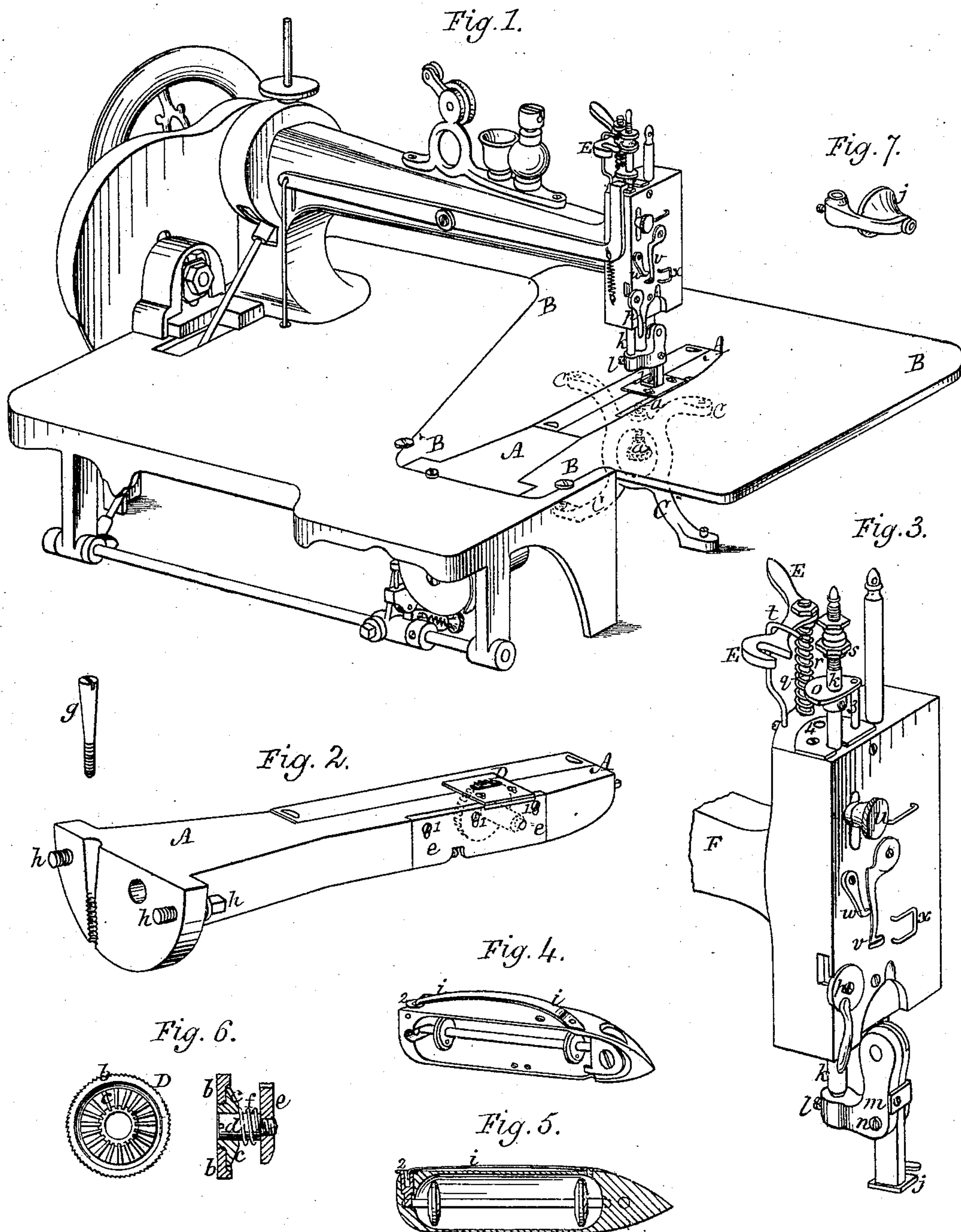


I. MANNING.
Sewing-Machines.

No. 152,500.

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IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **152,500**, dated June 30, 1874; application filed April 22, 1874.

To all whom it may concern:

Be it known that I, IRA MANNING, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Sewing-Machines for plain and ornamental work; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 represents a perspective view of the machine. Figs. 2, 3, 4, 5, 6, and 7 represent views of detached portions of the machine, and shown on an enlarged scale to better develop their particular construction and operation.

My invention relates to certain devices in connection with what are termed "horn" sewing-machines, so as to adapt such machine to plain and ornamental work at pleasure, and adapt it to sewing or stitching shoes, saddlery, leather, or cloth.

That portion of the table of the sewing-machine at and around the horn A is made removable and replaceable, so as to leave the horn with free open space about it to admit of placing the material or thing to be sewed or stitched on, over, or around it, and to turn it as the line of stitching may require. This sectional or removable part of the table is shown at B, and when it is used as it is with plain work, the sewing of which admits of a very rapid motion of the mechanism, and consequent great vibration of the arm or horn A, unless in some manner prevented, I have arranged so as to avoid this vibration by attaching a foot, C, to said removable part of the table, in which a set-screw, *a*, is fixed, so that it can be run up against the under side of the horn, and thus furnish a support to said horn, and at a point where its vibration would be greatest.

When the table B is removed, the foot and support are removed with it, the horn, for the special work done upon it, as in stitching shoe-tops, not then requiring the support, as the speed of the machine for that kind of work is very much reduced, and so, too, consequently, is the vibration of the horn.

The shuttle, the shuttle-race, and feed-wheel are arranged and work inside of the arm or

horn A, and as the horn must be as small as possible, so that small work may be placed on or over it, the space occupied by these interior working parts must be economized to keep the horn within practical limits.

The horn, too, is secured to the frame at but one of its ends, and is liable to a slight lateral disarrangement, which throws the race and shuttle out of exact working position in relation to the needle and its thread.

I have devised for these conditions and provisions as follows: The feed-wheel D, that works in the horn or arm A, is made in two parts, *b c*, Fig. 6, the gear part *c* being embedded in the outer part *b*, upon the perimeter of which the roughened surface is made. This wheel is made in two parts for two purposes: First, that it may be compact in form and require but little space in the arm; and, second, so that the embedded gear may be cut true and with facility, which could not be done where the rim projected and was solid, so that a gear-cutting tool could not pass clear through between the gear-teeth.

By making this feed-wheel in two parts, the beveled and sunken gear-teeth are readily cut on the inner part, *c*, and when so cut this inner part is screwed into the outer part, as seen in Fig. 6.

A seat or recess is made in the inside of the horn for the feed-wheel to work in, and said wheel is supported by, and turns on, a stud or journal, *d*, fastened to the side plate *e*, and a pressure-spring, *f*, bearing against the side plate and against the feed-wheel, keeps the latter in proper working position. The side plate *e* is adjustable in a vertical direction by making the holes through which the screws *l* pass slightly elongated, so that to adjust the feed-wheel, which is difficult to get at, it is only necessary to adjust the side plate, and this carries with it the feed-wheel. The stud *d* not only furnishes the support for the feed-wheel, but it serves as a guide or directrix for placing the wheel in its true position. The feed-wheel must be dropped into its recess in the horn before the side plate is put on, and under these circumstances it cannot be manipulated from the exterior while the plate is being put in place; but by having a single bearing for the feed-wheel, and

that a stud or journal on the face or side plate, it is only necessary to insert the point of the journal in the opening in the center of the feed-wheel, and then simply arrange the side plate in its proper position, and that brings the feed-wheel into its proper place and position.

To adjust the shuttle-race in relation to the needle and its thread, a wedge-shaped or conical screw, *g*, works in a correspondingly-shaped hole made one-half in the heel of the arm or horn, as seen in Fig. 2, and one-half in the frame of the machine adjacent thereto. The arm or horn is bolted to the frame or table of the machine by the screw-bolts *h h*, and when it becomes necessary to adjust the raceway or the arm it is only necessary to slightly slack up the bolts *h* and turn the wedge-shaped screw *g* in one direction or the other as the adjustment may require, and then tighten up the bolts *h* again, the wedge or conical screw holding the arm in its adjusted position.

The shuttle is shown in Figs. 4 and 5. The particular feature of the shuttle consists in the spring *i*, which serves two purposes, viz: Carrying the thread back with itself or with the shuttle; and, secondly, for holding the bolt 2 in its place when locking the bobbin in the shuttle. The bolt 2 has a recess in its head, into which the bent and free end of the spring *i* takes, and so holds the bolt in place, as well as closing that end of the spring. Upon the bolt 2 there is a small projection, against which the finger-nail may be pressed to raise the bolt against the action of the spring to unlock the bobbin. The spring, too, when necessary, can be raised independent of the bolt by the thumb or finger nail.

For the purpose of adapting the machine to such varied work as is now required to be done by it, I have so arranged that I can use either the rotary, the flat, or the jumping pressure, as may be best suited to the special work to be done; and for facility in threading the needle I have further arranged the presser-foot, whether rotary, flat, or jumping, so that it may be turned partially round and away from its working position, so as to make free access to the needle when threading it.

For these mechanisms I have constructed or arranged as follows: In Figs. 1 and 3 I have shown the flat presser-foot *j*, which may be made and used in the ordinary way. This presser-foot is attached to the presser-bar *k* at *l*, and said foot may be a movable or a rigid one in relation to its holder *m*, and kept in its normal condition by a spring behind it when movable, or made immovable in its holder by the set-screw *n*. In Fig. 3 this presser-foot is represented as swung away from or out of its working position. In a cross-head, *o*, fastened to the upper portion of the presser-bar or shaft *k*, there is a pin, 3, which, when the presser-foot is raised up by its cam and lever *p*, previous to its being swung around out of

the way of the needle, rises up out of a hole, 4, and so releases said shaft or bar, and allows it, together with the presser-foot, to swing around, as shown. When the presser-foot is again swung back to its working position, the reaction of the spring around the rod *k* causes the pin 3 to shoot into its hole 4, and also to bring the foot down against the cloth over the feed-wheel D. Now, if it is desirable to convert this flat pressure into jumping pressure, a rod, *q*, which carries a latch-lever, E, is pressed down against the action of a restraining-spring, *r*, until the hook of the latch will take under the nut *s* on the rod *k*. By pressing down the rod *q* its lower end is brought in contact with a cam on the shaft that passes through the arm F, and which shaft by another cam vibrates the needle-bar; and said first-named cam coming against the lower end of the rod *q* raises it up, and with it the rod *k*, and when the cam passes beyond the end of said rod *q*, it, as well as the presser-foot bar *k*, is thrown down by the reaction of the presser-bar spring, and so causes this jumping pressure. The advantage of the jumping pressure is that it momentarily releases the material being sewed, and gives the operator an opportunity to turn the work when curved and ornamental stitching is being done. It also jumps the presser-foot over the material, instead of moving in contact with it, which latter, in the case of patent or glazed leather, mars its surface. When the jumping pressure is not used, the latch is swung under a keeper, *t*, and is held out of the way in part by the keeper, and in part by the reaction of the spring *r*, which spring also acts to raise up the rod *q* out of the way of the cam, that otherwise strikes and works it. At Fig. 7 is shown a rotary pressure, which can be applied to the presser-rod *k* at the point *l*, when a rotary presser is preferred for any special work. When the jumping-presser is used, it, as also the presser-bar *k*, is raised up against the action of the spring encircling the rod *k*, and is brought down by the reaction of that spring when the cam has passed the rod *q*, and the force of said spring is regulated by a button, *u*. The rod *k* is also furnished with an appliance to prevent it from turning too far, or so as to allow the pin 3 to slip off of the plate on which it rests while being turned. The take-up consists of a swinging spring-arm, *v*, which vibrates around its pivot, and the extent of its vibration in one direction is regulated by an adjustable stop, *w*, against which it is thrown by its reactionary spring, and in its opposite direction it is stopped by a guide, *x*, under or around which the thread passes.

There are many other parts of the machine which are not described, as they constitute no part of the mechanisms herein claimed. The most of them are shown in the drawing, and it is deemed unnecessary to particularly describe them, they being well understood by builders of sewing-machines.

I have mentioned the tapering screw *g* only

as a means of moving or adjusting the arm or horn to the right or left. It is obvious that a cam, crank, or other forcing mechanism may be used to accomplish the same end or purpose, and would come within the scope of my invention, which consists in making the horn adjustable in relation to the needle.

Among other advantages gained by making the feed-wheel in two parts, and screwing them together, are those of replacing one of the parts when the other is worn out or injured, and of making the outside of hardened steel and the inside or gear part of soft cast-iron. And said wheel has but a single support, and that on the face-plate, so that the needle may work close to its face on the opposite side.

Having thus fully described my invention, what I claim is—

1. In combination, with the horn or arm *A* and its fastening-bolts *h*, the conical or wedge-shaped screw *g*, for adjusting the shuttle-race in said arm to the needle or its thread, substantially as described.

2. The side plate *e* as a covering and support for the feed-wheel, as also a guide or directrix for placing said feed-wheel in its proper position, substantially as described.

3. The feed-wheel made in two separate parts, and then screwed together, as and for the purpose described.

4. The spring-bar *q* and its latch-lever *E* in combination with the presser-bar and presser, for converting the presser from a slipping or frictional to a jumping presser, substantially as described.

5. The sectional removable and replaceable table *B*, with its foot *c* and adjustable support *a*, under the sewing-point, to prevent vibration of the horn or arm, substantially as described.

6. The spring *i* and bolt 2 in combination with the shuttle, when acting for carrying back the shuttle-thread, and also as a keeper to hold the bolt 2, that locks the bobbin in the shuttle in locking position.

7. In combination with the spring take-up *v*, the adjustable stop *w*, for regulating the extent of its motion in the direction of said stop, substantially as described.

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Witnesses:

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