

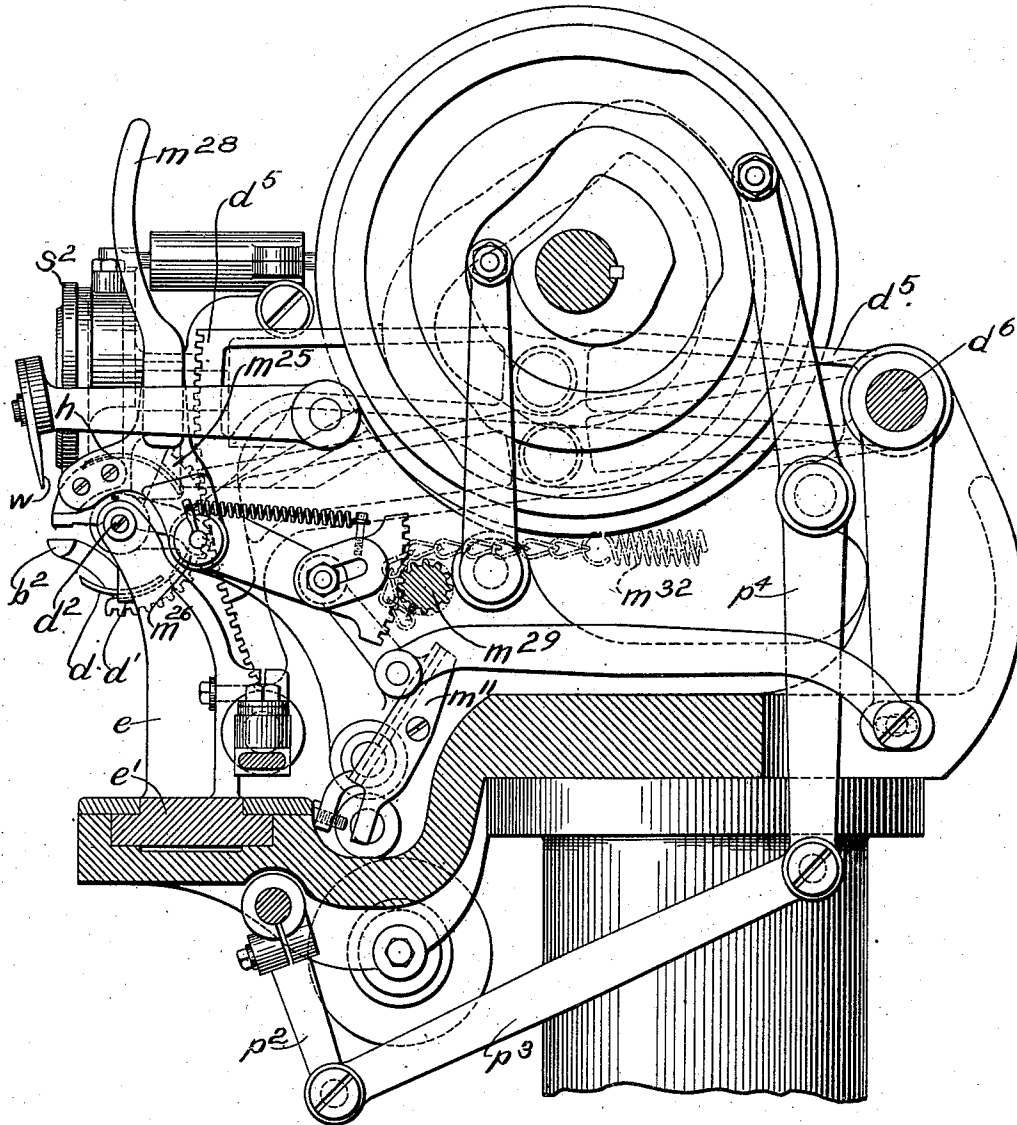
T. G. PLANT.
CHANNELING DEVICE FOR SEWING MACHINES.
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Patented Nov. 23, 1909.

2 SHEETS—SHEET 1.

Fig. 1



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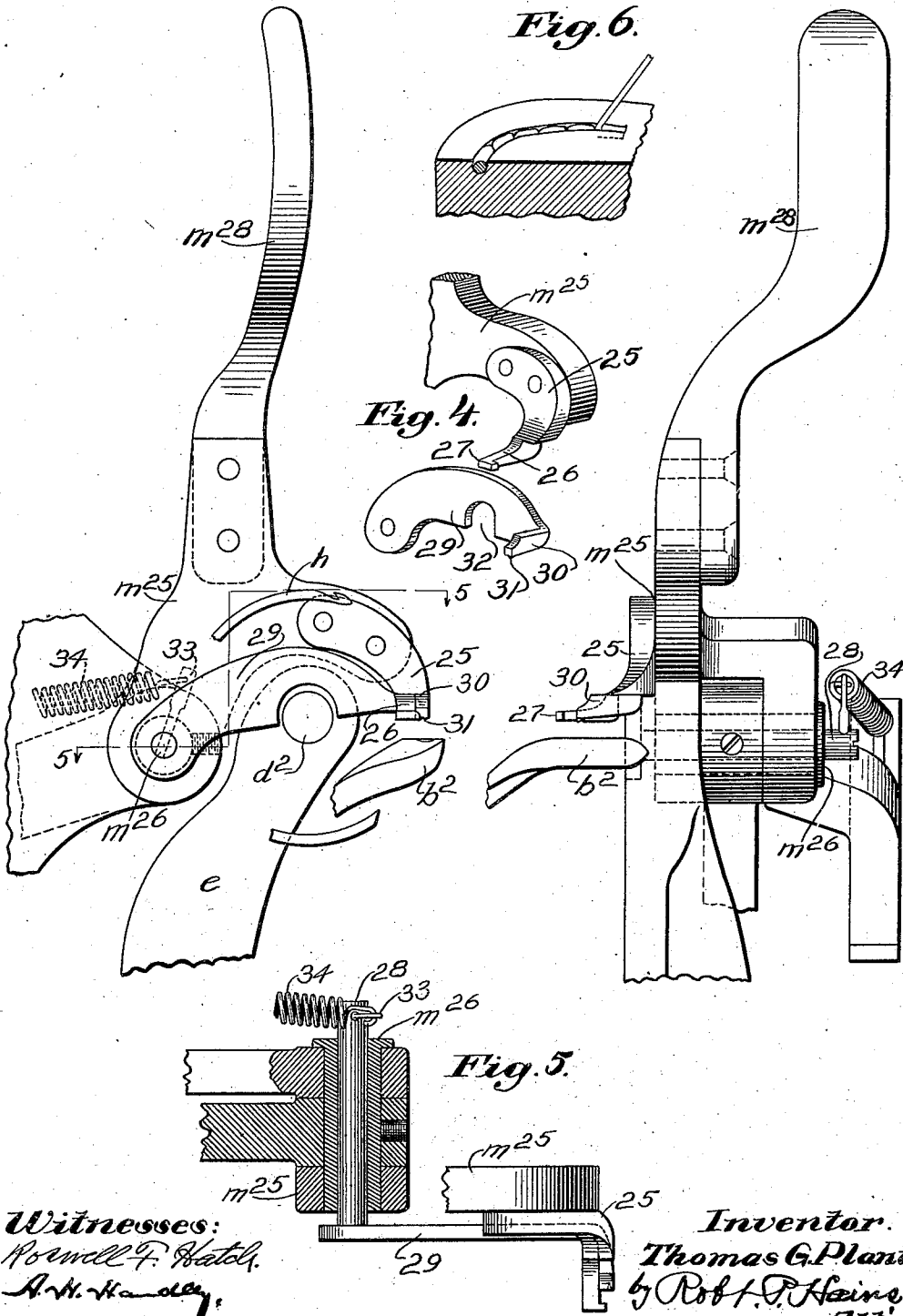
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2 SHEETS—SHEET 2.

Fig. 2.

Fig. 3.



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CHANNELING DEVICE FOR SEWING-MACHINES.

940,723.

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To all whom it may concern:

Be it known that I, THOMAS G. PLANT, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Channeling Devices for Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention in sewing machines relates particularly to means for making a slit or cut in the work in advance of the stitch making point to receive the line of stitches as formed, my invention comprising the combination of parts hereinafter set forth, operating in the manner described.

To enable my invention to be understood, I will describe the same in connection with one embodiment thereof selected for illustration herein, it being understood, however, that my invention is not restricted to the particular embodiment shown.

Referring to the drawings: Figure 1, in vertical section and partial elevation, illustrates a typical sewing machine equipped with one embodiment of my invention. Fig. 2 is an enlarged detail showing the presser foot, a part of the work support, the awl and needle, viewed from the opposite side of Fig. 1; Fig. 3 is a front elevation of the parts shown in Fig. 2; Fig. 4 a perspective detail illustrating the nose of the presser foot and the cutting device separated, to illustrate more clearly the cooperative arrangement of the two; Fig. 5 is a horizontal section on the dotted line 5-5 of Fig. 2; and Fig. 6 a perspective detail showing a series of stitches with the slit or cut to receive the same.

Referring to the drawings and particularly to Fig. 1, I have typified the well-known curved needle, lock stitch sewing machine extensively employed in the manufacture of boots and shoes. The construction and operation of such machines is so well understood that it is unnecessary to describe the same in detail, it being sufficient for present purposes to refer only to the principal parts thereof. The feed slide is indicated at d' and reciprocated by usual means, with a bracket e thereon, a short shaft d^2 mounted in the upper end of said bracket supporting the awl carrier d' and its awl d , driven by the segmental gear d^5 , fulcrumed at d^6 at the rear of the machine.

The shuttle case is indicated at s^2 , Fig. 1, the same containing a usual shuttle, driven in usual manner. The usual stationary work support is indicated at b^2 , above which is arranged the presser foot carrying lever m^{25} , fulcrumed upon a stud m^{26} and provided with a handle m^{28} by which it may be raised at will, said presser foot lever having a tail piece provided with a segmental gear in mesh with a pinion m^{29} controlled by a spring m^{32} which tends constantly to depress said presser lever to maintain its presser foot in substantially continuous contact with the work beneath it, resting upon the work support b^2 . The usual thread finger is typified at w , the thread locking means at p^2 , p^3 and p^4 , and the measuring mechanism at m^{11} to vary the length of thread delivered to the stitch forming devices in accordance with the position of the presser foot indicating the thickness of work operated upon. The usual needle is indicated in dotted lines at h , Fig. 1, it being actuated in usual manner.

Referring to Figs. 2, 3 and 4, the presser foot 25, shown separately in Fig. 4, is suitably attached to the free end of the presser foot carrying lever, said presser foot being cut away at its front side to leave a rearwardly and transversely extended finger 26, with an outwardly extended ear 27 at its outer end.

The fulcrum stud m^{26} for the presser lever, Fig. 5, is made tubular to receive a pin 28 provided at its left hand end, next the presser lever, with an arm 29, which reaches forward into position directly beneath the presser foot 25, said arm 29 underlying the laterally extended portion of the presser foot and being itself provided with a laterally extended finger portion 30 (see Fig. 4) which is provided at its under side with a slitting knife or device 31.

Between the supporting pin 28 and its free end, said arm 29 is notched as at 32 (see Fig. 4) to straddle the pin or support d^2 for the awl carrier, said arm standing between the awl carrier and the supporting bracket e therefor, the latter being cut away for the purpose, so that every transverse reciprocation of the feed slide, its bracket and awl carrier, to cause the awl to feed the work, will take with it said arm 29 and its slitting device 31, the fulcrum pin 28 for said arm sliding endwise in the tubular presser foot fulcrum m^{26} .

Referring again to Fig. 5, the pin 28, at

its end opposite the arm 29, is provided with a radial stud 33, which is connected by a spring 34 with some stationary support, said spring tending constantly to raise the arm 29 with its slitting device to hold the latter close against the under side of the presser foot, so that whenever the presser foot is raised, however little, the slitting device will follow it, the presser foot depressing the slitting device before it as it descends or is pressed into working contact with the material between it and the work support.

The parts are so arranged and constructed that (Fig. 3) the slitting device 31 occupies a position close to the vertical plane in which the awl oscillates, the awl in its oscillations just clearing the end of the slitting device.

In the operation of the machine the awl rises in well-known manner to penetrate the work whereupon the feed slide, upon which the awl carrier is mounted, is given a feeding movement to the left (Fig. 3) to cause the awl to feed the work into position beneath the needle, in order that the needle as it descends may enter the awl hole, the awl being withdrawn in advance of the needle. When the needle has entered the work and the awl cleared it, the feed slide is returned again to the right (Fig. 3) to its original position, preparatory to the awl again penetrating the work for the next stitch and, during this return movement, the slitting device is drawn along the top of the work and slits the same for a distance equivalent to the length of feed, so that when next the awl is moved to the left to feed the work into position beneath the needle for a new stitch, the slit previously made by the slitting device follows the last stitch to its position beyond the needle the slit reaching from the last stitch to the needle. Thus the next stitch, as formed, sinks into the slit beneath it and is thereby concealed more or less, according to the depth and the nature of the cut, and that of course depends largely upon the character of slitting device employed. By this arrangement it matters not what may be the length of feed or how often it may be varied, the slitting device by moving always with the feeding awl will produce for each stitch a slit to receive the same and of a sufficient length therefor. It will be observed that each slit produced by the slitting device extends from the last stitch formed to the needle so that the slit is always in proper position to receive the next stitch formed, even though the work during the feed be turned more or less as, for instance, in following the irregular outline of a shoe sole. This would be impossible if the slitting device in its movement always began at a point removed from the last stitch formed and drew farther away. It will be observed, also, that the slit is produced upon

that side or face of the work which is opposite the side or face at which its actuator, namely, the awl carrier, is located; that is to say, the slit is produced at one face of the work by a feeding and actuating device operating at the opposite face of the work.

The manner of forming the slit in advance of the stitch is well illustrated in Fig. 6.

Having described one embodiment only of my invention, what I claim and desire to secure by Letters Patent is:

1. In a sewing machine for sewing shoes, the combination of stitch forming mechanism, work feeding means to move the work in the line of feed, a work slitting device to slit the work for the reception of the stitches, and means to move the feeding means and slitting device together and with the work as it is fed and to return the feeding means and slitting device to initial position to cause the slitting device to slit the work on such return movement.

2. In a sewing machine for sewing shoes, the combination of a shaft, stitch forming mechanism operated therefrom, a feeding awl, a work slitting device to slit the work for the reception of the stitches, and means for moving the feeding awl and slitting device together and with the work as it is fed and to return the feeding awl and slitting device to initial position to cause the slitting device to slit the work on such return movement.

3. In a shoe sewing machine, the combination of stitch forming and awl feeding means, a presser-foot, an arm carrying a slitting device, said arm being engaged by the presser-foot, and connections between the awl feeding means and said arm to impart movement to the slitting device in the line of feed.

4. A sewing machine comprising stitch forming means combined with a feeding awl; a work slitting device connected therewith, and means to operate the same whereby said awl and slitting device advance with the work as the latter is fed and the slitting device slits the work as the awl is returned for a new feed.

5. A sewing machine comprising stitch forming means, an awl, means for moving the awl in the line of feed to advance the work and then return the awl to initial position, a work support, a presser foot opposed thereto, a work slitting device to slit the work for the reception of the stitches, and connections between the slitting device and awl feeding means to cause the slitting device to move with the awl and work as the latter is fed, and remain in the work and be returned by the awl feeding means to initial position to slit the work on such return movement.

6. A sewing machine comprising, in combination, a work support, a rising and fall-

ing presser-foot, an arm carrying a slitting device, means for imparting the rising and falling movements of the presser-foot to said slitting device, and means for reciprocating the slitting device in the line of feed.

7. A sewing machine comprising, in combination, stitch forming and work feeding means, a work support, a rising and falling presser-foot, an arm carrying a slitting device, means for imparting to said arm the rising and falling movements of the presser-foot, and connections between the work feeding means and said slitting device to impart to the latter movements in the line of feed.

8. A sewing machine comprising, in combination, stitch forming and work feeding means, a work support, a rising and falling presser-foot opposed thereto, a slitting device underlying a portion of the presser-foot, means for raising said slitting device as the presser-foot is raised, and means for

imparting to the slitting device reciprocating movements in the line of feed.

9. A sewing machine comprising, in combination, stitch forming means, an awl, means to cause the awl to penetrate the work, a work slitting device disposed adjacent the plane of movement of said awl as it penetrates the work, means to move the awl and slitting device together in the line of feed and with the work as the latter is fed, and to return the awl and slitting device to initial position to cause the slitting device to slit the work.

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

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Witnesses:

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