

(No Model.)

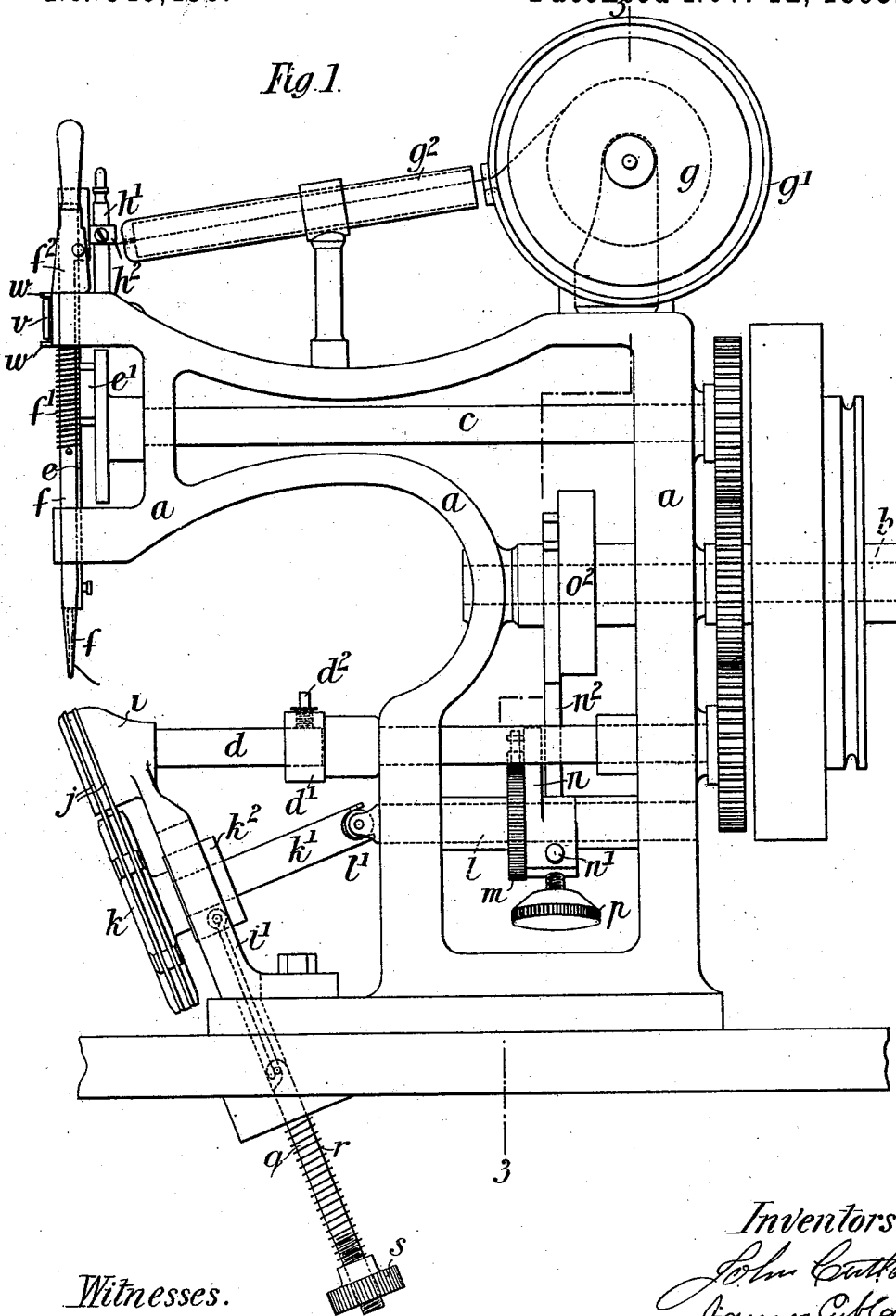
3 Sheets—Sheet 1.

JOHN CUTLAN & JAMES CUTLAN.
SHOE SEWING MACHINE.

No. 549,496.

Patented Nov. 12, 1895.

Fig. 1.



Witnesses.
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John E. Dousfield.

Inventors.
John Cutlan
James Cutlan

(No Model.)

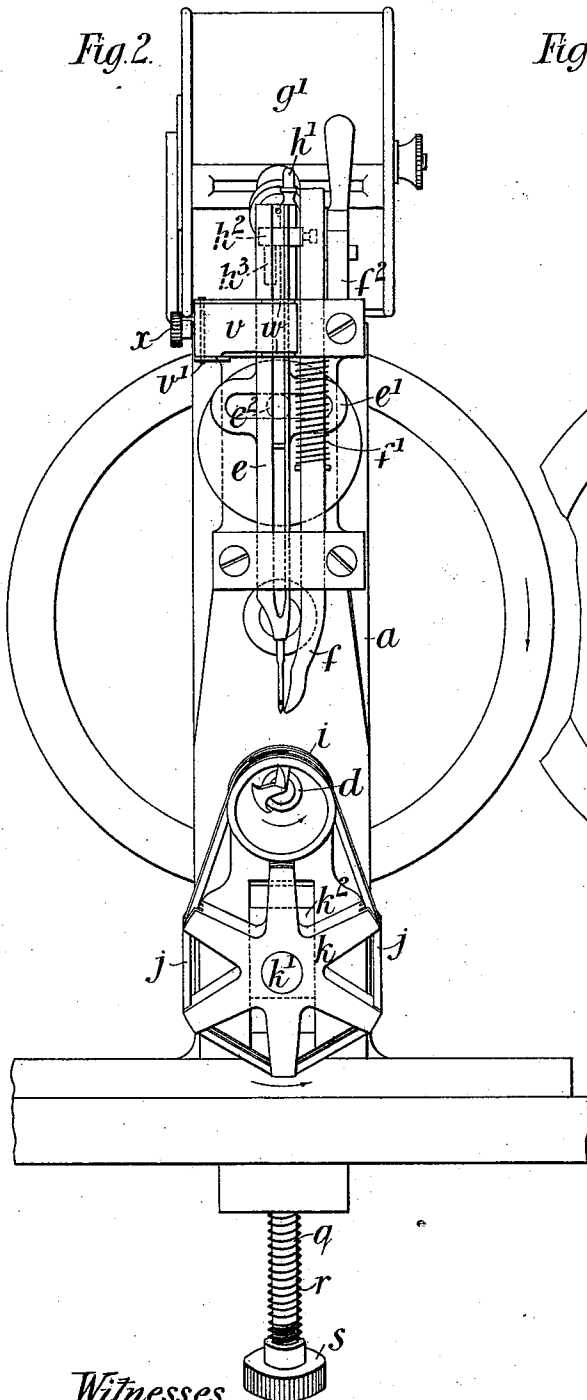
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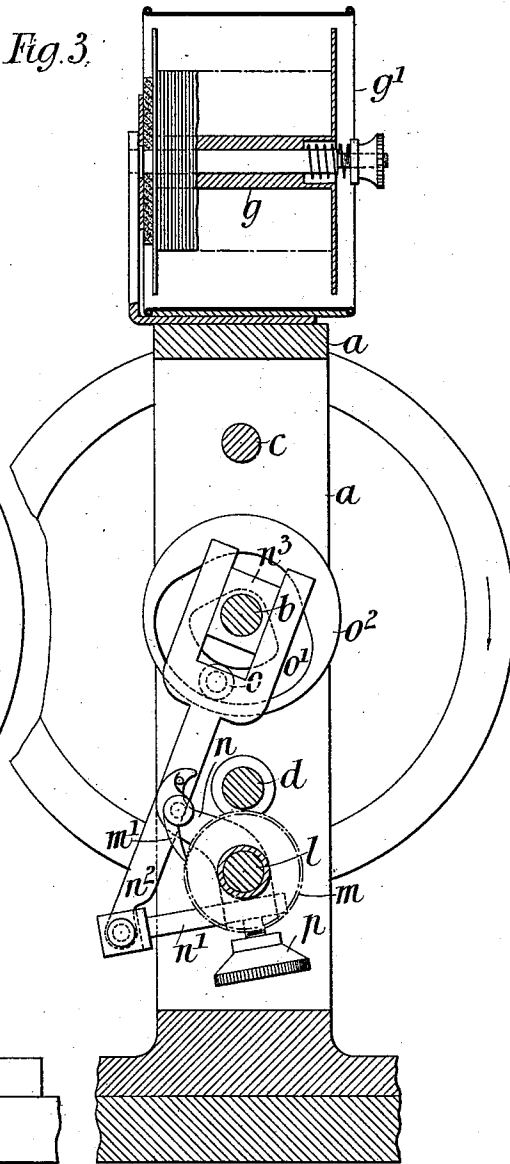
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Fig. 2.



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Fig. 3.



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Fig. 4.

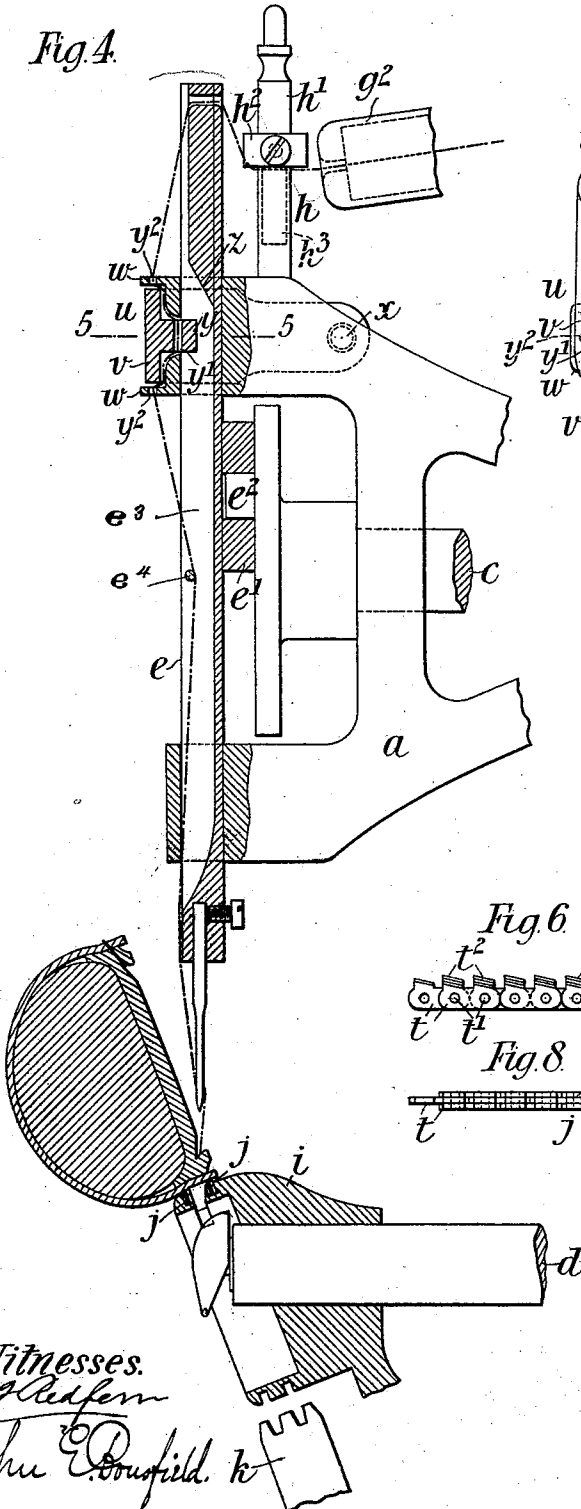


Fig. 5.

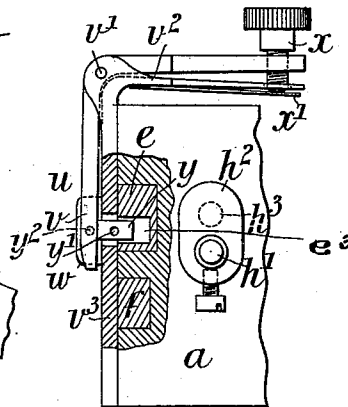


Fig. 6.

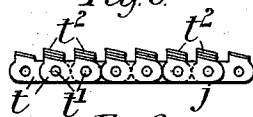


Fig. 8.



Fig. 7.



Witnesses.

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JOHN CUTLAN AND JAMES CUTLAN, OF LONDON, ENGLAND.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 549,496, dated November 12, 1895.

Application filed January 2, 1895. Serial No. 533,530. (No model.)

To all whom it may concern:

Be it known that we, JOHN CUTLAN and JAMES CUTLAN, subjects of the Queen of Great Britain, residing at London, England, have invented a new and useful Turn-Shoe Sewing-Machine for Sewing the Soles to Up-
pers of Boots and Shoes, of which the follow-
ing is a specification.

The invention relates to improvements in sewing-machines, and has for its object to adapt an ordinary sewing-machine having a straight needle for that class of boot and shoe sewing known as "turn-shoe" work.

According to our invention we arrange the needle-plate or work-support in an inclined position with respect to the base-plate or supporting-base of the machine, and we provide a feed mechanism which consists of chains running in grooves formed in the work-support, the said feed mechanism being driven from a wheel having a series of spurs or arms. The shaft carrying the said wheel is placed at an angle corresponding with the inclination of the work-support, and is operated from a horizontal shaft, with which it is connected by a universal joint, a tension device being employed to keep the chains taut. The feed mechanism is operated through the medium of ratchet mechanism on the said horizontal shaft. Upon the plate carrying the needle-bar and presser-foot is fixed a gripping device which we employ for holding the thread during the time that the needle-bar is moving upward and drawing a fresh supply of thread for the next stitch from the spool, the said gripping device being operated to grip the thread under the action of a spring and moved to release the thread by the contact therewith of a cam-surface on the needle-bar. The needle-bar is hollowed out to receive the thread and a tube is provided on the upper part of the machine, through which the thread passes from the spool to the needle-bar.

To enable our invention to be fully understood we will describe the same by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine constructed according to our invention. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical transverse section on the line 3 3,

Fig. 1. Fig. 4 is a sectional elevation of the front portion of the machine drawn to an enlarged scale. Fig. 5 is a sectional plan, the section being taken on the line 5 5, Fig. 4. Figs. 6, 7, and 8 are respectively a side elevation, a transverse section, and a plan of a portion of one of the chains for feeding the work, the said views being drawn to an exaggerated scale.

a is the framing of the machine; *b*, the driving-shaft; *c*, the needle-operating shaft, and *d* the hook or looper shaft, the said shafts *c* and *d* being driven from the shaft *b*, through the medium of gearing, as clearly shown in Fig. 1.

e is the needle-bar, which slides in suitable guides in the head of the frame *a* and is provided with a slotted cross-bar *e'*, in which the pin *e²* of a crank on the end of the shaft *c* engages in a well-known manner to cause the vertical reciprocation of the said needle-bar.

f is the presser-foot, which also slides in suitable guides in the head of the frame and is provided with a spring *f'*, which normally tends to hold the presser-foot against the work, and with a cam *f²* for lifting the presser-foot from the work against the pressure of the spring in the ordinary manner.

The needle-bar *e* is hollowed out to provide a longitudinal thread-carrying groove or recess *e³*, and the needle-bar is also provided with a thread-guide *e⁴*, consisting in this instance of a bar located in the recess *e³* for holding the thread in the said recess.

g is the thread spool or bobbin, arranged in a frame or box *g'* on the upper rear part of the frame *a*, and *g²* is a tube through which the thread passes from the bobbin to the needle-bar.

h is a thread-guide, consisting of a pillar *h'*, carrying upon it an adjustable block *h²*, provided with a downwardly-projecting pin *h³*, between which pin and the pillar the thread is caused to pass.

i is the needle-plate or work-support, which is inclined to the base-plate of the machine, and is supported upon or formed in one piece with a bracket *i'*, attached to the base of the machine and made hollow or cup-shaped, so as to receive the looper-hook within it, as shown most clearly in Fig. 4, the said work-

support also forming the bearing for one end of the looper-shaft *d*. In practice the said looper-shaft is made in two parts, one of which carries a socket *d'*, in which the adjacent end of the other part of the shaft is fixed by means of a set-screw *d''*, this arrangement being provided to permit of readily adjusting or removing and replacing the looper when required.

j j are the feed-chains, which run in grooves in the work-support *i*, and also around the arms or spurs of the wheel *k*, mounted on the inclined shaft *k'*, carried in a bearing in the bracket *i'*.

l is the horizontal shaft to which the inclined shaft *k'* is connected by a universal joint *l'*, and *m* is a ratchet-wheel mounted on the shaft *l* and engaged by a pawl *m'* for imparting motion to the feed-wheel *k* and the chains *j j*. The pawl *m'* is carried by an arm *n*, pivotally mounted upon the shaft *l* and carrying a lever *n'*, to which is attached one end of a connecting-rod *n''*, the other end of which is bifurcated to slide on a block *n'''* on the driving-shaft *b* as a guide, and carries a roller *o*, running in the groove *o'* of a cam *o''* on the said driving-shaft, the arrangement being such that when the driving-shaft is rotated the arm *n* will be oscillated and caused, through the medium of the pawl which it carries, to impart motion to the ratchet-wheel *m* and, consequently, also to the feed-wheel *k*.

To adjust the length of the feed, we arrange the lever *n'* so that it can be lengthened or shortened, the said lever, as shown, sliding through an aperture in an extension of the arm *n* and being fixed in any position by means of a set-screw *p*.

In order that the feed-chains shall always be stretched taut, we arrange the bearing *k''* to slide in the bracket *i'*, and to the said bearing we attach a rod *q*, carrying a spring *r*, arranged between an abutment upon the base of the machine and a nut *s* on the end of the rod, in such a manner that the said spring normally tends to pull down the bearing *k''* and thereby draw the wheel *k* away from the work-support *i*.

The construction of the feed-chains will be understood by reference to Figs. 6, 7, and 8, the said chains being each composed of a series of flat links *t*, connected together by rivets *t'*, each link being provided with two teeth *t'' t'''*. The length of the several teeth is so proportioned that the toothed surface will have an angle somewhat similar to that shown in Fig. 7. These chains are arranged in the grooves of the work-support *i*, so that the highest edges shall be uppermost and form teeth or projections which will prevent the work from slipping downwardly upon the work-support under the pressure of the needle, as will be readily understood by reference to Fig. 4.

u is the gripping device, which we employ for holding the thread during the upward movement of the needle-bar. This device comprises a bell-crank lever *v*, pivoted at *v'* upon a lug or extension *v''* of the front plate

v'' of the head of the machine and at one end working between two lugs *w w* on the head of the machine, and carrying at the other end a regulating-screw *x*, which is acted upon by a spring *x'*, also fixed to the extension *v''*, the said spring normally serving to press the free end of the bell-crank lever toward the plate *v''*. On the said free end of the lever *v* is fixed a projection *y*, having a hole *y'* through it, and in the lugs *w w* are formed other holes *y'' y'''*, through which holes *y' y''* the thread is passed, in the manner shown in Fig. 4.

The upper part of the slot in the needle-bar *e* is formed with an inclined plane *z*, so placed that as the needle is entering the work it will act against the end of the pin or projection *y* to force back the lever *v* against the pressure of the spring *x'*, thereby allowing the thread to freely pass through the gripping device *u*. When, however, on the upward movement of the needle the incline *z* passes above the projection *y*, the lever *v* is moved toward the plate *v''* by the spring *x'* and grips the thread, so that the latter cannot slide through the gripping device *u*, the result being that the continued upward movement of the needle-bar, through the upper part of which the thread is passed, as shown in Fig. 4, causes a certain length of thread to be drawn from the spool ready for the next stitch.

In the operation of the machine our work is firmly held upon the work-support against the feed-chains in such a position that the needle will enter the channel in the sole, and each time that the needle moves out of the work the feed-chains will feed the same along the required distance.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a sewing machine, the combination, with the work support, of the feeding chains and operative mechanism therefor and a tension spring for said chains to hold them taut, substantially as described.

2. In a sewing machine the combination with the work support and feeding chains, of an actuating wheel for said chains, said wheel being movable toward and from the work support and the tension spring for said wheel and chains, substantially as described.

3. In a sewing machine, the combination, with the work support, of the feeding chains, the wheel for actuating said chains, said wheel being movable toward and from the work support, a mechanism for actuating said wheel including a shaft with a universal joint, and means for drawing said wheel downward to tighten said chains, substantially as described.

4. In a sewing machine the combination with the head of the machine, of a thread guide in rear of the needle bar, the needle bar having a thread opening above said head, and a thread carrying groove in its lower portion,

a thread gripping device on the front of the head of the machine, operated by the needle bar on its downward stroke to release the thread, and on its upward stroke to grip the thread, a guide holding the thread in said thread carrying groove of the needle bar whereby the needle bar guides and controls the thread, substantially as described.

5. In a sewing machine the combination with the inclined work support, of feeding chains having teeth provided with upper faces having a greater angle of inclination with respect to the base plate of the machine than the incline of the work support, substantially as described.

6. In a sewing machine the combination with the needle having a longitudinally extending thread carrying groove, and provided at one end of said recess with a thread clamp operating shoulder, of a thread clamp having a movable member provided with a portion extending into said longitudinal thread carrying groove in position to be struck by said shoulder, and a thread guide carried by the

needle bar for confining the thread in said groove, substantially as described.

7. In a sewing machine the combination with the head of the machine and the longitudinal recessed needle bar having a cam at one end of said recess, the said head of the machine being provided with two thread guides in different horizontal planes, and an aperture intermediate the said thread guides communicating with the recess in the needle bar, of a spring actuated tension arm located intermediate said thread guides and provided with a projection extending through said aperture, in line with said cam, said projection having a thread guide therein normally held out of line with the thread guides on the head of the machine, substantially as described.

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Witnesses:

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