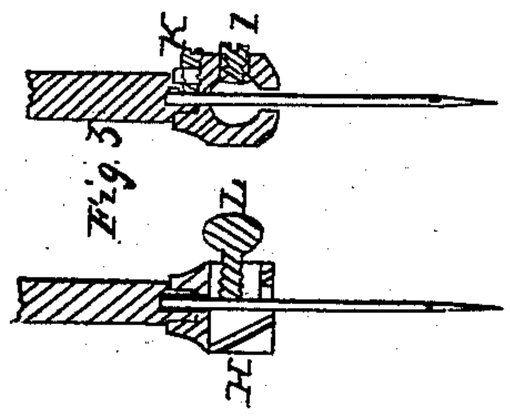
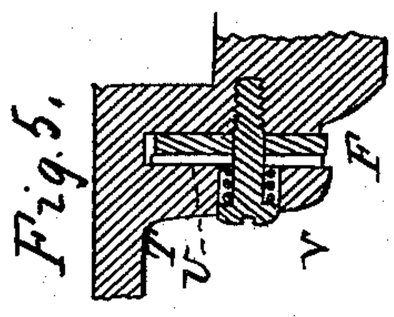
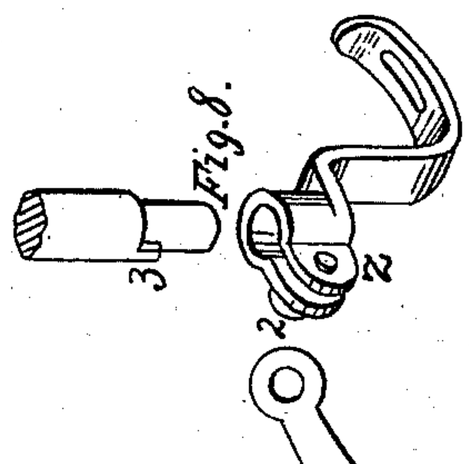
C. E. BILLINGS.

Sewing Machine.

No. 88,603. Patented April 6, 1869.







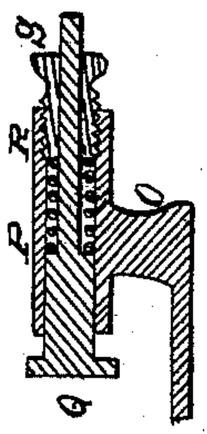
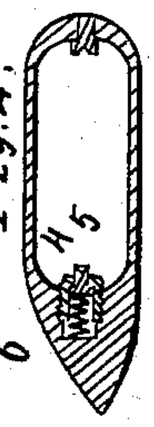
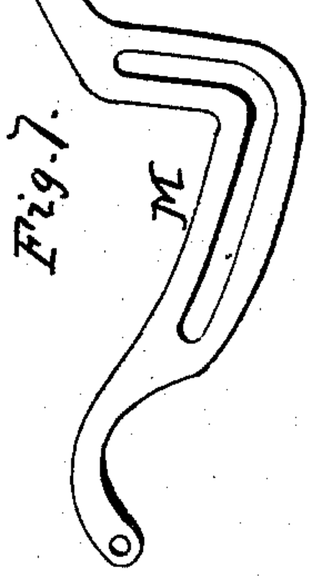


Fig. 2.





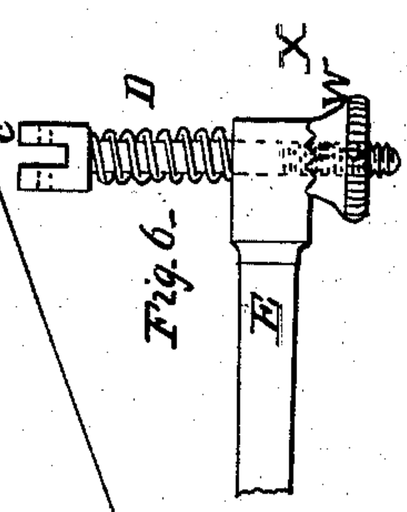


Fig. 6.

Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES E. BILLINGS, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **88,603,** dated April 6, 1869.

To all whom it may concern:

Be it known that I, CHARLES E. BILLINGS, of Hartford, in the State of Connecticut, have invented certain Improvements in Sewing-Machines, and in a Shuttle for such Machines; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My improvements are (some of them) applicable to sewing-machines in general, and others more particularly applicable to that class of machines known as the "Weed sewing-machine."

They relate to a provision for lateral adjustment of the needle; to an improved device for holding the bobbin within the shuttle; to an improvement in the feeding devices; to the construction and application of the presser-foot, and to other details.

In the drawings, Figure 1 represents a perspective view of a machine containing my improvements; Fig. 2, the thread-tension device; Fig. 3, the needle-adjusting device; Fig. 4, the improved shuttle; Fig. 5, the friction devices for the feed-bar; Fig. 6, the feed-regulating devices; Fig. 7, the thread-controller lever; Fig. 8, the presser-foot.

The general construction of machine shown being that of the kind known as the "Weed sewing-machine;" it is unnecessary to describe it in detail, except so far as may be necessary to explain my improvements.

The main driving-shaft is located beneath the bed-plate A, and by means of a grooved cam thereon operates the vibrating-needle-arm B, in a well-known manner. The same shaft by means of an eccentric thereon, (not shown,) operates a link, which, being connected at C to rod D on rock-bar E, (shown in Fig. 6,) imparts motion to the feed-bar F, and a crank on the forward end of the same shaft, by means of a connecting-link, serves to impart motion to the shuttle-driver G, the above-named parts and their general arrangement being similar to those employed in the machine above named.

I will first describe those of my novel features which are located above the bed-plate.

Fig. 3 illustrates my mode of providing for a lateral adjustment of the needle, so as to insure true and perfect action relatively to the shuttle, whether using a large or a small needle.

Transversely and horizontally through the lower end of the needle-bar I cut a tubular hole, in which I fit snugly a short cylindrical piece, H, capable of being adjusted lengthwise therein, and preferably this piece should have a spline or feather at its under side, riding in a slit cut partly across the bottom of the bar and extending into the tube, so as to hold it from turning.

I is an adjusting-screw passing through a hole larger than itself in the bar, and then screwing into a threaded hole adapted for it in the piece H. The loosening or tightening up of this screw admits of shifting the piece or plug H a sufficient distance right or left to meet all the requirements consequent upon a change of one needle for another of different size.

K is a screw, which serves to secure the shank of the needle steadily in its socket in the needle-bar above the plug after the proper adjustment has been made.

L is a thumb-screw, which enters one end of the plug and holds the needle firmly in it.

It will readily be seen how with these devices the needle may not only be shifted, but also held truly and firmly in its vertical position under all adjustments.

M is thread-controller, formed in a single piece and shaped as shown, and having therein a slot in form somewhat less than a right angle, and with rounded corners, the longer part of the slot being very gently curved. This controller is pivoted upon a stationary pin on the forward end of the bracket or goose-neck, and is operated at the proper periods by a pin on the forward end of the vibrating arm, the same pin also serving to connect this arm to the link which actuates the needle-bar, as shown at N. The thread passes, as shown in the drawings, from the spool to the eye of the needle, and the operation of the take-up or controller upon it will be readily understood.

To give the requisite tension to the needle-thread I employ the following-described device: *o* is a standard mounted on the bracket, and having a horizontal tubular piece or cylinder, P, thereon. One end of a plunger, Q, which is fitted to play in this tube, is provided with a smooth-faced disk or button, whose surface is designed to be pressed directly upon the body of thread on the spool, which is supported on a vertical fixed spindle, a slightly-

conical metallic sleeve being introduced into the spool before the same is placed upon the spindle, the sleeve and spindle being so adapted to each other as regards size as to preclude any wabbling of the spool. The outer end of the plunger for the greater portion of its length is of much less diameter than the tube, and is surrounded by a coiled spring, R, as shown, and the outer end of the tube is threaded on the inside to receive a threaded nut, S, by the screwing up of which the coiled spring is compressed and the pressure on the body of thread increased, and vice versa. The nut is also tubular to permit the smaller end of the plug to enter and pass through, and thus be sustained and steadied by it. This is found to be a most efficient as well as simple tension device, and always in perfect working order, admitting also of the most delicate adjustments and without any risk of damage to the spring, which is completely housed and secured from contact and from dust, and in a great degree, also, from changes of temperature.

Heretofore, in order to put friction upon the feed-bar at the point where it played between the two sides of a projection or post, T, depending from the bottom of the table or base-plate A, the bar played quite closely to these sides, and the sides themselves, or one of them, were forcibly sprung by means of a screw, which passed through the side and through the feed-bar. The objections to such mode of adjustment are manifest, and it has proven not as efficient as the needs of the machine demand. To correct this defect and avoid any need of springing the metal, I make the slit in the post for the reception of the feed-bar wider than heretofore and place between one side of the bar and the post a sheet-steel plate, U, conforming in shape to the post, and introduce a spiral spring, V, within the post, surrounding the screw and located between the post and the head of the screw, as shown in Fig. 5. This provision admits of exact adjustment of the friction without straining any of the parts or springing the post in the slightest.

To graduate and preserve uniformity of feed in these machines, two nuts, one outside the other and both located on the rocker-shaft lever, have been employed; but as both of such nuts were liable during the running and jarring of the machine to get displaced, and so change the length of stitch when such change was not wanted, I have devised the following plans to prevent such consequences:

By reference to Fig. 6 it will be observed that but a single nut, W, is used, and that this nut is notched, as shown at X, corresponding notches being made in the end of the rock-shaft E, as also shown at X.

Intermediate the opposite side of the rocker-shaft and the head of the rocker-shaft lever I place a spiral spring surrounding the lever, and this portion of the apparatus is now complete. The spiral spring exerts a constant tendency to keep the notched nut in place and prevent its turning, the power of the spring being made sufficient to insure this absolutely under all conditions.

I secure to the inner side of each horn of the shuttle-driver a pad or sleeve or strip of leather or rawhide or other equivalent but durable material adapted to wear well under the repeated blows and to stifle the sound and avoid the rattle.

My mode of attaching the presser-foot to its bar and of constructing it for this purpose, and for easy removal when desired, is as follows: (See Fig. 8.) The foot is made with a projection, Z, in its rear, and this is cut so as to have a slit or opening, 1, extending to the hole or socket which receives the presser-foot bar. Through both of the ears of this projection are drilled holes, one of which should be screw-threaded to receive a clamping-screw, 2, by means of which, when the presser-foot is placed upon the bar, it may be tightened up to any required degree to hold it firmly. A projection or feather, 3, or some equivalent means on the bar, serves to keep the foot from turning around when upon the bar and in use.

To hold in place the plunger usually employed in shuttles as one of the bearings for the bobbin, I construct a bushing, 4, (see Fig. 4,) having an exterior screw-thread and a screw-head, and make the plunger 5 also with a head of such size that while it may enter the tube of the bushing, yet it can pass through it. A screw-threaded socket is made within the nose of the shuttle to receive this bushing, and a spring, 5, serves to force the plunger outward toward the cavity in the shuttle. It will now be observed that when the parts are in place none of them can get lost or displaced, that the plunger is confined by the bushing, and that by turning the bushing all these parts may be taken out readily, if ever found desirable for any purpose.

I claim—

1. The combination, with the needle-bar, of the splined or feathered slide or plug H and screws L and I, the parts being constructed, arranged, and operating as and for the purpose shown and described.

2. The combination, with the shuttle, of the headed and screw-threaded bushing or socket and its inclosed and headed spring-plug, substantially as shown and described.

3. The combination, with the rocker-shaft lever and coiled spring, of the notched surface on said shaft, and a corresponding notched surface on the nut upon said lever, substantially as and for the purpose set forth.

4. The combination, with the presser-bar and its spline or projection 3, of a presser-foot constructed with its socket open at one side, and provided with ears having holes therein to receive a tightening-screw, substantially as shown and described.

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