

(No Model.)

3 Sheets—Sheet 1.

E. KOHLER.
SEWING MACHINE.

No. 301,060.

Patented June 24, 1884.

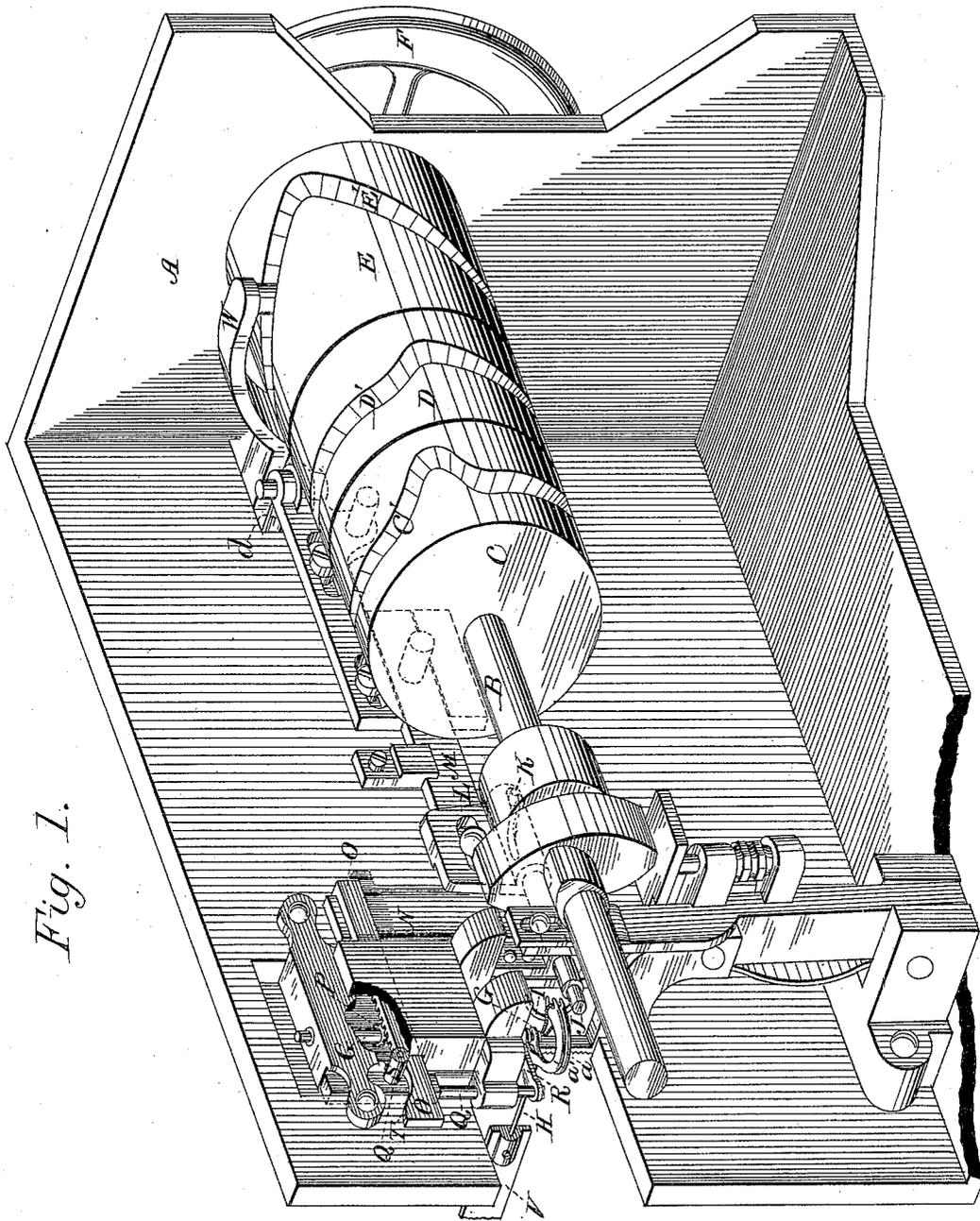


Fig. 1.

Witnesses,
Geo. B. Strong,
J. H. House

Inventor,
Edw. Kohler
By
Dewey & Co.
attorneys

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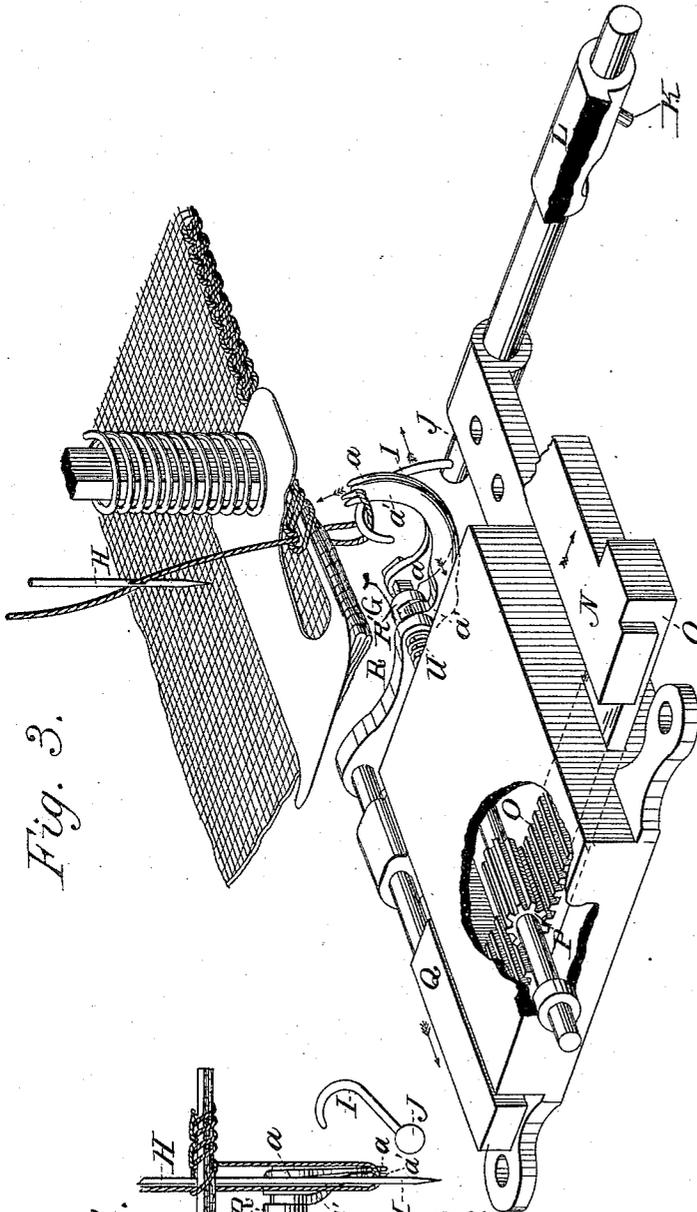


Fig. 3.

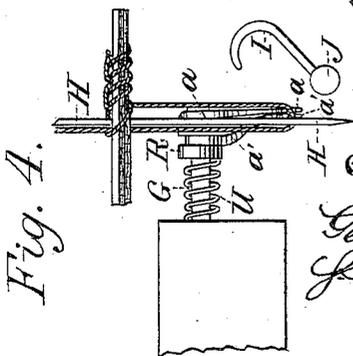


Fig. 4.

Witnesses,
 Geo. H. Strong, Edw. Kohler
 J. H. Young, By
 Duway & Co.
 Attys.

UNITED STATES PATENT OFFICE.

EDWARD KOHLER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE KOHLER SEWING MACHINE MANUFACTURING COMPANY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 301,060, dated June 24, 1884.

Application filed June 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD KOHLER, of Oakland, county of Alameda, State of California, have invented an Improvement in Sewing-Machines; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to sewing-machines, and is especially designed for sewing heavy fabrics, such as carpets, bags, &c.

It consists in certain improvements in detail and in various novel features of construction, which will be more fully described by reference to the accompanying drawings, in which—

Figure 1, Sheet 1, is a view of the machine turned upon its side, so as to show the mechanism beneath in perspective. Fig. 2 is a perspective view of the mechanism above the table, showing the tension devices. Fig. 3 is an enlarged view of the hook below the cloth-plate, the arm for retaining the thread-loop upon the hook as it is carried upward, the needle, and the thread, showing how the stitch is formed. Fig. 4 is a side view showing the hook engaged with the loop of the thread when it is below the table.

The sewing mechanism is mounted upon and beneath a stand or table, A, and consists of a needle and needle-arm, a feed mechanism, and driving-shaft B, having cam-cylinders C, D, and E fixed to it, the whole being driven by power applied to the pulley-wheel F upon the outer end of the shaft.

In my former patent of January 16, 1883, I have shown a threadless hook fixed to a partially-rotating shaft beneath the cloth plate or table in such a relative position to a vertically-reciprocating needle as to enter the loop formed below the plate as the needle descends, and carry said loop above the table (the needle having receded) to a point which allows the descending needle to pass through it and form a stitch, together with the necessary connected mechanism. In my present invention I employ a hook composed of two similarly-curved parts, *a a'*, one part, *a*, being fixed to the outer end of a shaft, G, beneath the table,

while the other part, *a'*, fits a feather or an angular part of the shaft, so as to be turned simultaneously with the part *a*, while it is drawn away from it by a mechanism hereinafter described, so that the two parts lie close together and form a single hook while they are below the table, and when the needle H descends with the thread and forms a loop as it begins its ascent this hook passes through the loop so formed, and begins to carry it upward in the arc of a circle through a slot in the table, so that it is carried over the edge of the fabric into position for the needle to pass through it upon its next descent. Simultaneously with its movement upward the two halves begin to separate sidewise, and thus spread the loop, so that when it has reached a point beneath the needle H the loop will be so spread that the needle passes between the two points *a a'* of the hook. These points again close when they are returned below the table. They have short fingers, as shown, which serve to hold the loop and carry it above the cloth-plate.

I is an arm or guard, which projects from a shaft, J, and is caused by the partial rotation of the shaft to lie across the thread-loop after the hook has taken hold of it, and to follow it in its upward movement so far as to insure its being carried over the edge of the cloth. In my present invention the partial rotation of the shaft J is effected by means of a pin, K, projecting from one side of it, and entering a spiral slot in the guide-plate L, through which the shaft passes, and which is moved back and forth along the shaft by the slide-bar M. This bar is actuated by a cam-slot, C', in the cylinder C. The slide-bar M has an arm, N, projecting horizontally at right angles beneath the table, and this carries the rack-bar O, which engages the pinion P upon the shaft G, carrying the divided hook. The reciprocating movement of the bar O thus causes the shaft G to perform partial rotations alternately in each direction, and thus carry the double hook below and above the cloth-plate. In order to separate the part *a'* from the part *a* as it rotates, a bar, Q, is supported in guides and

boxes at a short distance from and parallel with the shaft G. An arm, R, projects from the bar Q, and its opposite end fits loosely around the shaft G, and has a ring or sleeve, R', which also surrounds this shaft, and is supported at a little distance from the arm by a connecting-bar, r. The part *a'* is fitted to the shaft G between the arm R and sleeve R', and is curved downward, as shown, near the shaft, in order to allow it to perform its rotary movements without striking the bar r. The outer end of the bar Q is flattened, and carries a pin or anti-friction roller, S. The rack-bar O has a curved edge at T, which acts as a cam when the bar O reciprocates, and, passing beneath the roller S, it draws it and the bar Q back, and thus withdraws the part *a'* of the hook, as before described, while it is carrying the thread-loop above the table. As the hook returns beneath the table, the rack-bar O moves so as to leave space for the roller S and the bar Q to move back again. A spiral spring, U, surrounds the shaft G, and, pressing against the side of the arm R, forces it back as soon as the bar Q is released by the cam T, and the part *a'* is returned by it close to part *a*. In this manner the hook is alternately opened and closed while the stitch is being formed.

V is the vertically-moving bar carrying the needle, H, and it is caused to reciprocate by means of a bell-crank lever, W, having its long arm connected with the needle-bar, and its angle fulcrumed in the arm X, while its short arm extends downward and is actuated by a cam-slot, E', in the cylinder E. The thread or twine is brought through guides upon the arm X, thence down around the wheel Y, and up through an eye or over a hook on the end of the lever *b*, which is fulcrumed at *c* within the arm X. A bell-crank lever, *d*, has its angle fulcrumed in this arm, so that one end extends down and is actuated by the

cam-slot D' in the cam-cylinder D. The opposite arm is connected with the lever *b*, as shown, and thus causes it to oscillate by the action of the cam D, which acts as a take-up.

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

1. A sewing-machine having a vertically-reciprocating needle carrying a single thread, a two-part threadless hook mounted upon a horizontal rock-shaft below the table, and a reciprocating rack-bar, O, engaging a pinion upon the rock-shaft, and having an incline or cam, T, at its outer end, in combination with a bar, Q, with an arm, R, which engages one part of the hook, and a pin or roller, S, upon which the cam T acts to separate the hook, substantially as herein described.

2. The two-part threadless hook mounted upon a rock-shaft beneath the table, the reciprocating rack-bar O, engaging a pinion upon the rock-shaft, and having an incline or cam, T, at its outer end, in combination with the bar Q, with the pin or roller S, which is engaged by the cam T, the arm R, engaging one part of the hook to retract it, and the returning-spring U, substantially as herein described.

3. In a sewing-machine, the combination of a reciprocating needle, a double threadless hook oscillated by shaft G and its connections, an oscillating shaft, J, carrying a guide, I, for the purpose specified, and a plate, L, having a curved slot which engages with a pin on the shaft J, and means for moving the same, substantially as described.

In witness whereof I have hereunto set my hand.

EDWARD KOHLER.

Witnesses:

S. B. STUDLEY,
S. H. NOURSE.