2 Sheets—Sheet 1.

T. E WEED.

Sewing Machine.

No. 12,011. Patented Nov. 28, 1854.

Fig. 1

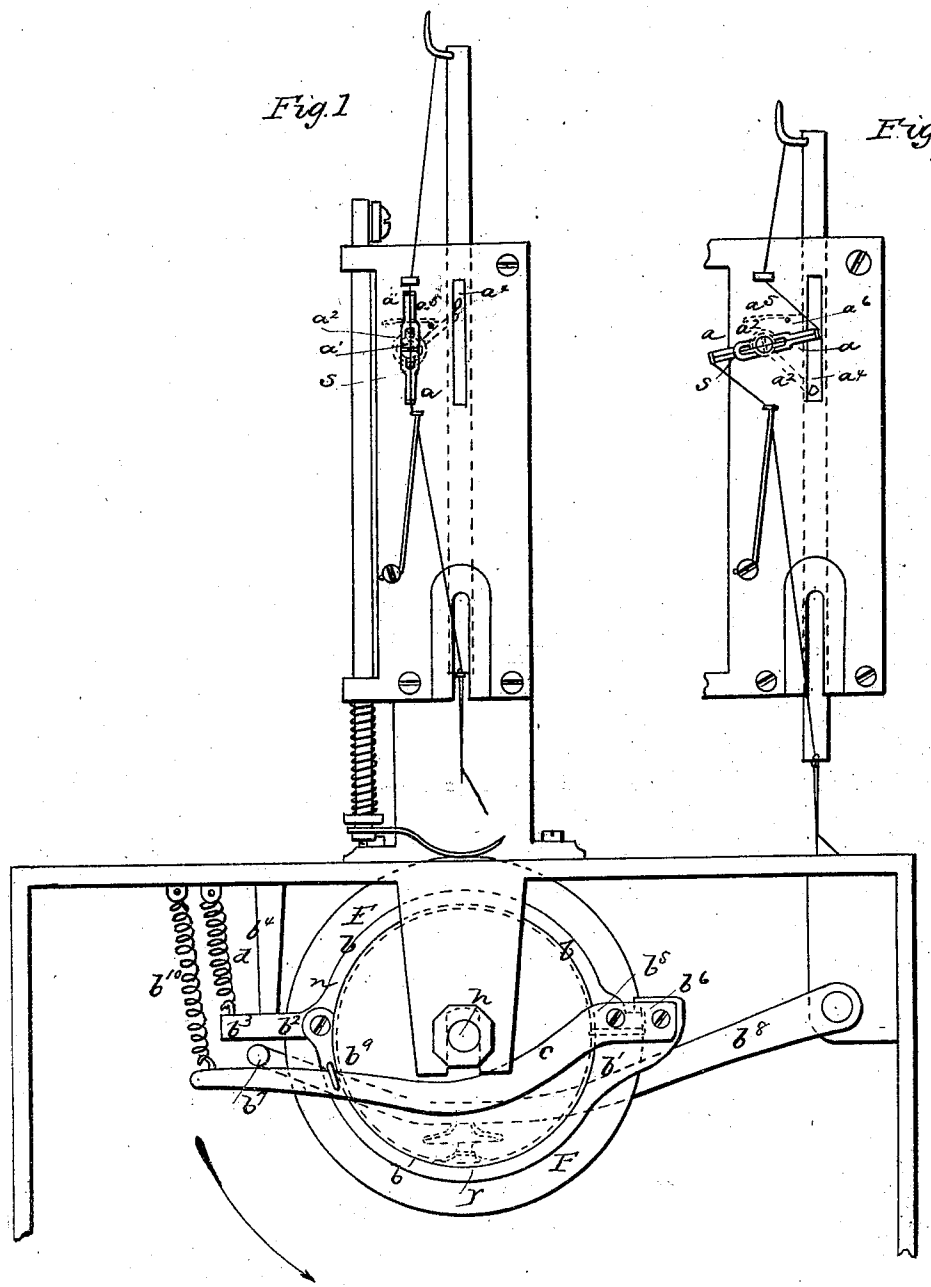


Fig. 2

2 Sheets—Sheet 2.

T. E WEED.

Sewing Machine.

No. 12,011. Patented Nov. 28, 1854.

Fig. 4

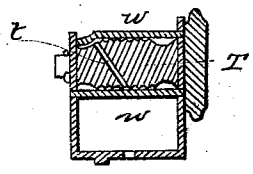
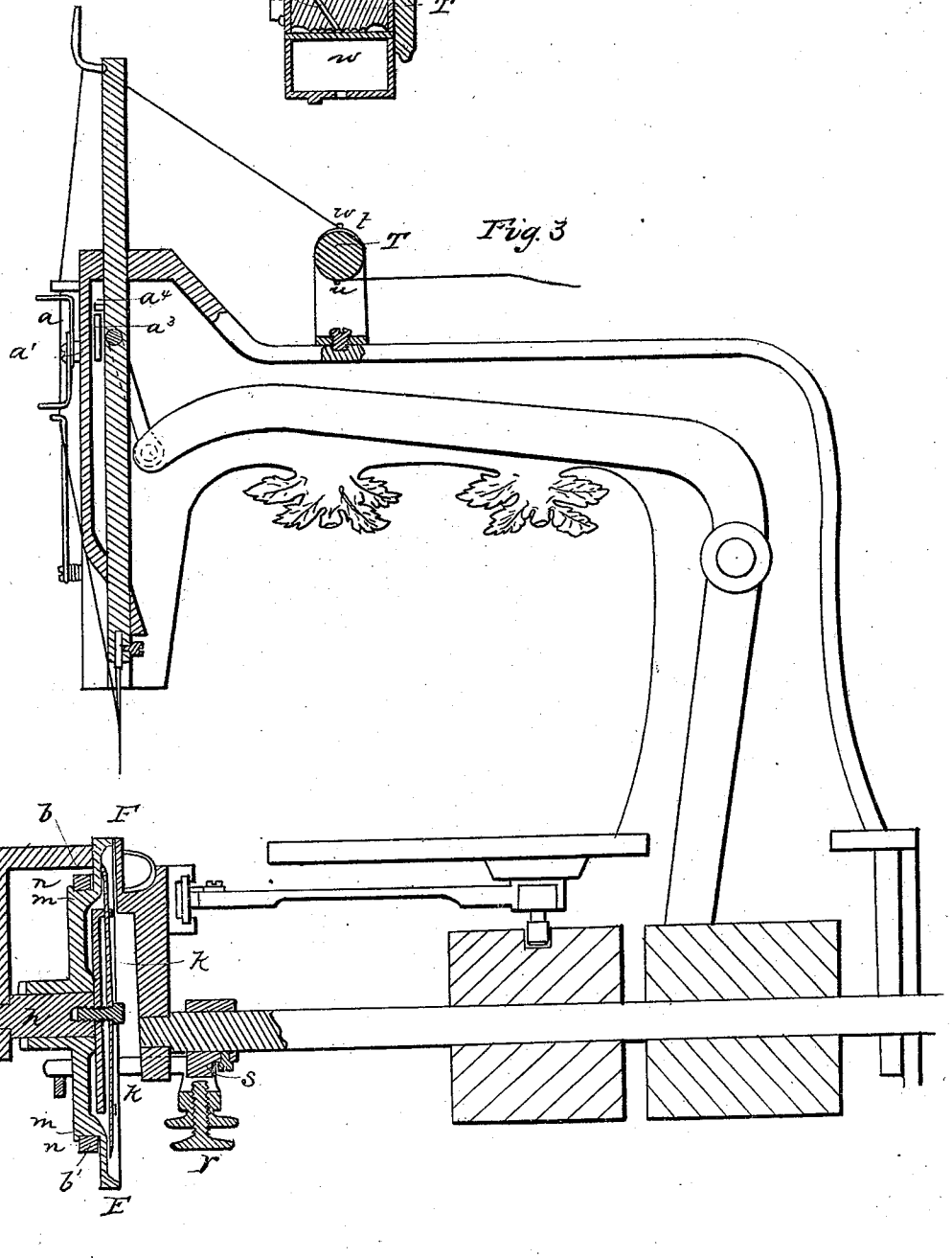


Fig. 3



UNITED STATES PATENT OFFICE.

THEODORE E. WEED, OF WILLIAMSBURG, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **12,011**, dated November 28, 1854.

To all whom it may concern:

Be it known that I, THEODORE E. WEED, of Williamsburg, in the county of Kings and State of New York, have invented certain Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known, and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, of which—

Figure 1 is a front view of the machine; Fig. 2, a side elevation; Fig. 3, a detached view of a part of the machine, and Fig. 4 a section of the tension-cylinder.

My invention consists in certain improvements in sewing-machines. First, I provide a means of controlling the thread during the descent of the needle, so as to keep the thread clear from the point of the needle. In all sewing-machines a difficulty is experienced from the thread falling loosely about the point of the needle on its downward motion, which makes very irregular stitches and often cuts off the thread. Various modes of friction have been used to control the thread, but have been found to be very imperfect, operating in such manner that the thread is liable to break at any moment. These difficulties I remedy entirely without friction by the means hereinafter described.

I will now proceed to describe the means by which I carry into effect the above improvement.

The device for controlling the thread during the downward motion of the needle I call the "vibrating spring-fly," and is shown in Figs. 1, 2, 3 at *a a*, which are two arms secured to a shaft, *a'*, which shaft is connected with a spiral spring, a^2, which tends to keep the fly in place and in the position shown in Figs. 1 and 3. Attached to the shaft *a'* is an arm, a^3, by which the fly is vibrated back and forth, the arm being carried down by the projecting pin a^4, attached to the needle-bar. Attached to the frame is a spring, a^5, which is checked by the pin a^6, and the office of which is to yield back as the needle-bar moves, so as to allow the pin a^4 to pass the end of the arm a^3 and to bring it back again to the position shown in Fig. 2. This spring must of course be stronger than the spiral spring a^2, and keeps the arm a^3 in place, so as to be caught by the pin a^4 on the needle-bar in its downward movement. When the arm a^3 has been carried down to the position shown in dotted lines in Fig. 2, it slips over the projecting pin a^4 upon the needle-bar, and then immediately returns to the position shown in Fig. 1, and of course the fly returns with it. In each arm of the fly is a small hole, through which the thread passes, as shown in the drawings, and it will be seen that as the fly turns from its position shown in Fig. 1 it takes the position shown in Fig. 2, and during such change of position the fly takes up the slack-thread that is given out by the downward motion of the needle-bar until the point of the needle enters the material to be sewed, at which time the pin in the needle-bar leaves the lever and the fly resumes its position and leaves the slack-thread free for the shuttle to pass through. Whatever amount of slack there may be till the point of the needle enters the cloth can be taken up by adjusting the length of the arms *a a*, one of which, it will be seen from the drawings, is provided with a long slot, *s'*, so as to set it out or in, and thus vary the stretch of the fly.

The cloth-feeder is made as follows: F is the feed-wheel, turning loosely upon the shaft *h*, but kept in place and sufficiently restrained by the action of spring *k* bearing against it. Upon the face of the feed-wheel opposite to that pressed upon by spring *k* is a swell or boss, *m*, the periphery of which is grooved at *n* to receive the bands *b b'* of the friction-clutch. These bands are pivoted at b^2, and the band *b* is continued out into arm b^3, which is held against check b^4 by spiral spring *d*. The lever *c* is pivoted to bands *b b'* at the points b^5 b^6. The lever *c* is moved in the direction of the arrow by the pin b^7, projecting from the cam-lever b^8, and back to its position against check-pin b^9 by the spiral spring *d*, spring b^{10} acting meanwhile to open the clutch. As the lever *c* is moved forward it brings together the bands *b b'*, binds them upon the feed-wheel, and then carries the feed-wheel round the space required. The pin b^7 on the cam-lever then allows the lever *c* to retreat, and the clutch is loosened and returns to take another hold. The tension of spring *d* must be so adjusted with reference to the action or pressure of the clutch-bands through the lever *c* on

the feed-wheel that the spring shall hold back the clutch and feed-wheel until the clutch has its full bite upon it. The length of feed at each stroke is adjusted by the set-screw *r* in the cam-lever pressing upon the cam *s*. The friction of the thread is regulated by giving to it more or less turns over the friction-cylinder T. This cylinder has a screw-thread or spiral grooves upon its surface, and a hole, *t*, made diagonally through it. Above and below the cylinder are two guards, *w w*, which confine the threads in the grooves and keep them from overriding. The thread as it comes from the spool is passed through the hole *t*, and as the cylinder turns round it winds the thread in opposite directions on each side of the perforation, and thus regulates the amount of friction upon the thread. The advantage of this mode of producing friction is the uniform delivery of the thread from a smooth surface in the direction of a tangent, which is not the case where the thread emerges from a hollow axis.

What I claim as my invention is—

The vibrating spring-fly *a*, whether adjustable or not, for taking up the slack of the thread during the descent of the needle and releasing the thread as the needle enters the cloth, substantially in the manner set forth.

T. E. WEED.

Witnesses:
T. CAMPBELL,
CHAS. G. PAGE.