No. 873,338.

PATENTED DEC. 10, 1907.

O. ASHTON.

FEEDING MECHANISM.

APPLICATION FILED APR. 12, 1906.

3 SHEETS—SHEET 1.

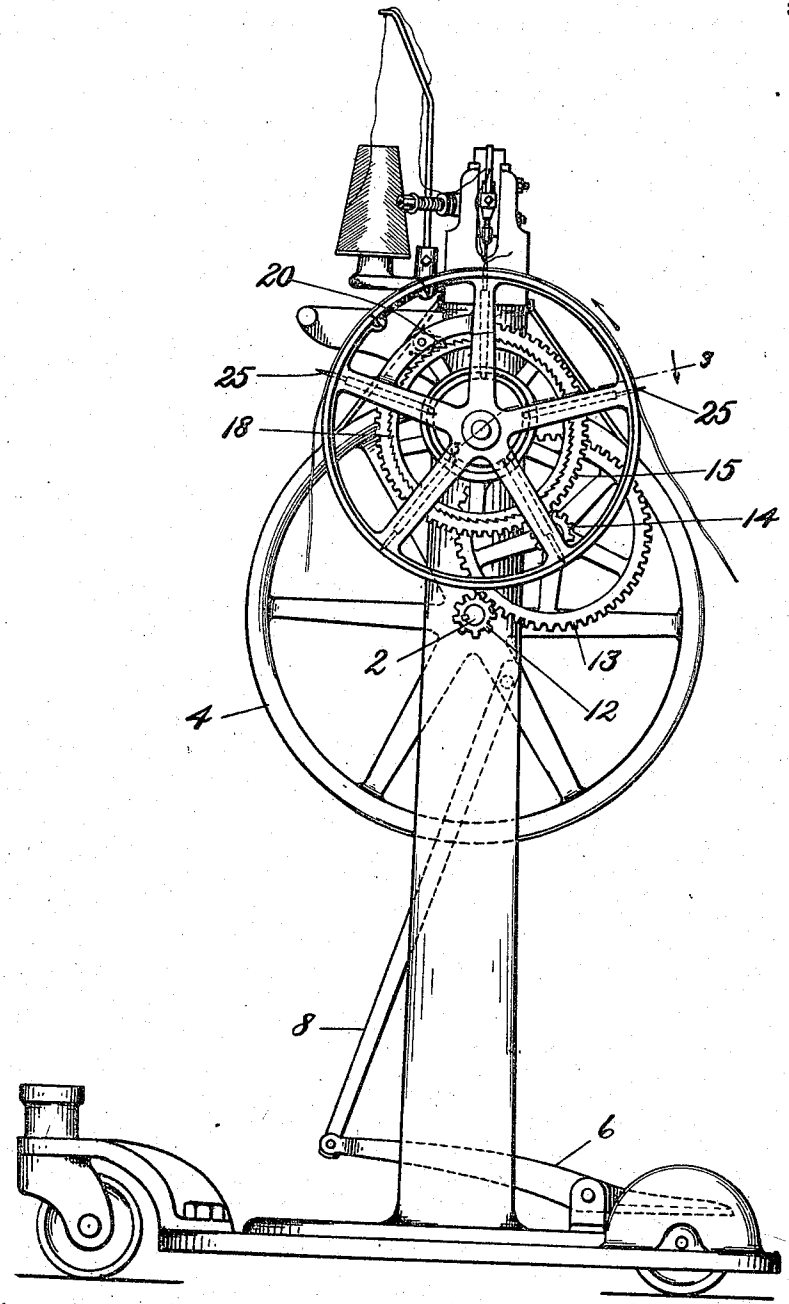

Fig. 1.

WITNESSES.
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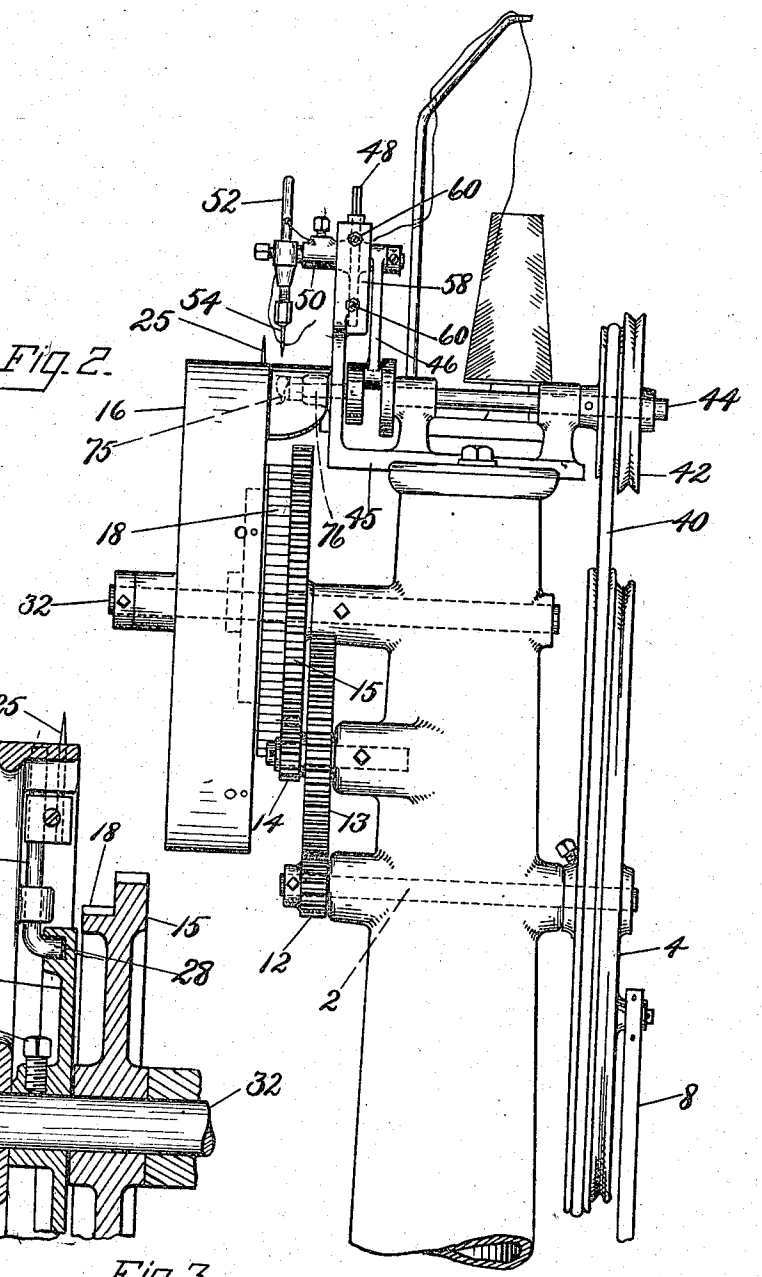
3 SHEETS—SHEET 2.

Fig. 2.



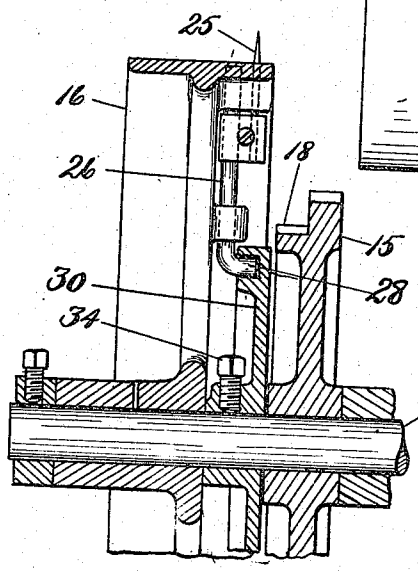


Fig. 3.

WITNESSES.

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3 SHEETS—SHEET 3.

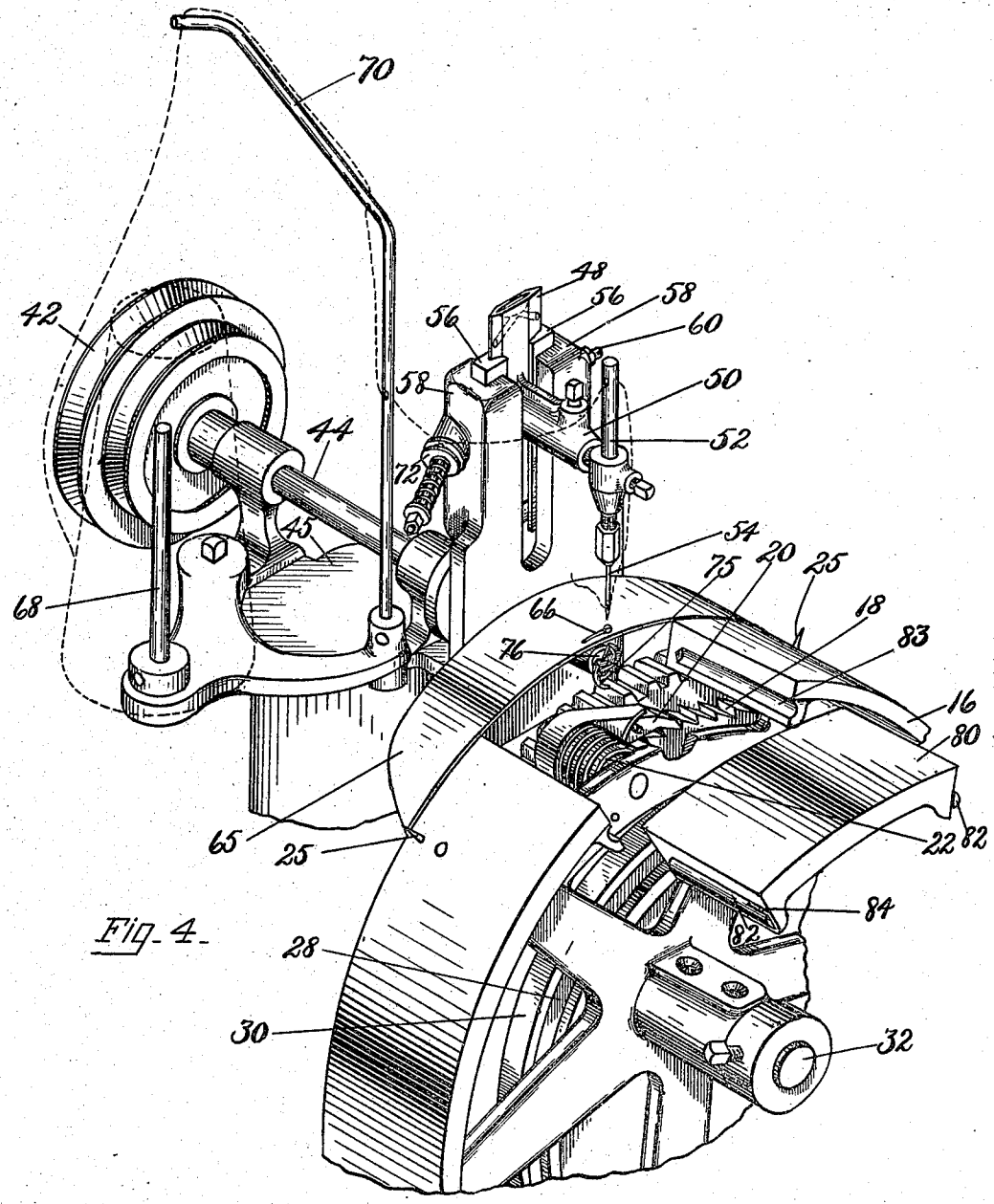

Fig. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

ORRELL ASHTON, OF LAWRENCE, MASSACHUSETTS.

FEEDING MECHANISM.

No. 873,338. Specification of Letters Patent. Patented Dec. 10, 1907.

Application filed April 12, 1906. Serial No. 311,290.

To all whom it may concern:

Be it known that I, ORRELL ASHTON, a citizen of the United States, residing at Lawrence, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Feeding Mechanism, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to sewing machines and other machines in which stock is fed progressively into position to be operated upon and is herein shown as embodied in a machine for sewing together the ends of lengths of cloth, such machines being designed particularly for use in mills where loom lengths of cloth require to be united to facilitate subsequent operations upon the continuous strip thus formed.

A very important feature of the invention consists in novel stock feeding mechanism. This mechanism includes a carrier member for presenting the stock to the means for operating upon it, herein shown and referred to as stitch forming means, and devices for engaging the stock to insure its advance with the carrier member. These engaging devices have a movement independent of the carrier for engaging the stock before it reaches the stitch forming means, a movement with the carrier to advance the stock past the stitch forming means, and a further movement with relation to the carrier to disengage themselves from the stock after it has been sewed. As herein shown, the carrier is a rotatable member in the form of a wheel, which may be turned intermittently but preferably will be rotated continuously for carrying the stock under the stitch forming means, or it may be any other means for operating upon the stock. The feeding devices coöperating with the carrier are herein shown as carried by it, although they might be otherwise mounted, and as actuated to project them beyond the periphery of the carrier wheel into engagement with the stock thereon before the engaged portion of the stock reaches position to be sewed. The actuating means is arranged to hold the devices in operative engagement with the stock to insure its advance with the carrier to and past the stitch forming means and then to withdraw said devices within the periphery of the wheel, whereby the stock is stripped from them after the stitch forming means has been passed. The engaging devices are preferably formed as a series of sharpened pins arranged to project through the rim of the feed wheel at suitable intervals and movable radially with relation to the wheel by a cam which is arranged to act upon the pins successively and control their movements in engaging and disengaging the stock. The engaging devices are preferably so arranged and actuated that one will not be withdrawn from the stock until the next following one has passed the stitch forming means whereby the stock will be drawn past the stitch forming means with certainty.

Other features of the invention, including details of construction and combinations of parts, will be hereinafter described and pointed out in the claims.

In the accompanying drawings which represent a sewing machine embodying the invention in the best form now known to me,—Figure 1 is a front elevation; Fig. 2 is a side elevation; Fig. 3 is a section on line 3—3 of Fig. 1; Fig. 4 is a perspective view on an enlarged scale.

The apparatus is shown as a portable machine, the base of which is provided with casters as shown in Fig. 1. The column is formed with a bearing for a shaft 2 carrying a pulley 4 which is rotated by a pedal 6 to which it is connected by a rod 8. The shaft 2 has on its front end a pinion 12 which through reducing gears 13, 14, 15 drives the carrier member of the stock feeding mechanism. This carrier member is herein shown as a wheel 16 of large diameter and preferably is connected to the gear 15 by means which permit its rotation independently of the driving means described. This connection as herein shown comprises a rotatable wheel 18 movable with the gear 15 and a pawl 20 carried by the wheel 16 in position to coöperate with the ratchet, as shown in Figs. 2 and 4. A spring 22 holds the pawl to the ratchet.

Coöperating with the carrier wheel 16 are feeding devices shown as comprising pins 25 arranged to extend radially through guides in the wheel and attached to shank members 26, which are similarly guided in the wheel. The shank members are provided with portions which are, as herein shown, received in a cam groove 28 of a cam block 30 by means of which the feeding devices are projected beyond the periphery of the wheel into position to engage the stock and insure its ad-

vance with the carrier wheel, and are retracted to strip themselves from the stock and avoid danger of the stock being carried around by the wheel. The feeding pins are shown as five in number, but there may be any desired number of them. The cam groove 28 is illustrated as formed to cause three of these pins to project into position to engage the stock at a time so that while one is holding the stock in operative relation to the means for operating on the stock another will be operative for drawing the stock from the means for operating on it and a third may be entering the stock preparatory to performing its function. The cam block 30 is preferably movable to permit the positions of the pins to be adjusted or to be projected earlier or later with relation to the point at which the stock is acted upon by the means to which it is fed. To this end the cam is mounted, as shown in Fig. 3, on the fixed spindle 32 upon which the gear 15 and the wheel 16 turn and is secured thereon by a binding screw 34. By loosening the binding screw the cam can be moved angularly about the spindle into any relation to the fixed spindle and caused to project and withdraw the pins 25 earlier or later in their travel.

The means for operating upon the stock presented by the feeding mechanism is herein shown as sewing or stitch forming mechanism adapted to connect two lengths of cloth, although it might be any other means for operating upon stock. The stitch forming mechanism is shown as of the single thread chain stitch type and is operated by a belt 40 extending from the pulley 4 to a pulley 42 fast on a shaft 44 carried in bearings of a bracket 45 secured to the top of the column of the machine. The shaft is connected by a pitman 46 to a slide 48 having a forwardly extending arm 50 carrying a needle bar 52 by which the needle 54 is operated. The slide 48 reciprocates between guide plates 56 mounted in posts 58 of the bracket 45 and one of which is adjustable by means of the set screws 60 to take up wear of the slide and guide. The connection of the needle bar to the slide 48 is not so rigid as to interfere with the slight movement of the needle in the direction of the feed which may be required because of the continuous movement of the feed wheel 16. The needle works through a shield 65 which is provided with an elongated needle opening 66, as shown in Fig. 4, to accommodate the movement of the thread as the stock is fed. The thread is supported on a spool holder 68 and runs through a guide 70 and a tension device 72 to the needle bar and needle as shown.

Coöperating with the needle to form the stitches is a looper 75 mounted on a shaft 76 operatively connected to the shaft 44, as shown in Fig. 2. Any other usual or suitable form of stitch forming mechanism or other mechanism for operating on the stock may be substituted for that shown and here described.

To facilitate access to the parts of the machine which are located behind the carrier wheel 16 without removing the wheel said wheel is formed with a section 80 of its rim which is detachably secured to the main portion of the wheel and may be removed, as shown in Fig. 4. This section 80 is held in place by locking devices shown as keys 82 split at their outer ends, as at 84, and secured to the section 80. This construction of the keys causes them to bind upon the main portion of the wheel when the section has nearly reached its normal operative position, but to offer no resistance to the major portion of the movement of inserting and removing the section 80.

By reason of the connection between the wheel 16 and its driving mechanism which permits the wheel to be rotated independently, said wheel may be turned to bring a portion of the stock which has been impaled on a feeding pin 25 into position to begin the sewing at any desired point. Also this connection allows the wheel to be readily turned without pedaling to bring the section 80 uppermost where its removal will expose the said looper 75 and the pawl 20 which are the hidden parts most likely to require inspection.

In using the machine herein shown the stock to be fed is placed upon the carrier wheel and, engaged with a feeding device after which the wheel may be turned by hand, if desired, to bring under the needle the point at which the sewing is to begin. Movement of the treadle will then rotate the wheel and cause the feeding pins to engage the stock automatically, positively carry it to the needle, and then continue their control to draw it past the needle. Preferably one pin will not disengage itself from the stock until the following pin has passed the needle, so that the succession of pins maintain constant engagement with the stock to draw it past the needle and then automatically strip themselves from the stock so that it is not carried around by or caused to wind upon the wheel.

Having explained the nature of my invention and fully described a machine embodying its several features, I claim as new and desire to secure by Letters Patent of the United States:—

1. In a mechanism of the class described, the combination with a carrier for supporting the stock and means for actuating the carrier, of stock engaging pins movable with the carrier and normally occupying positions below the stock supporting surface of the carrier, and means for automatically projecting the pins into the stock and then withdrawing them therefrom.

2. In a mechanism of the class described,

the combination with a carrier wheel for supporting the stock and means for turning the wheel, of pins located normally within the periphery of the wheel and means for projecting the pins beyond the periphery of the wheel and thereafter retracting them at predetermined points in the rotation of the wheel,

3. In a mechanism of the class described, the combination with a stock feeding wheel and means for rotating it, of pins arranged radially on the wheel and a cam stationary with relation to the wheel for automatically projecting the pins into engagement with the stock on the wheel and retracting said pins to strip them from the stock.

4. In a mechanism of the class described, the combination with means for operating on stock, of a stock feeding wheel, means for rotating the wheel, pins located normally within the periphery of the wheel, and means for projecting the pins successively into engagement with the stock on the wheel before the operating means is reached and withdrawing the pins from the stock after the operating means has been passed.

5. In a mechanism of the class described, the combination with means for operating on stock, of a stock feeding wheel, means for rotating the wheel, pins arranged radially on the wheel, and a cam for projecting the pins successively into engagement with the stock on one side of the operating means and withdrawing them when they have reached the other side of the operating means, said cam being adjustable relatively to the means for operating on the stock to change the point in the rotation of the wheel at which the pins shall be projected and withdrawn.

6. In a mechanism of the class described, the combination with mechanism for operating on stock, of a stock feeding wheel arranged in front of said mechanism and having a portion of its rim removable to allow access to the operating mechanism.

7. In a mechanism of the class described, a stock feeding wheel having a portion of its rim removable from the main portion and a coöperating groove and spring key formed in the abutting edges of said portions for securing them in assembled relation.

8. In a mechanism of the class described, a stock feeding wheel comprising a main rim section provided with grooves in its edges, and a removable rim section provided with a rib to coöperate with said groove, said rim having an outer spring section for locking the removable section in normal position.

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

ORRELL ASHTON.

Witnesses:
HUGH HAUSTER,
HANNAH ASHTON.