

SPRAGUE & HILL.

Sewing Machine.

No. 84,589.

Patented Dec. 1, 1868.

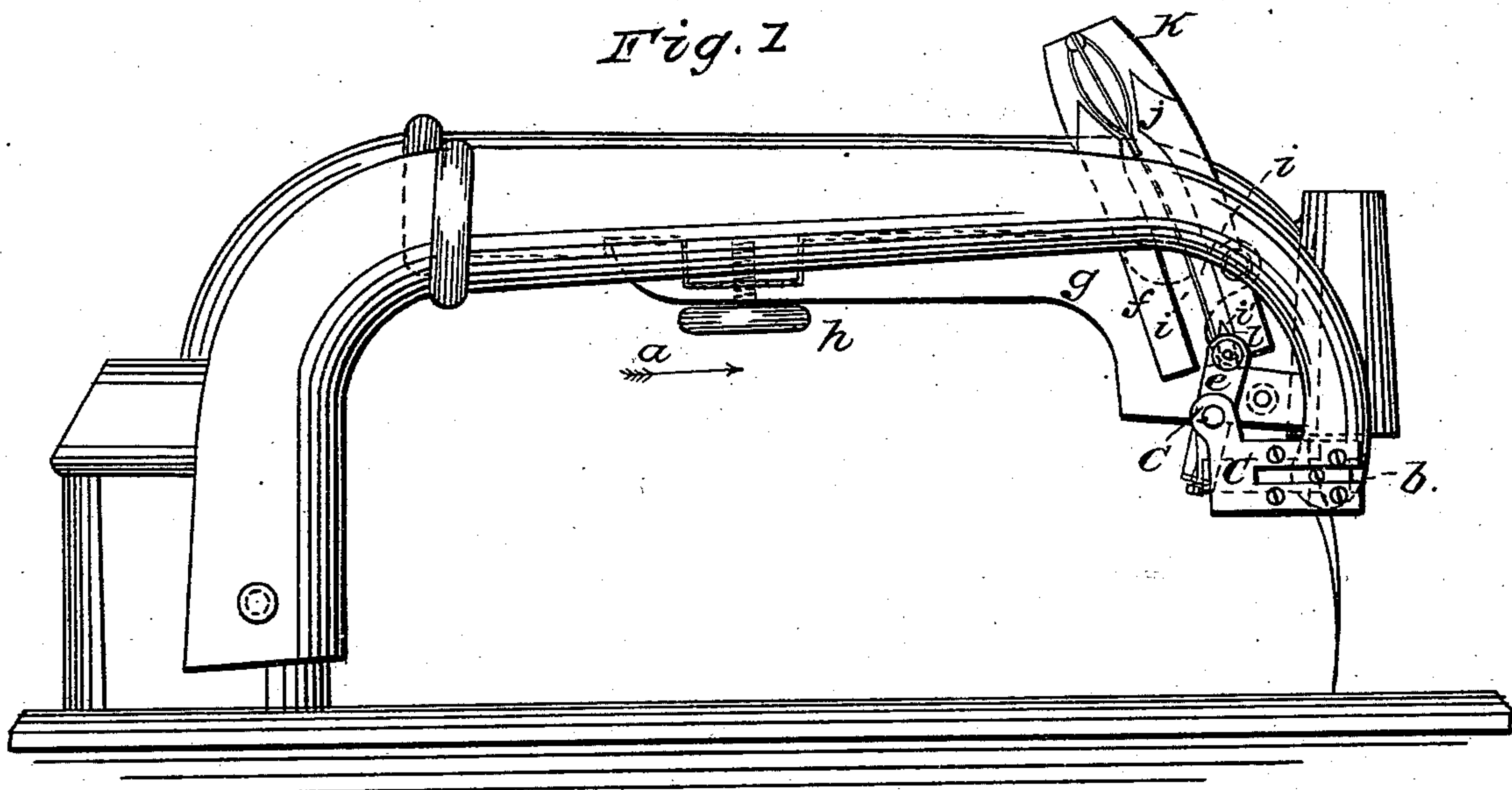


Fig. 2.

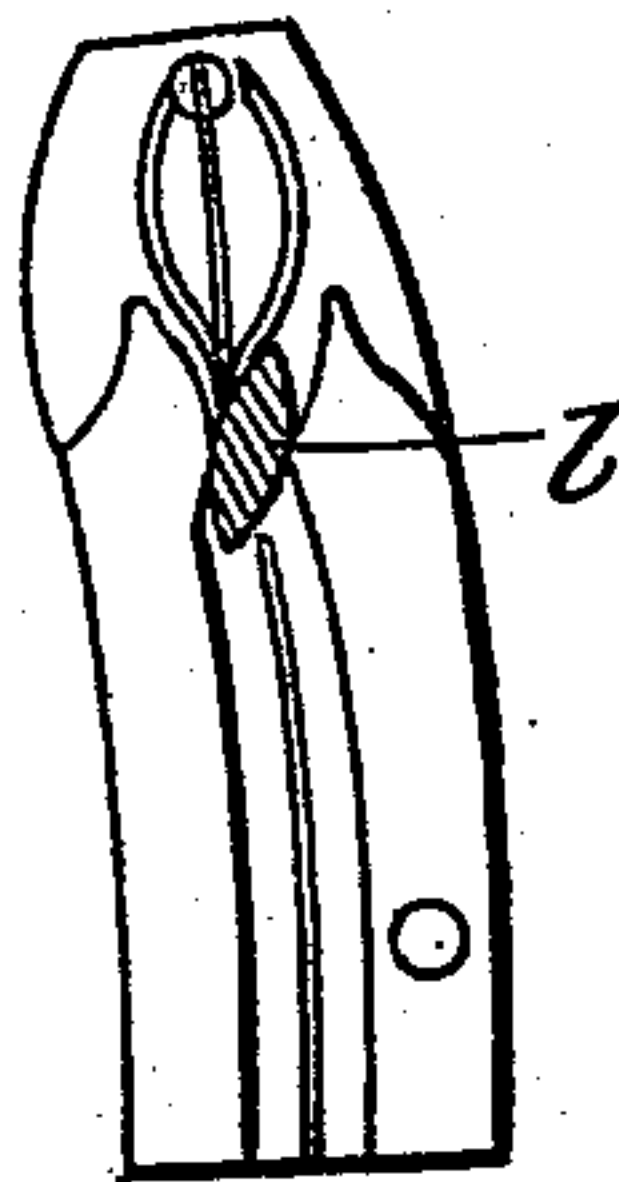


Fig. 3

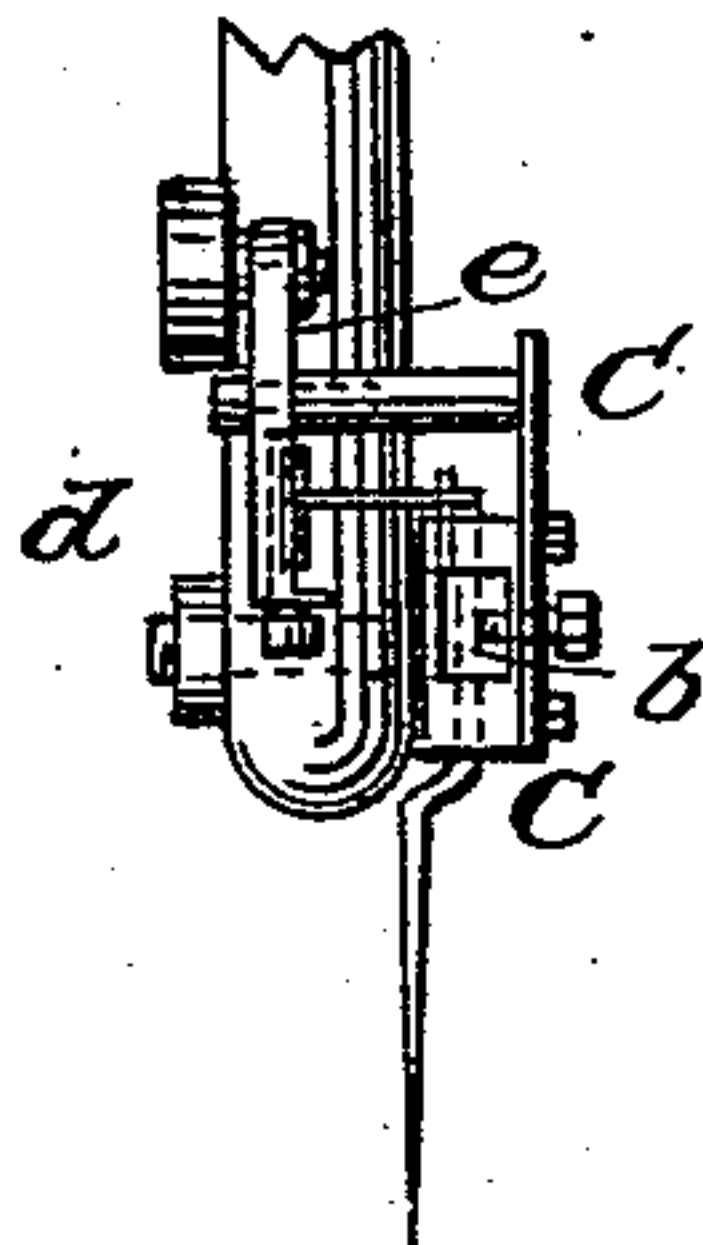


Fig. 4



Witnesses

Wm A Morgan
G. L. Cotton.

Inventors

Jonathan Sprague
Alvah F. Hill
per Munnell
Attorneys

UNITED STATES PATENT OFFICE.

JONATHAN SPRAGUE, OF ANN ARBOR, AND ALVA T. HILL, OF PONTIAC,
MICHIGAN.

IMPROVEMENT IN SEWING-MACHINE.

Specification forming part of Letters Patent No. 84,589, dated December 1, 1868.

To all whom it may concern:

Be it known that we, JONATHAN SPRAGUE, of Ann Arbor, Washtenaw county, Michigan, and ALVA T. HILL, of Pontiac, in the county of Oakland and State of Michigan, have invented a new and useful Improvement in Vibrating Needle Attachment for Sewing-Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of the needle and presser arms of a sewing-machine with our improvement attached. Fig. 2 represents a side elevation of a cam-plate, which is used to give vibrating motion to the needle. Fig. 3 represents a side view of the end of the needle-arm and its appendages, looking in the direction of the arrow *a*; and Fig. 4 represents a detail view of the vibrating arms.

Similar letters of reference indicate like parts.

The object of this invention is to provide an attachment for sewing-machines, for vibrating the needle for button-hole stitching, felling, or any similar work requiring a side stitch.

It consists in arranging the needle-holder so as to be vibrated automatically, to change the position of the needle at each downward motion; also, in an arrangement of mechanism for effecting the said vibration.

Hitherto, to accomplish button-hole stitching or other lateral or side stitching, the work has been fed in two directions. We propose to accomplish this result by vibrating the needle in one direction, thereby avoiding the necessity of providing a lateral feed mechanism. The means which we have adopted in this example consist of a sliding needle-holder, *b*, supported in a block, *C*, suitably arranged to admit the holder to vibrate in a direction at right angles to the feed, and connected to the needle-arm by a bolt and nut, *d*.

The block *C* is provided with a bracket, *C'*, which supports upon a pivot a swinging lever, *e*, to which the sliding needle-holder is adjustably connected, as shown in the detached view, Fig. 4.

f represents a cam-grooved plate suspended from bracket *g*, connected to the presser-arm by a thumb-screw, *h*, so as to be readily attached to or detached from the said arm.

The plate *f* is provided with a cam-groove, which is divided into two parts, *i* and *i'*, for a considerable distance of its length, by a thin dividing-wall, *i''*. At the point *j* the walls of the groove approach each other, and from the said point to the upper end expand in straight lines, and between the said expanding ends of the walls of the groove an elliptical spring is provided, the end of which projects to some extent below the contracted part *j* of the walls of the groove.

The lever *e* is provided with a vibrating elliptical guide, *l*, arranged to work in the cam-groove as the said lever is moved up and down by the needle-arm, which, by reason of the above-described configuration of the walls of the cam-groove and the arrangement of the spring *h*, will be caused to traverse alternately in the parts *i* and *i'* of the grooves, as will be readily understood, thereby communicating to the needle an alternate to-and-fro motion at right angles to the feed-motion of the fabric, making the necessary lateral or side stitches for button-hole stitching, felling, and other similar work.

Our improved attachment may be readily arranged to be applied to any sewing-machines.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with the sliding holder *b*, of the vibrating lever *e*, slide *l*, and cam-grooved plate *f*, provided with the spring *K*, substantially as and for the purpose described.

2. The combination, with the cam-grooved plate *f*, of the elliptical spring *K*, substantially as and for the purpose described.

JONATHAN SPRAGUE.
ALVA T. HILL.

Witnesses:

JOHN HUMPHREY, Jr.,
CHARLES J. PEIRCE.