

(No Model.)

3 Sheets—Sheet 1.

J. G. POWELL.

WEB HOLDER ACTUATING MECHANISM FOR AUTOMATIC KNITTING MACHINES.

No. 510,934.

Patented Dec. 19, 1893.

FIG. 1

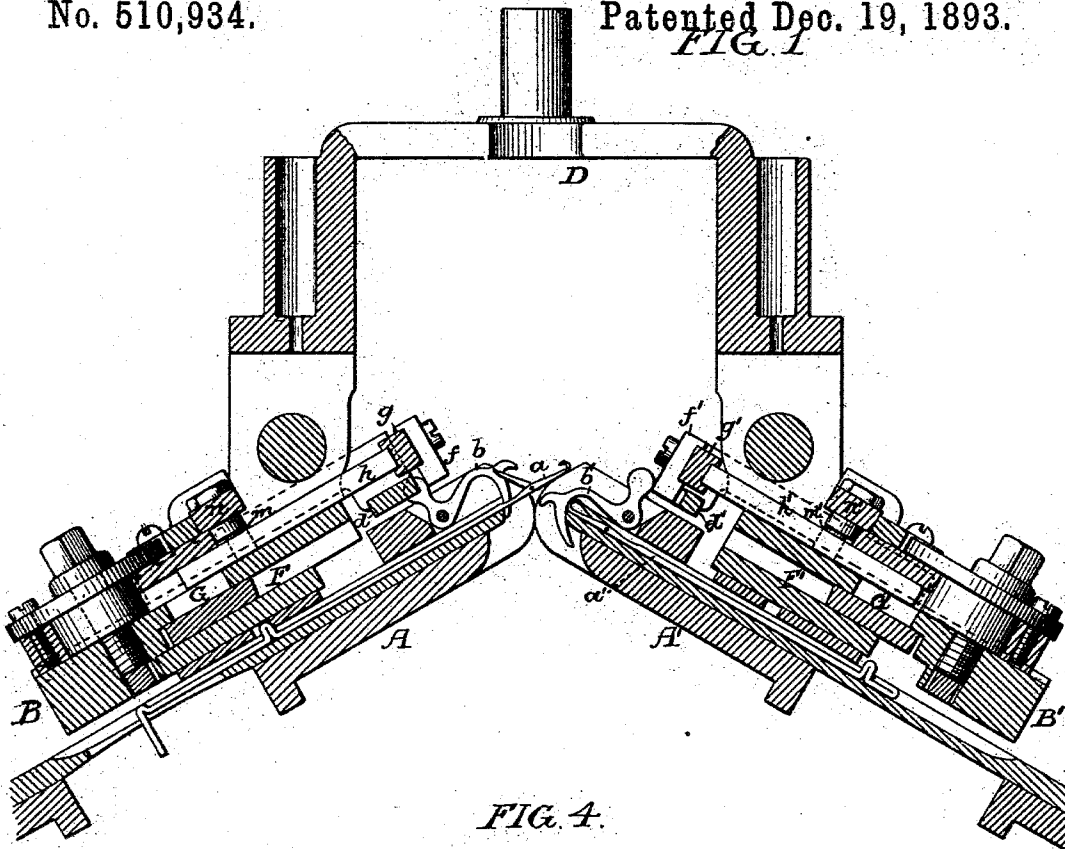
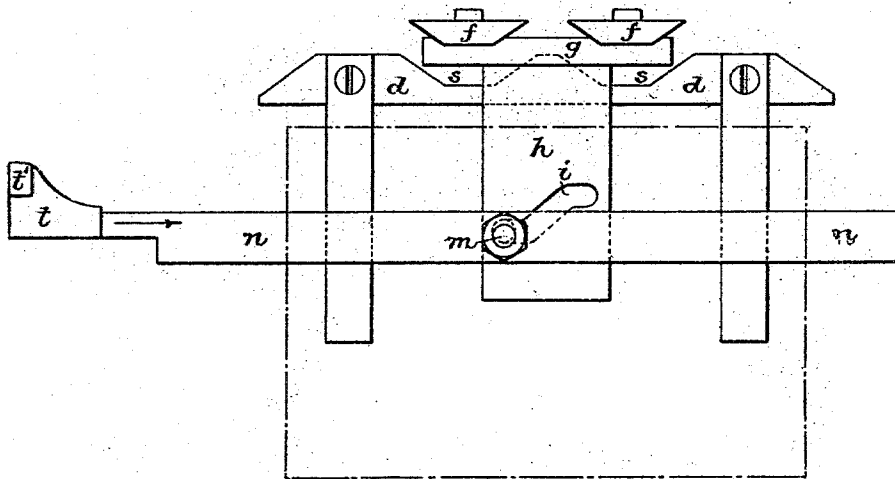


FIG. 4.



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(No Model.)

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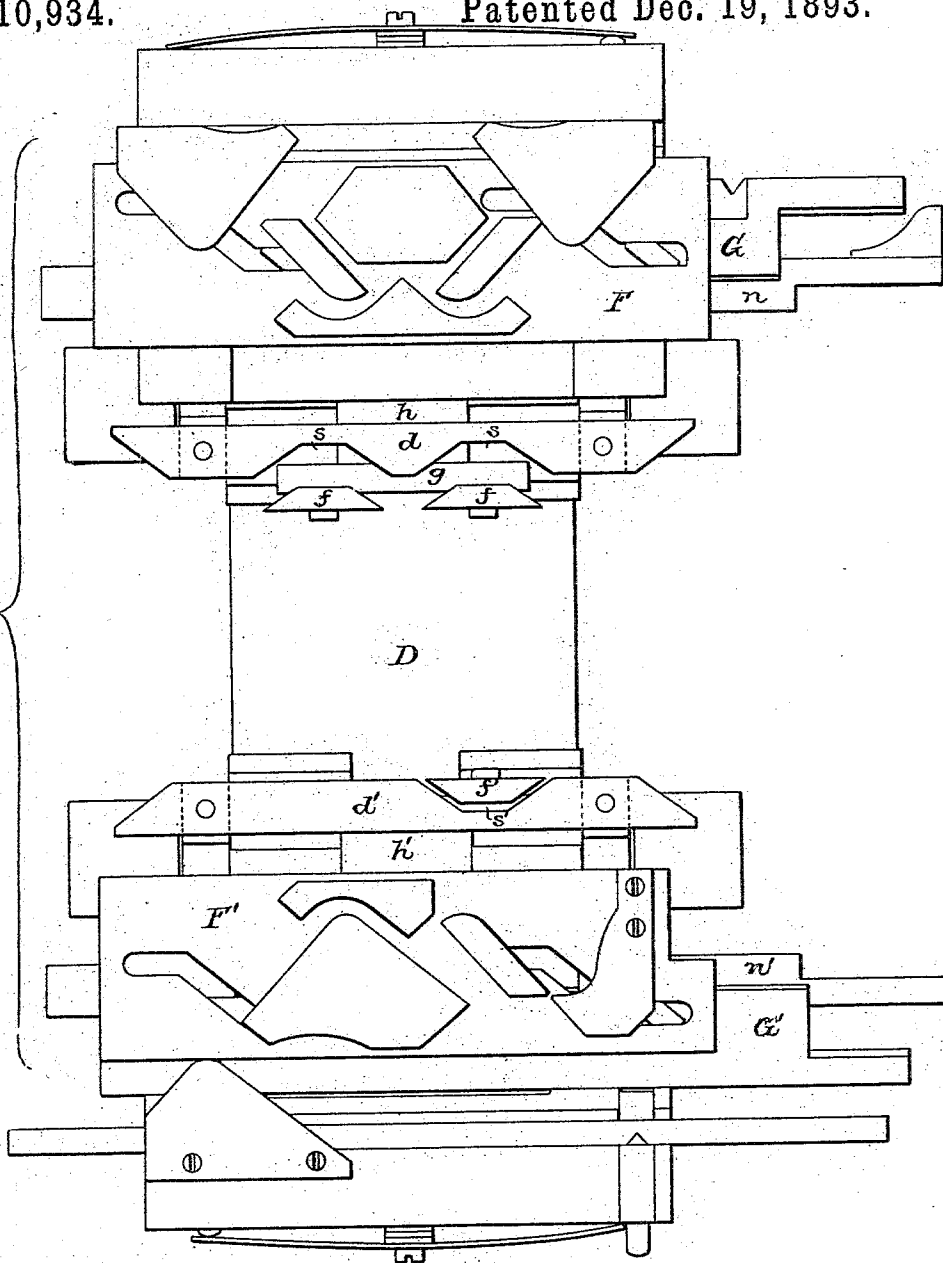
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FIG 2



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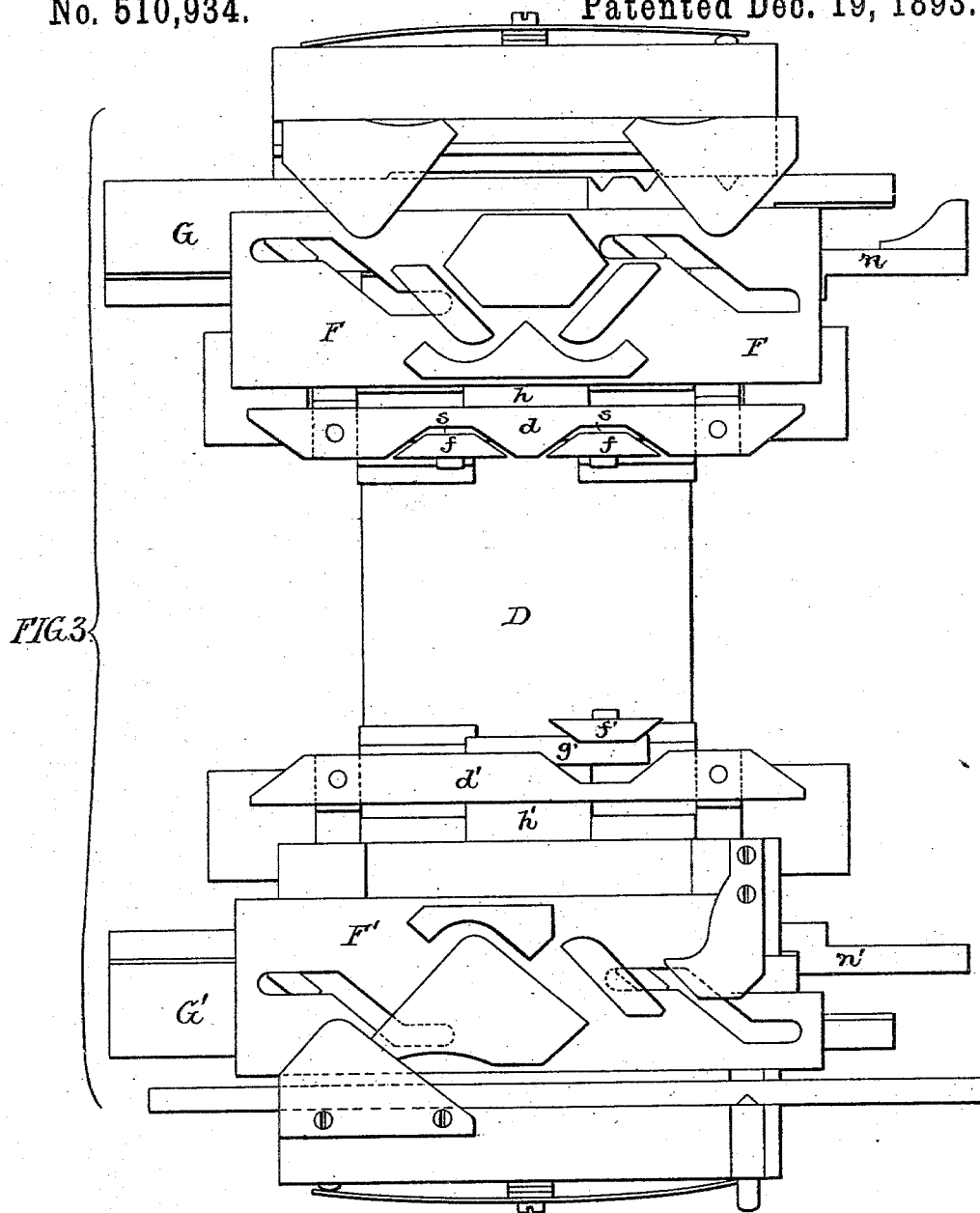
3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

JOHN G. POWELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO EDWARD POWELL, OF SAME PLACE.

WEB-HOLDER-ACTUATING MECHANISM FOR AUTOMATIC KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 510,934, dated December 19, 1893.

Application filed March 25, 1893. Serial No. 467,621. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. POWELL, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Web-Holder-Actuating Mechanism for Automatic Knitting-Machines, of which the following is a specification.

My invention consists of a certain improvement in knitting machines of the class represented in Patent No. 440,389, dated November 11, 1890, my present improvement consisting of a modified means of operating the web holders, all as fully set forth, and specifically claimed hereinafter.

In the accompanying drawings:—Figure 1, is a transverse section of sufficient of the knitting machine to illustrate my present invention. Fig. 2, is an inverted plan view of the duplex cam carrier of the machine, illustrating the cams in the position shown in Fig. 1. Fig. 3, is a similar view, but illustrating the cams in a different position; and Fig. 4, is a detached view illustrating the device for operating the cams which actuate the web holders.

In Fig. 1, *A A'* represent the opposite fixed needle beds of the machine, having guide slots for the needles *a a'* and pivots for the web holders *b b'*.

B B' are the traveling heads or carriages which are connected by the yoke *D* so as to operate in unison, each of these traveling heads having a guided cam-carrying slide, that of one head being represented at *F*, and that of the other head at *F'*, these cam slides being caused to move in their guides so as to throw the cams carried thereby into or out of operative position, and such movement being effected by suitable slide bars *G G'*, guided respectively in the heads *B B'* and operated by contact with suitable stops on the machine just before the sliding heads reach their limit of movement in either direction, as fully set forth in the patent before referred to, the object of thus throwing the needle actuating cams into and out of operative position being to knit first in one direction upon one set of needles and then in the opposite direction upon the other set in making tubular work, or to throw one set of needles out of action altogether in order to knit to-

and-fro upon the opposite set in forming a tapered pocket for the heel or toe, or to throw both sets of needles into action in forming the first or "setting up" course.

The web holders *b b'* operate in conjunction with the needles to hold down the web as the needles rise to take the fresh thread and to knock over the old stitches when the needles are retracted, and in the patented machine these web holders operated continuously so that both sets of web holders were actuated when but one set of needles was in operation at a time. This was objectionable not only because of the wear of the parts, but mainly because it prevented the setting of the web holders of one head directly opposite the needles of the other head because of the interference of one with the other in their movement, and thus necessitated the making of the machine of coarse gage. In an application for patent filed by me on the 1st day of September, 1892, Serial No. 444,772, I have described a plan of overcoming this difficulty by providing for a certain amount of lost motion in the devices for operating the cams for actuating the web holders, so that the latter, while operating properly in conjunction with their own needles, will rise and fall at a certain distance in the rear of the acting set of the opposite needles. In my present machine, however, I provide for throwing out of action entirely the web holders corresponding with the inactive set of needles, said web holders being operated only with the needles with which they co-act are operated. In order to effect this result the cam bar *d* of the head *B* has two movable cams *f f* which are mounted upon a cross bar *g* carried by a slide *h*, suitably guided in the head, said slide *h* having a cam slot *i* with which engages a pin *m* on a slide bar *n*, the latter being adapted to be operated by stops on the machine in the same manner as the bar *G* which operates the knitting cam slide *F*.

When the cams *f* are projected, as shown in Figs. 1 and 2, they will act upon the butts of the web holders *b* and cause the operation of the same, but when said cams are withdrawn into the recesses *s* of the bar *d*, as shown in Fig. 3, they will clear the butts of

the web holders and the latter will consequently remain inactive.

The head B' has a bar d' with an adjustable cam f' mounted upon a bar g' which is carried by a slide h' having a cam slot for the reception of a pin m' upon a bar n' to be operated in the same manner as the bar n , there being in connection with the bar d' but one cam f' instead of the two cams f of the bar d , for the web holders b' are only to be acted upon when the head B' is traveling in one direction whereas the web holders b operate in conjunction with the needles upon which to-and-fro knitting is performed, and hence must be capable of being operated in proper relation to the acting set of needles upon either movement of the head B.

In "setting up" a stocking, stitches are formed upon the needles of both heads. Hence in this case, it is necessary to permit both sets of web holders to remain out of action in order to prevent them from interfering with the needles as before referred to. For this reason there is upon one end of the slide bar n an enlargement t with the lug l' , which is intended to be struck by a special stop of the machine in order to move the slide n in the direction of the arrow (Fig. 4) and thus withdraw the cams f before starting the setting-up course, the cams being thrown into action after this course is completed and remaining in action during the time that to-and-fro knitting is being performed, after which the web holders are in operation alternately first on one head, and then on the other, while tubular web is being produced.

It will be observed on reference to Figs. 1 and 4, that that portion of the pin m which engages with the slot i of the slide h is eccentric in respect to the portion which passes through the bar n , so that by turning the pin, the position of the slide h and of its cams in respect to the butts of the web holders b can be changed to compensate for wear of the

parts. The same construction is adopted in the case of the bar n' , pin m' and slide h' .

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a machine having two opposite sets of needles, working alternately for the production of tubular web, and movable web holders for each set of needles, the combination of said needles and web holders, with cams for operating the latter, and with means for throwing said cams into and out of operative position, whereby each set of web holders may be caused to work only when its own set of needles is in action, substantially as specified.

2. In a machine having two opposite sets of needles, working alternately for the production of tubular web, and simultaneously for the production of a "setting up" course, and movable web holders for each set of needles, the combination of said needles and web holders with cams for actuating the latter, and means for throwing one set of cams into action during one movement of the head, and the other set into action during the opposite movement of the head, and means for throwing both sets of cams out of action simultaneously during the one movement of the head devoted to the formation of the "setting up" course, substantially as specified.

3. The combination of the cam carriers, the web holders, slotted slides having cams for actuating said web holders, and slide bars having pins with eccentric portions engaging the slots of the cam slides, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN G. POWELL.

Witnesses:

FRANK E. BECHTOLD,
JOSEPH H. KLEIN.