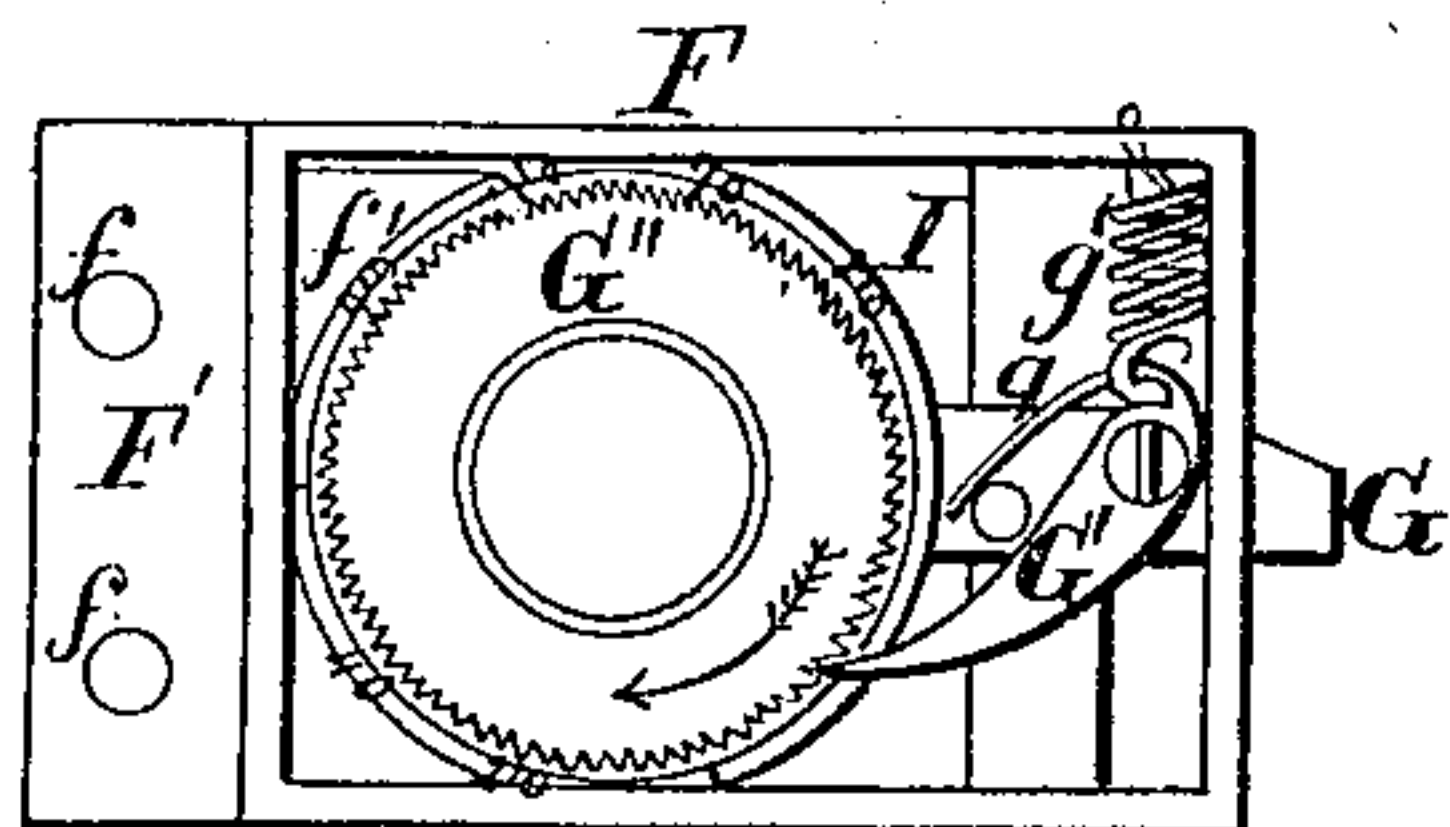


*E. Wilder*

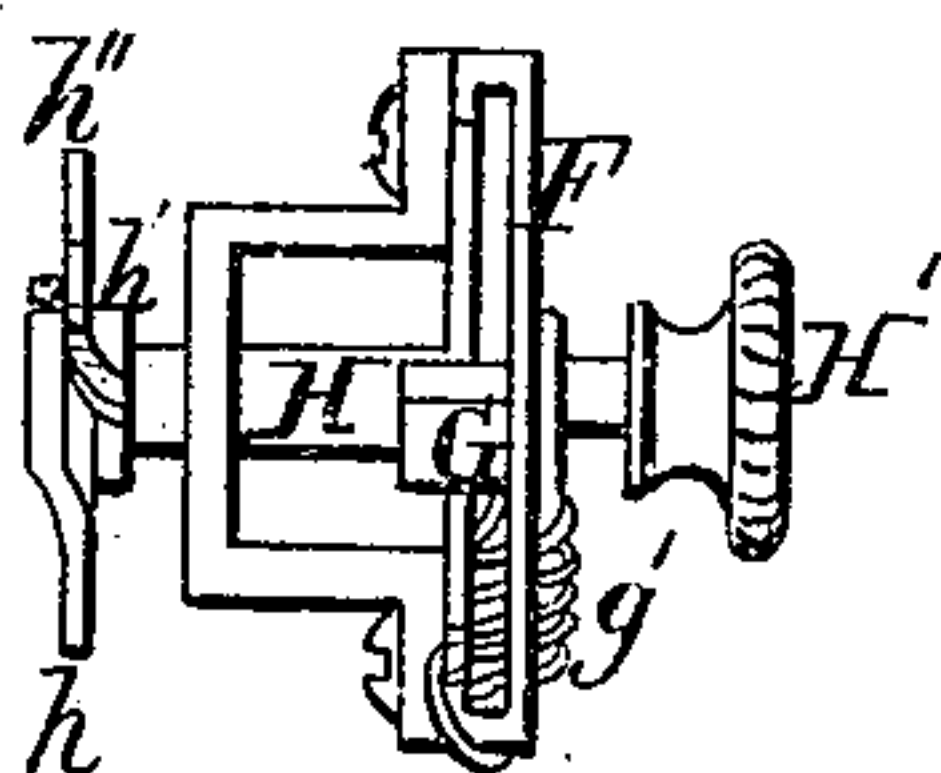
*Stop for Knitting Mach.*

N<sup>o</sup> 83, 116.

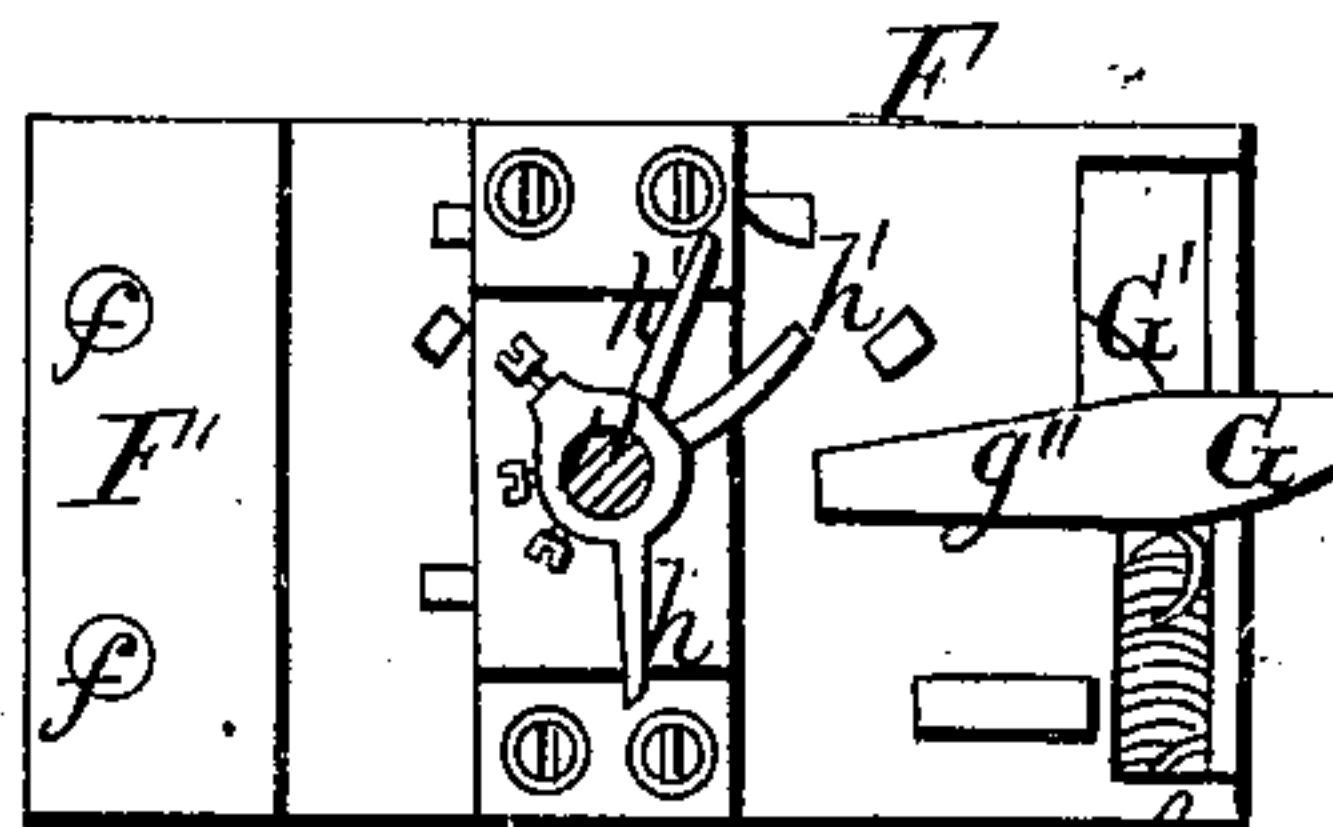
*Patented Oct. 13, 1868.*



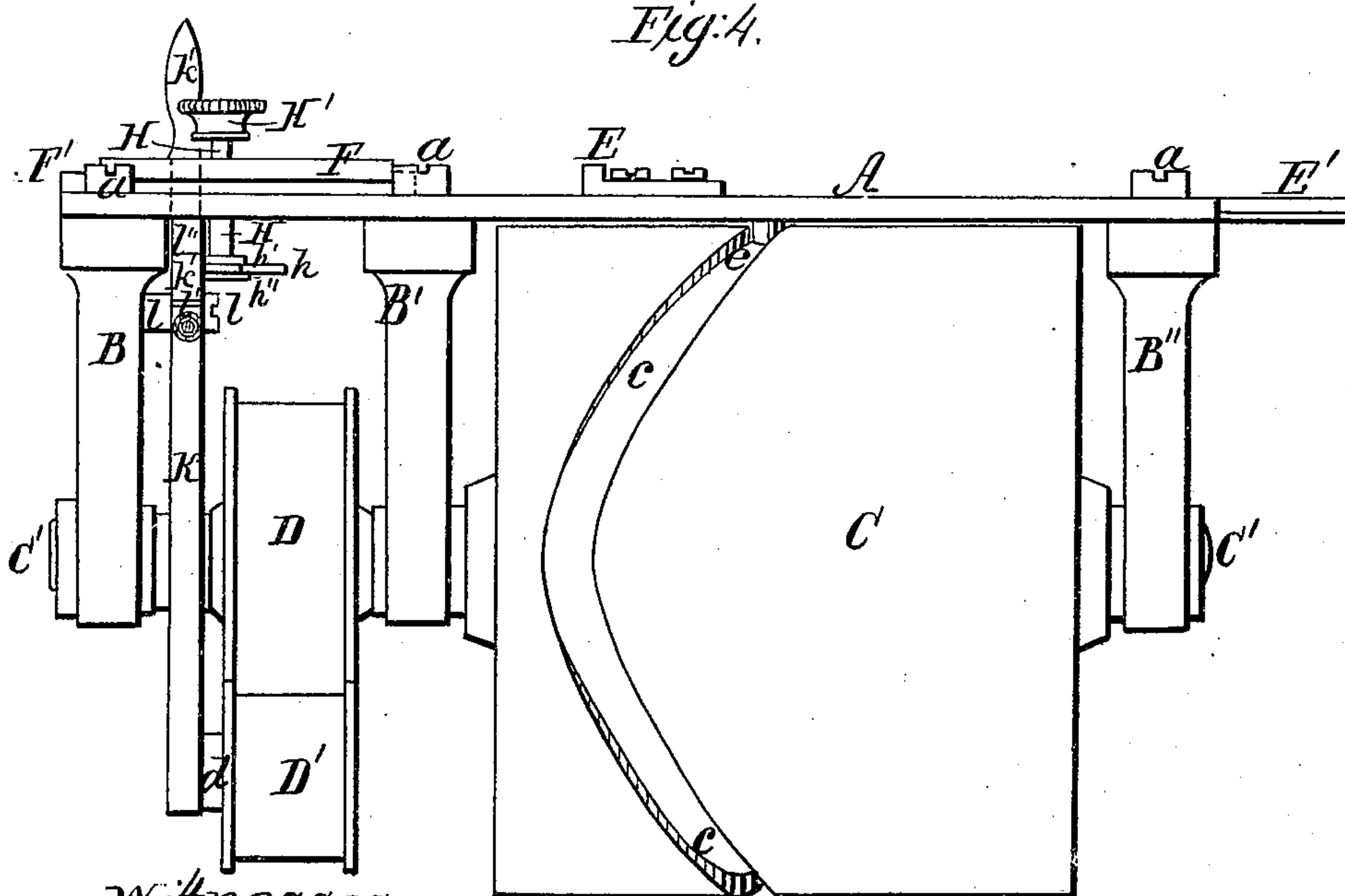
*Fig:1*



*Fig:2.*



*Fig: 3.*



*Witnesses;*

G. M. Van Zuren

17 Aug.

*Inventor;*

Elihu Wilder





# UNITED STATES PATENT OFFICE.

ELIHU WILDER, OF CHICOPEE FALLS, MASSACHUSETTS.

IMPROVEMENT IN STOP-MOTIONS AND INDICATORS FOR KNITTING-MACHINES.

Specification forming part of Letters Patent No. 83,116, dated October 13, 1868.

*To all whom it may concern:*

Be it known that I, ELIHU WILDER, of Chicopee Falls, Hampden county, Massachusetts, have invented a new and Improved Mode of Operating and Automatically Stopping Knitting-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to letters of reference marked thereon.

Figure 1 is a top view of the registering device, showing the dial-plate and ratchet. Fig. 2 is an edge view, and Fig. 3 is a bottom view, of the same, showing the fingers. Fig. 4 is a side elevation of the rotary cam and the frame holding it. Fig. 5 is a view of the bent lever-arm detached. Fig. 6 is an end elevation, partly in section, of the cam and pulleys, with the ratchet and lever for operating the tightening-pulley. Fig. 7 is a view of the pawl detached. Fig. 8 is a top view, showing the position of the registering device relatively to the sliding bar and catch.

The nature of my invention consists in certain combinations of devices for operating and automatically stopping knitting machinery at any desired number of rounds or stitches, as will be hereinafter described, reference being had to the annexed drawings, in which—

A is the frame of the machine, which can be made in any convenient way, to suit the particular knitting-machine to which it may be applied, and can be made of any suitable metal.

B B' B'' are brackets under the frame, and through their lower ends passes the main shaft C'.

C is a rotary cam for giving reciprocating motion to the sliding frame.

D is the driving-pulley on one end of the main shaft.

D' is the tightening-pulley, which is fastened on a shaft, *d*, on the lower end of the crooked lever K.

E is the "trip-dog" on the sliding bar E', which works in the frame A in V-shaped grooves, as seen in Fig. 6.

F is the frame of the "registering device," on which is arranged the "dial-face" I, to indicate the particular number of rounds at which the motion is to be suspended.

F' is the flange, with screw-holes *ff*, by which it is to be fastened to the frame A.

G is the bolt, which is to be operated upon by the trip-dog E in the sliding bar as it comes up to it at every revolution of the rotary cam.

G' is a pawl working on a screw on the bolt G, and is held up by a spiral spring, *g'*, which is fastened to the tail-piece *g*.

G'' is a ratchet-wheel fastened to the axle H. This ratchet can be divided into any convenient number of teeth, and the dial-plate I can be subdivided into a corresponding number of degrees, and the zero-point being established—say at 1—then the figures going around the circle to the left, in opposite direction to the arrow, will be marked on the card-board or metallic plate, for the purpose to be hereinafter described.

H is the axle or shaft of the ratchet and dial device.

H' is the thumb-screw for setting the register-points.

I is a dial-plate, on which are marked the subdivisions of the dial.

K is the curved lever, having on it, at *k*, the ratchet, and which works freely around the main shaft G', having at the lower end the small shaft *d*, on which works the tightening-pulley D'. The upper end of this lever may be, and in most cases is, weighted to overbalance the pulley D'.

L is a pawl, having its pivot *l* in the bracket B. At the lower side is the catch *l'*, and on its upper side, at the other end, a raised boss, *l''*.

*c* is the cam-groove on the cylinder C.

*d'* is the driving-band.

*e* is the pin on the under side of the sliding bar E', and which works in the groove *c*.

*f'* is a spring-catch to hold the ratchet G''.

*g'* is a spiral spring to retain the pawl G'.

*h h' h''* are the fingers which engage the boss *l''* of the pawl L as the ratchet G'' is moved around by the action of the bolt G and pawl G'.

*k* is a ratchet on the lever K, which the catch *l'* of the pawl L engages for holding the pulley on the lower end tight to the driving-belt.

*l''* is the boss, with which the fingers *h h' h''* come in contact to trip the pawl, and permit the tightening-pulley to be raised, and release the band.



In all former knitting-machines where the movement of the sliding frame which operates the needles is produced by the crank motion, the passing of the crank over the four cardinal points—*i. e.*, on the opposite centers and the quarter-round above and below—there is a well-known irregularity. The motion of the crank-arm may be uniform; but the speed of the connecting-bar is very fast on the upward and lower quarter-round and very slow on the centers. In the present improvement this difficulty is obviated, as by the more regular movement of the rotary cam and the passage of its groove under or beside the pin of the sliding bar, the latter has a more regular reciprocating movement. Any desired motion may be given by the curve of the cam being so adapted. In the movement of the bar *E'*, as it comes back, the dog *E* at the end moves to one side the bolt *G* in the registering device, which bolt carries the pawl *G'*, which moves the ratchet-wheel *G''* one notch in the direction of the arrow. On the lower end of the axle *H* of the ratchet-wheel there are three registering-fingers, *h h' h''*, which are made adjustable around the shaft *H*, and can be set at such points relatively with one another that they each indicate the number of rounds required for the different parts of the stocking. Thus the first is set for seventy-five (75) rounds, the second for twenty-four (24) rounds, and the third for one hundred and forty (140) rounds. The first finger is then adjusted, as described, and held in place by a set-screw or a thumb-screw, so that when by the motion of the sliding bar the ratchet-pawl has acted on the ratchet-wheel to move it until the index points to any number set—say seventy-five—on the dial, then the finger *h* will by striking against the boss *l''* raise the catch *l'* in pawl *L* away from the notches on the lever *K*, and the tightening-pulley *D'*, which has kept the driving-belt in action upon the pulley *D* on the main shaft, will be thrown up and the machine cease to act. The attendant will then arrange his work, throw up the lever *K*, and the tightening-pulley *D'* will again cause the belt to act on *D*, and so on continuously until all the changes shall have been made to complete the whole stocking.

As a modification of the device shown in the drawings, the axle *H* of the register may be constructed hollow, so that each finger may have a hollow spindle, the spindle of one fitting into the spindle of another finger, with index-points above, so that the position of each finger below will correspond with the index-point above, and by an arrangement of thumb-screws to move each spindle from above, and set and fasten the same without looking at the fingers underneath. There may be also added to the spindles and the axle a series of wheels, whereby motion may be multiplied, so that instead of confining the machine to a small number of rounds by the

size of the ratchet, it may be kept at its present dimensions, and yet run the machine to three or four hundred rounds. This will obviate the necessity of increasing the diameter of the ratchet to produce certainty in the engagement of the pawl, as any smaller teeth would not act with certainty, and hence would result an uncertainty in the number of rounds being registered.

The machine is operated in the following manner: The frame *A* having been so constructed as to be applied to the sliding frame of a knitting-machine, the driving-belt is connected to the driving-pulley *D*, the bent lever *K* is adjusted so that the tightening-pulley *D'* gives the belt the proper tension, and the catch *l'* is placed in one of the notches of the ratchet *k*. When motion is given to the belt, the revolution of the pulley causes the main shaft to revolve. The cam-groove moves the pin *e* to and fro, carrying the bar *E'*, and thus communicates the proper equable reciprocating movement to the knitting-machine. To stop the knitting automatically when certain rounds have been completed, the registering device is thus arranged: In Fig. 3, Sheet 1, the fingers *h h' h''* are separately movable, yet can be made each one firmly fast to the shaft *H*. *h* is set in such a position that whenever by the action of the bolt *G*, caused by the movement of the sliding bar *E'*, the ratchet *G'* shall have been carried in the direction of the arrow the proper number of rounds indicated, the finger *h* will cause the lever *K* to be released, and the tightening-pulley be removed from the belt; and the results will follow in their proper order from the contact of *h'* and *h''* with the boss *l''* on the pawl *L*, to disengage the lever *K*, as before.

The fingers *h h' h''* being on the rings on shaft *H* one above another, the upper and lowest ones are curved inward to correspond with the line described by the middle one, so that they all revolve in the same plane. In this arrangement there is no limit, as it will be observed that any convenient number of fingers can be applied, and by the same action the exact number of rounds can be given to knitting-machines, which, when accomplished, the machine will stop automatically, thus making more exact work, and thereby enabling the operator to attend to more machines than one, as by a slight observation as to the succession of the times of working of the machines many can be attended to by the same individual.

Having fully described my invention, what I claim as new therein, and desire to secure by Letters Patent of the United States, is—

1. The shaft *H*, carrying the adjustable fingers *h h' h''*, substantially as described.
2. The combination of the bolt *G* with the pawl *G'* and ratchet *G''*, and shaft *H*, carrying the fingers *h h' h''*, made adjustable, and held in position by set-screws or thumb



screws, and operating upon the pawl of a ratchet, for the purpose of stopping the machine at any number of rounds or stitches, substantially as set forth.

3. The combination of the shaft H, having adjustable fingers *h h' h''*, with the ratchet *G''*, pawl *G'*, bolt *G*, sliding bar *E'*, having the

trip-dog *E*, and the cam-grooved cylinder *C*, applied to a knitting-machine, substantially as described.

ELIHU WILDER.

Witnesses:

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