

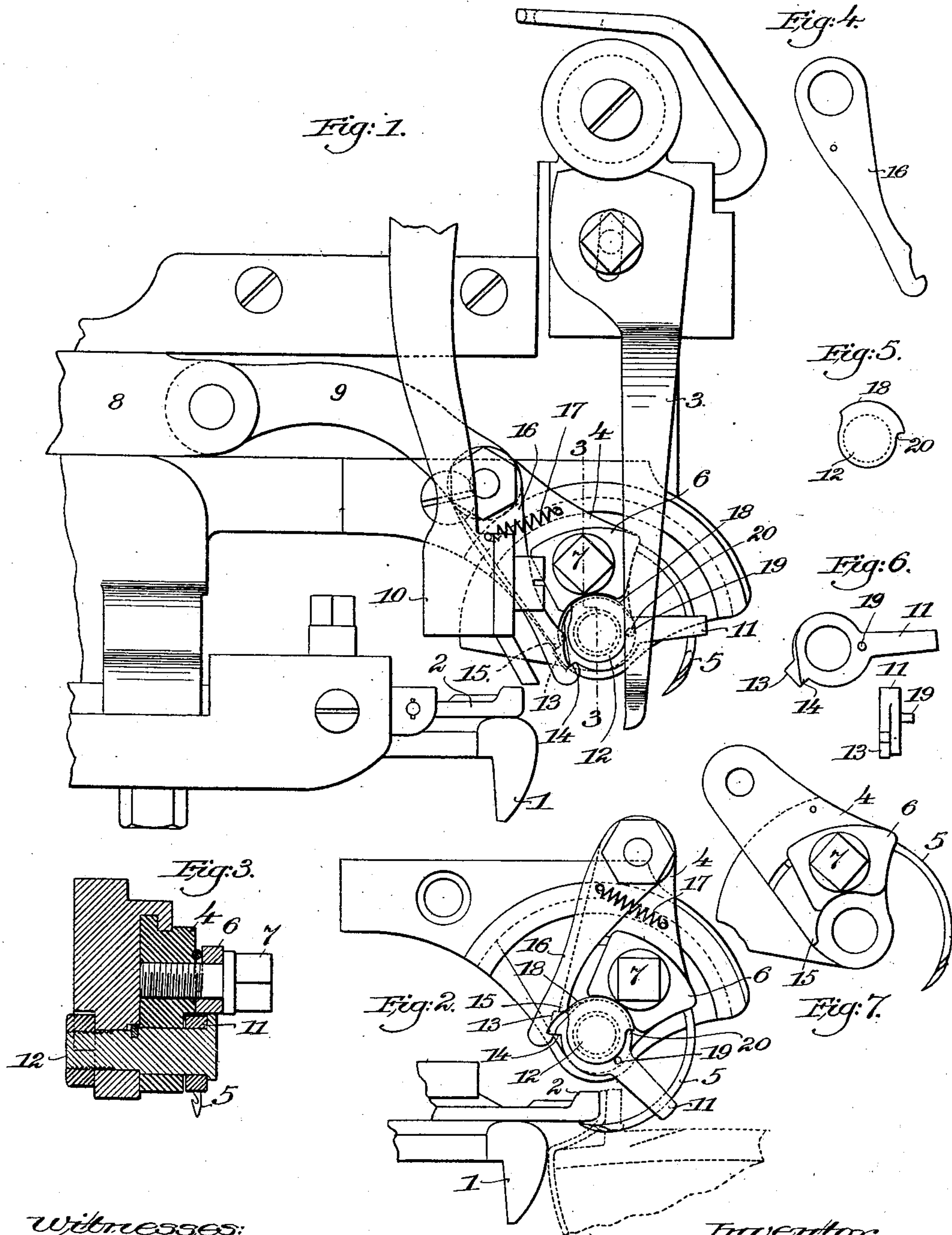
No. 701,862.

Patented June 10, 1902.

A. W. EATON.  
SEWING MACHINE.

(Application filed Aug. 9, 1900.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## SEWING-MACHINE.

**SPECIFICATION** forming part of Letters Patent No. 701,862, dated June 10, 1902.

Application filed August 9, 1900. Serial No. 26,395. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR W. EATON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to sewing-machines, and more particularly to the mechanism for actuating the needle-guide of such machines. Various mechanisms have heretofore been devised for actuating the needle-guide of sewing-machines, and particularly of sewing-machines employing a curved needle. In certain of these mechanisms the needle-guide has been actuated to advance toward and retract from the work by a frictional engagement with the needle carrier or segment. These mechanisms have been found to be unreliable, as the frictional engagement between the needle carrier and guide is often insufficient to properly actuate the guide, especially in case the needle becomes bent or sprung, the guide remaining near the carrier instead of being moved into contact with the work to support the needle while passing through the stock. In certain other mechanisms the needle-guide has been actuated to advance toward the work by means of a spring connection between the guide and the needle-carrier and to retract by a direct contact of the needle-carrier with the guide. These mechanisms are unsatisfactory in operation, as the spring often fails to actuate the guide, which remains near the needle-carrier, as in the mechanisms before referred to. The principal objection to both classes of mechanism above referred to, however, is that in case the guide is actuated it is brought into contact with the work with considerable force and imparts a sharp blow thereto. This tends to move the work away from its support and renders the manipulation of the work by the operator difficult, the operation of the stitch-forming devices being often interfered with and the breaking of the thread or the needle 50 occasioned.

The object of my invention is to provide a mechanism for actuating the needle-guide of a sewing-machine which shall be free from the defects above noted and which shall be simple in construction and reliable in operation. 55

With these objects in view my invention contemplates the actuation of the guide positively to bring it close to the stock during the forward movement of the needle, and then the releasing of the guide, leaving it perfectly free during the continued forward movement of the needle, the guide being carried into contact with the stock by virtue of its weight and the slight friction between the guide and the needle. 65

My invention also contemplates the positive actuation of the guide during the retracting movement of the needle. By so actuating the guide its movements are rendered certain and no disturbing blow is imparted to the work. 70

My invention is particularly applicable to wax-thread sewing-machines employing a curved needle, and in the drawings accompanying this application I have shown my invention applied to such a machine, the particular machine illustrated being adapted for securing the uppers to soles of boots and shoes during the operation of lasting. 80

In the accompanying drawings, wherein is illustrated a preferred embodiment of my invention, Figure 1 is a view in side elevation of the operating mechanism of a sewing-machine for lasting boots and shoes having my invention applied thereto. Fig. 2 is a view in side elevation of a portion of the mechanism shown in Fig. 1 with the parts in the position they assume as the needle enters the work. Fig. 3 is a sectional view on the line 3 3, Fig. 1. Fig. 4 is a detail view of the pawl for actuating the needle-guide. Fig. 5 is a detail view of the cam for disengaging the pawl. Fig. 6 shows in side and end view the needle-guide, and Fig. 7 is a detail view of the needle-carrier. 85 90 95

Referring to the drawings, 1 represents the sliding rest or support for the work, 2 the pusher for forcing the upper over the edge and against the lip of the sole, 3 the gage for 100



engaging the bottom of the sole, 4 the needle carrier or segment, 5 the needle held in the groove in the needle-segment by the clamp 6 and bolt 7, 8 the slide for actuating the needle-segment, 9 the link connecting the slide and segment, and 10 the looper of a sewing-machine for lasting boot and shoe uppers, the parts referred to being of well-known construction and arranged to operate in substantially the same manner as in prior machines of this type.

The needle-guide is represented at 11, and the manner in which it is supported and actuated in accordance with my present invention will now be described. The stud 12, upon which the needle-segment is pivotally mounted, is provided with a flanged head, between which and the needle-segment the hub of the needle-guide is journaled. The face of the needle-segment is cut away, as shown in Figs. 3 and 7, to receive the hub of the guide. The hub of the guide is provided with two projections 13 and 14, the projection 13 being engaged by a shoulder 15, formed by cutting away the face of the needle-segment to receive the hub of the guide, and the projection 14 being engaged by a pawl 16, pivoted to the needle-segment and held in engagement with the projection 14 by means of the coiled spring 17. The flanged head of the stud 12 is provided with a cam-surface 18, which is adapted to engage the pawl 16 and lift it out of engagement with the projection 14 at a certain point in the forward movement of the needle-segment. A pin 19, projecting laterally from the needle-guide, engages a notch 20 at one end of the cam-surface to limit the backward movement of the guide.

The operation of the mechanism above described is as follows: Starting with the parts in the position shown in Fig. 1, with the needle retracted, the needle-guide at the limit of its backward movement, and the pawl 16 engaged with the projection 14, as the needle-segment moves forward under the influence of the slide 8 and link 9 the needle-guide will be carried forward with the needle until the guide is nearly in contact with the work, at which time the pawl 16 will be lifted from engagement with the projection 14 by the cam 18. The parts are now in the position shown in Fig. 2, in which position the needle-guide is disconnected from its actuating mechanism and is free to move either backward or forward. As the needle-segment continues to advance the needle will move through the guide, which will be moved against the work by gravity and by the friction between the needle and the guide. On the backward movement of the needle-segment the needle-guide will remain in contact with the work until the parts assume the position shown in Fig. 2, at which time the shoulder 15 will engage the projection 13 and act during the continued backward movement of the needle-segment to positively return the needle-guide to the position shown in Fig. 1. It will be noted

that the needle-guide is released from its actuating mechanism before it strikes the work and that the force of the blow imparted to the work will consequently be very slight. The guide is actuated with as great certainty as if it were in constant engagement with its actuating devices and any disturbing effect due to the striking of the guide against the work is avoided. It will also be noted that by disconnecting the needle-guide from its actuating devices during the forward movement of the needle I am enabled to actuate the guide from the mechanism for actuating the needle and still obtain a positive forward movement of the guide.

I am aware that it has heretofore been proposed to actuate the needle-guide of a sewing-machine positively in both directions, but in such case a mechanism independent of that for actuating the needle is required and the needle-guide is constantly connected with such mechanism. Such an arrangement, in addition to rendering the machine more complicated, is open to the objection noted above in case the guide is arranged to come in contact with the work.

I believe that I am the first to provide mechanism for positively actuating the needle-guide of a sewing-machine to advance it toward the work in connection with means for disconnecting the guide from such actuating mechanism after it has been so advanced. I also believe that I am the first to positively actuate the needle-guide of a sewing-machine from the needle-carrier to advance it toward the work.

The construction illustrated in the drawings and above described embodies my invention in its preferred form; but it is to be understood that my invention is not limited thereto, but may be embodied in a great variety of forms without departing from the spirit thereof.

Having thus described my invention and explained the operation thereof, what I claim as new, and desire to secure by Letters Patent, is—

1. A sewing-machine, having, in combination, a needle, a needle-guide, mechanism for positively actuating the guide to advance toward the work, means for disconnecting the guide from such mechanism at the end of its positive movement permitting a forward movement of the needle with relation to the guide, and means for actuating the needle, substantially as described.

2. A sewing-machine, having, in combination, a needle, a needle-carrier, a needle-guide, connections between the guide and carrier for positively actuating the needle-guide, means for disconnecting said connections during the forward movement of the needle-carrier permitting a forward movement of the needle with relation to the guide, and means for actuating the needle-carrier, substantially as described.

3. A sewing-machine, having, in combina-



tion, a curved needle, a needle-segment, a  
needle-guide, a pawl pivoted to the needle-  
segment and engaging the needle-guide, a  
cam acting to disengage the pawl during the  
5 forward movement of the needle-segment, and  
means for actuating the needle-segment, sub-  
stantially as described.

4. A sewing-machine, having, in combina-  
tion, a needle, a needle-guide, mechanism for  
10 positively actuating the guide in both direc-  
tions, means for disconnecting the guide from  
its actuating mechanism at the end of its posi-  
tive forward movement permitting a forward  
movement of the needle with relation to the  
15 guide, and means for actuating the needle,  
substantially as described.

5. A sewing-machine, having, in combina-  
tion, a needle, a needle-carrier, a needle-  
guide, connections between the guide and car-  
rier for positively actuating the needle-guide 20  
to advance toward the work and thereafter  
permitting a forward movement of the needle  
with relation to the guide, and means for actu-  
ating the needle-carrier, substantially as de-  
scribed.

In testimony whereof I affix my signature  
in presence of two witnesses.

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Witnesses:

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