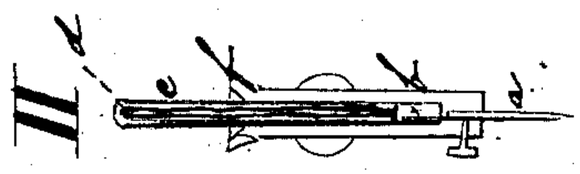
W. O. GROVER.

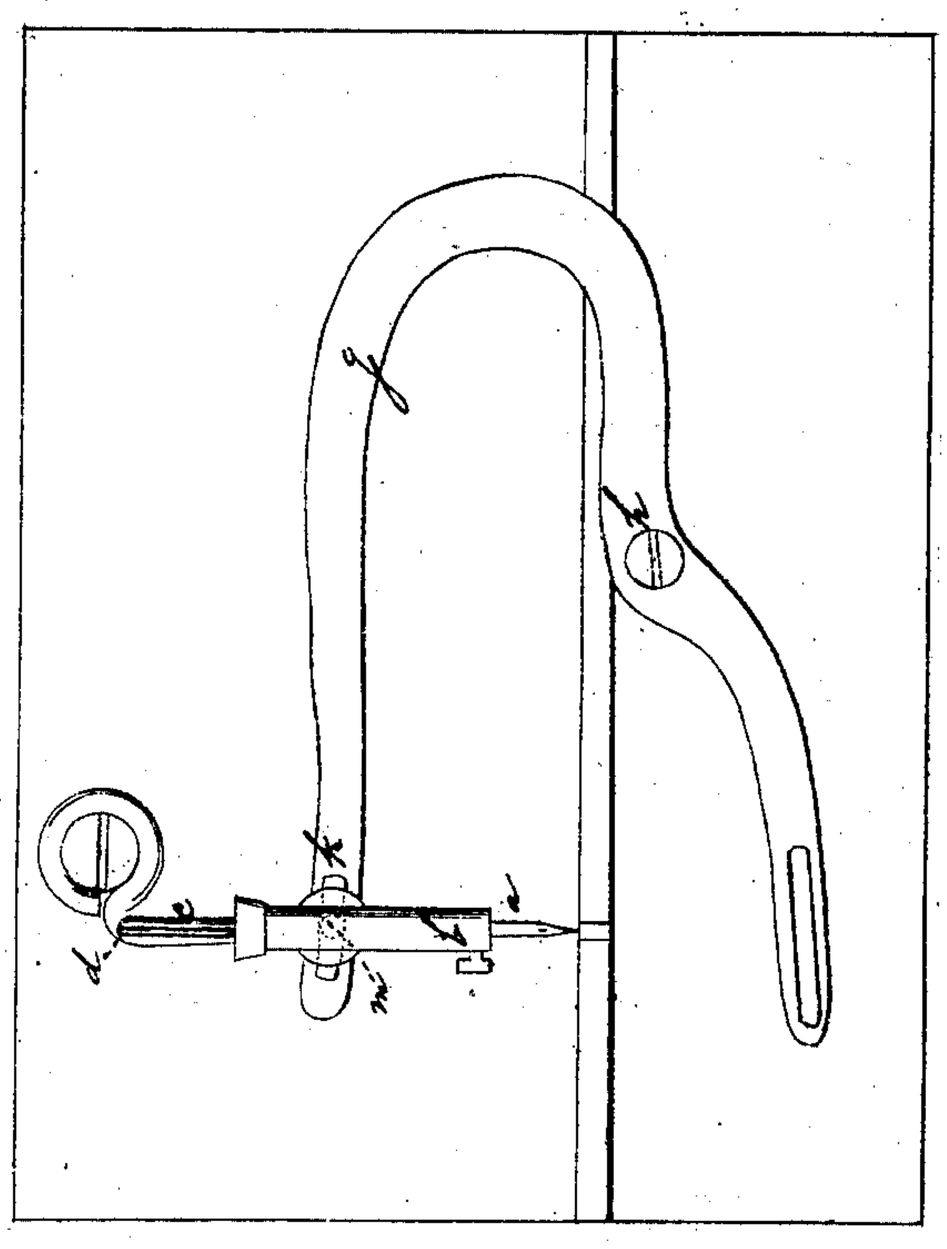
SEWING MACHINE.

No. 21,669. Patented Oct. 5, 1858.

II



I



UNITED STATES PATENT OFFICE.

W. O. GROVER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **21,669**, dated October 5, 1858.

To all whom it may concern:

Be it known that I, W. O. GROVER, of the city of Boston, in the State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, applicable to all machines that sew seams by the use of a reciprocating needle; and I do hereby declare that the following specification, taken in connection with the drawings, is a full, clear, and exact description thereof.

In the drawings, Figure 1 is a side elevation of the needle and its guiding and actuating mechanism, and Fig. 2 is a section taken through the guiding mechanism.

My invention has for its objects the guiding of a needle of a sewing-machine by apparatus cheaper, better, and more simple than that generally in use, and also the guiding and actuating of the needle by apparatus possessing like qualities; and the nature of the first part of my invention consists in combining the needle of a sewing-machine with a hollow cylinder, and with a piston or plunger, the one sliding upon the other, and the whole acting substantially in the manner and for the purposes set forth hereinafter; and, lastly, my invention consists in combining with a cylinder-plunger and needle a slot or its equivalent, substantially in the manner and for the purposes specified.

In the drawings, which represent only so much of a sewing-machine as is necessary for the elucidation of my invention, the needle is represented at *a* as attached to one end of a hollow cylinder, *b*, which is bored out truly. To some proper standard or support connected with the framing or bed-plate of the machine is attached, in any suitable manner and with sufficient firmness to withstand the shocks of the machine, a plunger, *e*, whose section corresponds with the bore of the cylinder, and whose periphery fits closely thereto. Along the length of this plunger is formed a slot or groove—such as *d*—and the cylinder is coned out at top, as at *f*, so as to serve as a receptacle for oil. The chief use of this slot is to permit a free escape and entrance of air during the vibrations of the cylinder, and it may extend through the center of the plunger, which will in that case be tubular, or may be otherwise located, so long as it serves this purpose. A vibrating bell-crank, *g*, pivoted at *h* and receiving motion in any convenient way, is by means of a slot, *k*, and pin *m* connected to the needle-carrier, and forms a cheap and simple apparatus for actuating it.

By the use of apparatus thus described the needle-bar is guided and supported over and upon a long surface, so that the needle is certain at all times to enter and depart from the same spot in the bed-plate, while the wear, being distributed over a considerable surface, will be inconsiderable, thus securing accuracy of movement during a protracted use of the machine. Moreover, the needle-carrier, being a hollow cylinder or tube, may be made very light and still possess sufficient strength and stiffness, this quality of lightness being of the utmost importance in fast-running machines, as the working parts are thus, in a great measure, relieved from the jars incident upon arresting and again putting in motion a comparatively heavy needle-bar; and, further, under the arrangement shown in the drawings oil may be employed to any reasonable or proper extent as a lubricator of the needle-bar on its guide without any danger of drops falling upon the work below. It is further evident that the cylinder and plunger may be manufactured cheaply and without the exercise of any great degree of mechanical skill, and that the vibrating arm, slot, and pin, or the equivalents of the two latter, constitute a cheap and simple actuating apparatus.

Having thus described my improvements, I claim as of my own invention—

1. The combination of a cylinder and plunger and needle of a sewing-machine, substantially in the manner and for the purpose specified.

2. A slot or its equivalent, for the purpose specified, in combination with the guiding mechanism of a sewing-machine needle substantially such as is herein described.

In testimony whereof I have hereunto subscribed my name, in the city of Boston, on this 13th day of September, A. D. 1857.

WM. O. GROVER.

In presence of—
WM. E. BAKER,
R. G. BROWN.