

(Model.)

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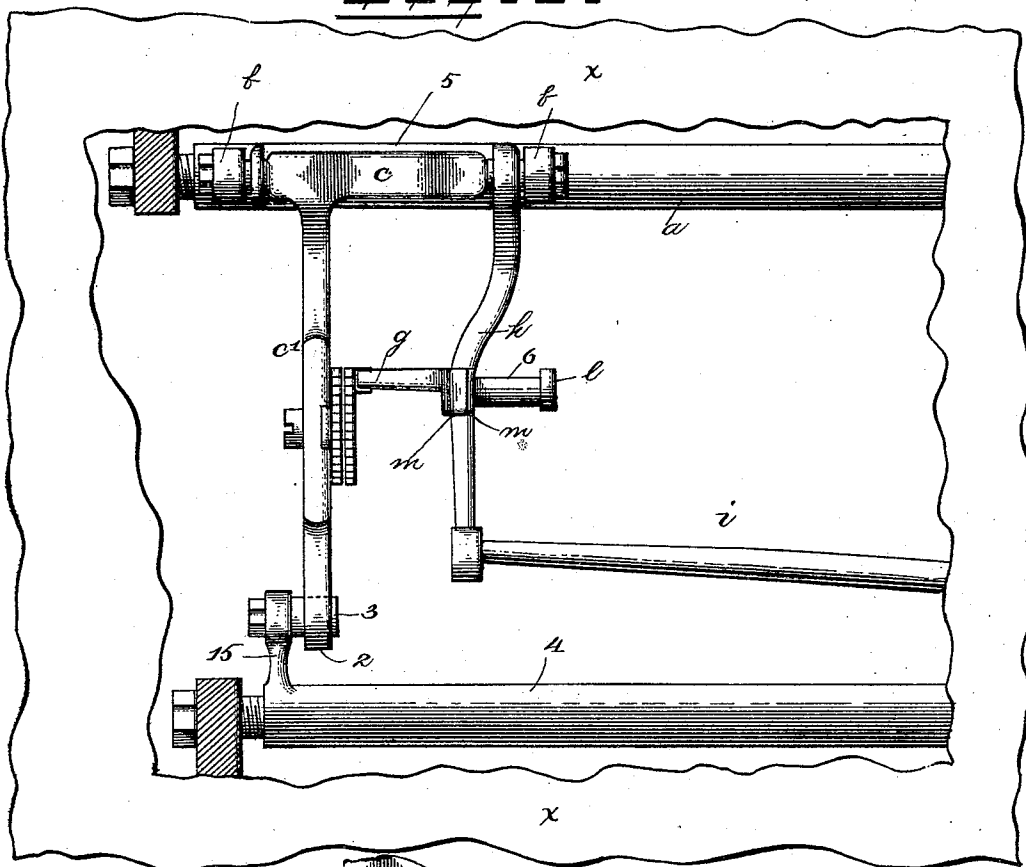
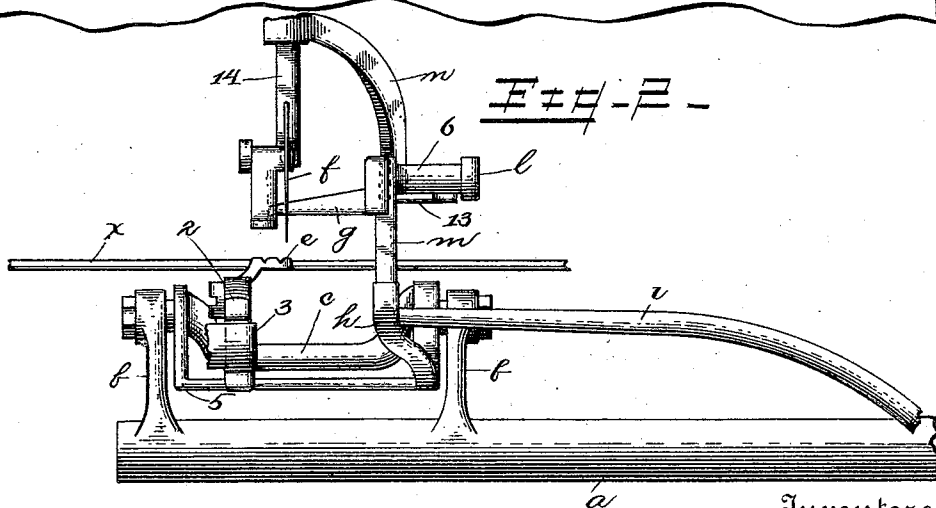
E. M. STAPLES & S. W. HOUGHTON.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 459,350.

Patented Sept. 8, 1891.

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Witnesses

Albert B. Blackwood
 John Blackwood.

Inventors:

a Inventors:
Eliak M. Staples and
Stanley K. Houghton
by Allen Webster
their Attorney

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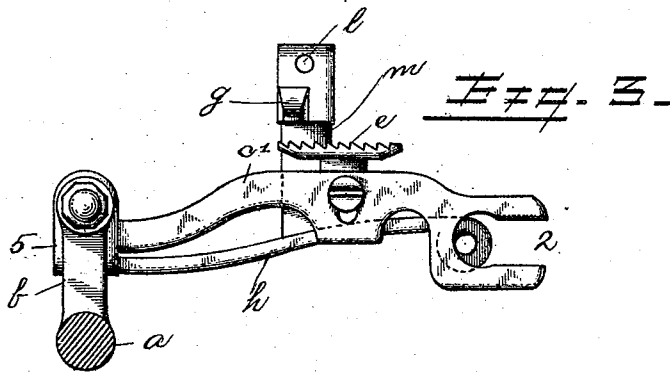
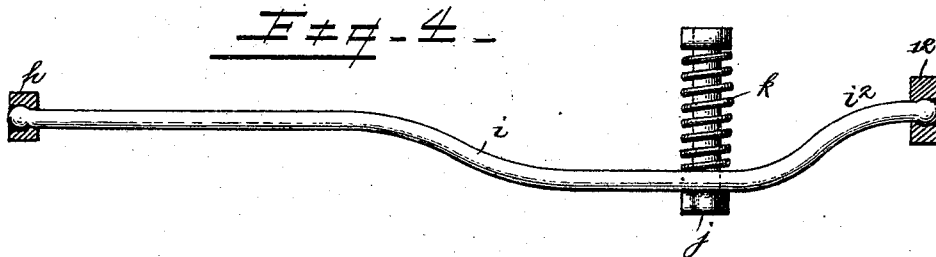
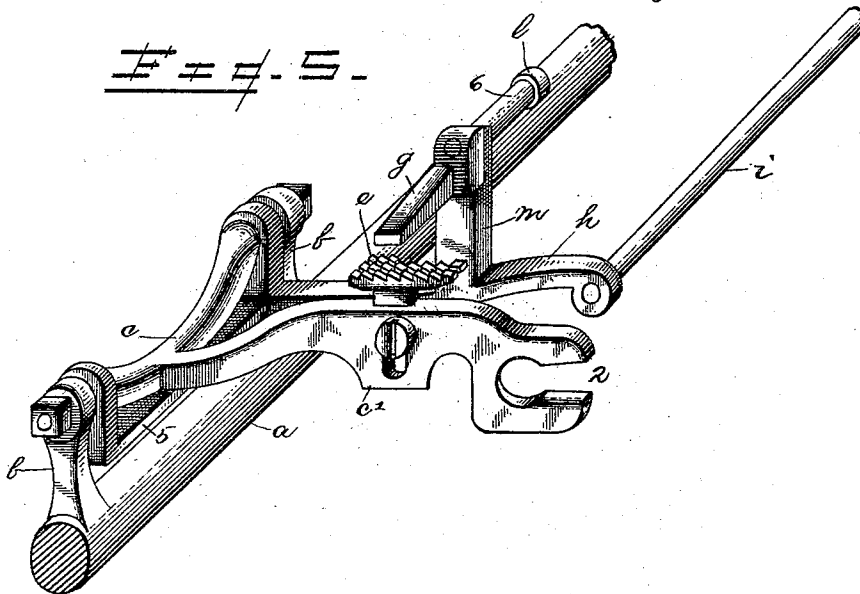
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Witnesses

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Inventors:

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Stanley W. Houghton,
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Their Attorney.

UNITED STATES PATENT OFFICE.

ELIAL M. STAPLES AND STANLEY W. HOUGHTON, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO D. S. LOOMIS, OF SAME PLACE.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 459,350, dated September 8, 1891.

Application filed December 8, 1887. Serial No. 257,348. (Model.)

To all whom it may concern:

Be it known that we, ELIAL M. STAPLES and STANLEY W. HOUGHTON, citizens of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have jointly invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

Our invention has relation to improvements in the feed mechanism of sewing-machines; and the object is to provide an improved feed mechanism whereby the material being sewed is fed to the needle by pressure of feed-dogs above and below the material; and our invention consists in the novel construction and combination of the parts, as will be hereinafter described, and particularly pointed out in the claims.

We have fully and clearly illustrated our invention in the accompanying drawings, wherein—

Figure 1 is a plan view of our invention, the bed-plate of the machine being broken away. Fig. 2 is a side view in elevation as seen from the front side of the machine, parts being broken away. Fig. 3 is an end view as seen from the front of the machine. Fig. 4 is a detail view of a part of the lever which reciprocates the upper feed-bar, showing the yielding or spring fulcrum and form of end connections to the feed-bar and operating mechanism. Fig. 5 is a detail perspective of the mechanism.

a designates a rock-shaft having bearings arranged under the bed-plate *x* of the machine and having connection with the mechanism driving the machine. This rock-shaft is common to machines of the construction shown, being employed to give the backward and forward motions to the feed-dog located below the bed-plate, and therefore no further description is deemed necessary. Projected from this rock-shaft are two vertically-arranged posts *b*, between which is pivotally mounted the bar *c*, having projected therefrom the lower feed-bar *c'*, terminating in a forked end 2, which engages, as usual, with a pin 3 on an arm 15, extending from the rock-shaft 4, which gives vertical motion to this lower

feed-bar and corresponding movement to the lower feed-dog carried by it. To the lower feed-bar *c'* is connected the stem of the lower feed-dog *e*, which moves in a slot in the usual throat-plate.

f designates the needle.

h designates the upper feed-bar arranged under the bed-plate of the machine and formed with a stirrup-like bearing 5, supported to swing between the post *b*, substantially as shown, and having formed thereon a vertically-extending post *m*, reaching up through an aperture in the bed-plate of the machine and to which is secured the upper feed-dog *g*, which projects forward and is arranged to engage with the upper face of the material, as hereinafter specified more fully. The feed-dog *g* is formed with a sleeve 6, in which engages a fastening-screw 1 to hold the feed-dog to the post *m*.

To the presser-bar 14 of the machine may be attached a lifter *n*, having an arm 13, which is arranged to engage under the rearwardly-projecting sleeve 6 of the upper feed-dog, so that the upper feed-dog may be lifted free from the material whenever the presser-bar is lifted.

i designates the operating-lever for the upper feed-bar. This lever is fulcrumed on a pin or stud *j*, secured under the bed of the machine, and has its ends secured loosely to the free end of the upper feed-bar *h* and to an arm 12, projecting from the rock-shaft 4, respectively, by means of rounded bearings in apertures in the feed-bar and arm, substantially as shown in Fig. 4. On the fulcrum-pin *j* is a spring *k*, which tends to hold the lever *i* on its fulcrum and at the same time causes the lever to hold the upper feed-bar in its normal position.

The operation is as follows: The lower feed-bar is given its reciprocating horizontal movements through the vibrations of the rock-shaft *a* and its vertical reciprocations by the rock-shaft 4, as usual. The upper feed-bar, with its attached feed-dog, is moved horizontally by the action of the rock-shaft *a* and vertically by the lever *i*, being reciprocated or rocked by the rock-shaft 4. The movements of the

feed-bars in horizontal directions are synchronous; but their vertical movements are opposite, so that they recede from and approach the material simultaneously. This is accomplished by the connections with the rock-shaft 4. The lever *i* being fulcrumed on the pin *j* and having its one end attached to the upper feed-bar and the other end to the arm on the rock-shaft 4, to which the lower feed-bar is connected, as heretofore specified, the end *i*² of the lever is given the same motion as the lower feed-bar, and consequently the other end of the lever *i* gives reverse or opposite reciprocations to the upper feed-bar, while the horizontal movement is effected by the rock-shaft *a*.

It will be perceived from the foregoing description that the several parts of the mechanism are all concealed and out of the way, with the exception of the upper feed-dog, which is necessarily exposed for the purposes intended.

Having thus described our invention, what we claim is—

1. The combination of a rock-shaft below the bed-plate of the machine, a lower feed-bar provided with a feed-dog, also below the bed-plate and receiving horizontal movement from the rock-shaft, means, substantially as specified, independent of the said rock-shaft for vertically reciprocating the lower feed-bar, an upper feed-bar below the bed-plate of the machine connected to the said rock-shaft and receiving horizontal movement therefrom and having a vertical post extending through the bed-plate of the machine, a feed-dog on the post, a lever under the bed-plate of the machine connected to the free end of the upper feed-bar, and means, as specified, for tilting the lever, substantially as described.

2. The combination, with the lower feed-bar and feed-dog of a sewing-machine and the rock-shaft to give the same horizontal motion, all below the bed-plate, of an upper feed-bar, also below the bed-plate, connected to the said

rock-shaft and provided with a post projected through the bed-plate of the machine and carrying a feed-dog, a lever under the bed-plate to give the upper feed-bar vertical movements, and means independent of the rock-shaft to tilt the lever, substantially as described.

3. The combination, with the rock-shaft and the lower feed-bar and feed-dog, all below the bed-plate, of an upper feed-bar connected to the said rock-shaft and provided with a post projected through the bed-plate of the machine and carrying a feed-dog, a lever under the bed-plate to give the upper feed-bar vertical movement, a spring bearing upon the lever to hold it yieldingly on its fulcrum, and means independent of the rock-shaft for tilting the lever, substantially as described.

4. The combination of the presser-bar having a presser-foot mounted thereon, the upper feed-bar arranged below the bed-plate of the machine and having a post projected up through the bed-plate and provided with a feed-dog and with a lug 6 extended therefrom, and a lifter *n* on the presser-bar, arranged to engage the lug carried by the post of the upper feed-bar, whereby both the presser-foot and the feed-dog may be simultaneously raised from the work, substantially as set forth.

5. The combination of the upper and lower feed-bars independently connected to a single rock-shaft under the bed of the machine, whereby the feed-dogs receive synchronous horizontal movements, and a second rock-shaft under the bed of the machine having independent connections to the free ends of the respective feed-bars, whereby the feed-dogs receive opposite vertical movements, substantially as described.

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