# A. F. JOHNSON.
## SEWING MACHINE.

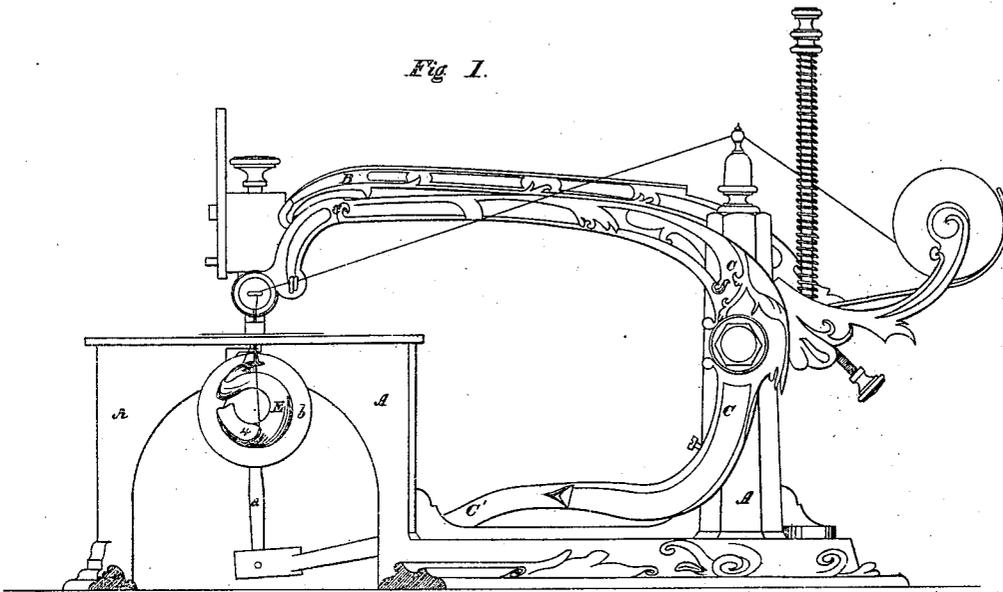No. 20,686.                    Patented June 22, 1858.
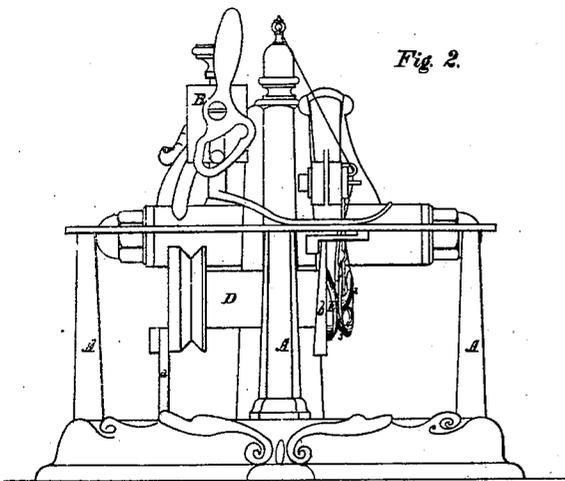
Fig. 1.

Fig. 2.

Fig. 3.        Fig. 4.

# UNITED STATES PATENT OFFICE.

ALBERT F. JOHNSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND FRANCIS F. EMERY.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **20,686**, dated June 22, 1858.

*To all whom it may concern:*

Be it known that I, A. F. JOHNSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation; Fig. 2, an end view. Figs. 3 and 4 are details to be referred to.

My invention consists in improved mechanism for forming the loop and drawing up the thread, by which I avoid the friction of many moving parts, and am enabled to construct a sewing-machine more durable and efficient than any with which I am acquainted.

That others skilled in the art may understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the drawings, A is the frame of the machine; B, the stationary arm, which carries the presser-bar; C, the vibrating arm, which carries the needle. The lower branch, C', of this arm is connected by a crank, a, to a shaft, D, which is supported in suitable bearings in the frame of the machine. This shaft is driven by a band and pulley, actuated by a treadle, or in any other suitable manner. The shaft D carries, near one end, a cam, b, which actuates the feed-bar; but as this feed forms no part of my present invention, it need not be more fully described.

Attached to the end of the shaft D, beneath the slot through which the needle plays, is a hook-cam, E, of a peculiar form, (shown in detail in Figs. 3 and 4,) by which a loop is formed in the thread after the needle has passed through the cloth, and the loop is held open until the next stitch is made, when the thread is drawn up as tight as required, the whole operation of forming the loop and drawing up the thread being performed by this one hook-cam E, as will be presently described. The vibrating needle-arm, being connected directly to the shaft which carries this looping and drawing apparatus, insures the proper succession of movements. The cam E is formed, as shown in the drawings, with a hook, 1, on its periphery, a deep groove or slot, 2, into which the needle descends after it has passed through the cloth, and a shallow groove, 3, which runs out on the outer face of the cam, forming a lip, 4, which catches the loop of the thread and holds it distended until the hook has caught another loop and drawn it through this one, when, as the lip 4 comes round, the first loop slips off from it and the hook 1 draws the second loop through the first, taking up, as the cam revolves, the slack of the thread, and drawing it sufficiently tight without any spring or other device for the purpose. The metal is cut away behind the hook and the different parts are rounded off, as shown, so that the loop slides from the hook 1 as the cam revolves, and is caught by the groove 3 and lip 4, and is held distended, as in the position shown in Figs. 1 and 2.

The cam E may be attached directly to the face of the cam b, or to the end of the shaft, or may be formed from the end of the shaft itself.

By the above-described improved machine I do away with a multiplicity of parts, which cause friction, are liable to derangement, and require nice adjustment.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Taking the loop from the needle by a revolving hook, operating in the manner substantially as set forth.

2. In combination with the revolving hook 1, the groove 3 and the lip 4, or its substantial equivalent, for holding the loop distended, in the manner substantially as described.

ALBERT F. JOHNSON.

Witnesses:
THOS. R. ROACH,
SAMUEL COOPER.