

United States Patent Office.

A. R. BYRKIT AND G. S. BYRKIT, OF FAIRFIELD, IOWA.

Letters Patent No. 80,907, dated August 11, 1868.

IMPROVEMENT IN SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN :

Be it known that we, A. R. BYRKIT and C. S. BYRKIT, both of Fairfield, in the county of Jefferson, and State of Iowa, have invented a new and useful Improvement in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a side elevation of a sewing-machine constructed according to our improvement.

Figure 2, an inverted plan of the same, and

Figure 3 a partly sectional front elevation, on a larger scale than the previous figures, of the lower portion of the machine, from the table downwards, in illustration of the shuttle and feeding-bar-operating mechanism.

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

This, our improvement, relates, in one of its features, to that class of machines in which a double-pointed shuttle is used for carrying a secondary or locking-thread through the loops left or formed by the needle-thread in both directions of the shuttle's throw, first passing the secondary thread, through a loop of needle-thread, in the direction of the feed, and through the next loop of needle-thread in a contrary direction. In this connection the invention embraces an oblique set or arrangement, relatively to the feed, of the shuttle-race and shuttle or its carrier-arm; likewise, a heart-shaped cam, in combination with the feed for operating the latter, in whichever direction the machine is run; also, a peculiar combination of devices for effecting and regulating the feed, all substantially as hereinafter described.

Referring to the accompanying drawing, it will only be necessary here to describe at length those parts of the machine to which the improvement relates, or that are more immediately connected with it. In said drawing, S represents a main or driving-shaft, on which may be arranged a grooved cylinder, F, for giving motion to a needle-lever, E, that imparts the necessary vertical reciprocating action to the needle-bar E¹, carrying the usual eye-pointed needle e, which may be supplied with thread from a reel in rear of the machine, subject to the control of ordinary or any suitable tension-devices, that, together with the presser-foot and other common or well-known parts, need no particular reference.

The cloth-table E² is here shown as arranged above the bed-plate E³ of the machine, with a block or frame-piece, f, disposed between them, but such construction may be changed.

C is the shuttle-arm or carrier-operating lever, working on a fulcrum or pivot, as at g, that projects from a lower standard, h.

D is a wheel or disk, made fast to the shaft S, and formed, on its one side or face, with an endless groove, s s, of the configuration represented by dotted lines in fig. 3, and with which a double-pointed shoe or driver, m, pivoted to the lever C, gears, for the purpose of giving a forward and backward motion to said lever, with its carrier and shuttle, the groove s s, by its configuration, moving the lever C forward, or in one direction of its throw, during one revolution of the disk D and its shaft S, and in a backward or opposite direction during the next revolution, in whichever direction the machine is run, that is, during reverse motions of the shaft S, and giving a single throw to the shuttle during a double, that is, one up-and-down movement of the needle.

A is the double-pointed shuttle, which is freely or loosely borne by a suitably-constructed carrier, B, so as, in the reciprocating action of the shuttle across the path of the needle, and in directions approximating to the feed, and oppositely thereto, to pass the shuttle, with its secondary thread, through the loop or loops of the needle-thread. The face of the shuttle A works against or in close proximity to the face side of the shuttle-bed or race R, which is set obliquely to the feed, and the lever C, or its pivot g, correspondingly pitched or set, so that the shuttle-thread lies, as it were, in front of the needle when the shuttle is at the extremity of one of its strokes, and behind it when at the end of its opposite stroke, and nearer to the operator by reason of the obliquity of the shuttle's course across the machine. This oblique action of the shuttle obviates the "twill," which is characteristic of machines of this class, by reason of the peculiarity of the stitch or passage of the secondary thread in opposite directions from the double-pointed shuttle through the successive loops of the needle-thread, firstly in direction of the feed, and next reversely thereto.

Motion is given to the feeding-bar V by means of a heart-shaped cam, N, arranged to rotate with the shaft S, said cam imparting an up-and-down motion to a pitman, M, through studs or projections *u*, and said pitman carrying, at or near its upper end, a button, K. This button K, as it is moved down, comes in contact with a bent lever, L, which lifts the feed-bar V to bite the cloth, and then strikes or acts upon a lower projecting end of a beam or rocking-plate, J, pivoted as at *n*, which draws forward a connecting-rod, G, carrying with it the feed-bar V, to which said rod is attached. The rod G is connected with the one arm of the rocking-plate J by or through a slot, *r*, so that by working to the right or left, a lever, H, which is in slotted gear with the rod G, the leverage at which the plate J acts upon the rod G may be altered to give more or less stroke to the feed-bar V, accordingly as a long or short stitch is required. In the upward stroke of the button K, the action of the feed-bar is reversed, said bar, with its appendages, dropping to release the cloth, and the button striking and acting upon the upper arm of the beam or rocking-plate J to work the feed-bar V backwards. The action of the feed is the same, in whichever direction the machine is run, and the heart-shaped cam N admits of the machine being reversed at any time without missing a stitch.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination, with the shuttle face-plate, arranged obliquely to the feed-movement, of the obliquely-moving vibrating-carrier and double-pointed shuttle, substantially as and for the purpose set forth.
2. The combination of the heart-shaped cam N with the feeding-mechanism described, for operating the feed, in whichever direction the machine is run, essentially as herein set forth.

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Witnesses:

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