

(No Model.)

J. B. PAXTON & E. I. O'NEILL.
WEB HOLDER FOR KNITTING MACHINES.

No. 468,137.

Patented Feb. 2, 1892.

FIG. 3.

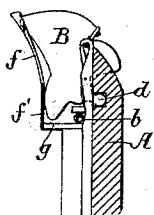


FIG. 4.

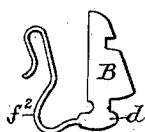


FIG. 5.



FIG. 6.



FIG. 1.

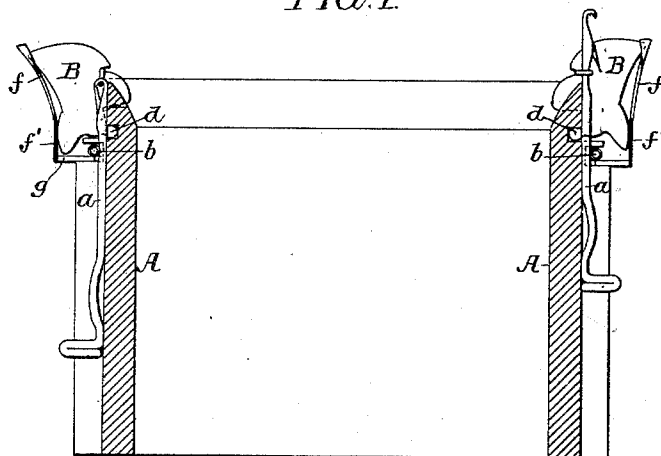


FIG. 2.

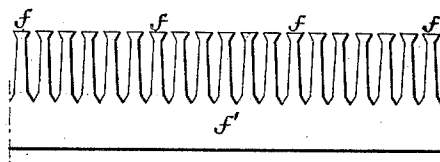


FIG. 11.

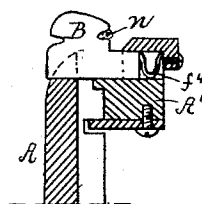


FIG. 7.

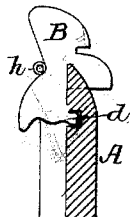


FIG. 8.

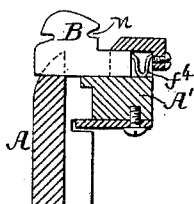


FIG. 9.

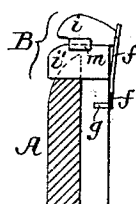


FIG. 10.



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UNITED STATES PATENT OFFICE.

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WEB-HOLDER FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 468,137, dated February 2, 1892.

Application filed July 25, 1891. Serial No. 400,764. (No model.)

To all whom it may concern:

Be it known that we, JOHN B. PAXTON and ELLIS I. O'NEILL, both citizens of the United States, and residents of Philadelphia, Pennsylvania, have invented certain Improvements in Web-Holders for Knitting-Machines, of which the following is a specification.

The object of our invention is to so construct a web-holder or hooked sinker for knitting-machines that while the same will properly perform its function of holding the web and preventing it from rising with the needles, the web-retaining hooks will be of such an elastic or yielding character that when the stitches are being drawn by the needles said stitches will not be strained or cut, as they are likely to be when rigid hooks are employed, work of any required degree of stiffness and of fine gage being thereby produced on machines provided with web-holders constructed in accordance with our invention.

In the accompanying drawings, Figure 1 is a vertical section of a knitting-machine cylinder provided with hooked sinkers constructed in accordance with our invention, the sinkers and needles being shown in elevation. Fig. 2 is a side view of a fingered spring plate or band for acting on said hooked sinkers. Fig. 3 is a view illustrating one of the sinkers in a different position from either of those shown in Fig. 1; and Figs. 4 to 11 are views illustrating modifications of our invention.

In Fig. 1, A represents the cylinder of a circular-knitting machine, having in its outer face the usual vertical grooves for the reception of needles *a*, which in the present instance are held in place in the grooves by the ordinary coiled-spring band *b* surrounding the same. Around the upper end of the cylinder are a series of hooked sinkers B, of which there is preferably one for each needle, the sinkers alternating with the needles, and being adapted to suitable slots cut in the top of the cylinder between the needle-grooves, although in carrying out our invention there may, if desired, be but one of these hooked sinkers for every two or more needles of the machine. Each sinker has at its lower inner corner a rounded lug or toe *d*, which enters an annular groove formed in the cylinder A, so that said toe forms a pivot for the sinker and permits the upper hooked end

of the same to swing in and out, the engagement of the lug with the cylinder also preventing vertical displacement of the sinker. The sinkers are normally held at the limit of their inward movement by the action upon the back or upper outer corner of each sinker of an elastic finger *f* upon a spring plate or band *f'*, which surrounds the cylinder, and is supported vertically thereon by any desired means, as, for instance, by means of lugs *g*, projecting into a grooved portion of the cylinder, as shown in Fig. 1, this band *f'* bearing upon the curved outer edge of the sinker and serving to retain the toe *d* of the same in the groove of the cylinder; but said curved edge being concentric with the pivotal axis of the sinker, so that said sinker can swing freely. When the sinkers are pressed inward, the hooked upper portions of the same engage with the top course of stitches of the knitted web which is being produced and prevent the rise of said stitches with the needles as the latter are lifted in knitting, as shown at the right-hand side of Fig. 1; but when a needle is pulling the thread down over the upper surface of the hook, said hook will yield outwardly to a slight extent, as shown in Fig. 3, until the thread passes the point of the hook, whereupon the latter will be again moved inward under the influence of the spring-finger *f* until the thread is drawn down onto the sinker and the needle is drawing the stitch, whereupon the sinker will yield, as shown at the left in Fig. 1, so as to prevent it from exercising such restraint upon the stitch as will cut or strain the same, the sinker moving inward as the needle rises again, so that its hook will be in position to catch and retain the web. By this means a knitted web of any desired degree of stiffness can be readily produced.

In carrying out our invention, although we prefer to use the fingered spring plate or band which we have described, this is not absolutely essential, as each of the sinkers may, if desired, be provided with a spring-finger at the rear for bearing against a ring or abutment on the cylinder, one form of such finger being shown at *f*² in Fig. 4, and another being shown at *f*³ in Fig. 5, or that portion of the sinker upon which the thread acts may be so constructed as to possess inherent elasticity and be free to yield, as shown in Fig. 6.

Independent spring-fingers for each sinker or web holder may even be dispensed with and the entire series may be acted upon by a coiled spring-band *h*, encircling the same in the same manner as the coiled spring-band *b* encircles the needles, such construction being shown in Fig. 7. The objection to this plan, however, is that the forcing backward of each hook will carry the spring out of contact with one or more hooks on each side of the same. Hence the use of a special spring for each hook is preferred. The hooks may, however, have a sliding instead of a swinging movement. Thus, as shown in Fig. 8, the hooked sinker B is guided radially in the upper end of the cylinder and in a ring A', surrounding the same, and is acted upon by a spring *f*⁴, bearing upon the outer end of the guide-shank of the sinker, or it may be acted upon by a spring-band, such as shown in Fig. 7, adapted to a recess *n* in the sinker, as shown in Fig. 11. It will be manifest, also, that there is no absolute necessity for the outward movement of that portion of the hooked sinker which is below the notch of the hook. Hence we may in some cases make the upper hooked portion *i* separate from the lower or sinker portion *i'*, the latter being rigidly secured to the upper portion of the needle-cylinder and the hook surmounting the same and being free to slide in and out thereon as the stitch slides on the top of the sinker *i'*, lateral displacement of the hook being prevented in any suitable manner—as, for instance, by the use of side guides or wings *m*, embracing the upper portion of the sinker, as shown, for instance, in Figs. 9 and 10, these wings also serving to prevent the thread from being drawn into the joint between the sinker and hook.

Although we have described our invention as applied to a needle-cylinder, it will be evident that it can be used in connection with the needle bars or carriers of straight machines as well.

We are aware that movable hooked sinkers, both pivoted and sliding, have before been proposed, but the operation of such sinkers has been controlled by cams, and when springs were used for acting upon the sinkers such springs were always in addition to the cams, whereas in our case the hooked sinkers are yielding sinkers, in the sense that the pull of the stitch is resisted only by the action of the spring, in contradistinction to sinkers the movement of which is positive, as it must be when such sinkers are controlled by a cam.

Hence without claiming, broadly, a movable hooked sinker, in combination with a spring, we claim and desire to secure by Letters Patent—

1. The combination of the needle-carrier of a knitting-machine with yielding web-holders which normally occupy a position for retaining or preventing rise of the work with the needles, said web-holders providing an elastic bearing for the stitches, whereby they are

free to move outwardly as the stitches are drawn, substantially as specified.

2. The combination of the needle-carrier of a knitting-machine with yielding web-holders free to move outwardly as the stitches are drawn and an elastic backing for said web-holders, substantially as specified.

3. The combination of the needle-carrier of a knitting-machine with yielding web-holders free to move outwardly as the stitches are drawn and with an independently-acting elastic backing for each web-holder, substantially as specified.

4. The combination of the needle-carrier of a knitting-machine with yielding web-holders free to move outwardly as the stitches are drawn and with a spring plate or band having a series of fingers, one for each web-holder, said fingers tending to press the web-holders inwardly, substantially as specified.

5. The combination of the needle-carrier of a knitting-machine with a web-holder pivoted at its lower portion to said needle-carrier and free to move outwardly at the upper portion when the stitch is being drawn, and a spring-retainer for controlling said web-holder, substantially as specified.

6. The combination of the needle-carrier of a knitting-machine with a sinker having at the top a hook forming a web-holder, said hooked sinker being free to move outwardly at the top when the stitch is being drawn, and a spring-retainer controlling said hooked sinker, substantially as specified.

7. The combination of the needle-carrier of a knitting-machine with a sinker having above the same a hook constituting the web-holder, said hooked sinker being free to move outwardly when the stitch is being drawn, and an independently-acting spring-presser controlling each sinker, substantially as specified.

8. The combination of the needle-carrier of a knitting-machine with a sinker pivoted to said carrier and having a hook constituting a web-holder, with a spring-retainer acting upon said hooked sinker above the pivot so as to cause the hook to engage with the web, substantially as specified.

9. The combination of the needle-carrier of a knitting-machine with a series of sinkers, each pivoted to said carrier and each having a web-retaining hook and an outer curved portion concentric with the pivot, and a spring-band bearing upon the curved portions of the sinkers and having a series of projecting spring-fingers, one for each sinker, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN B. PAXTON.
ELLIS I. O'NEILL.

Witnesses:

EUGENE ELTERICH,
HARRY SMITH.