P. W. Hart.

Stop for Knitting Mach.

No. 46,186. Patented Jan. 31, 1865.

Fig: 1.

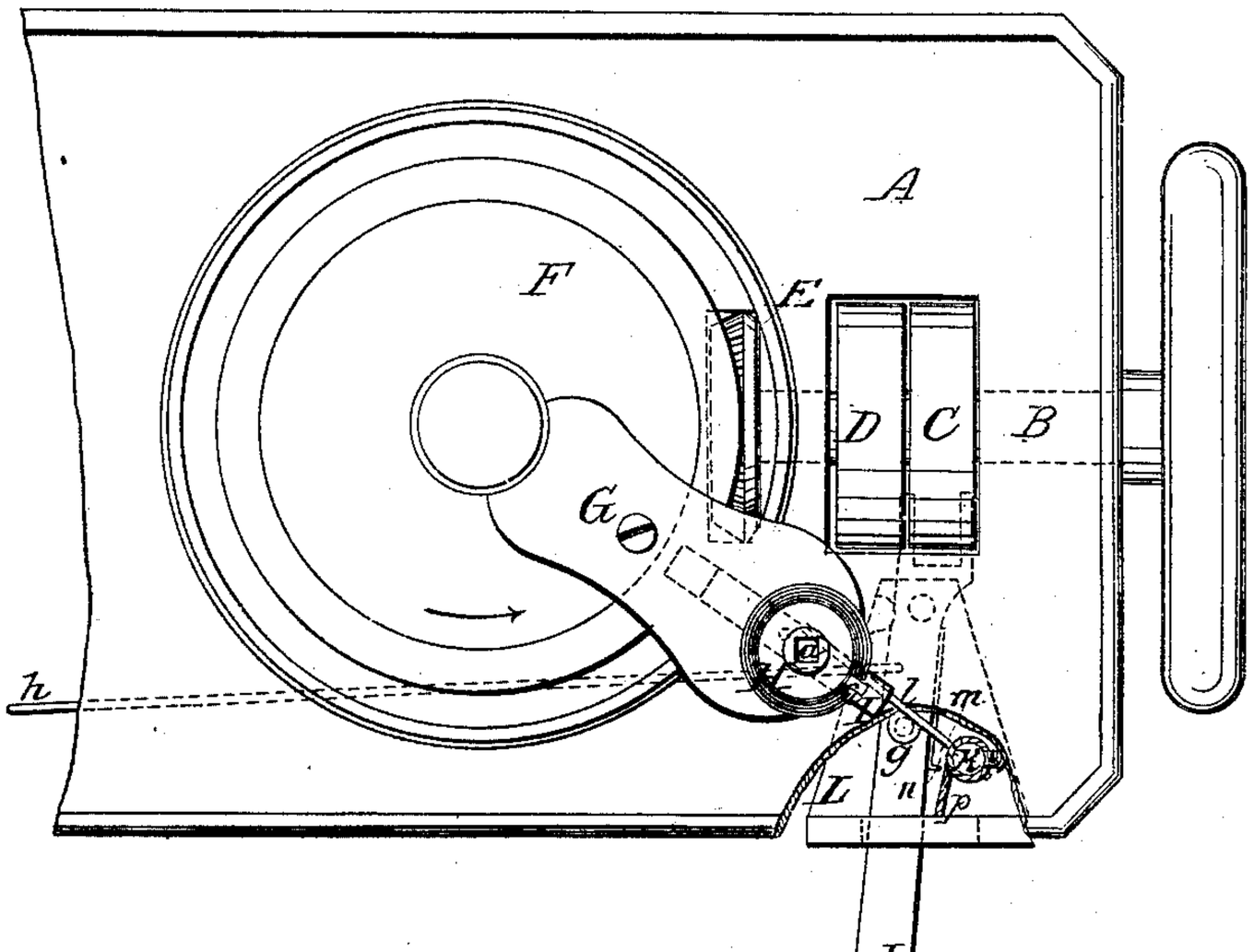


Fig: 2.

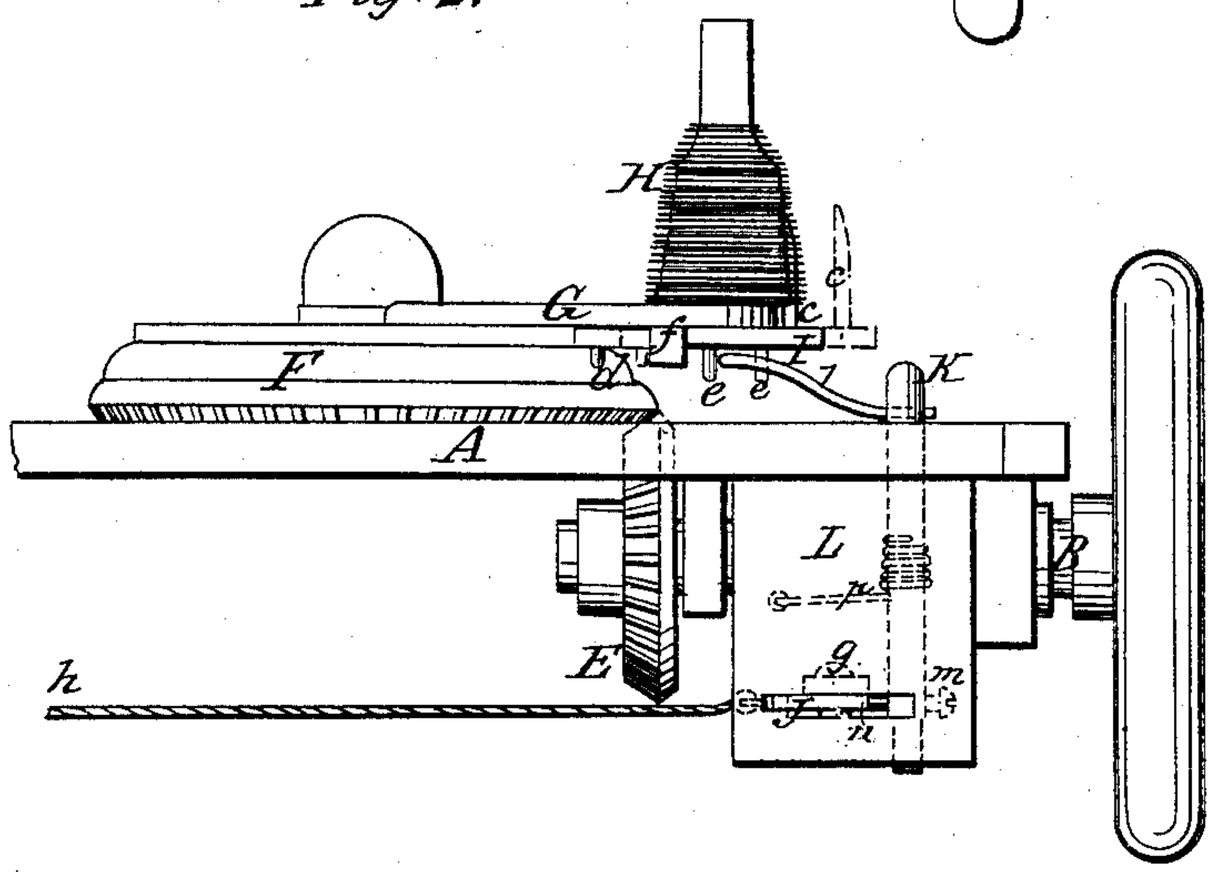
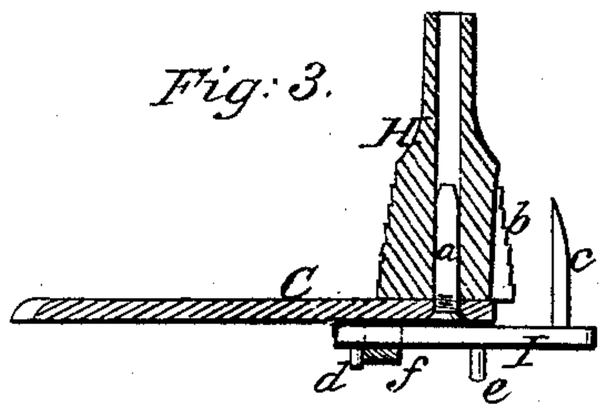


Fig: 3.



Witnesses
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UNITED STATES PATENT OFFICE.

PHILO W. HART, OF STAMFORD, NEW YORK, ASSIGNOR TO THE DALTON KNITTING MACHINE COMPANY OF THE CITY OF NEW YORK, N. Y.

IMPROVEMENT IN STOP-MOTIONS FOR CIRCULAR-KNITTING MACHINES.

Specification forming part of Letters Patent No. **46,186**, dated January 31, 1865.

To all whom it may concern:

Be it known that I, PHILO W. HART, of Stamford, in the county of Delaware and State of New York, have invented a new and Improved Stop-Motion for Circular-Knitting Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan of part of a knitting-machine, showing the application of my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical section of the bobbin and bobbin-stand.

Similar letters of reference indicate corresponding parts in the several figures.

This stop-motion is intended for those circular-knitting machines in which the cylinder containing the needles is stationary and the yarn bobbin or bobbins revolve around the said cylinder.

It consists in a slide attached to the revolving bobbin-stand and carrying a pin or piece which enters a notch provided in the bobbin, and which is held in the said notch by the yarn upon the bobbin, but which, when liberated by the running of nearly all the yarn off the bobbin, permits the slide to fly out by centrifugal force to a position to strike and liberate the shipper, and so cause the stoppage of the machine.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the bed-plate, which supports all the working parts of the machine. B is the main shaft, furnished with fast and loose pulleys C D, to receive the driving-belt, and with a bevel-gear, E, which drives the horizontal rotating plate F, which carries the bobbin-stand G and the feeding and cast-off mechanism, the said plate being toothed around its edge to gear with the said gear E. The needle ring or cylinder is not represented.

The bobbin-stand G is bolted securely to the plate F, and has firmly secured in it the pin *a*, over which the eye of the bobbin H is tightly inserted, so that it will not be turned by the draft of the yarn. The bobbin is of ordinary construction, except that it has a longitudinal groove, *b*, cut in one side. In putting the bobbin on the pin *a* care must be taken to set the groove *b* outward or in the farthest position from the center of the machine.

I is the slide, and *c* the attached pin or piece, which, in combination with the groove *b* in the bobbin, constitutes my invention. The slide I consists of a straight piece of iron fitted to slide radially toward and from the center of the machine in a guide, *f*, secured to the bottom of that part of the bobbin-stand which overhangs the plate F, and the pin or piece *c*, which is rigidly secured to the outer end of the said slide, is intended to be received in the groove *b* in the side of the bobbin. The said slide is furnished on its under side with a stop, *d*, to prevent it from being thrown out entirely from the bobbin-stand by the centrifugal force developed in its revolution, and it is also furnished with a pin, *e*, to act upon the device which liberates the belt-shipper. Before putting a full bobbin H on the pin *a* the slide I is pushed back toward the center of the plate F till its pin *c* comes in contact with the end of the bobbin-stand, which stops it in such position that in putting the bobbin on the pin *a* the pin *c* will enter the groove *b*, and so pass under the yarn on the bobbin.

In the operation of the machine the pin *c* is held in the groove *b* of the bobbin by the yarn, and the pin *e* is thus kept in such a position that it will not interfere with the device which locks and unlocks the shipper-lever J until the yarn has so nearly all run off the bobbin that it leaves the pin *c* uncovered. The centrifugal force developed in the slide I by its revolution then causes it to slide outward as far as permitted by the stop *d*, and the pin *e* is thus brought to a position in which it unlocks the shipper, and so causes the stoppage of the machine.

The shipper-lever J may be applied to operate either in combination with fast and loose pulleys, as represented, or with a clutch, and may be locked and unlocked by any suitable device upon which the pin *e* can operate in a proper manner to stop the machine; but for illustration of the operation of the slide I it

will be sufficient to describe the arrangement shown in the drawings for stopping the machine.

The shipper-lever J is arranged to work on a fixed fulcrum, *g*, and has applied to it a spring, *h*, which exerts a constant tendency to pull and hold it to a position to keep the belt on the loose pulley D. The device for locking it in a position to keep the belt on the fast pulley consists as follows: K is a spindle, working in a bearing in the bed-plate A and in another bearing in a hanger, L, which also supports the fulcrum pin *g* of the shipper-lever. To the upper part of this spindle, which projects above the bed-plate A, there is secured an arm, *l*, and through the lower part there is screwed a screw, *m*, the point of which acts as a stop to the shipper-lever when the latter is in a position to hold the belt on the fast pulley, as shown in Fig. 1. This screw is so arranged that when it is thus in operation the pressure of the lever against it, produced by the spring *h*, holds its point firmly against a hook, *n*, attached to the lever, and so prevents the spindle K from turning. When the shipper is brought to the above-mentioned position, the screw *m* is brought up against the hook *n* by means of a spring, *p*, which is coiled around the spindle in such manner as to exert a constant tendency to turn it in the direction of the arrow shown near it in Fig. 1, and this spring, in bringing the screw *m* to that position, brings the arm *l* to a position which is within the range of the revolution of the pin *e* on the slide I, when the latter has been thrown out from the center of the plate F by centrifugal force, as hereinbefore described, but out of the range of the revolution of said pin when the pin or piece, *c* is confined within the groove *b* of the bobbin by the yarn thereon. When the pin or piece *c* is liberated by the running of the yarn off the portion of the bobbin which receives it, and the slide I is thrown out by centrifugal force to the position shown in Fig. 3 and in red outline in Fig. 2, the pin *e*, in its continued revolution, strikes the arm *l*, and thereby turns the spindle K so far in the opposite direction to that in which the spring *p* acts upon it that it brings the screw *m* to such an oblique position relatively to the shipper-lever as no longer to stop it, but to allow the said lever to be brought by the spring *h* to a position to ship the belt from the fast pulley C to the loose pulley D and stop the machine.

In order that the machine shall be stopped before the yarn has entirely run off the bobbin, and so to prevent holes in the work, the winding of the yarn on the bobbin is commenced on the upper part, above where the pin or piece *c* is received within it.

The employment for actuating the stop-motion of the pin or piece *c*, entering a groove in the bobbin, but attached to a slide or its equivalent fitted to the bobbin-stand, is much less expensive and more convenient than the use of a movable piece attached directly to the bobbin itself, as in the latter case every bobbin has to be furnished with a separate movable piece, while in the former case no addition to the bobbin is required, and the only alteration of it is the cutting of a groove in one side.

What I claim as my invention, and desire to secure by Letters Patent, is—

The movable pin or piece *c*, in combination with the slide I, or its equivalent, attached to the bobbin-stand, and with a groove or recess in the bobbin, substantially as and for the purpose herein specified.

PHILO W. HART.

Witnesses:
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