

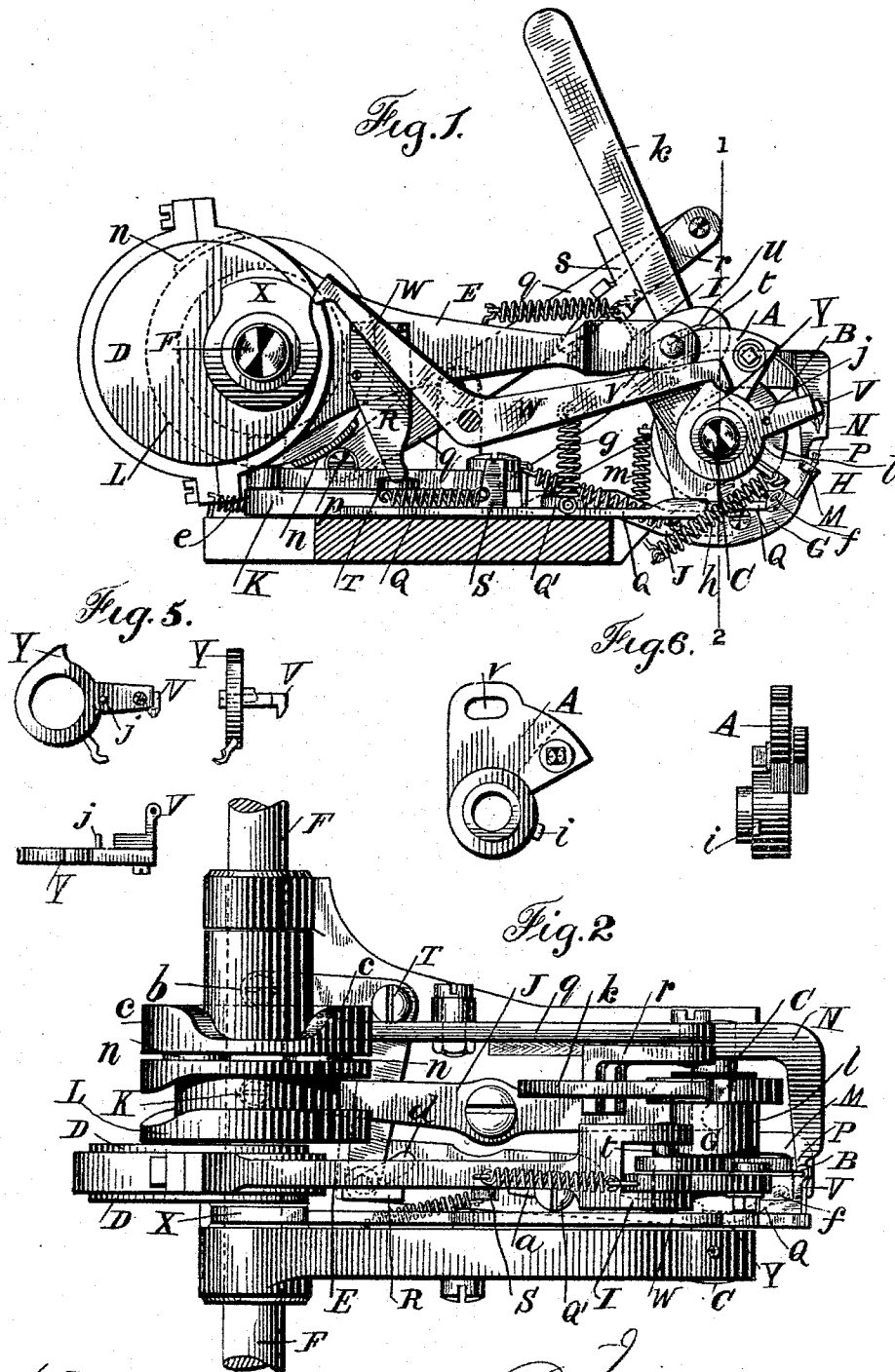
(No Model.)

2 Sheets—Sheet 1.

M. C. & T. J. DENNE.
BOOT OR SHOE SEWING MACHINE.

No. 515,662.

Patented Feb. 27, 1894.



Witnesses:
J. A. Rutherford.
Robert Everett.

Inventors:
Mark C. Denne,
Thomas J. Denne,
James L. Norris, Attorney

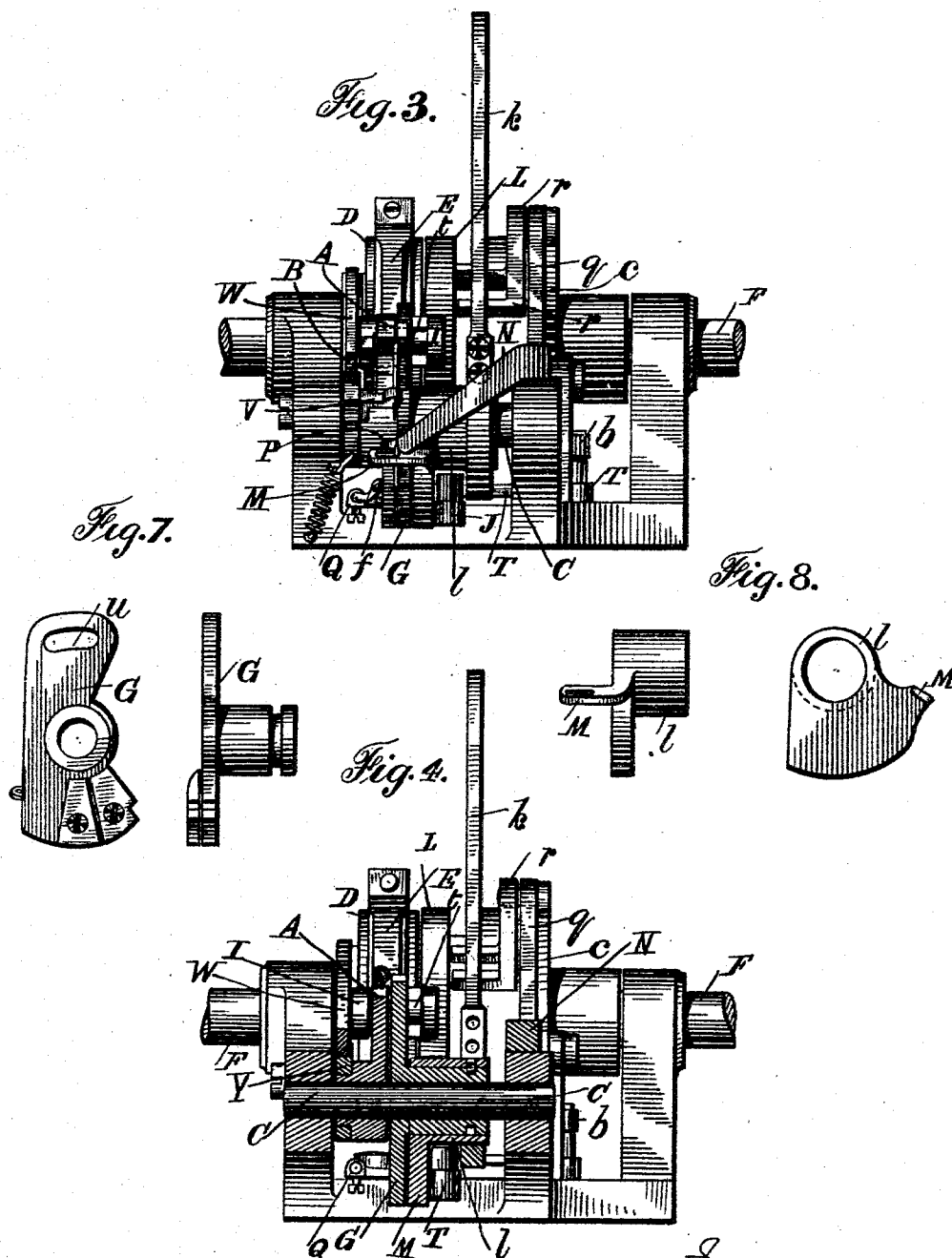
(No Model.)

2 Sheets—Sheet 2.

M. C. & T. J. DENNE.
BOOT OR SHOE SEWING MACHINE.

No. 515,662.

Patented Feb. 27, 1894.



Witnesses:
J. A. Rutheford
Robert Smith

Inventors:
Mark C. Denne
Thomas J. Denne
By James H. Norris
Attorney.

UNITED STATES PATENT OFFICE.

MARK CHARLES DENNE, OF EASTBOURNE, AND THOMAS JAMES DENNE, OF
HEMEL-HEMPSTEAD, ENGLAND.

BOOT OR SHOE SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 515,662, dated February 27, 1894.

Application filed February 10, 1892. Serial No. 421,046. (No model.) Patented in England January 26, 1891, No. 1,424.

To all whom it may concern:

Be it known that we, MARK CHARLES DENNE, residing at No. 1 Christchurch Road, Eastbourne, in the county of Sussex, and
5 THOMAS JAMES DENNE, residing at Hemel-Hempstead, in the county of Hertford, England, subjects of the Queen of Great Britain, have invented new and useful Improvements in Boot or Shoe Sewing Machines, (patented in Great Britain, No. 1,424, bearing date January 26, 1891,) of which the following is a specification.

This invention has for its object certain improvements connected with boot and shoe
15 sewing machines in which a barbed needle, an awl, and a looper are employed.

In order that our invention may be thoroughly understood we annex the accompanying sheet of drawings, in which—

20 Figure 1, is an elevation, with the side removed, of a machine made according to our invention. Fig. 2, is a plan of same. Fig. 3, is a front elevation. Fig. 4, is a front sectional elevation through the line 1, 2, Fig. 1.
25 Figs. 5, 6, 7 and 8 are detail views of the cast off, needle plate, awl carrier, and presser foot respectively.

The needle carrier is a plate A to which the needle B is secured and which has a vibratory motion round a horizontal shaft C in the front of the machine. The motion is imparted to it by an eccentric D and rod E from a back shaft F parallel with the above mentioned shaft.

35 The awl carrier G is a similar plate to the above, which carries the awl H in a reversed position with respect to the needle and so that both the needle and awl move in the same plane when the feed is not in action.

40 This plate is included along with the needle plate in the fork I at the end of the eccentric rod E. The feed is obtained by means of a lever J moving in a horizontal plane, one end K of which is engaged in a cam L, and the
45 other works between two collars on the boss of the above mentioned awl carrier. The cam is so arranged that when the needle is passing through the work following the awl point to point, it imparts a motion to the awl,
50 moving it out of the plane of the needle to

the distance the length of stitch required. The awl then passes up through the work and when through is moved back again to the plane of the needle, taking with it the work and also the under presser foot M which is
55 pivoted to the same piece.

The plate N against which the work is held is above it and the front edge P forms a guide for the work. The before mentioned presser foot M keeps the work in position against this
60 plate.

The looper Q for throwing the thread into the barb of the needle is actuated preferably by the following means. A lever R attached to and projecting from the eccentric rod E
65 pushes against the pillar S moving the looper forward and at the same time it is caused to describe a circular motion at its front end by pivoting the looper at Q' in a slot a to allow of the forward motion and moving the back
70 end transversely by the pivoted bell crank T having a roller b bearing against a face cam c fixed to the back shaft. The needle being pushed through the work the looper Q is given a combined forward and circular movement
75 by the projection R, bell crank T sliding in angular slot d Fig. 2, the roller b being at this time opposite the recessed portion of the cam c into which it is pulled by the spring e so that the front end of the looper being placed
80 in the proper position with regard to the needle and having an eye f through which the thread passes it throws the thread into the barb of the needle. The needle returns through the work drawing the thread up above the surface and
85 returns leaving a loop through which the next loop is drawn and in this manner forming the stitch.

The cast off V embraces the needle B and is lifted at the top of its stroke to allow of
90 the loop escaping by the rocking lever W riding over the inclined projection Y of the disk to which the cast off is fixed, under the action of the spring g and is held in this position during a portion of the forward move-
95 ment of the needle by the cam X fixed to the back shaft F moving under the hinder end of the lever W preventing any downward travel of the same so fixing the cast off until the cam X is clear of the lever, when V is
100

pulled down on to the work by the spring *h*. The cast off *V* is lifted at the proper moment by the stud *i* coming into contact with the pin *J* of the cast off disk.

5 The presser foot *M* can be moved away from the work against which it presses by pulling over the handle or lever *k* fixed to the cylindrical part *l* to which the presser foot is attached, a spring *m* serving to keep the
10 foot up to its work.

In order to compensate for any irregularities in the thickness of work under operation the pressure of the presser foot *M* is relieved twice during each revolution by the
15 cams *n, n*, on the back shaft coming in contact with the roller *p* and depressing the rocking lever *q* releasing the catch *r* from the segmental notched piece *s* and thus leaving the handle and presser foot to adapt itself to
20 the thickness of work then passing.

The movements of the various parts during one revolution of the back shaft are as follows. The back shaft is turned until the awl is in the same vertical plane as the needle,
25 and just entering the presser foot slot. The handle *k* is then pulled back to lower the presser foot *M* sufficiently to allow of the insertion of the work between it and the fixed foot and guide *N, P*. *k* is then let go and is
30 automatically fixed in the position required according to the thickness of the work by means of the segmental toothed ratchet *s* and the catch *r*, by its tooth *r'* pressing upon the ratchet *s* and acting as a pivot when the upper
35 end of *q* is lowered by its spring *r''* and the lower tooth *r'''* then engages in the quadrant teeth of *s*. The back shaft *F* is then rotated causing the awl *H* to move over the arc of a circle and through the work when the various
40 parts will be in the position shown in the annexed drawings. The eccentric *D* and rod *E* having drawn the awl through the work and the needle back as far as they will go, begin to return the needle following the awl
45 through the hole made in the work. When the needle has nearly reached the end of its stroke the cam on the back shaft shifts the end *K* of the lever *J* over and moves the sleeve *l* and carrier *G* along the shaft *C* a distance
50 equal to the length of stitch required a sufficient space being allowed at the end of the shaft *C* and also in the fork *I* for this purpose. The awl is now out of the plane of the needle and although the back shaft continues
55 to rotate the awl and needle are at rest. The needle carrier *A* and the awl carrier *G* are on the same pivot *C* but have differential movements relatively to each other by reason of the slots *u, v*, and pin *t*, the spring *E'* serving
60 to keep the needle carrier in a backward position and the spring *G'* the awl carrier in a forward position. When the needle arrives at the extreme end of its stroke the eccentric *D* begins to return but imparts no motion to
65 the needle the pin *t* moving in the slot *v* (the lost motion of both carriers is at the beginning of the return of their respective strokes).

The looper *Q* now under the combined action of the projection *R*, bell crank *T*, slot *d*, and cam *c* throws the thread upon the barb of the
70 needle, which then returns through the work, drawing the thread after it and forming the loop. The awl is at the same time piercing another hole through the work and as soon
75 as the needle is clear it is moved across by the lever *J*, taking the work with it, until the awl is in the same vertical plane as the needle which then descends through the loop before mentioned, following the awl in the manner
80 before described.

What we claim, and desire to secure by Letters Patent, is—

1. In a sewing machine, the combination of an awl-carrier having a hollow boss loosely mounted and adapted to slide longitudinally
85 on a shaft, a presser-foot provided with a sleeve fitted upon said hollow boss, and mechanism for independently oscillating said awl-carrier and presser-foot about said shaft as a center, substantially as described. 90

2. In a sewing machine, the combination of an awl-carrier having a hollow boss loosely mounted and adapted to slide longitudinally on a shaft and provided with a circumferential groove, a presser-foot provided with a
95 sleeve fitted upon said hollow boss, mechanism for independently oscillating said awl-carrier and presser-foot about said shaft as a center, a pin passing through the presser-foot sleeve and engaging the groove in the hollow
100 boss of the awl-carrier to prevent independent longitudinal movement of said carrier and presser-foot, and mechanism for imparting a lateral movement to the awl-carrier and presser-foot for feeding the work, substantially as
105 described.

3. In a sewing machine, the combination of a slotted needle carrier, a slotted awl-carrier, a rotary drive-shaft, an eccentric fitted on said shaft, a rod engaging at one end said eccentric and at its other end provided with a
110 pin engaging the slots in the needle and awl-carriers, and springs connected to said carriers and operating to oscillate them in reverse directions, substantially as and for the
115 purpose specified.

4. In a sewing-machine, the combination of a slotted needle-carrier and a slotted awl-carrier both mounted loosely on a shaft and the latter capable of longitudinal movement thereon, a rotary drive-shaft carrying an eccentric,
120 a rod at one end engaging said eccentric and bifurcated at its other end and embracing said needle and awl-carriers, a pin carried by said rod and passing through the slots in the
125 needle and awl-carriers, means for imparting a lateral movement to the awl-carrier, and springs for oscillating said carriers in opposite directions, substantially as and for the purpose specified. 130

5. In a sewing machine, the combination of the needle and awl-carrier, the rod *E* for actuating the same, the looper-plate *Q* carrying at its forward end a looper *f* and provided

with a diagonal slot *d* at its rear end, a pivot
Q' passing through an elongated slot formed
centrally in said plate, a bell-crank lever T at
one end engaging the slot *d* and at its other
5 end engaging a cam *c* on the main-shaft, an
arm R carried by the lever E, a projection S
engaged by said stop, and a spring for retract-
ing the plate Q, substantially as shown and
described and for the purpose specified.
10 In witness whereof we have hereunto signed

our names, in the presence of two subscribing
witnesses, this 30th day of November, 1891.

MARK CHARLES DENNE.

THOMAS JAMES DENNE.

Witnesses:

HENRY GARDNER,
*Patent Agent, 166 Fleet Street, London, Eng-
land.*

CHARLES ALFRED GROSSETETE,
166 Fleet Street, London, England.