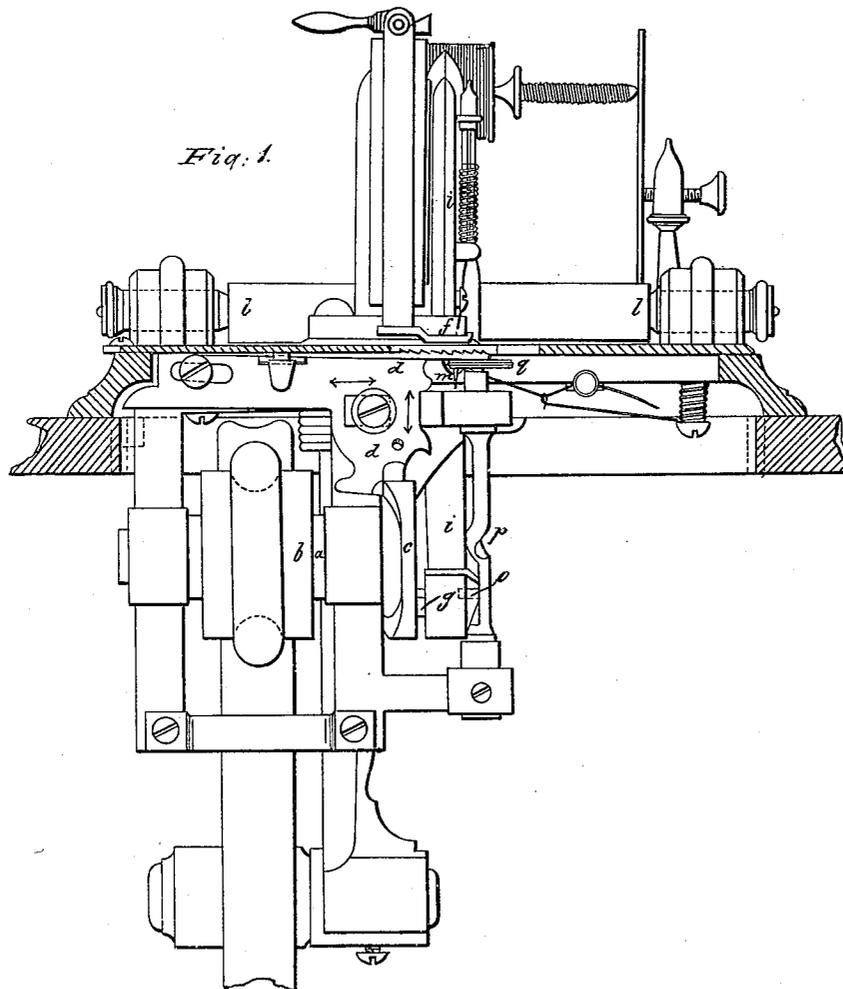


W. O. GROVER.
Sewing Machine.

No. 37,502.

Patented Jan. 27, 1863.

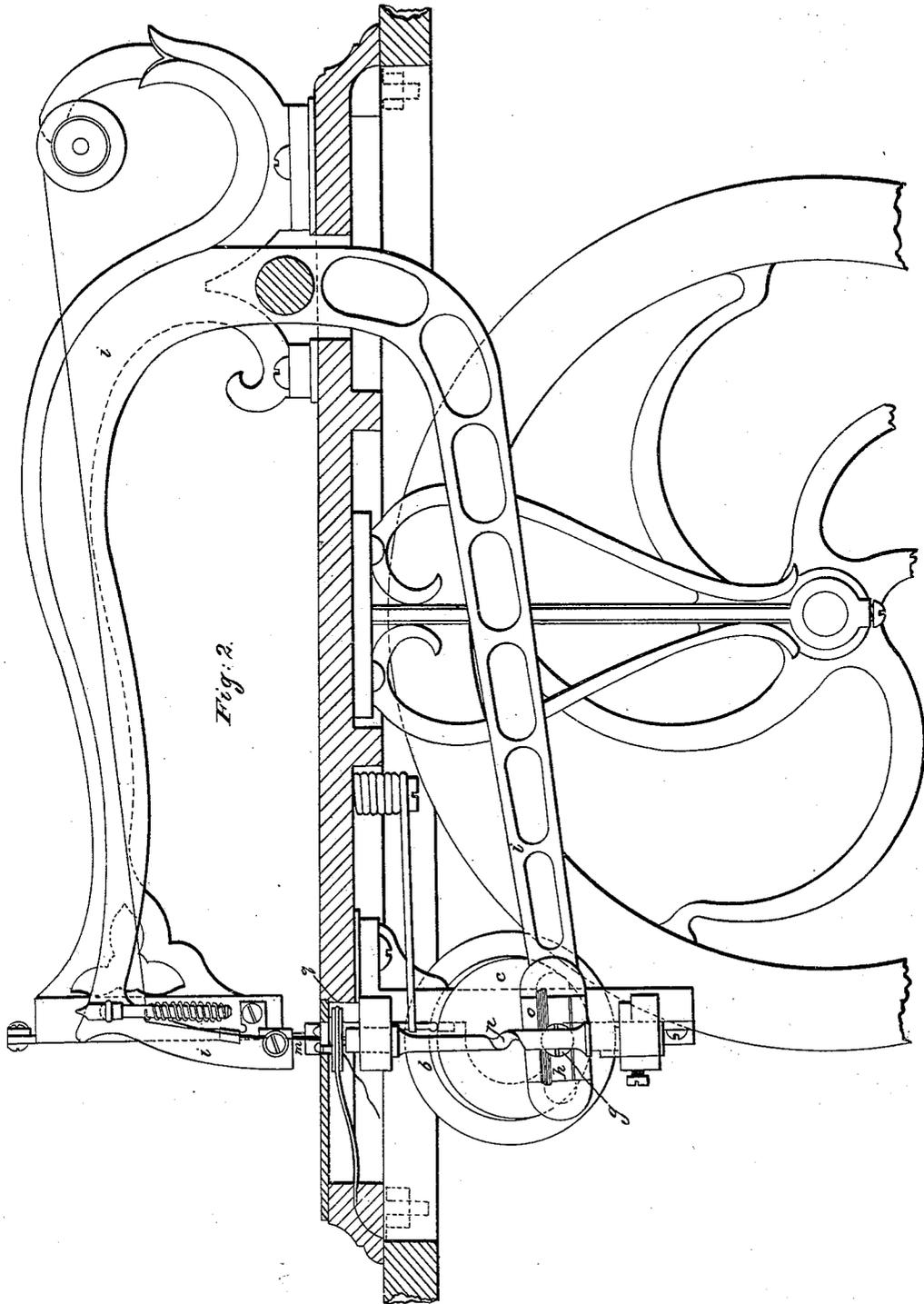


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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

W. O. GROVER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 37,502, dated January 27, 1863.

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 a certain new and useful Improvement in Sewing-Machines; 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 front elevation of my improvement, and Fig. 2 a side elevation of the same.

This improvement is in certain points of arrangement and mechanical construction, rendering the machine cheaper and less liable to derangement, and is shown in the drawings as applied to a new pattern of what is commonly known as the "Grover & Baker" machine, although it is applicable to other machines for sewing seams; and the nature of my invention consists in arranging the horizontal main shaft which actuates the feed directly or nearly under the feed, when such shaft also actuates an arm that gives motion directly to a needle-carrier, substantially as hereinafter specified, the object being to use but one shaft in the machine, and to have no joints or connections except those absolutely necessary in converting one kind of motion into another.

In the drawings the main shaft of the machine is shown at *a*. It is provided with a driving pulley, *b*, and has keyed upon it, or otherwise attached, a cam, *c*, with two faces, as shown in the drawings, one of which gives to the lower roughened feed-jaw, *d*, a motion back and forth in the length of the stitch, and the other moves the same jaw up and down to and from the spring clamp jaw *f*. This same cam has on its face a crank pin, *g*, which takes into a slot, *h*, in a bell-crank, *i*, pivoted at *l*, having its upper arm prolonged and bent downward, so as to serve as a carrier for a needle, *m*. This same arm has an acting surface, as at *o*, which lies in contact with a shaft, *p*, shaped, as shown in the drawings, in such manner that the acting surface, by reciprocating in contact with it, shall cause such shaft to pause and turn, as may be required, thus imparting the necessary motion to a curved needle, as at *q*.

Inspection of the drawings will show that

the prolongation of the driving-arm of the upper needle until it comes under or nearly under that needle, in combination with a main shaft arranged under the feed, or nearly so, enables me to drive the feed and the piercing-needle from the same shaft without the intervention of racks, links, or connecting-rods, simplifying the machine in such manner that but one shaft and one double cam and a crank-pin, or its equivalent, form the main essentials of the apparatus, thus materially cheapening the construction and lessening the chances of derangement.

I am aware of the fact that a machine known as the "Wheeler & Wilson" machine has been contrived and is in extensive use, in which the main driving-shaft actuates the feed, and also by means of an eccentric, a rod, and a joint gives motion to the needle-arm; but this contrivance employs the very joints I wish to avoid, and in such machines the needle-carrier is not prolonged underneath the material to be sewed.

The precise kind of connection between the lower end of the long bent arm and the shaft is not material, as that connection may be variously altered and modified without departing from the principle of my invention, and still secure all the good effects of my combined arrangement.

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

A long bent vibrating arm, one of whose ends drives a needle, in combination with a horizontal shaft arranged under the feed, and actuating the feed when that same shaft is also connected directly to one end of such bent arm, extending under the spot where the needle perforates the cloth, or nearly so, the whole arranged, connected, and acting substantially in the manner and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto subscribed my name in the city of Boston on this 30th day of September, A. D. 1857.

WM. O. GROVER.

In presence of—

WM. B. BAKER,
R. G. BROWN.