

S. ARNOLD.
Stopping Mechanism for Knitting-Machine.
No. 205,336. Patented June 25, 1878.

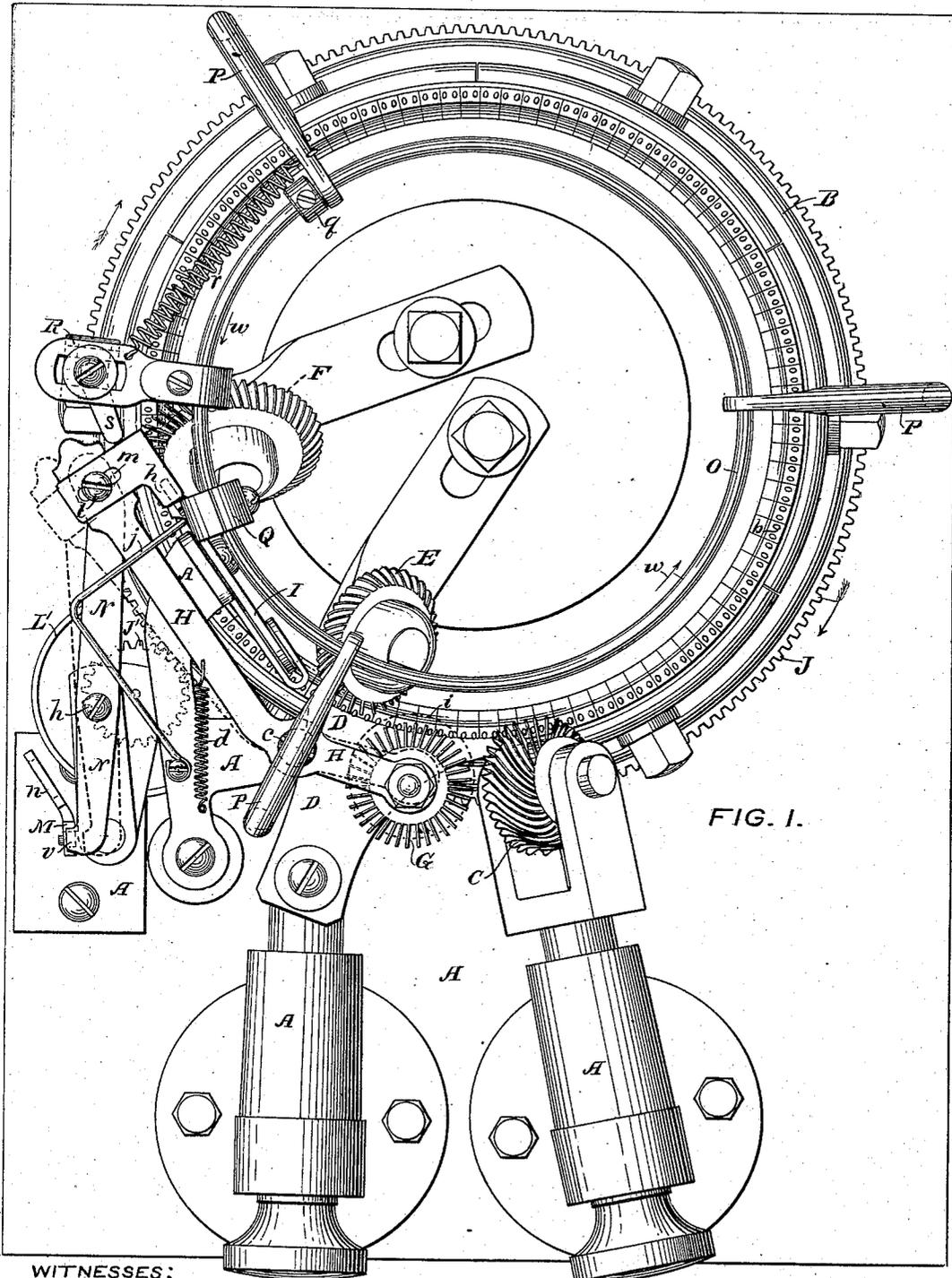


FIG. 1.

WITNESSES:

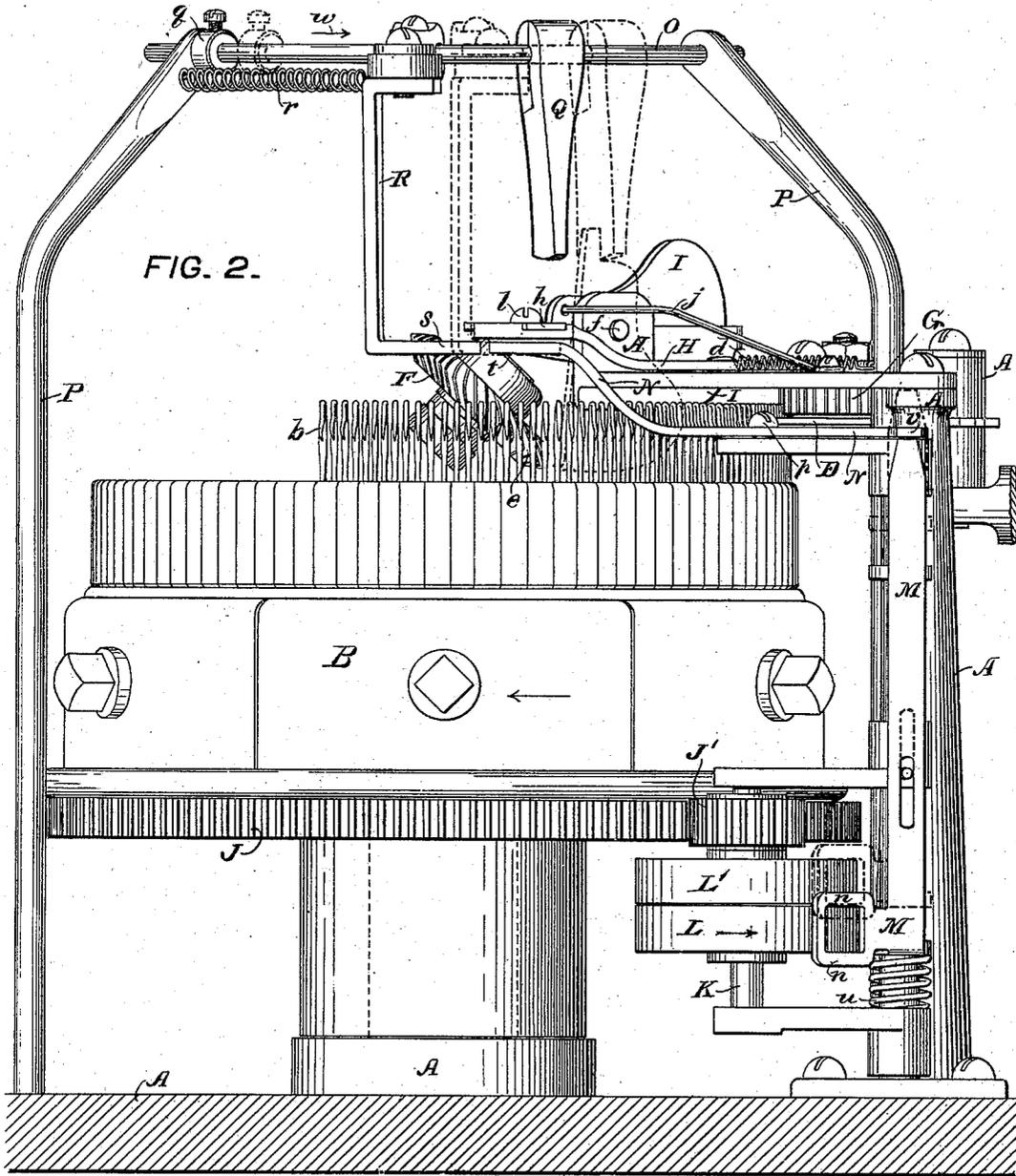
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INVENTOR:

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UNITED STATES PATENT OFFICE.

SATTERLEE ARNOLD, OF LANSINGBURG, NEW YORK.

IMPROVEMENT IN STOPPING MECHANISMS FOR KNITTING-MACHINES.

Specification forming part of Letters Patent No. **205,336**, dated June 25, 1878; application filed August 17, 1877.

To all whom it may concern:

Be it known that I, SATTERLEE ARNOLD, of Lansingburg, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Stopping-Mechanism for Knitting-Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view, Fig. 2 a side elevation, and Fig. 3 a sectional elevation, of portions of a circular-knitting machine, showing my invention applied thereto.

The nature of my invention relates to circular-knitting machines; and it consists in the arrangement and combination of parts whereby the machine is rendered more perfect in its operation, as will be hereinafter more fully described, and pointed out by the claims.

In the annexed drawings, A is the stationary portion of the machine; B, the needle-cylinder, having spring-barbed needles *b*; C, the sinker-burr, for feeding the yarn in loops into the needles; D, the presser for depressing the barbs of the needles; E, the landing-burr, for forcing the old loops onto the depressed barbs of the needles; and F, the cast-off burr, for removing the old loops from the needles, all operating together as in ordinary circular-knitting machines.

G is a burr, which is mounted to turn freely on an axis secured to a movable support or lever, H, pivoted at *c* to a stationary part. This burr G and its support H are arranged so that the burr engages with the end portions of the needles just after the sinker-burr C, as shown in Fig. 1, and so that the burr G is revolved by the needles, and is at the same time pressed gently inward against the new loops of yarn therein, either by reason of the position of the fulcrum *c* of the lever H or by the action of a spring, *d*, so as to thereby tend to continually equalize the length of the loops of yarn without straining them injuriously, whether more or less yarn be fed into the needles, and so that whenever the yarn shall break or fail at the burr G, that burr will then instantly move inward, so as to engage much deeper with the needles, and by such movement is capable of actuating any suitable known device for preventing the old loops from being

cast off from the needles, or for stopping the whole machine.

I, Fig. 3, is a movable web-depressor, arranged just inside of the circle of needles and just forward of the blades *e* of the casting-off burr F, and on the opposite side of the fabric therefrom. The depresser I is pivoted at *f* to a fixed part, and is held, as shown in full lines in Fig. 3, just over the fabric while the knitting goes on properly, with the old loops on the needles in about the positions indicated by the line *yy* in Fig. 3. The depresser I is retained in that position while the yarn continues to be properly supplied by having its arm *g* arranged under a part, *h*, of the lever H; but when the yarn breaks or fails at the burr G, the latter then instantly moves into deeper engagement with the needles, as indicated by the dotted line at *i* in Fig. 1, while the part *h* of the lever H releases the depresser I, which then instantly turns and falls, or is pressed by a spring, *j*, against the revolving fabric, and is further turned thereby, so as to force the old loops below the barbs of the needles, as indicated by the line *xx* in Fig. 3; and thus prevent the burr F from casting the old loops off from the needles while the machine continues to run. A stop-pin, *k*, limits the movements of the depresser I; and the part *h*, Fig. 1, is preferably secured to the lever H adjustably by means of a clamp-screw, *l*, extending through a slot, *m*, in the part *h*.

A spur-wheel, J, is fast on the needle cylinder B, and gears into a pinion, J', that is fast on a shaft, K, which has on it a fast pulley, L, and a loose one, L', to be revolved by a belt running between guides *n* on a belt-shifter, M, which is mounted to slide up and down on a fixed support, and has a spring, *u*, which, when the belt-shifter shall be free to be moved upward, will move the belt-shifter so as to shift the driving-belt from the fast pulley L onto the loose pulley L', and thereby stop the machine.

O is a light ring, supported above the needle-cylinder by standards P, in which the ring can be easily moved circularly to and fro. A collar, *q*, adjustably fastened to the ring O, serves, by contact with one of the standards P, to limit the movement of the ring in one direction, and a tension-spring, *r*, tends to

turn the ring in the same direction, and thereby keep the collar *g* against the standard. An arm, *Q*, is adjustably fastened in such a position on the ring *O* that while the collar *g* is against the standard, as shown in full lines in Figs. 1 and 2, the lower end of the arm *Q* is then in the path through which the arm *g* of the depresser *I* passes in moving from its position in full lines into that indicated by dotted lines in Figs. 2 and 3. A leg, *R*, is also adjustably fastened to the ring *O*, and has an inclined foot, *s*, arranged so that when the stop *g* is against the standard, as shown in Figs. 1 and 2, the part *s* is then near and inclined to the inner side of the end part *t* of the lever *N*, when the other end of that lever is over and keeps down the belt-shifter *M*, so as to retain the driving-belt on the fast pulley *L*, and thus keep the machine in motion.

Having these parts thus adjusted, as shown by full lines in the drawings, then the web-depresser *I*, in moving from its ordinary position (shown in full lines) into the position (indicated by dotted lines) in which it forces the old loops below the barbs of the needles, will move the arm *Q* with the ring *O* and leg *R* in the direction of the arrow *w*, and into the position indicated by dotted lines in Fig. 2, and thereby cause the inclined foot *s* to press outward the end *t* of the lever *N*, so as to release the belt-shifter *M*, which will then shift the driving-belt from the fast pulley *L* onto the loose pulley *L'*, and thus stop the machine.

By having the lever *G* connected with the lever *N* of the stopping mechanism by means of the intervening movable support *H*, web-depresser *I*, and parts *Q O R*, as above described, then whenever the new loops of yarn shall fail in knitting with the machine the burr *G* will move into deeper engagement with the needles, and thereby make the part *H* release the depresser *I*, so that the latter will move the parts *Q O R*, and thereby move the lever *N* of the stopping mechanism, and thus cause the machine to stop.

In carrying out this invention any suitable known driving and stopping mechanism is to be used.

In applying this invention to knitting-machines having two, three, or more sets of knitting devices (each set consisting of a sinker-burr, barb-presser, landing-burr, and cast-off burr, or other known equivalents) combined with one and the same needle-cylinder in the usual manner, I generally have only one stopping mechanism, which is actuated by one leg, *R*, on the ring *O*, as above described, and combine with each set of the knitting devices a burr, *G*, on a movable support, *H*, and a web-depresser, *I*, and have fast on the ring *O* a separate arm, *Q*, to be acted upon by the web-depresser, so that in knitting, whenever the yarn shall break or fail in or at any one of the several sets of knitting devices, the burr *G* of that particular set only will then instantly move into deeper engagement with the needles,

and in so doing its support *H* will liberate the depresser *I* of that set, so that that depresser will turn down onto the fabric and force the old loops below the barbs of the needles, and in so moving will move the arm *Q* of that set, so as to move the ring *O* with the one leg *R*, so as to thereby actuate the one stopping mechanism and cause the machine to stop.

In some circular-knitting machines heretofore made a burr is engaged with the needles between the sinker-burr and barb-presser, so as to bear against the new loops of yarn and prevent them from falling below the barbs of the needles; but in such cases the burr is not mounted and arranged, like the burr *G* in this invention, so as to automatically move into deeper engagement with the needles whenever the yarn breaks or fails, and thus be capable of actuating any suitable device for preventing the casting off of the old loops or for stopping the machine.

In some circular-knitting machines heretofore devised the sinker-burr, or another burr engaged with the end portion of the needles, has been combined with a stopping mechanism, and mounted so that when the yarn shall accumulate in the ends of the needles the burr will then move outward so as to engage less deeply with the needles, and thereby actuate the stopping mechanism, but not so as to move into deeper engagement with the needles and stop the machine when the yarn breaks or fails, like the burr *G* in this invention.

The web-depresser *I* has been heretofore arranged in a circular-knitting machine, and, in connection with a drop-wire, bearing on the yarn before reaching the sinker-burr, so that when the yarn broke or failed before entering the sinker-burr and needles the drop-wire fell, and thereby actuated the web-depresser, so that it forced the old loops below the barbs of the needles. That device will not act when the yarn breaks after or in being forced in loops into the needles by the sinker-burr; but the above-described combination of the depresser *I* and burr *G* on a movable support will prevent the old loops from being cast off from the needles whenever the yarn breaks or fails, either before or while being forced in loops into the needles by the sinker-burr, or at any point before or opposite to the burr *G*.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a circular-knitting machine, the burr *G*, located between the sinker-burr *C* and landing-burr *E*, in combination with the movable support *H* and a spring, *d*, whereby the said burr *G* is caused to operate upon the new loops between the needles, or move into deeper engagement therewith when the new loops fail, substantially as and for the purposes herein set forth.

2. In a circular-knitting machine, the combination of the web-depresser *I*, movable support *H*, and burr *G*, said burr engaging with the needles and mounted on the movable sup-

port which is connected with the web-depressor, substantially as and for the purposes herein set forth.

3. In a circular-knitting machine, the burr G, located between the sinker-burr C and landing-burr E, in combination with the web-depressor I and movable support H, substantially as and for the purposes herein set forth.

4. In a circular-knitting machine, the combination of the stopping mechanism, the web-depressor I, the stop-operating mechanism Q O R, the burr G, engaged with the needles, and a movable support, H, connected with the

web-depressor, whereby, when the new loops fail, the burr will move inward, and thereby release the web-depressor, so as to cause the latter to actuate the stopping mechanism, as set forth.

In testimony whereof I hereunto set my hand in the presence of two subscribing witnesses this 10th day of August, 1877.

SATTERLEE ARNOLD.

Witnesses:

AUSTIN F. PARK,
GEO. H. MORRISON.