

D. WHITTEMORE.
Sewing-Machine.

No. 217,184.

Patented July 1, 1879.

Fig. 4

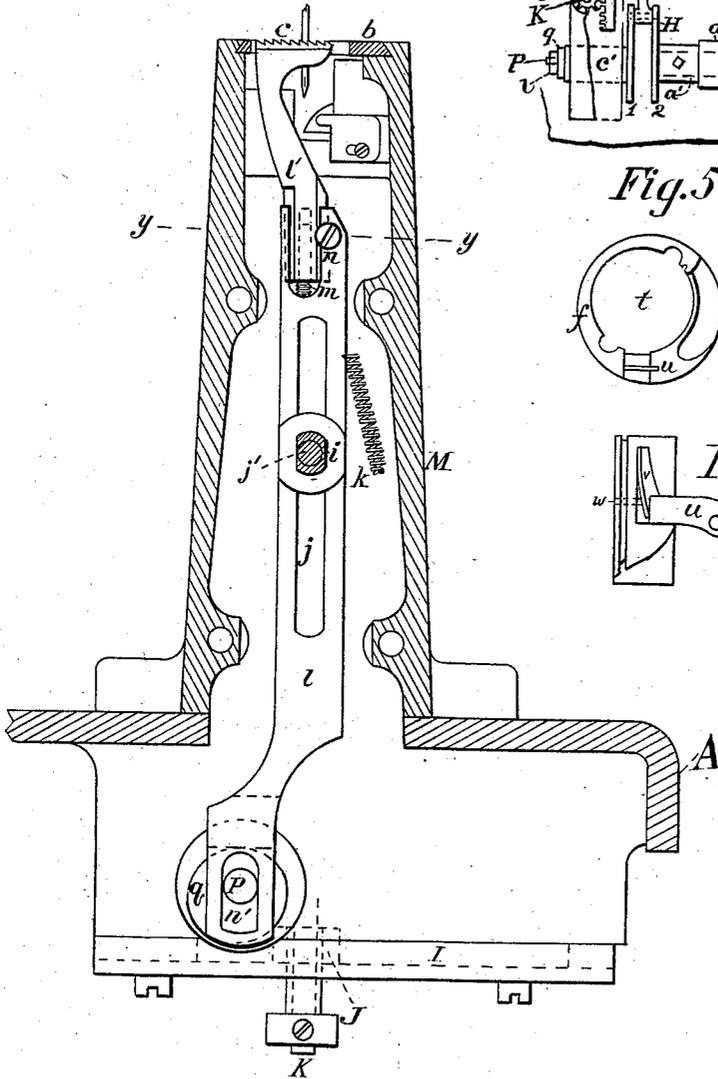


Fig. 8.

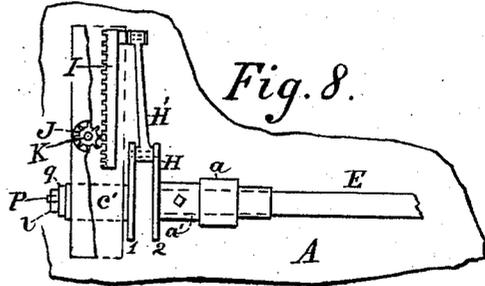


Fig. 5

Fig. 6

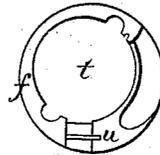
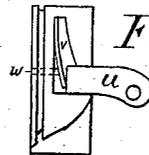


Fig. 7



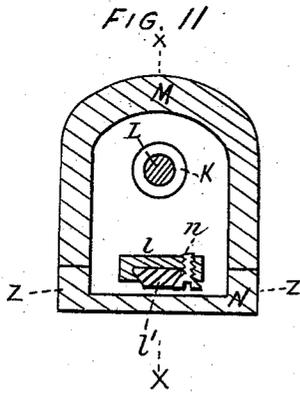
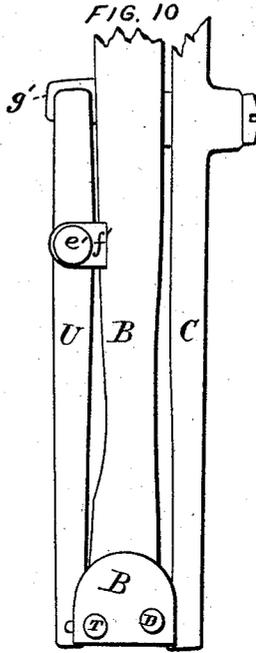
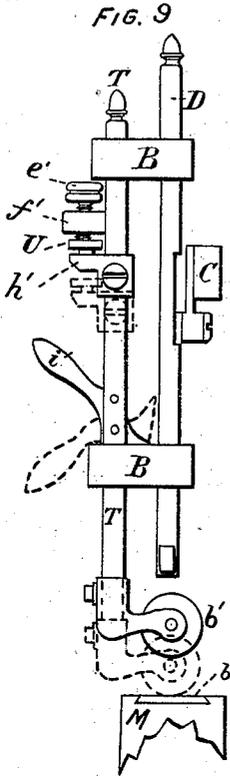
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UNITED STATES PATENT OFFICE.

DAVID WHITEMORE, OF QUINCY, MASSACHUSETTS, ASSIGNOR TO WALTER L. WHITEMORE, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **217,184**, dated July 1, 1879; application filed January 28, 1879.

To all whom it may concern:

Be it known that I, DAVID WHITEMORE, of Quincy, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Sewing-Machines, which invention is fully set forth in the following specification, reference being had to the accompanying drawings.

My invention relates to improvements in that kind of sewing-machines which are constructed with an upright work-supporting post, the top of which forms a diminutive table at a considerable elevation above the general level of the bed of the machine, and around which a clear space is left, in which work that is doubled or folded into irregular form may be permitted to overhang the post and lie freely around the same below the plane of its top, while that portion which is being sewed lies horizontally upon the work-plate on the top of the post, such elevated and diminished supporting-surface enabling the operator to stitch certain kinds of work of a folded, hollow, or tubular character with greater facility and less liability to deface and injure the goods thus being worked upon from undue doubling and pressure in the process of stitching, such as an ordinary flat table would necessitate.

Machines constructed with an elevated post and employed for stitching leather with a waxed thread, forming a chain-stitch, have been long in use, as shown in the patent granted to David Haskell August 28, 1860, and machines have been formed with a post of diminutive size for glove-sewing, with a shuttle therein, and having a feed mechanism operated from above, and performing the double duty of a presser-foot and feeding device.

The object of my invention is to produce a shuttle or lock stitch in connection with a work-supporting post and mechanism adapted to dry-thread stitching, and a class of work for which neither of said machines are adapted, or for which they can be successfully employed; and my invention consists in so constructing such post as to support in its top part, in a circular recessed race, a rotative shuttle for carrying a second thread and passing the same through loops formed of the

upper or needle thread, and combining with such post and shuttle a shuttle-driver and feed mechanism, both of which are operated from beneath the post; also, in combining with such post, shuttle, and feeding device so arranged, a presser-foot operated from above to act upon the material being sewed, and in conjunction with the feeding device; also, in the peculiar construction and arrangement of the feed-lever and its combination with coacting parts; and in the peculiar construction of the shuttle and its combination with coacting parts.

In the accompanying drawings, Figure 1 is a side elevation of a sewing-machine embodying my improvements. Fig. 2 is a detached vertical section taken through the axis of the vertical shaft which drives the shuttle, and in the direction indicated by line *x x*, Figs. 1 and 11. Fig. 3 is a top view of the work-supporting post with the sliding work-plate removed to disclose the shuttle in its circular raceway. Fig. 4 is an enlarged vertical section taken on the line indicated by line *z z*, Figs. 1 and 11, and as viewed from the left in said Fig. 1. Fig. 5 is a top or plan view of my improved shuttle with the perforated thread-retaining cap removed. Fig. 6 is a plan view of said cap. Fig. 7 is an edge elevation of the shuttle, the top, as shown in Fig. 5, being shown at the right in this figure. Fig. 8 is a detached under-side or inverted plan view, showing the relative positions, arrangement, and connections of the driving-shaft and the short auxiliary shaft, the crank and pitman, the rack and pinion, the feed-lever, and the cam and pin on the short shaft that actuates such lever. Fig. 9 is a detached elevation taken as viewed from the left in Fig. 1, and showing the presser-foot and its bar, the means of actuating and adjusting the same, and the adjacent parts of the machine. Fig. 10 is a detached top or plan view, showing the front portion of the goose-neck, the needle-actuating lever, the needle and presser-foot bars, the presser-foot-depressing spring, and its adjusting device. Fig. 11 is a horizontal transverse section taken through post M, the feed-lever, and shuttle-driver on the line indicated by line *y y*, Fig. 4.

In these figures, A represents the bed of the

machine. B is the goose-neck, upon which is pivoted the lever C for operating the needle-bar D. Said neck also supports the usual presser-foot, take-up, thread-guides, and tension devices, which, so far as they are material to my invention, will be described in their order.

Beneath the bed A the driving-shaft E is journaled in bearings *a a*, and carries upon its outer end the belt-pulleys and balance-wheel F, also an eccentric, which operates, through pitman G, the lever C.

At the opposite end of the driving-shaft is a crank, H, part 1 of which is secured or formed upon the short auxiliary shaft *e'*, while part 2 of such crank is formed upon a sleeve, *a'*, which is secured upon shaft E by set-screws, as shown in Figs. 2 and 8.

H' is a pitman, one end whereof is pivoted upon the wrist-pin which connects parts 1 and 2 of crank H, while its opposite end is pivoted upon a stud secured to rack I, which rack engages the pinion J, secured upon the vertical shaft K, whereby the rotation of shaft E, acting through its crank H, pitman H', and rack I, which latter slides in fixed ways, will produce a reciprocating rotary movement of pinion J and of the shaft K, to which it is secured, for the purpose of actuating the shuttle through its driver, in the manner to be described.

Upon the bed A is erected a post-like work-support, M, the top of which constitutes a diminished table, Fig. 3, and is provided with a slotted throat-plate, *b*, through which the rough-surface feed-plate *c* of the feed-bar operates, and through a perforation therein the eye-pointed needle passes in the usual manner. A sliding plate, *d*, is also provided and fitted to slide in ways in the top of said post, as shown in Fig. 3, and so made removable for the purpose of access to the shuttle-race. In the top of said post is a circular shuttle-race, *e*, Fig. 2, within which the shuttle *f* is seated, as shown in Fig. 3, and is actuated by the driver L, which latter is operated through the shaft K, as already stated, the depending shaft or stem of said driver being centrally inserted and secured in the head of shaft K, as shown in Fig. 2, for convenience of assembling or removal of said parts. The side N of the post M is removable, and is secured to the main portion of said post, when in position, by screws. Said side N is also vertically slotted, as at *h*, to receive a flanged and centrally-threaded block, *i*, Figs. 2 and 4, through which a screw-stud, *j'*, headed at its inner end, passes outward through a slot, *j*, in the part *l* of the feed-bar, such stud serving as an adjustable fulcrum, upon which said bar rocks and by which the throw of its upper feeding-surface *c* is regulated. The feed-bar, composed of parts *l* and *l'*, is reciprocated vertically by a cam or eccentric, *q*, secured upon shaft *e'*, and acting against a shoulder, *d'*, on the back side of part *l*. (See Fig. 2, and indicated by dotted lines in Fig. 4.) A short pin, P, Figs. 2,

4, 8, secured eccentrically in shaft *e'*, and acting in slot *n'* in the lower end of the feed-lever, serves to impart to such end of the lever a horizontal vibratory movement; and as the pivotal stud *j'* is, by means of the lock-nut O and block *i*, adjusted higher or lower relative to pin P and the toothed feed-plate *c*, the length of the feed-movement of said plate will be accordingly varied. A coiled spring, *k*, secured at its upper end to the feed-bar and at its lower end to plate N, insures the constant contact of shoulder *d'* of the bar with cam *q*. Said feed-bar is formed in two parts or members, *l* and *l'*, for convenience of removal of the upper part from the post and adjustment thereof and its plate *c* relative to plate *b*. The rough-surface plate *c* is also removable in order that such part which comes in immediate contact with the material being sewed may be changed for one more or less rough or sharply toothed, as may in any case be required. The top part of bar *l* is formed with a dovetail recess to receive the lower end of the top part, *l'*, which is secured therein by the locking-screw *n*, Figs. 4 and 11, and in the lower end of part *l'* is threaded a screw, *m*, the turning of which in or out to the requisite degree gages or graduates the depth to which part *l'* enters the recess in part *l*, and consequently regulates the position of its rough-surface plate *c* relative to the upper face of the work-plate *b*. This feed-bar, by the operation of the mechanism described, performs the part of the well-known four-motion feed.

The shuttle represented separately in Figs. 5, 6, and 7 is formed with a circular thread-chamber, *t*, having no central bobbin or thread-spindle, but is adapted to receive and carry a solid ball of thread so wound as to deliver from its center. Said shuttle is provided with a perforated cap, *s*, which serves to keep the thread in place, and by means of its perforations, through which the thread passes, and in conjunction with the perforated spring-plate *u*, also serves as a tension device, whereby a uniform tension upon the shuttle-thread is secured independently of any action of the thread-ball within the shuttle.

The cap *s* is held and kept from rotation relative to the shuttle by means of the projections from its periphery, which enter corresponding recesses in the wall of the shuttle, (shown in Fig. 5,) and it is held from vertical displacement by the spring-pressure of plate *u*, produced by spring *v*, between which plate and said cap, under a pressure produced and regulated by the adjusting-screw *w*, the shuttle-thread passes with the desired tension. By this construction of a shuttle and its self-contained tension devices, independent of a bobbin or thread-holder, the constantly-varying quantity of thread within the shuttle will in no degree affect the uniformity and perfect working of the thread-tension.

The pressure-roller *b'*, which is of the common construction, is pivoted in a short angle-arm, which is provided with a socket and se-

cured by set-screws upon the vertical bar T, as shown fully in Fig. 9. This bar is arranged to slide vertically in bearings in goose-neck B, as shown in said figure, and is raised from the feed-plate by the usual lifting-lever *i*, pivoted to the said bar, and acting upon the lower bearing of goose-neck B. When this lever is released the requisite depressing force is exerted upon bar T by the spring U, the front end of which acts upon a stirrup, *h'*, secured upon the bar by a set-screw, as shown in Fig. 9. The back end of said spring rests upon the upper side of a lug, *g'*, formed upon the goose-neck, and the requisite adjustment of the force to be exerted by said spring upon said bar is produced by screw *e'*, threaded in lug *f'*, and which screw, when turned down, acts directly upon the upper side of spring U, thereby increasing its pressure upon the bar T through the stirrup *h'*.

I claim as my invention—

1. In a lock-stitch sewing-machine, the combination of an elevated work-supporting post, M, having in the head thereof a shuttle-race, *e*, of a rotative shuttle, *f*, a feed-bar, *l*, a shuttle-driver, L, an actuating-shaft, E, and intermediate devices for operating such shuttle-driver and feed-bar, substantially as specified.

2. In a lock-stitch sewing-machine, the combination of an elevated work-supporting post, M, a rotative shuttle, *f*, arranged in a race in the head of the post, a shuttle-driver, L, and adjustable feed-bar, supported by and operated from below such post by means substantially as described, and a presser-foot, *b'*, arranged and operated above such post, all substantially as specified.

3. In combination, the recessed post M, with its removable side N, having slot *h*, and the feed-bar *l*, having slot *j*, the flanged stud *i*, screw-stud *j'*, and securing-nut O, all substantially as specified.

4. In a sewing-machine feed-bar, the combination, with part *l*, having the longitudinal slot *j*, of the part *l'*, adjustably seated in part *l*, and the locking-screw *n* and adjusting-screw *m*, all substantially as specified.

5. The shuttle *f*, chambered as described, and provided with the perforated cap *s*, the spring-plate *u*, the spring *v*, and adjusting-screw *w*, all substantially as specified.

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Witnesses:

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