

(No Model.)

L. MUTHER & R. G. WOODWARD.

NEEDLE VIBRATING MECHANISM FOR SEWING MACHINES.

No. 401,294.

Patented Apr. 9, 1889.

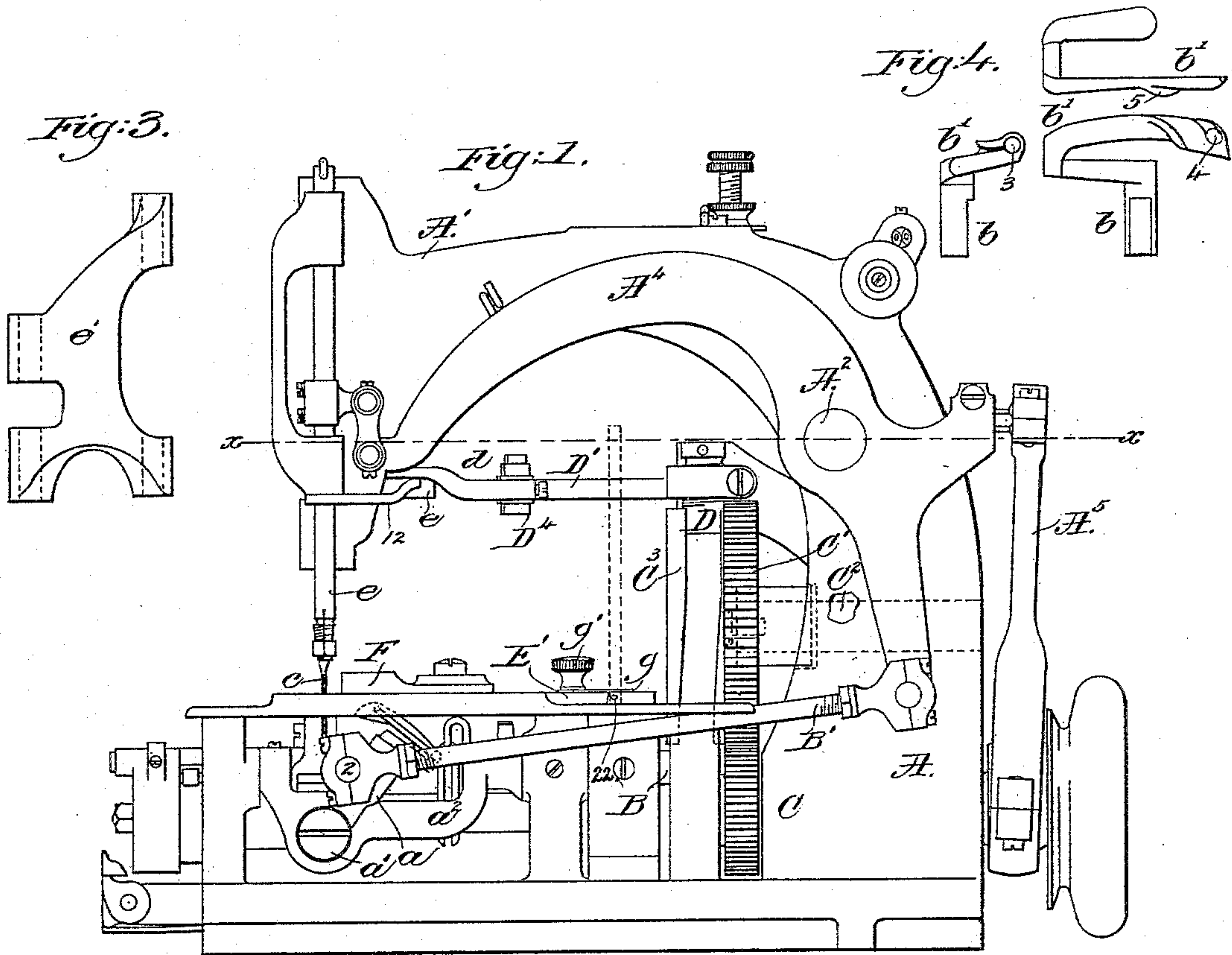
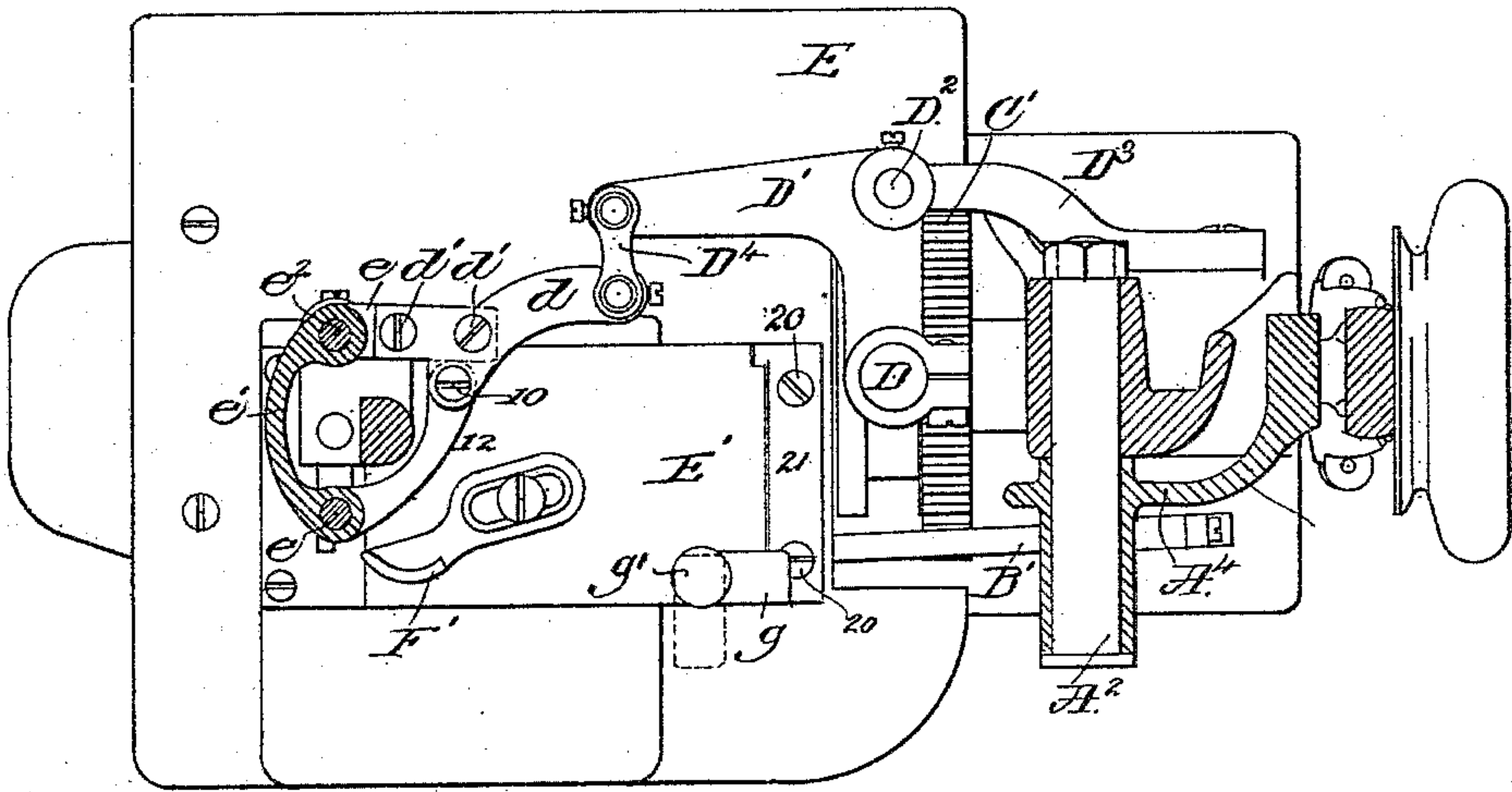


Fig. 1.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## NEEDLE-VIBRATING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 401,294, dated April 9, 1889.

Application filed July 16, 1888. Serial No. 280,034. (No model.)

*To all whom it may concern:*

Be it known that we, LORENZ MUTHER, of Chicago, county of Cook, State of Illinois, and RUSSEL G. WOODWARD, of Waukegan, county of Lake, State of Illinois, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention is intended as an improvement upon the machine described in United States Patent No. 299,568, dated June 3, 1884, the object being to adapt a machine of the same general class therein described for the purpose of zigzag or over seaming, the needle-bar, in addition to its vertical movement, having a lateral movement with relation to a line drawn horizontally through the feeding movement, as will be described.

Figure 1 is a front side elevation of a sewing-machine embodying our invention; Fig. 2, a plan view thereof below the dotted line  $x$ ; Fig. 3, a front view of the needle-bar guide detached from the machine, and Fig. 4 shows different views of the looper employed.

The frame-work A, having an overhanging arm, A', forming part of it, has a stud, A<sup>2</sup>, upon which is pivoted a vibrating arm, A<sup>4</sup>, which derives its motion from a link, A<sup>5</sup>, connected thereto and actuated from an eccentric upon the lower shaft, B, of the machine, said shaft at its front end having in practice suitable cams or eccentrics by which to actuate feeding mechanism, substantially as described in United States Patent No. 299,568.

The lower end of the arm A<sup>4</sup> has connected to it pivotally a link, B', which in practice is jointed by stud 2 to a looper-carrier,  $a$ , pivoted at  $a'$  upon a rocking frame,  $a^2$ , all substantially as in the said patent. The looper-carrier has connected to it in an adjustable manner the shank  $b$  of a looper,  $b'$ , having at its heel a slotted eye, 3, in which is led the under thread, the said thread being carried along in a groove at one side of the said looper and emerging from the hole 4, the looper having at a point back of the said hole a shoulder, 5, which catches upon the thread during the operation of sewing.

The looper herein described has a movement into the loop of needle-thread, and then swings across the path of movement of the needle C in the direction of the length of feed and back again toward the rear of the machine, so that the looper and needle co-operating together make a stitch substantially as made in the machine described in the said patent.

The shaft B has upon it a pinion, C, which engages and rotates a gear, C', loose on a stud, C<sup>2</sup>, the said gear having operatively connected with it a cam, C<sup>3</sup>, made as a hub with a peripheral groove, in which groove is inserted a roller or other stud, D, at one end of an elbow-lever, D', pivoted at D<sup>2</sup> on an arm or bracket, D<sup>3</sup>, the said lever, as herein shown, being jointed by a link, D<sup>4</sup>, to an arm,  $d$ , which, by screws  $d'$ , is attached to an arm,  $e$ , of the needle-bar guide  $e'$ , pivoted to oscillate about a pin,  $e^2$ , fixed in the head of the machine, the said arm also having connected to it, by a screw, as 10, a connecting-link, 12, through which the needle-bar guide  $e'$  is reciprocated laterally.

The rotation of the hub C<sup>3</sup> causes the elbow-lever D' to be vibrated, which in turn causes the needle-guide  $e'$  to turn about the pin  $e^2$ , as the needle-bar is reciprocated vertically in usual manner, so that the needle descends first at one side and then at the other side of a line parallel to the direction of the feed, as is well understood for herring-bone or over-edge stitching, the thread carried by the eye-pointed needle  $c$  having its loop concatenated with the thread carried by the looper  $b'$ , thus making a two-threaded chain-stitch.

The machine herein described may be used for stitching leather or other material, to join together abutting edges, or it may be used for overseaming or for ornamental stitching.

The cloth-plate E has attached to it by screws 20 a block, 21, to which is connected, by a suitable hinge, as 22, a plate, E', the plate when lifted uncovering the looper that it may be conveniently threaded. This plate carries with it the edge-gage F', and the plate has attached to it a turn-button,  $g$ , made as a thin plate of steel, connected thereto by a set-nut,  $g'$ , the said button when in the dotted-



line position, Fig. 2, enabling the plate E' to be turned up, as in the dotted-line position, Fig. 1.

We have not deemed it necessary to here-  
5 in illustrate and describe the feeding mechanism or the tension mechanism, or the take-up mechanism for the under thread, for such devices suitably to be used in the machinery herein described are fully described and  
10 shown in the patent referred to.

We claim—

In a sewing-machine, a reciprocating needle-bar having an eye-pointed needle, a pivoted needle-guide, *e'*, an arm, *d*, pivotally at-  
15 tached thereto, an elbow-lever, D', and a link-connection between it and the arm *d*, and a

link, 12, intermediate said arm and needle-guide, combined with a cam to vibrate the said elbow-lever and reciprocate the needle-guide laterally, and with the gears C C' to op- 20-  
erate the cam, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of subscribing witnesses.

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