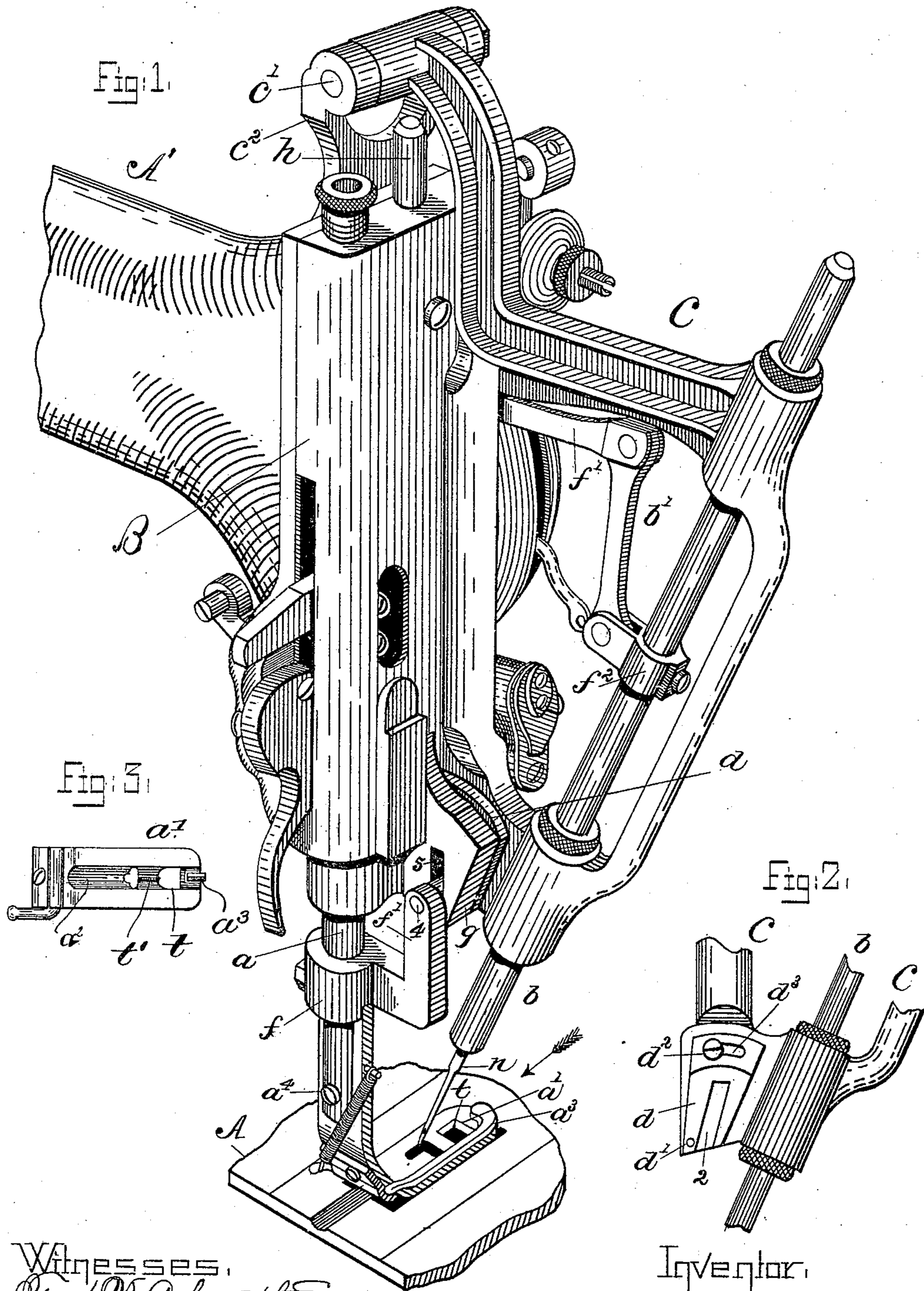


(No Model.)

W. A. NEELY.
SEWING MACHINE.

No. 467,299.

Patented Jan. 19, 1892.



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UNITED STATES PATENT OFFICE.

WILLIAM A. NEELY, OF LYNN, MASSACHUSETTS.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent, No. 467,299, dated January 19, 1892.

Application filed September 16, 1891. Serial No. 405,883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. NEELY, of Lynn, county of Essex, State of Massachusetts, 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.

United States Patent No. 454,540, dated June 23, 1891, shows and describes a sewing-machine in which the usual needle-carrying bar is provided with a horizontally-extended arm or projection connected by a link with an auxiliary needle-bar mounted in bearings so arranged as to place the needle-bar in diagonal position, so that the needle carried thereby will penetrate a stay-strip diagonally, the presser-foot, suitably grooved, riding upon the stay-strip which is being stitched to the material, as in the manufacture of boots and shoes, as provided for in United States Patent No. 431,123, granted to me July 1, 1890.

A third patent of the United States, No. 463,199, dated November 17, 1891, shows a sewing-machine in which the stay-strip carrier, represented as the presser-foot, while adapted to rise and fall to the varying thickness of the stay and material, is also adapted to be moved laterally automatically, according to the thickness of the stay, in order that the needle may always correctly enter the groove in the stay.

The invention herein contained and described is intended more especially as an improvement upon the apparatus shown in the last-mentioned patent.

In my aim to simplify the machine shown in the last-mentioned patent I have devised means whereby the presser-foot as it rises or falls, due to variations in thickness of material under it, automatically changes the angle of inclination of the needle-bar and the frame having bearings therefor, so that the point of the needle will always enter correctly the groove in the stay, whatever the thickness of the latter.

In the machine herein to be described the needle-bar-carrying frame, having bearings for the needle-bar, is pivoted to move in the arc of a circle at right angles to the direction of the feed of the material, and this frame has a gate provided with a slot, which is entered by a projection which moves with the

presser-foot, so that as the foot rises or falls, owing to variations in thickness of the stay under it, the said projection, rising or falling in said slot, swings the said frame and needle-bar in such direction as to cause the point of the needle to correctly enter the groove in the stay.

The stay-strip used in shoe-work is usually of a certain size; but the material from which the shoe is made is sometimes thick and sometimes thin, and for each different thickness of leather or material the needle-bar must occupy a certain angle in order that the needle may correctly enter the groove in the stay-strip, and any variations in thickness of the particular shoe being stayed and under the presser-foot will be compensated for by the rise and fall of the presser-foot.

In the use of my invention the operator, having a lot of shoes of a certain material to be stayed, will place the material, it having had its edges sewed together, under the presser-foot, as for staying, and will pass the end of the stay through the usual stay-guiding passage of the presser-foot and under the presser-foot over the seam to be covered. This done, the operator will adjust the collar on the presser-foot, carrying the pin which enters the slot in the gate of the needle-bar-carrying frame, and will elevate the pin until the point of the needle comes in the proper position to enter the groove in the stay. Now this material in the particular shoe under the foot may vary in thickness, and to ascertain if the inclination of the needle-bar is correct the operator will remove the material from under the presser-foot and will, by hand, while the foot is down, raise and lower the needle-bar and see whether or not the needle in all positions of the presser-foot will strike substantially in line with the groove-opener carried by the presser-foot, and if it will not then he will adjust the gate until this coincidence is established. Then he will put the material under the presser-foot and will stay the shoes of the class which he has prepared his machine for.

Figure 1 of the drawings represents in perspective a sufficient portion of a sewing-machine with my improvement added to enable my present invention to be understood, and Fig. 2 is a detail showing part of the needle-bar-carrying frame and the needle-bar and

the gate. Fig. 3 is an under side view of the presser-bar, it showing the seam-guide and the groove-opener.

The bed-plate A and the overhanging arm A', but partially shown, the presser-bar *a*, and the bar *h* are substantially as in United States Patent No. 454,540, and said parts are also common to the regular Wheeler and Wilson machine and to many other machines, the bar *h* being the usual needle-bar and being reciprocated vertically by or through connections with a shaft in the overhanging arm A' of the machine in any suitable manner.

In my patent, No. 454,540, I removed the needle from the bar *h* and made it simply as an actuating-bar, and connected to it and extended outwardly through the regular face-plate B of the machine an arm *f'*, and to this arm I jointed a link *b'*, which in turn I jointed to a collar *f*² of a needle-carrying bar *b*, which I supported in bearings of such shape as to cause the needle-bar *b* to occupy an inclined position. In this present invention I have mounted the needle-bar *b* in a frame C, which I have jointed or pivoted at C' upon a suitable pivot in a stand C², suitably attached to the overhanging arm, so that the said frame carrying the needle-bar may be vibrated in the arc of a vertical circle at right angles to the direction of the feed of the material, which is designated by the arrow in Fig. 1. I have provided this frame, which may be of any suitable shape or construction, with a slot, as 2, said slot being preferably in a gate *d*, pivoted at *d'* upon the frame, and made adjustable by a screw *d*² in a slot *a*³ of the gate, the movement of the gate by its pivot placing the slot 2 in a more or less inclined position.

The presser-bar *a*, of usual construction and normally held down by a spring, (not shown,) has attached to it at its lower end a presser-foot, as *a'*, in practice suitably grooved at its under side to receive and guide the stay referred to. This presser-foot, the under side of which is shown separately in Fig. 3, has a suitable groove, as *a*³, to receive the stay, and it also has mounted upon it a guiding device *a*³, common to the Patent No. 454,540, referred to. The shank of the presser-foot is connected to the presser-foot bar by means of a suitable screw *a*⁴.

To the presser-bar above the presser-foot is attached by a suitable screw a collar *f*, having, as represented, an upright portion *f'*, provided with a stud 4, which is extended through a slot 5 in an ear *g*, connected to or forming part of the face-plate B, the inner end of the said stud entering the slot 2 in the gate *d*. The stud 4 by entering in the slot 5 prevents an axial rotation or twisting of the presser-bar as the latter rises and falls; but the inner end of the stud 4 in the slot 2 of the gate moves the frame C more or less in a lateral direction, according to the thickness of the material underneath the presser-foot.

This invention is not limited to the exact construction of the frame C, nor to the exact construction shown for the gate or the slot 2, nor to the exact construction of the device attached to the presser-bar and having the stud 4, as it is obvious that the devices might be materially changed and not depart from my invention. The presser-foot has pivoted upon it a seam-guide *a*³, and at its under side, just back of the opening *t*, through which the stay-strip is led in contact with the material, the presser-foot is provided with a groove-opener *t'*, the latter entering the groove in the stay.

I am aware that an inclined needle-bar has been used, it reciprocating in a vertical plane parallel to the direction of the feed of the material, as in United States Patent No. 13,616, and such construction I do not claim.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A sewing-machine containing the following instrumentalities, viz: a throat or support for the work, a presser-bar, a presser-foot, a needle-bar having an eye-pointed needle, a movable frame, in which the needle-bar is adapted to reciprocate in an inclined direction in a vertical plane transverse to the direction of the feed of the material, and devices intermediate the said presser-bar and frame to automatically vibrate or move the frame to place the needle in proper position with relation to the material, as the material under the presser-foot varies in thickness, substantially as described.

2. A needle-bar-carrying frame pivoted to be moved in the arc of a circle at right angles to the direction of the feed, an inclined needle-bar therein provided with an eye-pointed needle, and means to reciprocate said needle-bar, combined with a presser-foot, a presser-bar, and intermediate devices between the said presser-bar and frame, the said devices comprehending a pin or projection of one of the said parts to enter a slot in another of the said parts, substantially as described, whereby vertical movement of the presser-bar effects the swinging or lateral movement of the needle-bar-carrying frame to place the needle-bar in a more or less inclined position, substantially as described.

3. The pivoted frame, an inclined needle-bar therein having an eye-pointed needle, means to reciprocate said needle-bar, and a pivoted gate having a slot, combined with a presser-bar, its presser-foot, a collar having a pin or projection to enter the slot of the said gate, and a guide for the said pin or projection, to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM A. NEELY.

Witnesses:

G. W. GREGORY,
FRANCES M. NOBLE.