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C. O. CROSBY.

Sewing Machine.

No. 25,885. Patented Oct. 25, 1859.

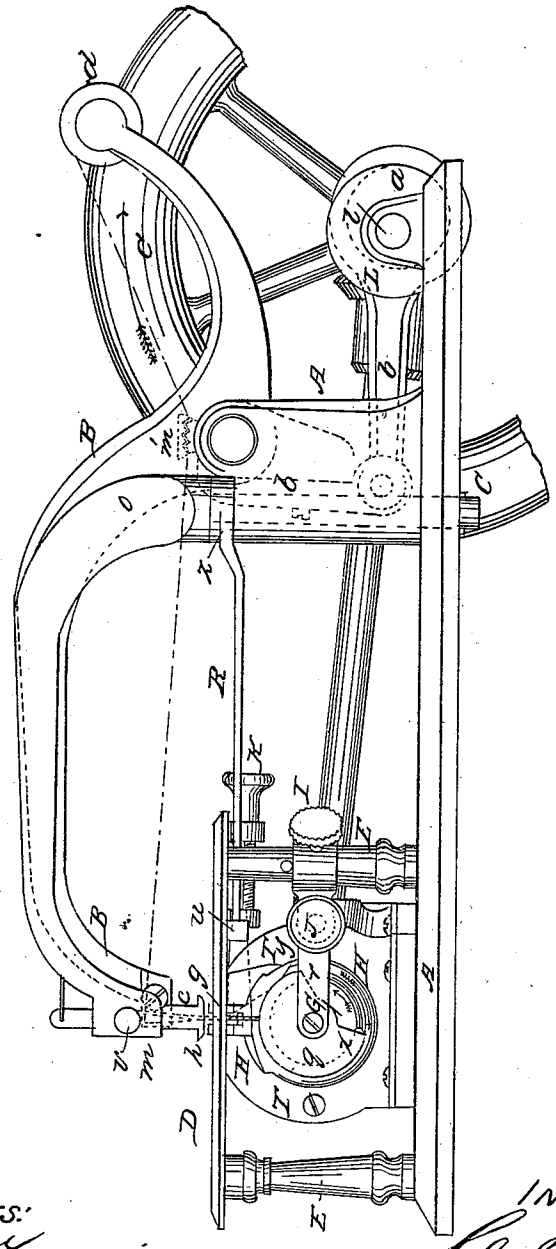

Fig. 1.

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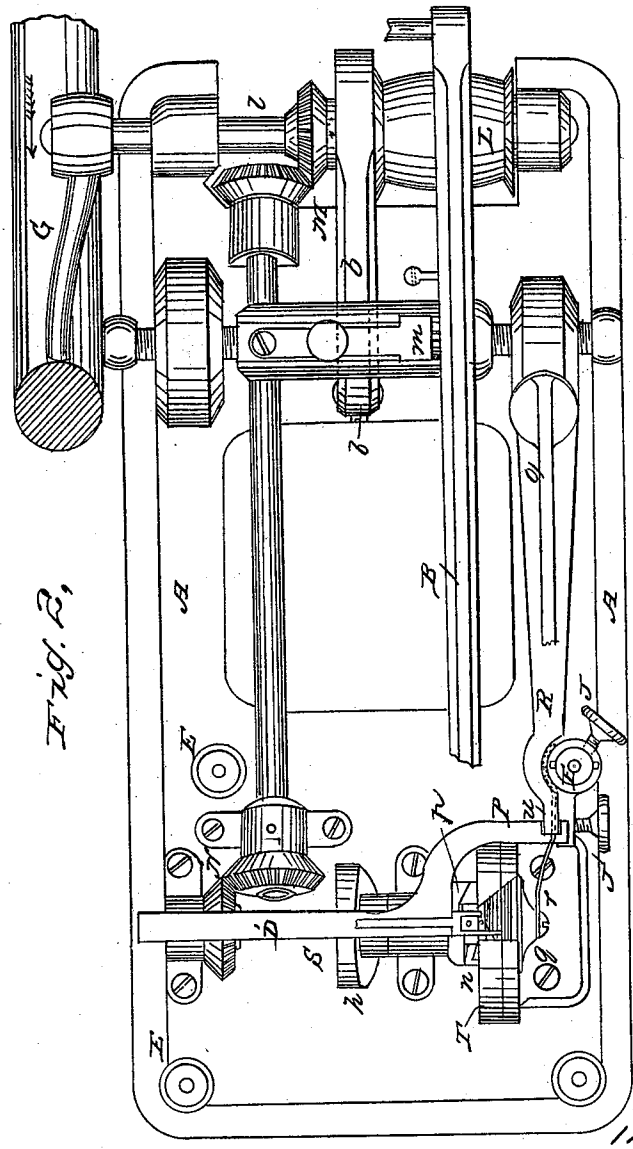

Fig. 2.

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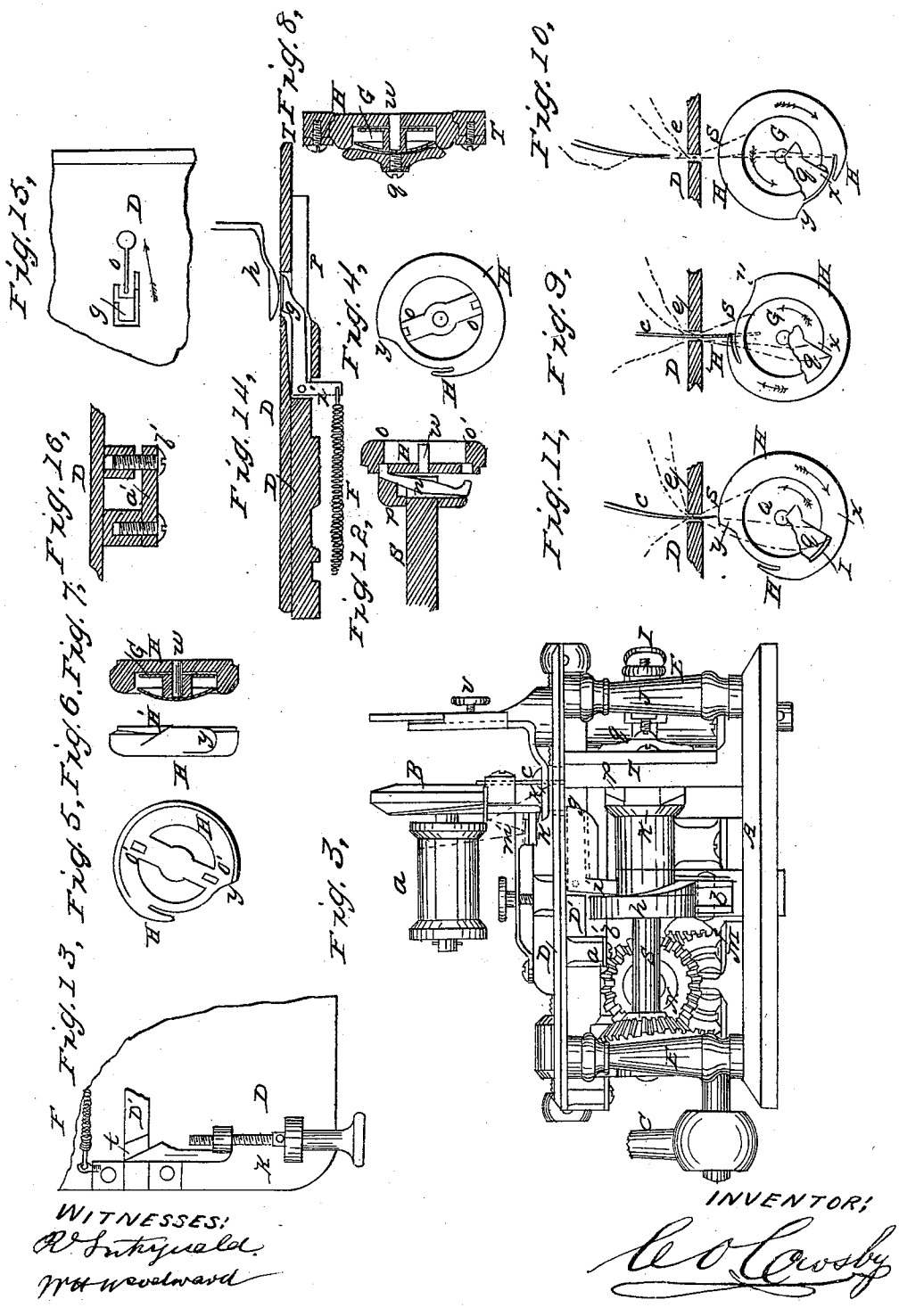

UNITED STATES PATENT OFFICE.

CHAUNCEY O. CROSBY, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **25,885**, dated October 25, 1859.

To all whom it may concern:

Be it known that I, CHAUNCEY O. CROSBY, of the city and county of New Haven, in the State of Connecticut, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction, character, and operation of the same, reference being had to the accompanying drawings, which make a part of this specification, in which—

Figure 1 is a side view of the machine in plan. Fig. 2 is a bird's-eye view of the same with the table or platform removed, showing the bevel-gearing, &c. Fig. 3 is a view taken from the left-hand end of Figs. 1 and 2, showing the cam-shaft S, &c. Fig. 4 is a view of the bobbin-case or bobbin-holder on its front or outer side. Fig. 5 is a view of the same reversed. Fig. 6 is an edge view of the same. Fig. 7 is a section of the same cut through the center to show the position of the bobbin G in the case and its space for the thread. Fig. 8 is a bird's-eye view of the same, showing the bobbin G and the cushion or buffer *q*. Figs. 9, 10, and 11 are plans of the same, showing three different positions of the needle, and also three different positions of the loop of the needle-thread while passing over the bobbin-case and bobbin to form the lock-stitch. Fig. 12 is a plan of the stationary cam which vibrates the rocking lever, which revolves the bobbin-case with the loop-spreader. Fig. 13 is a view of a portion of the table or platform turned over, showing the method of regulating the length of the feed. Fig. 14 is a longitudinal section of the feeding-bolt cut vertically through the feeding apparatus and table. Fig. 15 is a bird's-eye view of a portion of the table in its proper horizontal position, showing a part of the feeding apparatus as it passes through the table, and also the passage for the needle. Fig. 16 is a view of the box and adjustable friction-cap for regulating the amount of friction on the feeding-bolt D', Figs. 2, 3, 13, and 14.

The operation of my machine consists in the method of forming the lock-stitch by the use of a projecting point or loop-spreader attached diagonally to the periphery of the bobbin-case, which case is revolved (in proper guides) by the rocking lever on the shaft of the cam which operates the feed motion, and is rocked by a stationary cam, so that its two extremities alternately pass into mortises in the bobbin-case, so as to allow the thread to pass and the loop to be carried over the bobbin-case and bobbin which carries the second thread, and in the method of drawing up the stitch by the joint action of the loop-spreader and needle, and in the method of feeding the cloth by the use of smooth surfaces, (having a positive motion,) seizing the cloth between them and carrying it the desired distance, and then releasing it, while these surfaces are self-regulating as to the thickness of the cloth, as it may vary, without spring or elastic pressure.

I make the frame A A of cast-iron or any other suitable material, and mount it in the usual way.

I make the needle-bar of iron or any other suitable material, substantially in the shape shown at B B, Fig. 1. I work this needle-bar B B by means of an eccentric, (shown in dots at *a*, Fig. 1,) which acts on the jointed elbow-shaped lever *b b*, Figs. 1, 2, and 3, by revolving the shaft *l* in the direction indicated by the dart on the fly-wheel C, Fig. 1, which communicates to the needle *c* a curvilinear vibrating or reciprocating motion.

I use the ordinary eye-pointed needle, as shown at *c*, Figs. 9, 10, and 11, to carry that one of the threads (as shown by red lines) which passes from the spool or bobbin *d*, Figs. 1 and 3, through proper guides, like *m*, Figs. 1 and 3; and I apply the necessary friction to produce the proper tension by means of the spring and jaws *m'*, Figs. 1, 2, and 3.

I make the table or platform D, Figs. 1, 3, 9, 10, 11, 13, 14, 15, and 16, of cast-iron, or any other suitable material, and mount it on pillars, as shown at E E, Figs. 1 and 3. Through this table or platform D, I make a slot or space, substantially of the shape shown at *e*, Fig. 15, and indicated in Figs. 9, 10, and 11, through which the needle works to carry the thread through the cloth, so that the loop may be formed below.

I make two other slots or mortises, as shown at *g*, Fig. 15, through which two pieces with smooth surfaces work to assist in feeding the cloth, as shown at *g*, Figs. 15 and 1, one of which pieces is shown in full at *g*, Figs. 14 and 3. These two pieces *g* are raised to the position shown in Fig. 1 by the operation of the cam *h*, Figs. 2 and 3, on the elbow-shaped lever *i*, Figs. 14 and 3, and then, by the con-

tinued operation of the cam, they are moved in the direction indicated by the dart in Fig. 15, and they are thrown downward and moved in the opposite direction by the spiral spring, (shown at F, Figs. 13 and 14,) acting on the same elbow-shaped lever *i*, Figs. 14 and 3; but these downward and backward movements may be effected by an adjustable cam instead of a spring.

The other portion of the feeding apparatus is the foot *k*, Figs. 1, 3, and 14, (also with a smooth surface,) which I adjust to a suitable height above the table D, and secure it in a permanent and rigid manner by a set-screw, as shown at *v*, Figs. 1 and 3, and this foot *k* is moved horizontally with the pieces *g* to feed the cloth by means of the curved bar O, Fig. 1, which is worked by the curved arm P, acting on the bar R, as shown at *u*, Figs. 2 and 1, which gives the foot *k* the same extent of horizontal motion, and causes it to move at the same time with the pieces *g*, Figs. 13, 14, and 15. I regulate the amount of friction on the feeding-bolt D′ by the friction-cap *a′* and screw *b′*, Figs. 16 and 3.

I make the bobbin case or holder H with a broad circle and two arms or spokes, substantially as shown in Figs. 4 and 5, with a sufficient recess to receive the bobbin G, and a pin or stud, *w*, in the center as an axis for the bobbin, all as shown in section in Figs. 7, 8, and 12. On the periphery of this circle H, I have a projecting point or loop-spreader in the form of an inclined plane, as shown at H′, Figs. 6, 1, 4, 5, 9, 10, and 11, which in its revolution receives the loop at the needle, as shown in Fig. 9, spreads it, and carries it over the bobbin, as shown in Fig. 10, and releases it, as shown in Fig. 11. I place this bobbin-case H opposite the end of the cam-shaft S, Figs. 2, 3, and 12, and secure it in suitable guides, as shown at T, Figs. 1 and 8, (and indicated in Figs. 2 and 3,) in such a manner that the extremities of the rocking or vibrating lever *n*, Figs. 2, 3, and 12, may alternately pass into the mortises *o* and *o′*, Figs. 4, 12, and 5, in the arms or spokes of the bobbin-case H, and thus cause the loop-spreader H′ to pass round to take up the loop, carry it over the bobbin G, and release it, all as represented in Figs. 9, 10, and 11. I work this bobbin-case H by the rocking or vibrating lever *n*, Figs. 2, 3, and 12, (which is attached to the end of the cam-shaft S and works on a fulcrum-pin, as shown in Figs. 2, 3, and 12, and revolves with the shaft,) the extremities of which are caused to act alternately (similar to the pallets of a clock) in the mortises or slots *o* and *o′*, Figs. 12, 4, and 5, by means of the stationary cam *p*. (Shown in Figs. 2, 3, and 12.)

I make the bobbin G substantially as indicated in Figs. 7, 8, 9, 10, and 11, the space for the thread being shown at G, Figs. 7 and 8. I place this bobbin G on a pin or stud, *w*, (as an axis,) in the open space or recess in the bobbin-case H, as shown in Figs. 7, 8, 9, 10, and 11, which pin or stud *w* holds it in its place, and on which it is revolved (by drawing off the thread) in the direction opposite to the rotation of the bobbin-case H, as indicated by the darts in Figs. 1, 9, 10, and 11.

I make the buffer or cushion *q*, Figs. 1, 2, 3, 8, 9, 10, and 11, substantially in the form shown in Fig. 1 and in cross-section in Fig. 8. This serves not only to apply friction to the bobbin G to regulate the tension on the thread, but it also has an inclined plane terminating in a point, (seen at *x*, Figs. 1, 9, 10, and 11,) which stops or detains the loop as it is passing over the face of the bobbin G and holds it until the bobbin-case has arrived at the position shown in Fig. 11, when that part of the loop which was behind the bobbin-case, and which is indicated by dots in Fig. 10, will be drawn through the space between H′ and *y*, as shown in Fig. 11, at which time the loop will be between the bobbin G and the buffer *q*, when the loop will slip from the small inclined plane, terminating in a point at *x*, Fig. 1, and be drawn up between the face of the bobbin and the inner side of the buffer *q*, as indicated in Fig. 11, and a perfect lock-stitch will be formed. I secure this buffer *q* in its proper place by the thumb-screw I, Figs. 1, 2, and 3, in the collar of the spring-arm *r*, to which the buffer is attached, and this spring-arm may be more definitely adjusted by the thumb-screw J, Figs. 1, 2, and 3.

I regulate the length of the stitch by a set-screw, K, by means of two inclined planes, as shown at *t* and D′, Fig. 13. Thus by turning the screw K backward—that is, over toward the left—it will move the piece *t* in the direction indicated by the dart, so as to stop the feeding-bolt D′ sooner and leave it less room to travel, and thereby shortening its motions and the stitch, and vice versa I wind one of the threads (the needle-thread) on the spool or bobbin *d*, Figs. 1 and 3, (or place a common spool of thread there,) and pass the thread through the guides *m* and *m′* and the eye of the needle. I wind the other thread on the bobbin G, as indicated at *s*, Figs. 9, 10, and 11. (The space which receives the thread is shown in section at G in Figs. 7 and 8.) I draw out this last thread sufficiently to insure the first stitch, after which the machine will regulate the whole.

I put the machine in motion by means of a band on the pulley L, Figs. 1 and 2, which is on the shaft *l*, which works two pair of bevel-gear wheels at *m* and *n*, as shown in Fig. 2, (the pulley being revolved in the direction indicated by the dart on the fly-wheel C,) which communicate a reciprocating motion to the needle-bar B B and a rotary motion to the cam-shaft S, which revolves the cam *h*, Figs. 2 and 3, and the rocking lever *n*, Figs. 2, 3, and 12, which carries the bobbin-case around to form the loop, and finally to complete the stitch. When the needle is forced down to the position shown in Fig. 9, the projecting point or loop-spreader H′ (as there shown, and from the inclined form of the spreader H′, as shown

in Fig. 8,) will spread the loop, so that one part will pass over the bobbin, while the other part will pass behind the bobbin-case H, as shown in full lines and in dots in Fig. 10, and as the case H continues to be carried round the loop is stopped or detained by the inclined plane, terminating in a point, *x*, of the buffer *q*, and when the case H arrives at the position shown in Fig. 11 that part of the loop which was behind the case H will be drawn over through the space between H′ and *y*, when both sides of the loop will be in front of the bobbin, and the loop will slip from the small inclined plane, terminating in a point on the buffer, (shown at *x*, Fig. 1,) and be drawn up between the bobbin and the buffer, as indicated in Fig. 11. The loop will be drawn up by the joint action of the projecting point or loop-spreader H′ (on the next loop,) and the needle *c*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The rotary bobbin-case H, (armed with the inclined loop-spreader H′, and supporting on a pin, *w*, in its center, the bobbin G, which holds one of the threads,) in combination with the loop-detainer *x*, when the whole is constructed, arranged, and made to operate substantially as and by the means herein described.

2. The method of detaining the loop of the needle-thread, after the loop has passed the full diameter of the bobbin-case, by the projection and inclined plane terminating in a point on the buffer.

3. The frame or form composed of the curved bar O, bar R, and foot *k*, in combination with the bolt D′, elbow-shaped lever *i*, (carrying the pieces *g*,) and friction-cap *a*′, when the whole is constructed, arranged, connected, and made to feed the material substantially as herein described.

C. O. CROSBY.

Witnesses:
R. FITZGERALD,
E. CRAIG.