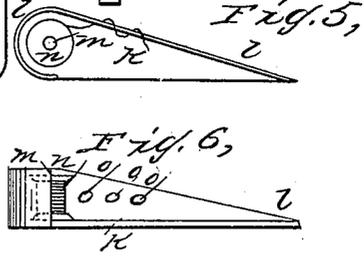
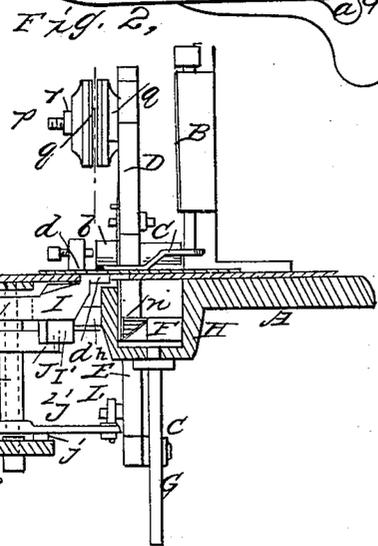
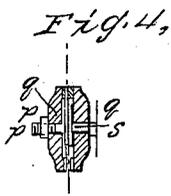
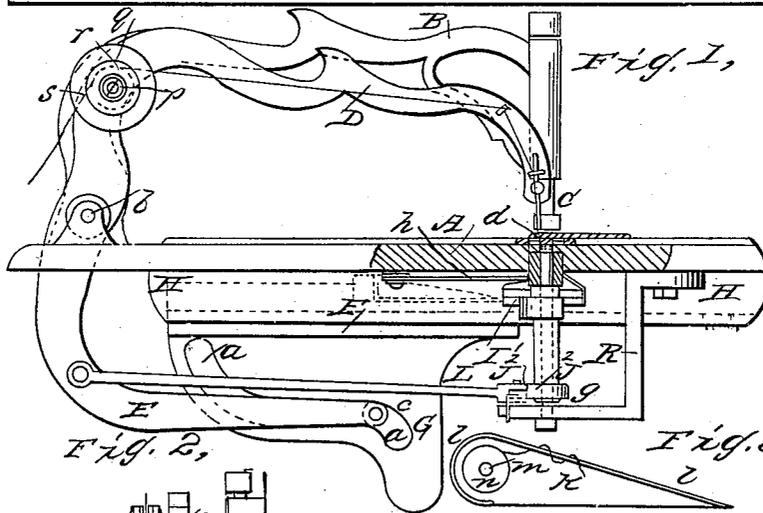
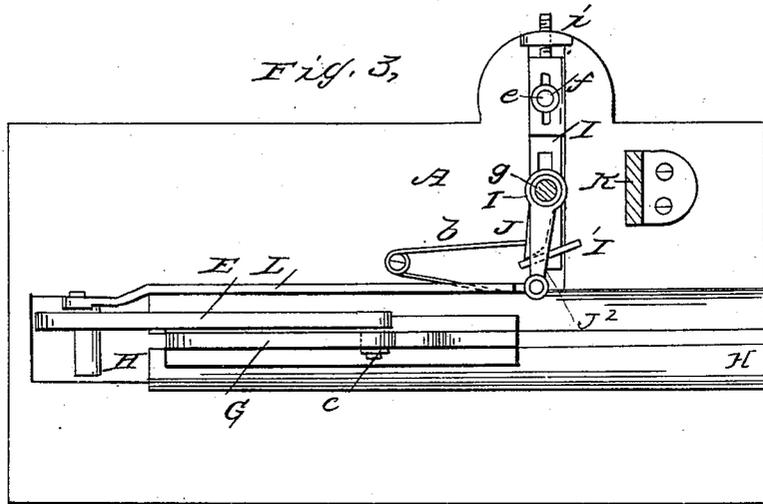


PENNY & BOTSFORD.

Sewing Machine.

No. 28,999.

Patented July 3, 1860.



Witnesses:  
 W. Coombs  
 C. Hughes

Inventor:  
 S. J. Penny  
 W. B. Botsford  
 per Murray & Co.  
 Attorneys

# UNITED STATES PATENT OFFICE.

T. J. PENNY AND W. B. BOTSFORD, OF WOOSTER, OHIO.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 28,999, dated July 3, 1860.

*To all whom it may concern:*

Be it known that we, T. J. PENNY and W. B. BOTSFORD, both of Wooster, in the county of Wayne and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a sewing-machine with our improvements partly in section. Fig. 2 is a vertical section of the same in a plane parallel with Fig. 1. Fig. 3 is an inverted plan of the same with part of the framing cut away to expose the working parts. Fig. 4 is a section of the tension device for the needle-thread. Fig. 5 is a top view of the shuttle; Fig. 6, a side view of the same.

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

Our invention consists in improved means of operating the feeding device in sewing-machines.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A, Figs. 1, 2, 3, is the bed-plate of the machine.

B is the stationary arm, which holds the presser C, which confines the work to the bed A and to the feeding device.

H is the shuttle-raceway, arranged with its sides parallel with the planes of motion of the needle-lever D E.

F is the shuttle-driver, fitted to slide in a slot in the bottom of the raceway.

To the bottom of the driver there is attached rigidly a slotted plate, G, whose curved slot *a* receives a friction roller or stud, *c*, attached to the lower arm, E, of the needle-lever, which is extended downward from its fulcrum *b* through an opening in the bed. The slot *a* is of such form that by the movement of the shuttle-driver it is caused so to act upon the roller or stud *c* as to produce the necessary operation of the needle-lever to give the requisite movement to the needle. The shuttle-driver is to be connected with the driving-shaft of the machine by means of a crank or connecting-rod or other equivalent means of producing the necessary reciprocating movement of the said driver, from which both the needle

and the feeding apparatus are intended to derive the necessary movements.

I, Figs. 1, 2, and 3, is the slide which carries the two feeding teeth or dogs *d d*, which are attached rigidly to its upper side. The said slide is fitted to work longitudinally back and forth in a groove in the bottom of the bed in a direction at right angles to the shuttle-movement, and is supported partly by a plate, *f*, secured to the bed-plate by a screw-bolt, *e*, and partly upon the upper end of the hollow shaft of a cam or wiper, J, which is fitted loosely to a fixed upright shaft, *g*, the lower end of which is held by a fixed hanger, K, bolted to the bottom of the bed A, and the upper end of which is screwed into the bed-plate. The slide I is provided with slots for the bolt *e* and shaft *g* to pass through.

To the shaft *J'* there is secured an arm, *J<sup>2</sup>*, which is connected with the lower arm, E, of the needle-lever by a rod, L, and the wiper J is caused to derive from the needle-arm, through the agency of the said rod L and arm *J<sup>2</sup>*, the necessary movement to act in such a manner upon a projection, *I'*, on the under side of the feeding-slide I, as to produce the necessary longitudinal movement of the said slide to make its dogs *d d* feed the cloth or other material under operation in the direction of the arrow shown in Fig. 2. The slide is forced back again after the feed by a spring, *h*, secured to the bottom of the bed, and the length of feed is regulated by a stop-screw, *i*, applied opposite to one end of the slide I. The slide is raised up while moving in the direction to produce the feed movement, for the purpose of making its dogs bite the material, by the arm *J<sup>2</sup>* passing up a stationary inclined plane, *j*, that is secured to the bottom of the hanger K, the shaft *J'* rising along with the said arm, and so forcing up the slide, which, it will be remembered, is partly supported by the said shaft. As the slide returns and the arm *J<sup>2</sup>* passes over the inclined plane *j* in the direction of its descent, the slide fails to press upward against the material.

The construction of our shuttle is represented in Figs. 5 and 6, and is as follows: *k* is a flat plate rounded at one end and tapering off to a point at the other end, constituting the bottom of the shuttle. *l* is a flange extending round the rounded end of the bottom, and from thence tapering off to nothing at the point of

the bottom. *m* is a fixed stud or pin standing up from the bottom plate, *k*, near the rounded end thereof, and having the bobbin *n* fitted to turn freely upon it, the depth of the said bobbin being somewhat less than the depth of the deepest portion of the flange *l*, which partly surrounds it. *o o* are holes in the flange *l*, through which the thread is laced to produce the friction necessary to give it the requisite tension. One side and the top of the shuttle thus constructed are open. The open side works next the needle against the face of the raceway, as shown in Fig. 2, and the flange *l*, on the other side, constitutes simply a guide to conduct the loop of the needle-thread over the shuttle-bobbin. The shuttle thus constructed costs little, and passes through the loop of the needle-thread with less difficulty than those of the usual construction.

Our improved tension device is represented in Figs. 2, 3, and 4. *p* is a pin secured in one side of the needle-lever, fitted with two clamping-disks, *q q*, which are faced with leather, cloth, india rubber, or other yielding or elastic substance for a certain distance from their outer edges, but are made each with a concavity on its inner side to contain a grooved roller, *s*, which is fitted to turn on the pin *p* between the said disks. *r* is a nut fitted to a screw-thread on the pin *p* for screwing the clamps up against the needle-arm or against a shoulder on the pin, and so pressing the clamps

together. The needle-thread is conducted on its way from the spool which supplies it to the needle between the clamps *q q* and one or more times round the roller *s*. As the thread is drawn between the clamps in the operation of making the stitch it passes round the roller *s*, which turns on the pin *p*, but yet contributes in a great degree to the production of the necessary tension, while the friction of the clamps upon the thread, which is greater or less according as the clamps are screwed up more or less tightly, makes up the requisite degree of tension. By the use of the roller and the friction-clamps combined in this way we find that the varying thickness of the thread has less effect and a more uniform tension is obtained than when a roller alone or clamps alone are used.

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination of the wiper *J*, the rising and falling upright rock-shaft *J'*, the arm *J''*, rod *L*, and inclined plane *j* with the needle-lever *D E* and feeding-slide *I*, substantially as herein described, to produce the necessary movements of the feeding-slide by means of the needle-lever.

T. J. PENNY.

WM. B. BOTSFORD.

Witnesses:

NEAL POWER,

D. H. HOLLIDAY.