3 Sheets—Sheet 1.

S. C. BLODGETT.

Sewing Machine.

No. 21,465. Patented Sept. 7, 1858.

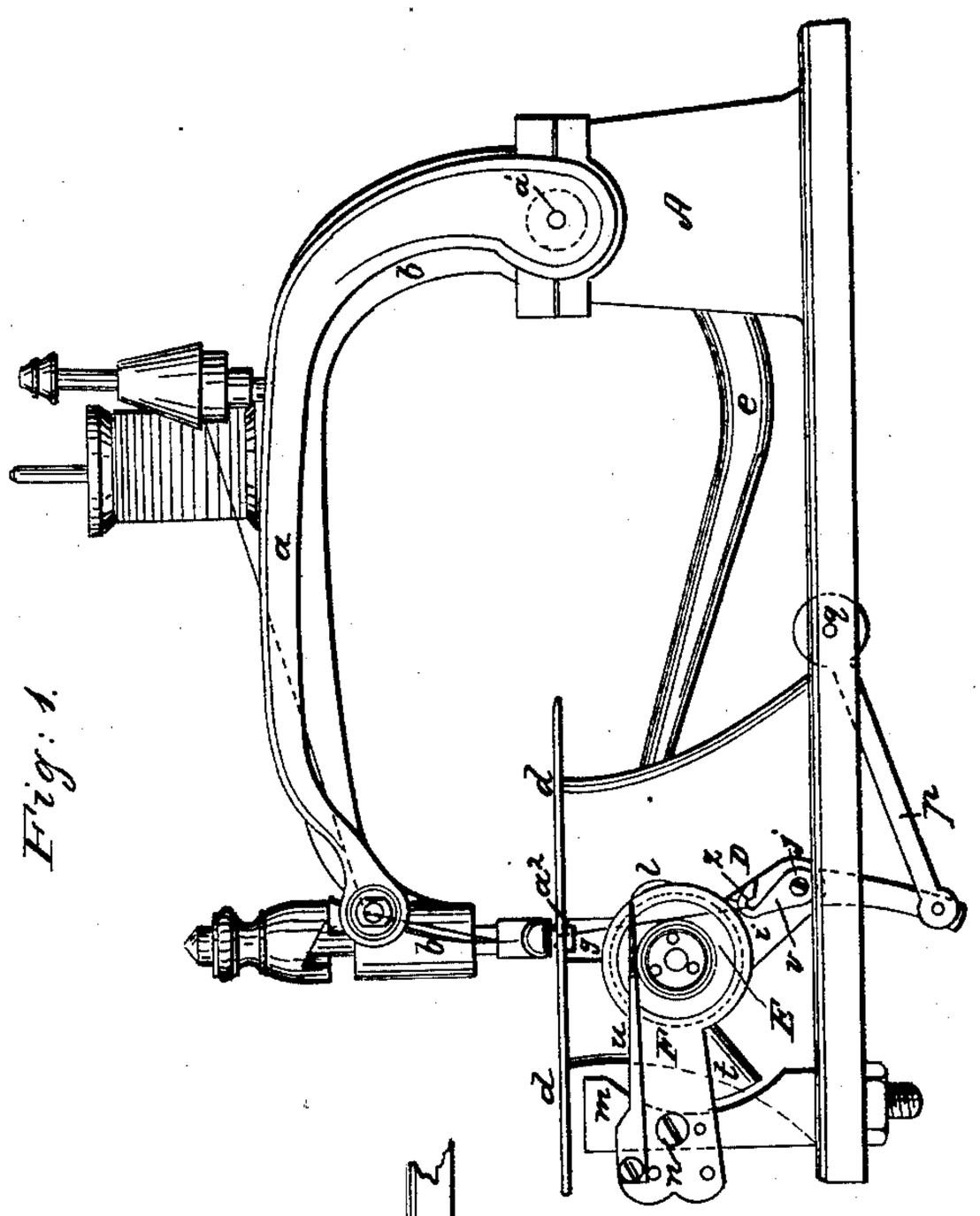


Fig. 1.

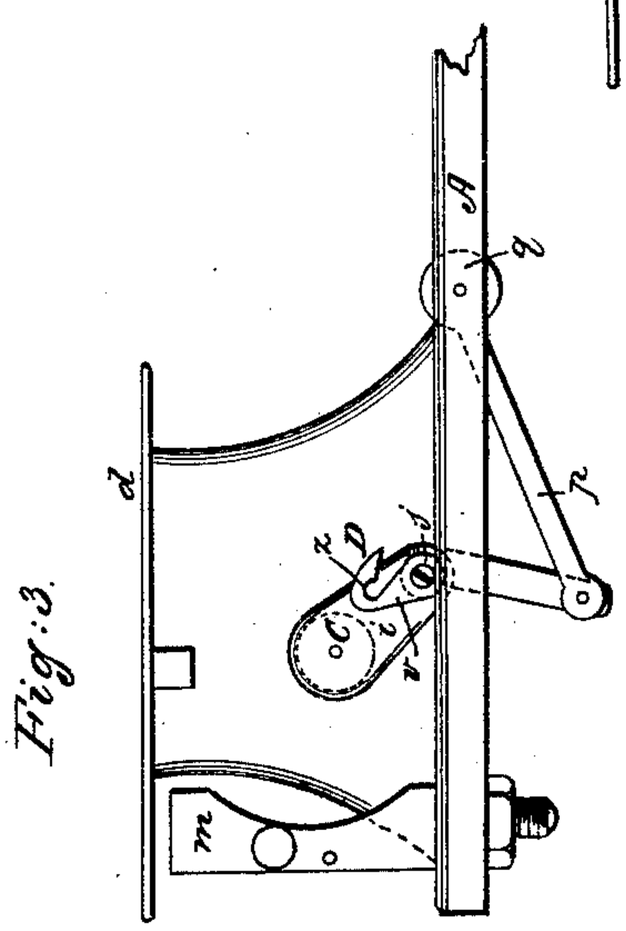


Fig. 3.

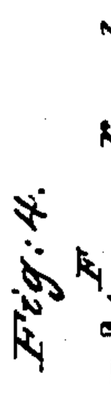


Fig. 4.

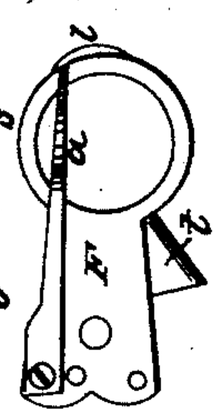


Fig. 5.

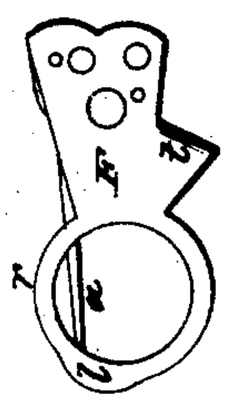


Fig. 6.

S. C. BLODGETT.

Sewing Machine.

No. 21,465.

3 Sheets—Sheet 2.

Patented Sept. 7, 1858.

Fig. 2.

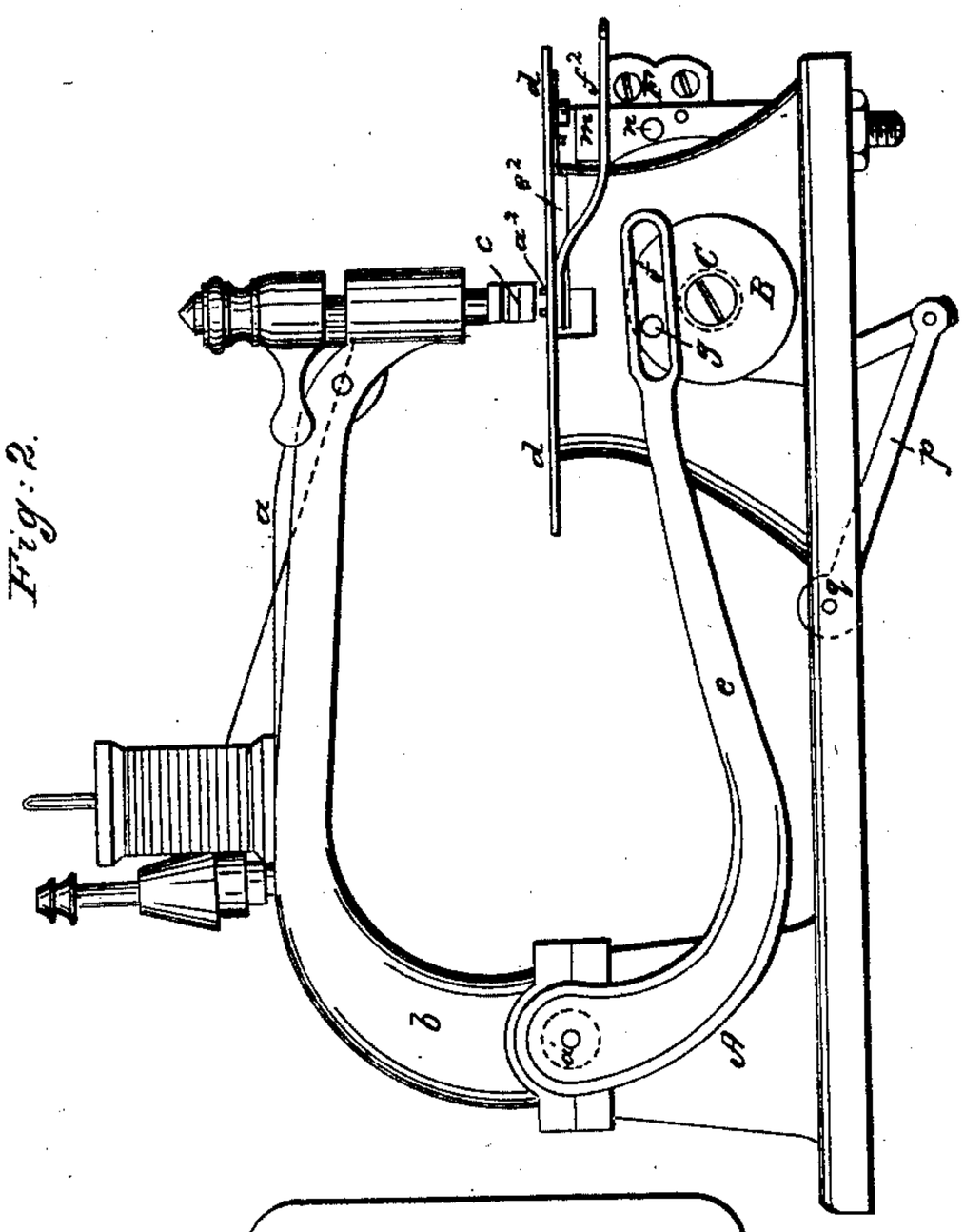
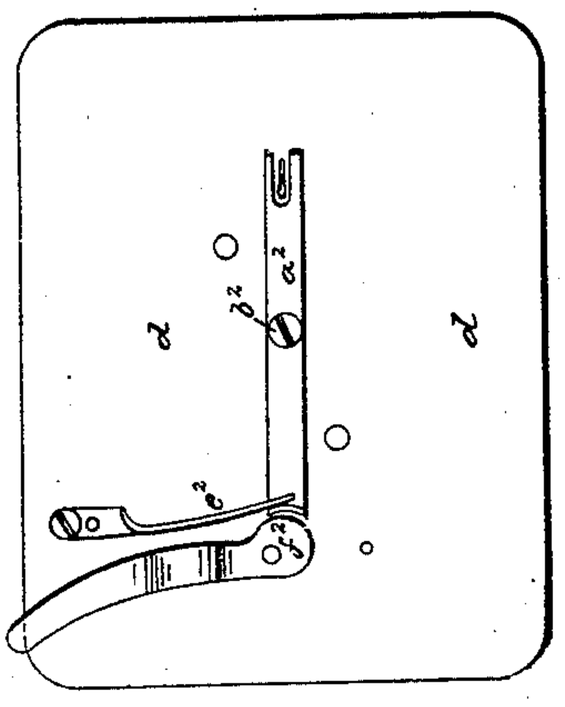


Fig. 1.



3 Sheets—Sheet 3.

S. C. BLODGETT.

Sewing Machine.

No. 21,465. Patented Sept. 7, 1858.

Fig: 12.

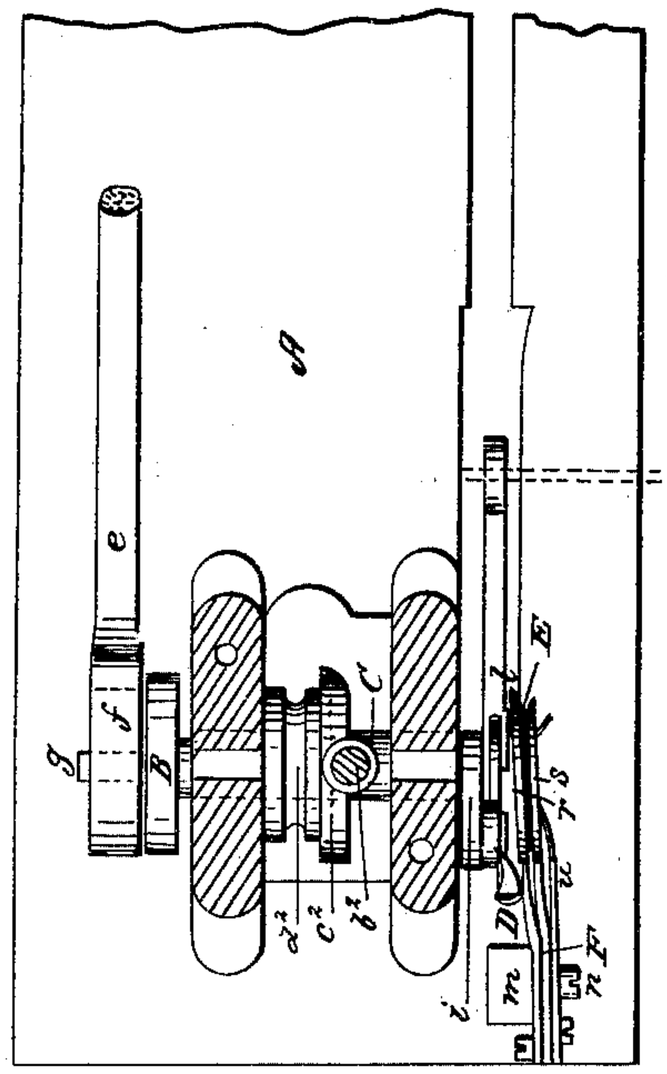


Fig: 13.

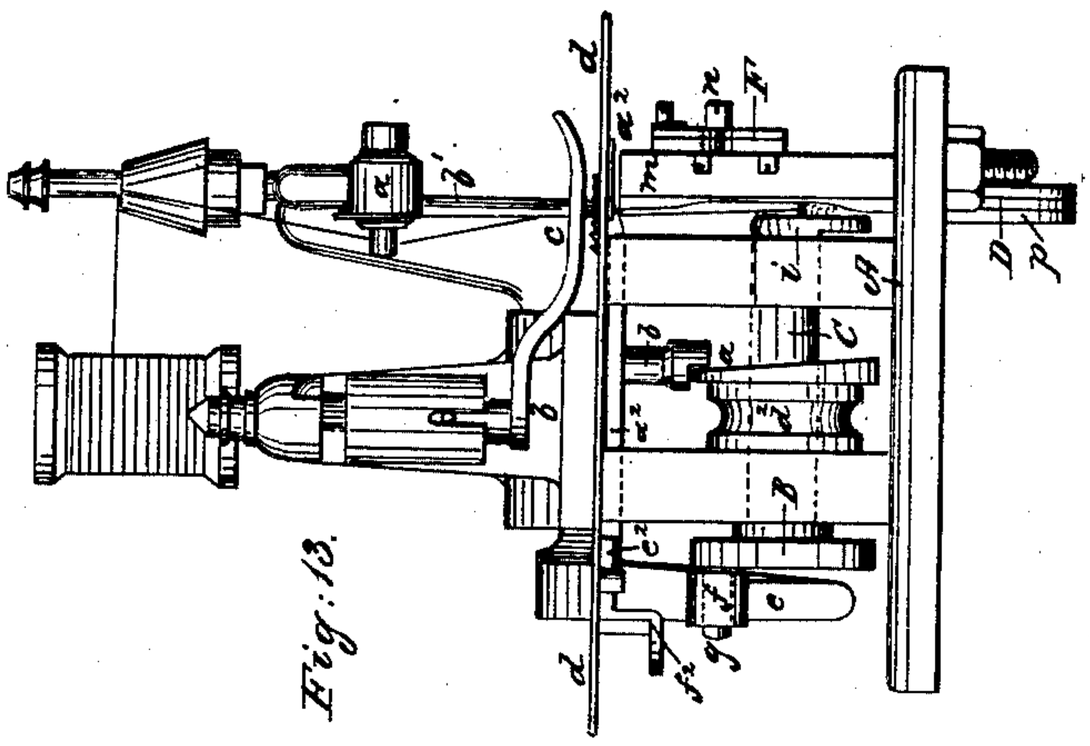


Fig: 11.

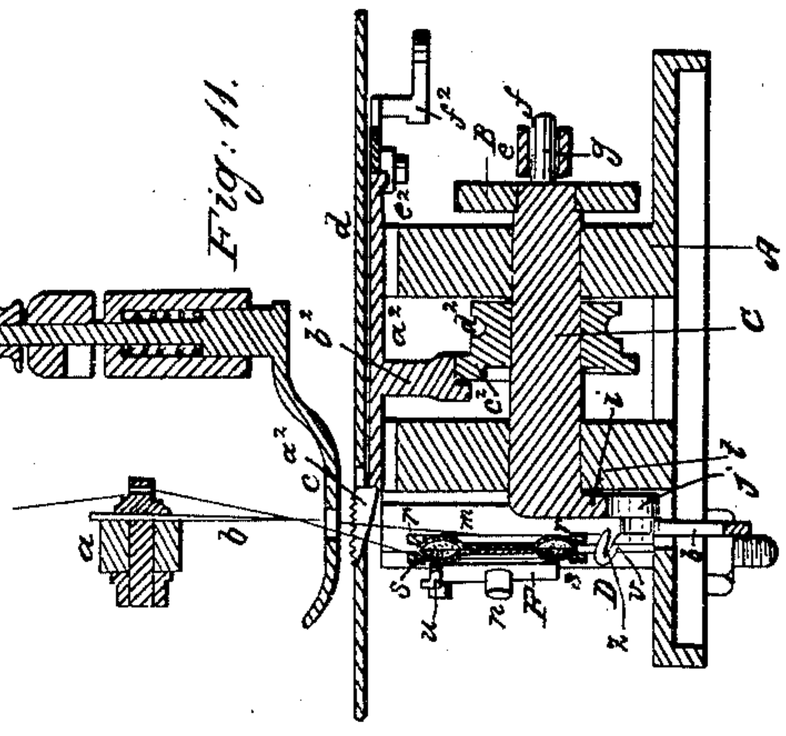


Fig: 7.

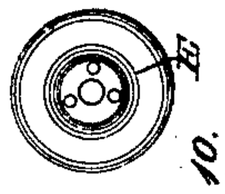


Fig: 8.

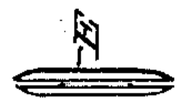


Fig: 10.

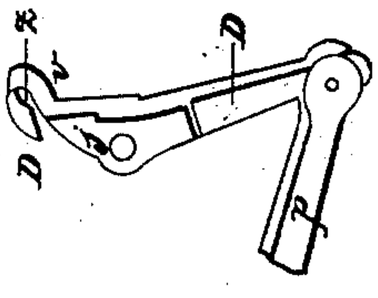
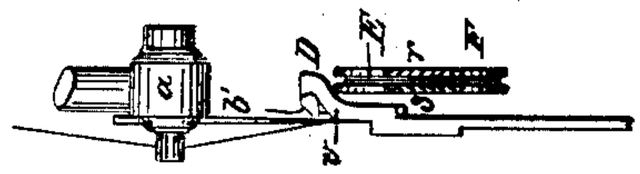


Fig: 9.



UNITED STATES PATENT OFFICE.

S. C. BLODGETT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO GEORGE B. SLOAT, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **21,465**, dated September 7, 1858.

To all whom it may concern:

Be it known that I, SHERBURNE C. BLODGETT, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improved Sewing-Machine; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, in which--

Figure 1 is an elevation of one side of the machine. Fig. 2 is an elevation of the opposite side of it; Fig. 3, a side view of the table, the hook, and the mechanism for operating the latter. Fig. 4 is a top view of the bobbin-holder and its auxiliary spring. Fig. 5 is a front view of the said bobbin-holder and spring. Fig. 6 is a rear elevation of it. Figs. 7 and 8 are side and edge views. Fig. 9 is an edge view of the hook, bobbin, and the needle. Fig. 10 is a rear view of the hook. Fig. 11 is a transverse and vertical section of the machine, such being taken through the needle. Fig. 12 is a horizontal section taken just above the bobbin-holder, and so as to exhibit the relative position of the bobbin-holder and the hook while the latter is raising up alongside of the bobbin-holder. Fig. 13 is a front end elevation of the machine; and Fig. 14 is an under side view of the top plate of the table, the feeder, and the spring and cam-lever thereof.

The said machine is calculated to perform sewing in cloth or other material by the conjoint operations of a needle, a bobbin, and a device or contrivance for seizing a loop formed by the needle and drawing it around the bobbin in such a manner as to cause the said bobbin to pass through the loop and carry a thread through it.

I am aware that a machine to perform sewing in such manner is not new; and therefore my invention relates to certain improvements thereon, or what may be termed an "improved machine" of such character.

The nature of my invention is as follows—that is to say, it consists in an improved mode of operating the hook about the bobbin—viz., with a compound motion produced by a crank and an arm or by two cranks, whereby the point of the hook is made to travel either in an elliptical or a circular path without being reversed or made to point upward and downward during its rotation; also, in a particular mode of constructing the hook.

In the drawings, A denotes the frame of the machine as carrying a table, *d*. From this frame an arm, *b*, extends upward and supports a cloth-presser, *c*, whose office is to press the cloth down upon the bed or toward the feeder. This feeder consists of a toothed slide-bar, a^2, projecting through the top plate of the table and under the presser. A notched foot, b^2, extending down from the feeder, rests on the periphery and against the side of a cam, c^2, applied to a driving-pulley, d^2. This cam should be properly formed to impart to the feeder not only an upward movement toward the cloth, but a forward movement, such as will feed the cloth along. A spring, e^2, applied to the rear end of the feeder and to the table, serves to retract the feeder, the amount of retraction being governed by a cam-lever, f^2. Furthermore, on one end of a shaft, a', is a needle carrier, *a*, and on the other a slotted arm, *e*, the said needle-carrier being made to support the needle b', as shown in Figs. 1 and 9. The arm *e* is constructed with a slot, *f*, for the reception of a round stud, *g*, projecting from a crank-wheel, B, as shown in Fig. 2, such crank-wheel being fixed upon one end of a horizontal shaft, C, carrying a wrist or crank, *i*, and arranged below the top of the table *d*, as shown in the drawings. This wrist or crank *i* supports the hook D, which turns freely on a screw-pin, *j*, projecting from the said crank *i*. In the drawings this hook is represented as constructed in the form of a lever, and with its longer or lower arm jointed to an arm, *p*, turning vertically on a joint-pin or center, *q*, arranged as shown in the drawings.

The bobbin is represented at E as constructed of two thin plates or disks made concavo-convex, and riveted together at or near their centers. This bobbin is supported within a holder, F, which is sustained in position by a post, *m*, such holder being made to project horizontally from the said post and to be confined thereto by a screw, *n*. This bobbin-holder is constructed of two parts, *r s*, respectively termed "back" and "front" supporters, each consisting of a thin ring and a plate projecting from it, as shown in the drawings, the back supporter, *r*, being formed with a cast-off or

projection, *t*, or its equivalent, to operate in a manner to cast off the loop from the hook during the rotary motion of the latter. The two supporters *r s* constituting the bobbin-holder should be constructed of thin metal and of a form so as to easily spring apart and permit the bobbin to be inserted between and held loosely by them, or to be withdrawn from them, as circumstances may require. The construction or position of the bobbin-holder with respect to the path of the hook should be such as to enable the said hook, during its upward movement about the bobbin, to pass by the said bobbin-holder. Fig. 12 of the drawings exhibits the arrangement of the bobbin-holder, which is not parallel to what would be the path of the hook, but as inclined thereto. Furthermore, an auxiliary spring, *u*, applied to the bobbin-holder, and constructed as shown in the drawings, is arranged so as to press upon the upper part of the bobbin and force the same toward or up to the back supporter, *r*. Between the two rings of the bobbin-holder the bobbin should fit sufficiently loose to enable a loop of thread to pass on opposite sides of the bobbin and between the rings at one and the same time. A small projection or guide, *l*, extends from the back supporter, *r*, in manner as shown in the drawings, such constituting a lip or guide to cause the thread of the loop to be directed to the bobbin or between the latter and its back supporter. The back of the hook D is notched out obliquely, as shown at *v* in Fig. 3, and has its heel projecting over the bobbin, as shown in Fig. 9, while its point is arranged obliquely or made to stand toward the needle in such manner as to cause it to enter the loop of such needle at the proper time. The arrangement of the heel of the hook—viz., so as to lap over the bobbin—facilitates the passage of the loop on and over the bobbin. By the rotary motion of the shaft C, the hook will be carried around the bobbin, the holder of which should be so formed or arranged as not to obstruct the upward passage of the hook, and such hook, by being controlled in its movements by the crank *i* and the arm *p*, will be caused to travel in an elliptical path around the bobbin without being turned over or reversed, as would be the case were the hook made to project directly from the crank *i*, and not turn on any pin or the equivalent projecting therefrom and separate from the shaft of the said crank. By making the hook to operate with a compound motion in an elliptical path, it is caused not only to be presented to the loop of the needle to good advantage, but during its upward movement it is tripped or tipped a little in a manner very favorable for the discharge of the loop from it, such discharge being rendered certain by the cast-off *t*, against which the loop will be borne by the hook.

In lieu of the arm *p*, I have contemplated the employment of a crank to be jointed to the tail of the hook D, and to be arranged below the crank *i*, and to be of the same size therewith. The employment of two cranks in manner as described would cause the hook to travel in a circular path instead of an elliptical one; but I prefer the employment of an arm, *p*, instead of an auxiliary crank, as for some reason it is much better. The heel part of the hook is notched up obliquely back, as shown at *z*, so as to form an auxiliary hook, which is more perpendicular than the main hook, and is intended to fetch the loop of thread back across the bobbin, which probably could not be done as well with a single and more crooked hook, and perhaps not at all. The object of the main hook is to carry the loop of thread forward and downward, the small hook or notch within the main hook serving to fetch the thread back across the bobbin, this latter being the most delicate and difficult part of the operation, and if not done to good advantage the tension of the thread is effected unfavorably. In connection with this point of the operation the bobbin should be so fitted between the rings as to have room for a lateral and not much perpendicular play room, in order that the loop of thread may pass each side of the bobbin with the least possible friction, so as not to draw down upon the loop unnecessarily hard, and thereby effect tension irregularly and draw the cloth into the slot in the top plate or table.

The operation of the above-described machine is as follows: The shaft C being put in revolution by any proper motor, while revolving it will set in operation the needle and the hook—that is, it will cause to be imparted to the former a reciprocating movement, such as will force it through and withdraw it from the cloth at the proper times, and it will also cause the hook to be moved around the bobbin—that is, in an elliptical path—as described. After the needle may have entered the cloth and been retracted sufficiently to form a loop beneath it, the hook will enter the loop, draw it downward, and spread it open in a manner to enable the bobbin to enter the said loop while the latter is being drawn downward by the hook. At such time part of the loop will be caught by the lip *l* and directed to the rear side of the bobbin, while the other part of the loop will pass on the front side of the bobbin, and as the hook rises upward such hook will be tipped a little, so as to readily pass out of the loop, which afterward will remain at rest until the hook may seize another loop from the needle and draw it downward therefrom, this latter operation causing the loop to be drawn into the cloth. The arrangement or application of the spring *u* to the upper part of the bobbin causes the said part of the said bobbin to be pressed away from the ring of the part *s* in a manner to facilitate the passage of the thread or front part of the loop between the two.

I lay no claim to a shuttle, a needle, and mechanism for operating them in such manner and while they carry separate threads as either to cause the shuttle carrying one thread to

pass through a loop of thread formed and held in cloth or other material by the needle, or to cause the loop of the needle-thread to be seized by a hook and cast around the shuttle in such manner as to carry its thread through the loop, as I am aware that such is not new. Nor do I claim the application of the hook to the bobbin in such manner that such hook shall revolve in a circular path concentric with the axis of the bobbin and be turned over or reversed in position so that it shall be caused to point both upward and downward while making each entire revolution; but

What I do claim is—

1. My improved mode of operating the hook about the bobbin—viz., with a compound motion produced by a crank, *i*, and an arm, *p*, or by two cranks—whereby the point of the hook is made to travel either in an elliptical or a circular path without being reversed or made to point upward and downward during its rotation.

2. The particular mode above described of constructing the hook—viz., so that not only the heel part thereof shall lap over the edge of the bobbin, but the point of the said hook extend obliquely in manner as described, or toward the needle, and so as to operate therewith as explained, and making the said hook with an auxiliary hook or notch, *z*, the same being to operate together as specified.

In testimony whereof I have hereunto set my signature this 25th day of June, A. D. 1858.

SHERBURNE C. BLODGETT.

Witnesses:

M. RUSSELL THAYER.

I. PAUL DIVER.