J. D. HEMPHILL.

WEB HOLDER FOR KNITTING MACHINES.

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1,048,965.

Patented Dec. 31, 1912.

FIG. 1.

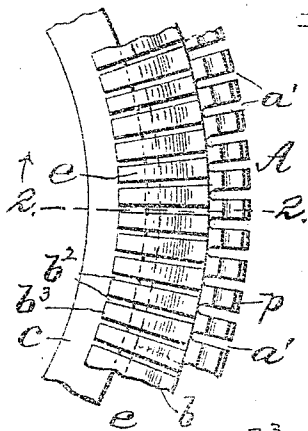


FIG. 5.

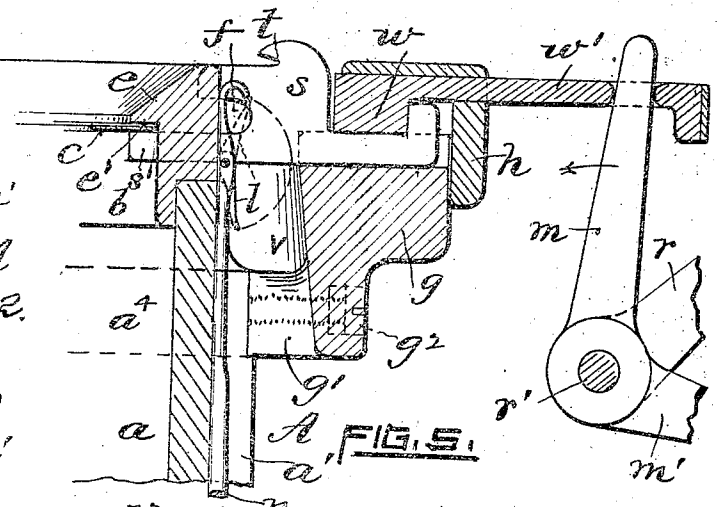


FIG. 2.

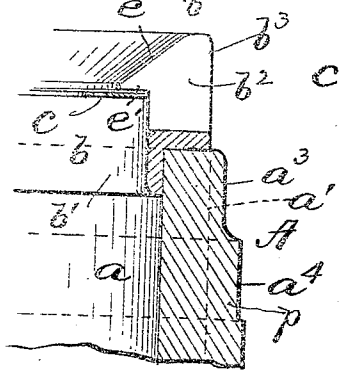


FIG. 3.

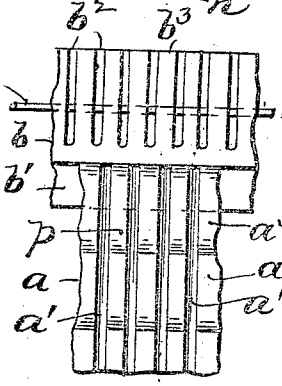


FIG. 4.

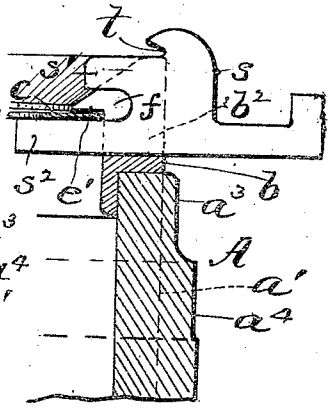
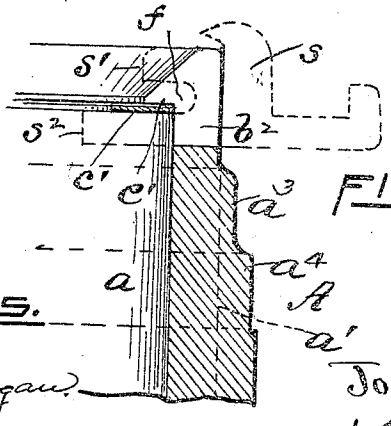


FIG. 6.



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WEB-HOLDER FOR KNITTING-MACHINES.

1,048,965. Specification of Letters Patent. Patented Dec. 31, 1912.

Application filed January 3, 1908. Serial No. 409,149.

To all whom it may concern:

Be it known that I, JOSHUA D. HEMPHILL, a citizen of the United States of America, and a resident of Central Falls, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Web-Holders for Knitting-Machines, of which the following is a specification.

This invention relates to automatic stocking-knitting-machines, but more especially to improvements in the web-holders thereof, and it consists in certain novel features of construction, as hereinafter fully set forth and claimed.

The objects of the invention are to both simplify and cheapen the construction of the needle-carrying or knitting-cylinder, so-called, and also to provide means which in coöperation with the web-holders movably mounted in the cylinder will positively prevent an accumulation in the web-holder grooves of lint, dirt, and other foreign matter to an extent which would appreciably affect the proper working action of the web-holders.

In some types of knitting-machines the upper end portion of the needle-carrying cylinder is provided with uniformly spaced radially disposed transverse grooves or slots having considerable depth in which thin endwise slidable steel web-holders are mounted. In such former construction, however, the rear portion of each web-holder usually cut away midway of its width or depth to form an elongated horizontal opening arranged when in use to register with and receive therein a tie member or partition interposed in and horizontally dividing said radial groove into two grooves having lesser depth, thereby providing means for maintaining the corresponding portion of the web-holder in the normal position with respect to the top edge or stitch-ring of the cylinder at all times. An objection to such former construction is that the labor and time employed in cutting the partitioned web-holder grooves in the top or stitch-ring is greatly increased. A more serious objection resulting from such former arrangement is that when the machine is in normal use the small space or pocket lying between the bottom of the said elongated opening of the web-holder and the proximate edge of the partition of the divided groove, in which latter the web-holder is mounted, becomes gradually clogged with lint, dirt, and other foreign matter, the rearward movement of the web-holder at the same time acting to compact the accumulating material, the result being to correspondingly shorten said movement, thus preventing the web-holder from making its full normal action to properly cast off the stitches. The work or output in such case being of course of an inferior quality or even waste stock. In machines employed in producing comparatively fine work and using say some two hundred needles and a like number of web-holders alternating therewith, it is a somewhat difficult matter to keep the web-holder grooves properly cleared under existing conditions, and may only be accomplished manually.

By means of the present invention the objections or disadvantages above named are wholly overcome; the partitions are dispensed with, therefore the grooves or web-holder guides can be produced more accurately and inexpensively; the web-holders when in use automatically keeping the grooves free and open by pressing any foreign matter therein outwardly therefrom into the continuously open center or work chamber of the cylinder.

In the accompanying drawings, Figure 1 represents, in enlarged scale, a top plan view of a portion of a knitting-cylinder embodying my improvement; the web-holders and needles being omitted. Fig. 2 is a corresponding transverse sectional view taken on line 2 2 of Fig. 1. Fig. 3 is a partial side elevation, corresponding with Fig. 2. Fig. 4 is a sectional view similar to Fig. 2, but showing in addition a web-holder positioned in the stitch-ring or upper end portion of the cylinder; the web-holder being represented in the normal working position for insuring the casting of the stitches from the needles. Fig. 5 is also a similar sectional view. In this figure are also represented relatively positioned elements adapted to coöperate with the needles and web-holders, and Fig. 6 is a sectional view, similar to Fig. 2, showing a modification of the cylinder construction.

It may be stated here that the present invention is well adapted to knitting-machines having needle-cylinders of either the stationary or revoluble type. As the improvement is combined or associated with only the upper end portion of the knitting-cylinder it is deemed unnecessary to illustrate more

of the latter than is shown in the accompanying drawings. Needle and web-holder carrying cylinders as usually constructed have the web-holder supporting top ring member, or stitch-ring as it is termed, suitably fitted and soldered or brazed thereto, or even secured by screws.

In the drawings herewith A designates the cylinder as a whole, and including the stitch-ring *b*. The barrel part proper, *a*, of the cylinder is provided with uniformly spaced parallel grooves a^1 alternating with partitions *p*, extending around the barrel's periphery and longitudinally thereof, in which are slidably mounted usual latch-needles, as *n*, the backs of which bear against the bottom of the grooves in a well-known manner.

The stitch-ring member *b* is fitted to the top end of the barrel *a* and has a thin annular flange b^1 extending downwardly a short distance and bearing upon the inner or concave surface of the cylinder's wall. It may be added that the outer diameter of said ring registers with the bottom of said needle-groove a^1. The ring has a series of vertical radially arranged comparatively deep and narrow grooves b^2 extending transversely through its wall, separated by the standing substantially parallel partitions b^3, the latter being staggered with respect to the said partitions *p* of the barrel, all as clearly shown. A projecting narrow horizontal circular flange e^1 is formed on the inner or concave face of the ring, its underside constituting a flat shoulder or abutment. The upper face *e* of the ring may be suitably beveled or adapted to form a support for the work being produced. The said web-holder grooves b^2 are cut entirely across and downwardly from the top through the said beveled and flanged parts of the ring to a point near the top of the barrel *a*. See Figs. 2 and 3. In other words, the depth of the groove is substantially equal to the depth or width of the web-holder. A flat thin sheet-metal ring or annulus *c* is located immediately contiguous to the underside of said flange e^1, its width as drawn exceeding that of the shouldered part. See Figs. 1 and 2. The flat thin web-holders *s* are constructed and adapted for use substantially as usual. They are positioned edgewise in the said ring *b*, the portion of each extending rearwardly from the throat *t* passing into and being supported in the corresponding groove b^2. The web-holder is provided with upper and lower arms, s^1 s^2, respectively, separated by the usual elongated parallel opening *f* terminating in the body part of the web-holder. The said lower member s^2 is somewhat longer than its fellow so that it may extend under and even beyond the annulus *c*, as clearly shown in Fig. 4. This figure shows the relative position of the web-holders when they are moved forward to cast off the stitches or loops from the needles, the throat *t* of the web-holder then being at or slightly beyond the back of the needles, the latter being omitted from this figure. It will be seen that the web-holders are mounted to move endwise in the radial guide grooves b^2 of the ring *b*, the lower arm members s^2 of the web-holders being seated in the grooves and extending inward therefrom under the flat annulus *c*, in turn disposed under the said inwardly projecting narrow circular flange e^1 of the ring, thereby at all times preventing the annulus and the web-holders from rising from their normal positions.

In Fig. 5 is represented means for throwing the web-holders out of normal action, thereby placing the web-holder's throats some distance in front of the needles *n*. This figure indicates the other extreme position in the web-holder's movement; it will be seen that even in this position the lower arm of the web-holder is still engaging the annulus member. The front or outer portion of the web-holder is supported in a grooved member *g*, termed a web-holder ring, the same being secured to the barrel of the cylinder by screws g^2 passing transversely through inwardly extending lugs g^1 of said ring. The cylinder may be slightly reduced in diameter, as indicated at a^4, thus forming a shoulder to receive and position the ring *g*. The latter has a comparatively large open annular air space *v* for the free passage of lint, &c., which also permits the latch *l* of the needle to swing unobstructedly therein, as indicated by the dotted line. *h* indicates a stationary web-holder cap-ring, so-called, and *w* a slidable web-holder cam mounted therein and engaging the web-holders when the latter are to be rendered temporarily inoperative. The cam-shank w^1 extends outwardly through the ring *h* and is perforated to receive the vertically arranged arm *m* of the actuating lever m^1, pivoted at r^1 to a bracket *r*. This and other coöperating elements of the machine are more fully illustrated and described in my co-pending application, Serial Number 288,093.

From the foregoing description it is obvious that the shoulder or flange e^1 of the stitch-ring *b* and the thin flat annulus *c* serve to keep the web-holders in the normal position vertically with respect to the top of the cylinder A at all times. It is also clear that in case any lint, &c., collects in the space *f* of the web-holder it is free to pass out or be forced out at the rear end of the grooves b^2 and drop through the cylinder to the floor, the only member encountered being the edge of the thin annulus *c*. The movement of the work itself as it is pro-

duced and passes downwardly over the stitch-ring has a tendency to attract any foreign matter from the web-holders through the adjacent open end of the web-holder grooves.

In lieu of providing the stitch-ring b and securing it to the barrel a to complete that portion of the needle-cylinder, the latter may be extended vertically corresponding to the normal level of the top of the ring and provided with an integral flange e^1 and web-holder grooves b^2, as indicated in Fig. 6. If desired the upper exterior portion of the cylinder may be reduced in diameter so as to give freer scope or play for the latches of the needles, as indicated at a^3.

I claim as my invention:—

1. A knitting-machine, having in combination a needle-cylinder provided with an inwardly extending annular flange, the upper end of said cylinder including said annular flange, having radial grooves therein, web-holders located in said grooves, each web-holder having an inwardly extending portion, and a horizontally disposed thin annular ring located below said annular flange and held in place by the inwardly extending portions of said web-holders.

2. In a knitting-machine, the combination of a needle-cylinder provided with an inwardly extending horizontal annular flange located below the plane of the normal stitch casting-off point, the upper end portion of the cylinder including said flange having spaced radial grooves therein, web-holders mounted for movement in said grooves, each web-holder having a lower member thereof extending inward through the wall of the cylinder below the latter's said annular flange and forming a limited space therebetween, and a horizontally disposed thin annulus movably located in said space and supported on the said inwardly extending lower member of the web-holders.

Signed at Providence, R. I., this 30th day of December, 1907.

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Witnesses:

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