secured concentrically to the under side of the feed-disk 4 and meshes with a beveled pinion 8, fast on the end of the horizontal shaft 9. The shaft 9 is suitably journaled within the bed-plate, and tight on the other end thereof is a pinion 10, which meshes with a gear-wheel 11, secured upon a horizontal counter-shaft 12, journaled within the base of the arm *b*. Upon the outer extremity of the counter-shaft 12 is secured a pinion 13, which meshes with and is driven by a large gear-wheel 14, carried by the stopping-disk 15 of the counting mechanism. The stopping-disk 15 receives an intermittent rotation through the clutch H, a segment-lever 59, connected therewith, eccentric 55 on end of shaft *c*, and connection 56 between said eccentric and segment-lever, as shown and described in my Patent No. 656,852. Thus it will be clear that the circular disk 4 receives its feed movements from the intermittent rotary movement of the stopping-disk 15 through an intermediate train of gearing—to wit, gears 7, 8, 10, 11, 13, and 14, and shafts 9 and 12.

The feed-disk 4 has a central circular opening 16, within which extends the circular throat-plate 17, provided with the usual needle-aperture 18 and a spur 19. The bevel-gear 7, secured to the under side of the feed-disk 4, has a central opening 20 to receive the circular throat-plate. The throat-plate 17 incloses the bevel-gear 7 and is supported in position by means of screws 21, (only one shown,) tapped in the under side of the plate 5, Fig. 1.

22 is a cloth-clamp, secured to and supported in position by a circular table or ring 23, which is journaled around the feed-disk 4 in such manner as to be capable of turning or swinging freely around said disk.

24 is a washer interposed between plate 5 and table 23 and disk 4.

30 is a post whose upper end passes through a perforation 31 in the clamp 22, and pivoted to the upper end of said post is a cam-lever 32, by means of which the clamp 22 is closed down against the material, and 33 is a washer interposed between the cam-lever and cloth-clamp.

It is often necessary to stop the machine before the stopping-disk is in proper position for the stop-motion devices to operate, and for this purpose I have provided what I shall term an "emergency" stop-lever in addition to the usual brake-lever.

Referring to Figs. 2 and 4, 70 is a spring-held lever or dog pivoted to the lower end of the usual brake-lever 71 and adapted to cooperate with the stopping-disk 15 at the will of the operator. 72 is a shoulder or stop on the lever 71, whereby the downward movement of the inner end or nose 73 of said lever is limited. The position shown in full lines in Fig. 4 is that which these parts occupy when the machine has been stopped, while the dotted lines in this view illustrate the position assumed by said parts when the machine is running. The effect of the lever 70 is to permit the brake-lever 71 to be operated manually at any time to stop or start the machine irrespective of the relative position or time of the counting-disk, and this stopping is effected by throwing the emergency-lever 70 against disk 15, so as to project the upper end 75 of said brake-lever within the field of travel of the cam 74. (Shown in dotted lines in Fig. 2.) The reverse movement of the lever 70 takes the upper end 75 of the brake-lever out of the field of travel of said cam 74.

What I claim is—

1. A stopping mechanism for sewing-machines, comprising a stopping-disk, a brake-lever, and an emergency lever or dog carried by said brake-lever and interposed between said brake-lever and stopping-disk, whereby the machine may be brought to a stop irrespective of the state of completion of its cycle of movements, combined with means for forming stitches and means for controlling the number of stitches to be made, substantially as described.

2. In an automatic stop-motion mechanism, the combination of stitch-counting mechanism, a stop-motion mechanism including a brake-lever, and an emergency lever or dog carried by said brake-lever and interposed between said brake-lever and counting mechanism, whereby the machine may be brought to a stop irrespective of the completion of the full cycle of movements, substantially as set forth.

3. In an automatic stop-motion mechanism, the combination of stitch-counting mechanism, a stopping-disk, a stop-motion mechanism including a brake-lever, and an emer-

gency-dog carried by the said brake-lever and interposed between said brake-lever and counting mechanism, whereby the machine will be free to run when the nose of said dog is projected toward the stopping-disk, and will be brought to a stop when the nose of said dog is withdrawn from said stopping-disk, substantially as set forth.

In testimony whereof I have hereunto set my hand this 15th day of August, A. D. 1900.

DONALD NOBLE.

Witnesses:
C. N. WORTHEN,
NATHAN POOR.