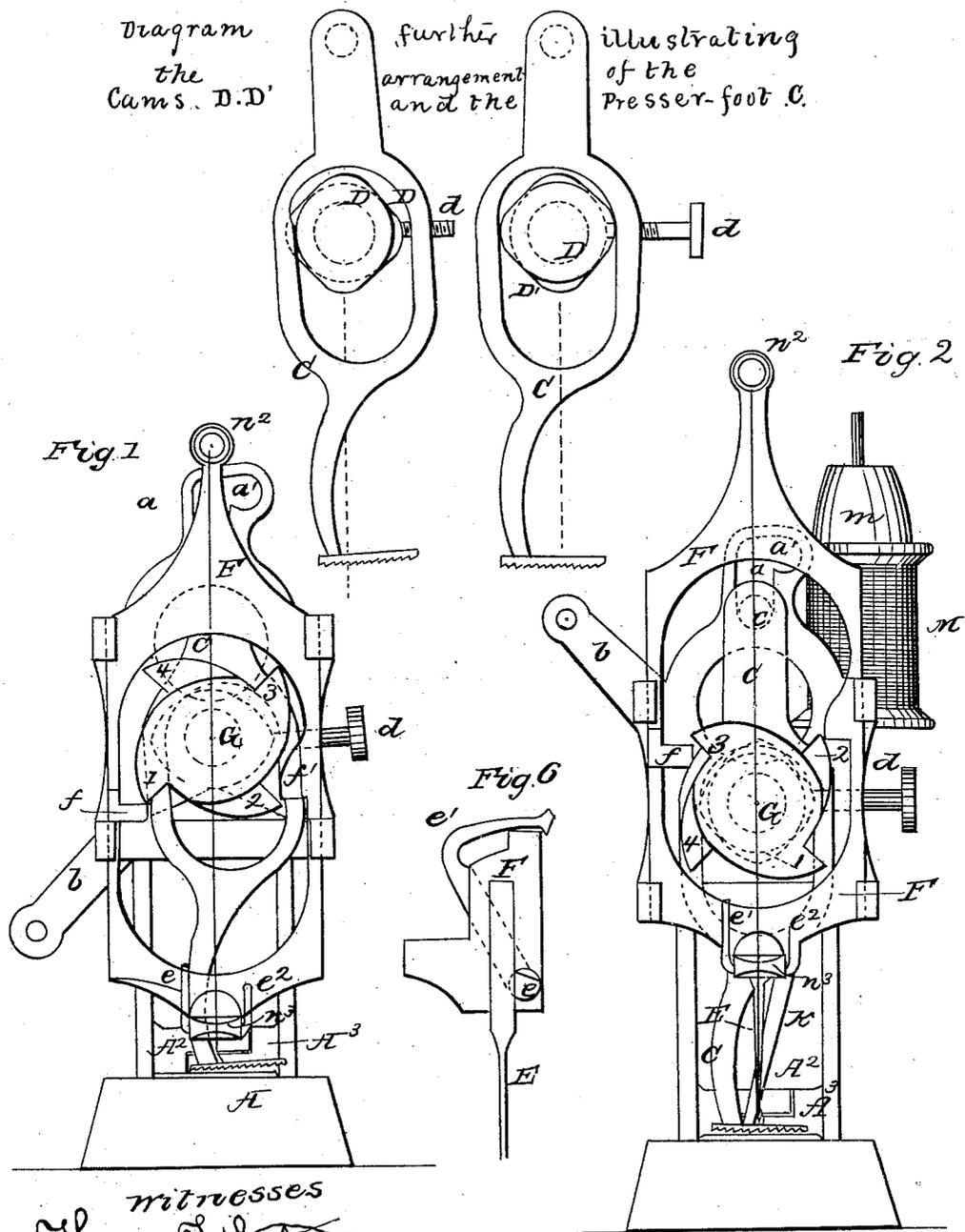


C. H. PALMER.

Sewing Machine.

No. 38,450.

Patented May 5, 1863.



witnesses
Thomas D. Tolson
W. Hendrickson

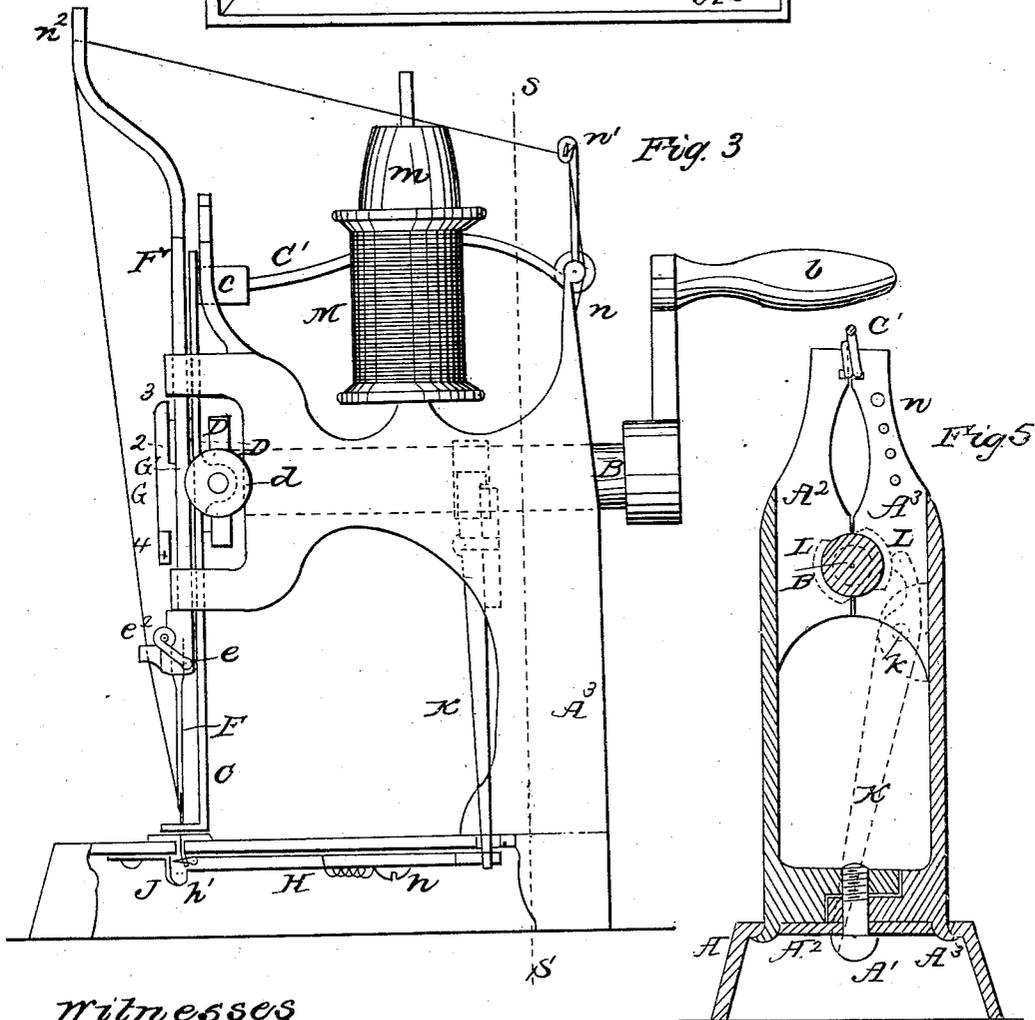
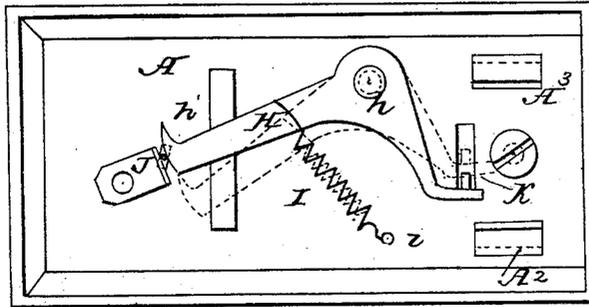
Inventor
Charles H. Palmer

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Fig. 4



witnesses
Thomas D. Gibson
at Hendersonson

Inventor
Charles H. Palmer

UNITED STATES PATENT OFFICE.

CHARLES H. PALMER, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND SAMUEL COLGATE, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 38,450, dated May 5, 1863.

To all whom it may concern:

Be it known that I, CHARLES H. PALMER, of the city, county, and State of New York, have invented a new and Improved Sewing-Machine; and I do hereby declare that the following is a full and exact description of the construction and operation of the same, which is prepared with a view to the obtaining of Letters Patent of the United States therefor.

The accompanying drawings form a portion of this specification.

Figure 1 is a front view with the needle down. Fig. 2 is a front view with the needle up. Fig. 3 is a side view, showing the parts in the same position as in Fig. 2. Fig. 4 is a plan view seen from below, with the parts corresponding in position to Figs. 2 and 3. Fig. 5 is a vertical section viewed from the front on the line *ss* in Fig. 3. Fig. 6 is a cross-section, showing on a magnified scale the means of securing and releasing the needle.

The parts represented in red outline in Fig. 5 are nearer the eye than the plane of section.

Similar letters of reference indicate like parts in all the figures.

My machine makes the stitch known as the "chain-stitch." It is very cheaply constructed, and forms two complete stitches at each revolution of the shaft.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation with the aid of the drawings, and of the letters of reference marked thereon.

A is a cast-iron bed-piece, which may be fixed to a bench or table by a screw, clip, or any other convenient means. A' is a screw inserted from below, and A² A³ are upright castings of the form represented. The parts A, A², and A³ constitute the frame of my machine, and are in consequence of the peculiar arrangement of the parts rigidly secured together by the single screw A'.

B is the shaft. It is supported in bearings between A² and A³, and may be turned by the crank *b*.

C is the presser-foot turning on a center, *c*. It is toothed on its under surface, as represented, and reciprocates horizontally to feed the cloth forward. This motion is induced by two cams, D and D', which lie side by side in the positions represented. The cam D induces

the forward motion, which feeds the cloth, and the cam D' induces the backward motion to take hold thereof. The screw *d*, tapped in the casting C at the point represented, by being turned in one direction and the other, so as to project its point inward to a greater or less extent toward the center of the cam D', which acts upon it, induces a greater or less extent of the feed-motion. The center *c*, on which the presser-foot turns, is movable within a slot, *a a'*, in the fixed framing, and the pressure downward on the presser-foot is obtained from the spring C', arranged as represented. On lifting C' and moving it slightly to one side the center *c*, and consequently the entire presser-foot C, is raised and held suspended in the lateral branch of the slot *a a'*.

E is the needle, fixed in the yoke F. The latter is guided by the frames A² A³ in a strictly rectilinear reciprocating motion. This motion is induced by the two sets of spurs or wipers represented. These are fixed on two wheels, G G', carried on the shaft B. The front wheel, G, has two spurs, 1 and 3, which act at the proper time on the front projection, *f*, on the yoke F, and induce the downward motion of the entire yoke F and its connections. The wheel G', immediately behind the wheel G, carries two spurs marked respectively 2 and 4, which act at the proper times on the internal projection, *f'*, of the yoke F and induce the upward motion of the yoke F and its connections. The line joining the spurs 1 and 3 stands at right angles to the line joining the spurs 2 and 4, and the respective projections *f* and *f'* stand, as will be observed, the first in the plane of the wheel G and the second in the plane of the wheel G', so that each operates independently of the other, and acts at a time when the other is of no effect. At each revolution of the shaft B each of the spurs 1 2 3 4 performs a complete revolution, which induces a motion or a half-reciprocation of the needle. The order in which these operations are performed is as follows: The spur 1, after driving the needle down, leaves the yoke F in the position represented in Fig. 1. The spur 2 now commences to act on the projection *f'* and raise the needle, and, after a quarter revolution of the shaft, leaves the parts in the position represented in Fig. 2. The spur 3 now acts on the projection *f*, driving the yoke F, and con-

sequently the needle E, downward again, and the spur 4 next meets the projection f' and again raises it.

It will be observed that the spur 1 leaves the projection f entirely, and consequently leaves the yoke F entirely free to rise before or at the time that the spur 2 meets the projection f' to elevate it, and that the latter leaves the projection f' , and consequently leaves the yoke F entirely free to be depressed before the spur 3 meets the projection f to depress it, and that the times of the contact and release of each of these parts are arranged by the position of the several parts, so that the reciprocations shall be performed with certainty, and that no considerable interval shall exist during which the yoke is free, one spur taking hold to induce a motion in the opposite direction so soon as another has ended its work.

The needle E is secured in the yoke F by turning the slender shaft or wire e . The axis of this wire lies near the axis of the needle. A notch is made in the wire on one side. When the bent ends e' e'' of the wire e are depressed the notch in e coincides with the socket in which the needle is received and allows the needle to be inserted or removed at pleasure. When the needle is properly in place in this socket the operator elevates the bent ends e' e'' of the wire e , and by thus turning the wire so that the notch does not coincide exactly with the socket induces a severe pressure of the sides of the notch against the needle, so as to hold it very rigidly connected to the yoke F. The bent end e' is hooked so as to take hold with some degree of force on the yoke and hold the parts in position when the needle is properly secured.

H is a lever adapted to reciprocate horizontally on the pin h . Its long arm carries a point, h' , of a proper form to enter the loop of the thread. The spring I, connected to the framing A at the point i , by its contractile force urges this lever H into the position indicated by the red outlines, and allows the needle with its thread to descend freely. When the needle has commenced to rise and to slacken its thread, the guard J prevents the loop extending on the front side of the needle and compels it to extend most on the back side. So soon as the loop has properly opened the lever H turns on its center h , and assumes the position shown by the black outline, and thereby thrusts the point h' through the loop of the thread. It stands in this position during the whole ascent of the needle, and subsequently moves back in time to release the loop and form the stitch in the well-known manner. The releasing movement of this lever is effected by the spring I. The seizing movement is effected through the agency of the lever K, which must now be described.

The lever K is mounted on the center k , which is fixed on the framing A^3 in the position represented. The long arm of this lever extends downward into contact with the short arm of the lever H, and is free to reciprocate in a

straight slot provided for the purpose in the casting A. The short arm of this lever K is acted on by two cams, L L', on the shaft B.

M is the spool of thread. It is mounted on a suitable upright spindle fixed on the casting A^3 . m is an annular weight mounted on the same spindle and adapted to induce friction on the spool M. The thread N passes from the spool M through one or more holes, n , (represented in the framing,) and after passing through the ring n' , which is mounted on the fixed framing, and through the rings n^2 n^3 , which are carried on the yoke F, extends through the eye of the needle in the ordinary manner.

The operation of my machine will now be readily understood. The cloth is inserted under the presser-foot and the latter allowed to descend and press upon it in the manner which is obvious. The left hand of the operator being allowed to guide the work, the right hand is applied to the crank b , and as the shaft B is revolved the needle descends through the cloth, and the point h' moves forward and retains the loop of the thread. The needle E then rises, the presser-foot moves and induces a feeding forward of the cloth to the proper extent for a stitch, and again rests while the needle again descends through the cloth, and the presser-foot again returns to seize a fresh quantity of the fabric. Additional fastenings may be introduced to hold the parts A^2 and A^3 more permanently together; but I do not consider such necessary. The screw A' may be set up with sufficient force to hold the upper ends of A^2 and A^3 very tightly each against the other.

Treadles and the ordinary accompanying mechanism may be employed to drive the shaft B through the medium of a belt and pulley or other approved means, if desired; but inasmuch as my machine induces two complete reciprocations of the needle and of the other parts at each revolution of the shaft B the necessity for any means of increasing the speed of the machine is not so great in my machine as in those ordinarily employed.

Some of the advantages due to different features of my invention may be separately enumerated, as follows:

First. By reason of the form and arrangement of the parts A, A' , A^2 , and A^3 the entire frame of my machine is held together by a single screw, and the slackening of this screw releases the greater portion both of the fixed and working parts to allow of cleaning, alteration, or renewal. My machine may in consequence be very cheaply constructed.

Second. By reason of the form and arrangement of the presser-foot C, center c , cams D D', and adjusting-screw d , I am enabled to obtain two complete reciprocations of the feeding parts with proper means of controlling the extent of the feed, so as to correspond with the double motion of the needle at each reciprocation without additional mechanism.

Third. By reason of the peculiar form and

arrangement of the slot *a a'* in the framing and the spring *C'* relatively to the presser-foot *C*, I am enabled to suspend and depress the presser-foot without any additional mechanism.

Fourth. By reason of the form and arrangement of the spurs 1 2 3 4 and projections *f f'* on the yoke *F*, which carries the needle *E*, I obtain two complete reciprocations of the needle at each revolution of the shaft *B*, and in connection with the other parts produce two complete stitches in the time and with the same muscular motion which is ordinarily required in analogous machines to produce a single stitch.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The construction and arrangement of the parts *A*, *A'*, *A²*; and *A³*, so as to form the fram-

ing of a sewing-machine, substantially in the manner and for the purpose herein set forth.

2. The construction and arrangement of the presser-foot *C*, center *c*, cams *D D'*, and screw *d*, substantially as and for the purpose herein set forth.

3. The construction and arrangement of the slot *a a'*, spring *C'*, center *c*, and presser-foot *C*, substantially as and for the purpose herein set forth.

4. The combination of the wheels *G G'* with the yoke *F* and projections *f f'*, substantially in the manner represented, and for the purpose herein set forth.

CHARLES H. PALMER.

Witnesses:

THOMAS D. STETSON,
W. A. HENDRICKSON.