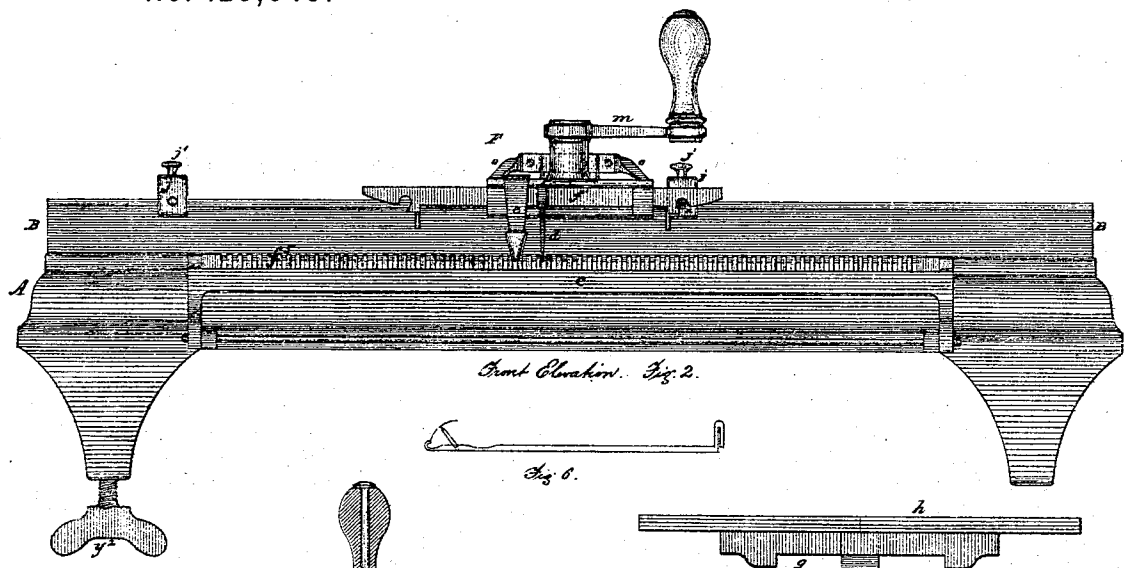
C. J. APPLETON.

Improvement in Knitting Machines.

No. 123,545. Patented Feb. 13, 1872.



Front Elevation. Fig. 2.

Fig. 6.

Fig. 5.

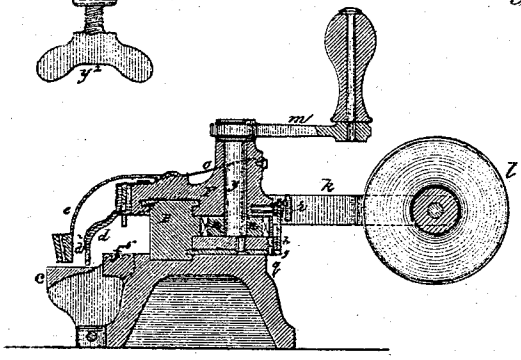


Fig. 3. Transverse Section.

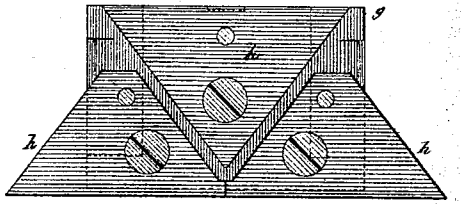


Fig. 4.

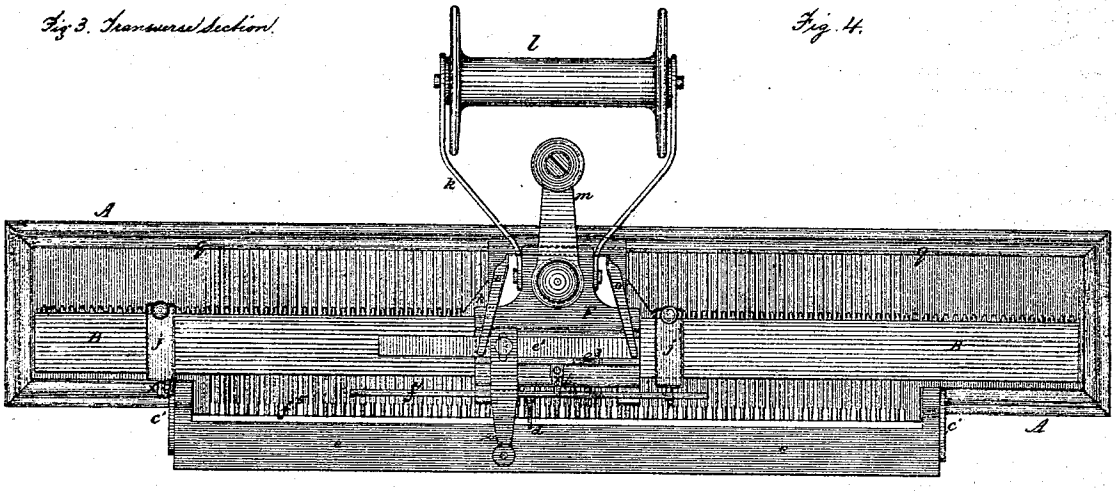


Fig. 1. Plan.

Witnesses:
P. L. Scrivener,

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UNITED STATES PATENT OFFICE.

CHARLES J. APPLETON, OF HAMILTON, CANADA.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. 123,545, dated February 13, 1872.

To all whom it may concern:

Be it known that I, CHARLES J. APPLETON, of the city of Hamilton, in the county of Wentworth and Province of Ontario, Canada, have invented certain new and useful Improvements in Knitting-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 represents a plan of the machine. Fig. 2 represents a front elevation of the same. Fig. 3 is a vertical transverse section through the center of the sliding carriage. Figs. 4 and 5 represent a plan and end view, respectively, of cam-holder and cam. Fig. 6 is a side view of a needle.

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

Nature.

The nature of my invention consists, first, in the needle bed-plate, having the jacks cut upon its front instead of attached movably thereto, in combination with a cam-holder, a cam, an adjusting-screw, and a work-guard plate; this combination enabling me to adjust the length of stitches in a very accurate and expeditious manner, and, at the same time, construct what is known as a flat or open machine at small cost. It consists, second, in the combination of adjustable selvage-stops with the bar which carries the yarn-guide and the bar which carries the selvage-finger, whereby, with a very simple mechanism, I am enabled to perform the operation of widening or narrowing the work at pleasure. It consists, third, in the yarn-carrier, attached to a sliding spring-bar, in combination with the carriage, provided with a drop-depression and with the adjustable stops of the rack-bar, whereby, with very simple mechanism, the operation of pressing the yarn-guide down between the knitting-needles and dropping the yarn into the selvage-needle can be very perfectly performed. It consists, fourth, in a single selvage-finger, operating on both selvages; said finger being attached to a sliding bar which alternately adjusts itself upon the pin of the right and left selvage-stops and remains in gear until the selvage-needle has secured the yarn. It consists, fifth, in making the selvage-needle with a spring-joint in it, between its extremities, so as to yield to the tension and at the proper moment slip off the loop and again assume its original position.

Description.

A, Fig. 2, is a bed-plate, (which can be attached to a table by means of thumb-screws y^2,) used for the purpose of holding and guiding a series of hooked or latched needles in grooves in a horizontal position. This bed-plate has the jacks f^5 formed directly upon it, and, by reason of this, in connection with an adjustable center-cam, hereinafter described, the length of stitches can be more accurately adjusted than with a bed-plate which has the jacks movably attached to it and adjustable thereon at both ends. B is a rack-bar, placed on the upper side of the bed-plate and over the needles. Upon the rack-bar B is placed a sliding carriage, F, to which all the working parts of the machine are attached, consisting of a cam-holder *g*, cam *h*, pinion *n*, stitch-adjusting screw *r*, bobbin-holder *k*, bobbin *l*, crank *m*, yarn-carrier *e*, yarn-carrier bar e^1, yarn-carrier springs *o*, selvage-finger holder f^1, and selvage-finger *d*.

Fig. 6 represents a side view of a single needle, any desired number of which move horizontally in the parallel grooves cut into and across the bed-plate and are operated back and forth by means of the cam *h;* said cam *h*, by means of its oblique sides, serving to replace any needles which may have been displaced, thus insuring their being in proper working position. The lower ends of the needles are constructed with an upright shank, extending a little above the face of the bed-plate, and are drawn in and pushed out by the cam *h* that is attached to the sides of the groove of the under side of the carriage F, and is so constructed as to give the needles an outward and inward motion, the selvage-stops *j j* allowing the cam to operate all or any number of the needles so as to take the yarn from the yarn-carrier. The selvage-finger carrier f^1 is provided with notches, which catch automatically on the pins j' j', attached to the selvage-stops *j j*, so as to arrest the motion of the selvage-finger in going from right to left and from left to right. *h*, Fig. 4, represents in full size a set of cams, attached by screws to the

cam-holder *g*. As the carriage F with the cams is moved back and forth by the crank *m* the needles are carried up one groove between the cams and down the other, and at the same time the yarn-carrier *e* delivers the yarn into the hooks of the needles, thus forming loops and knitting. *j j* are adjustable selvage-stops, which are grooved plates sliding on the rack-bar B, and can be placed in any desired position on the rack-bar and secured by means of a pin, *j'*, passing through the stops and down between the teeth of the rack. These stops may be placed at any distance apart to regulate the width of the work. On the front side of each stop is a projection pin, *x x*, Figs. 1 and 2, which serves to alternately catch and regulate the lateral motion of the selvage-finger holder f^1. The selvage-finger *d* is riveted to the selvage-finger holder f^1 and is for the purpose of holding the yarn at any desired point until the selvage-needle has secured the yarn for itself and returned to its original position. It has a joint, d^2, near its lower end, which allows it to bend inwardly at the proper time and release the yarn. Over the joint is riveted a small flat steel spring that causes the lower part of the finger to return to its original position after the yarn is released. *q*, Figs. 1 and 3, is a rear needle-guard, consisting of a rod, as shown, applied on the rear of the bed-plate A to prevent the needles from slipping out backward and for holding any needles which are between the stops that may be thrown back of it. A stitch-adjusting screw, *r*, Fig. 3, is attached to the carriage and yoked to the cam-holder *g* for lengthening and shortening the stitch at pleasure. A small spring, *t*, is secured to the top of the carriage and presses on the selvage-finger carriage to keep it in its place. The yarn-carrier bar e^1 slides between two raised projections on the top of the carriage F, the front one of which has a small notch or depression, e^3, cut into it on the upper side, which allows the yarn-carrier *e* to drop a little at the proper moment and guide the yarn into the hook of the selvage-needles. A guard-plate, *c*, is arranged immediately under the needles in front of the stationary jacks and is secured to the bed-plate A by the hooks *c' c'* at each end, its use being to prevent the knitting or work from sliding out with the needles when they are about to take up the yarn in order to make fresh knitting or loops.

It will be seen that the machine is set in motion by turning the crank *m*. An upright spindle, *y*, passing through it has a small pinion, *n*, keyed to its lower end, which gears into the longitudinal rack *i* at the back of the rack-bar B. By the direct and reversed motion of the crank the carriage F, and all the parts connected with it slide back and forth, and the number of stitches formed per minute will be regulated in proportion to the speed with which the crank is driven.

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

1. The bed-plate A, having the jacks f^5 formed directly upon its front edge, in combination with a cam-holder, *g*, cam *h*, adjusting-screw *r*, and front guard-plate *c*, substantially in the manner and for the purpose described.

2. The adjustable selvage-stops *j j*, in combination with the bar e^1, carrying the yarn-guide, and the bar f^1 carrying the selvage-finger, substantially in the manner and for the purpose described.

3. The yarn-carrier *e*, attached to the bar e^1, in combination with the adjustable stops *j j* and carriage F provided with the depression e^3, substantially in the manner and for the purpose described.

4. A single selvage-finger, operating on both selvages, substantially as described.

5. A jointed selvage-finger, substantially as described.

Hamilton, Canada, May 31st, 1871.

CHARLES JAMES APPLETON.

Signed in the presence of—

W. BRUCE,

WALTER ATHERTON.