J. W. STRANGE.

Improvement in Tension Mechanisms for Sewing Machine Shuttles.

No. 116,113. Patented June 20, 1871.

Fig. 1

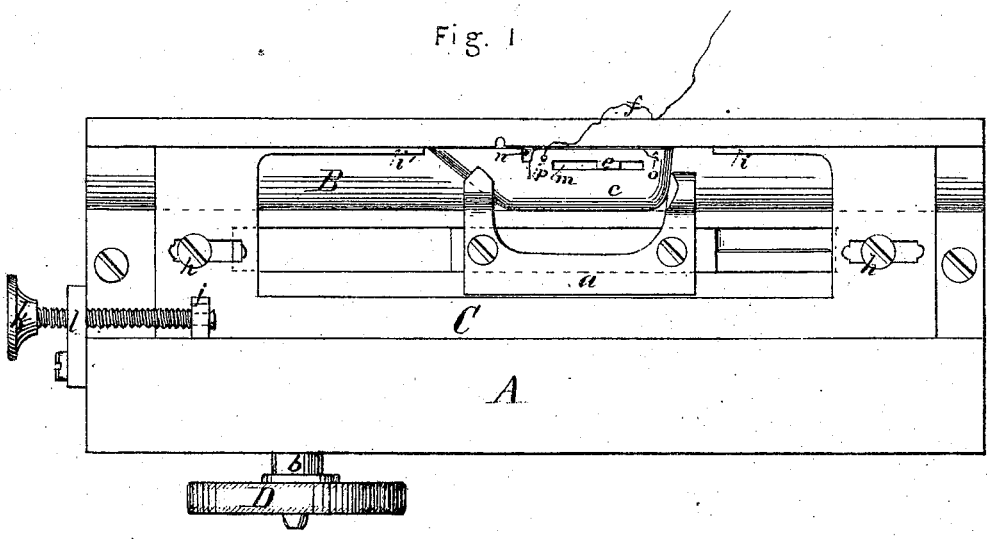


Fig. 2

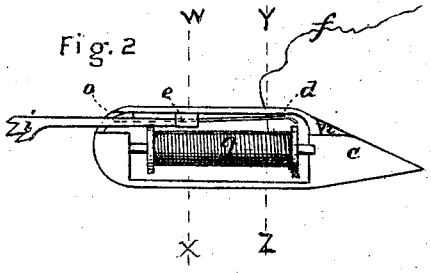


Fig. 3

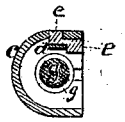
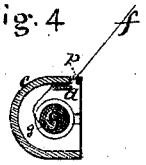


Fig. 4



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH W. STRANGE, OF BANGOR, MAINE.

IMPROVEMENT IN TENSION MECHANISMS FOR SEWING-MACHINE SHUTTLES.

Specification forming part of Letters Patent No. 116,113, dated June 20, 1871.

To all whom it may concern:

Be it known that I, JOSEPH W. STRANGE, of Bangor, in the county of Penobscot and State of Maine, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

This invention relates to a new and improved mode of adjusting the shuttle-tension, by which the adjustment is effected, either when the machine is in motion or when at rest, without removing the shuttle from the race; these results being effected by means of the devices hereinafter described, or by their mechanical equivalents.

Figure 1 is a top or plan view. Fig. 2 is a side elevation of the shuttle, showing the bobbin in position. Fig. 3 is a cross-section taken on line *w x*, Fig. 2; and Fig. 4 is a similar section taken on line *y z*, Fig. 2.

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

In the drawing, A represents a section of the bed of a machine, and B the shuttle-race. *a* is the shuttle-carrier, which is connected by a pitman to a crank upon shaft *b*, upon which is secured the wheel D for experimentally actuating the carrier. The shuttle *c* is arranged to be actuated by the carrier in the usual manner. *d* is a spring, one end ot which is secured to the inside of the shuttle near its rear end, as shown, and is so formed that its opposite end bears against the shell of the shuttle. *e* is a sliding block interposed between spring *d* and the shell of the shuttle, as is plainly shown in Fig. 3. A projection of this block extends through the shell in the slot *m*, as is shown in Figs. 1 and 3, and it also extends to the edge of the shell, as is shown in Fig. 3.

When the block *e* is moved toward the rear end of the shuttle as far as slot *m* extends, the spring *d* bears with nearly its full force against the side of the shuttle; but as the block is moved toward the pointed or front end of the shuttle the pressure of the free end of the spring upon the shuttle is diminished or taken off altogether as the slide is moved more or less. The thread *f* leading from the bobbin *g* passes between spring *d* and the shell of the shuttle, as is shown in Fig. 4, thence through the hole *p* in the shuttle, near the free end of spring *d*. It will be apparent that the pressure of the spring upon the thread may be graduated by actuating the block *e*, as before described; and as the pressure of the spring upon the thread constitutes the tension it may, therefore, be adjusted with great delicacy through the above-described means. If the machine be at rest and it is desired to change the tension, the slide *e* is actuated without removing the shuttle from the machine by means of that part which moves in slot *m*, as shown in Fig. 1, any small instrument or the fingernail serving for that purpose; but to adjust or change the degree of tension when the machine is in motion I employ the following devices: The plate C is arranged to slide in a suitable recess or groove, and is cut away centrally to allow a free movement of the shuttle and its carrier, as shown.

Two screws, marked *h*, pass through slots in plate C and enter screw-holes in bed A, the slots being of such length as to allow a sufficient end motion to the plate, which is imparted thereto by means of thumb-screw *k*, which passes through screw-nut *l* secured to bed A, while its inner end is secured in stud *j* upon plate C in such manner that the end motion of the screw in either direction, caused by its rotation, will be imparted to plate C. Two spurs or projections, marked *i* and *i'*, respectively, are formed upon or secured to plate C so as to bear against or slide close to the vertical side of the shuttle-race, as shown, while two small holes, marked *n* and *o*, respectively, are formed in the shell of the shuttle, as is plainly shown in Figs. 1 and 2, so that when the shuttle is actuated these spurs will enter the holes in the shuttle.

If it be desired to increase the tension, plate C should be moved to the right, as viewed in Fig. 1, when the forward movement of the shuttle would bring block *e* in contact with spur *i'*, thereby forcing the block toward the rear end of the shuttle and away from the free end of the spring *d*, thereby allowing the spring to act with greater force upon the thread, and increasing its tension, as before described, while if a decrease of tension is required it is

only necessary to move plate C to the left by the means described, when spur *i*, entering through hole *o*, would force the block toward the free end of the spring, thereby decreasing the pressure upon the thread and the consequent tension.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with shuttle *c*, the spring *d* and block *e*, when all are constructed and arranged to operate substantially in manner as and for the purposes specified.

2. The sliding bar C with its spurs *i* and *i'*, when constructed and arranged to operate substantially as and for the purposes specified.

JOSEPH W. STRANGE.

Witnesses:

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