A. WITTNEBEN.

Sewing Machine.

No. 48,007. Patented May 30, 1865.

Fig. 5

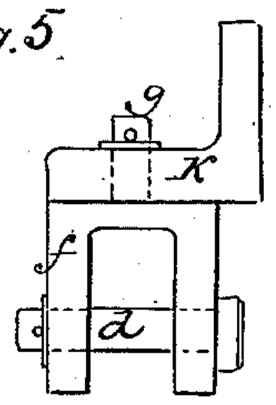


Fig. 4

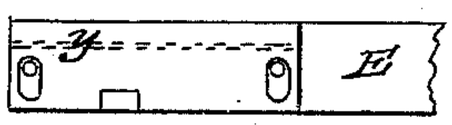


Fig. 2

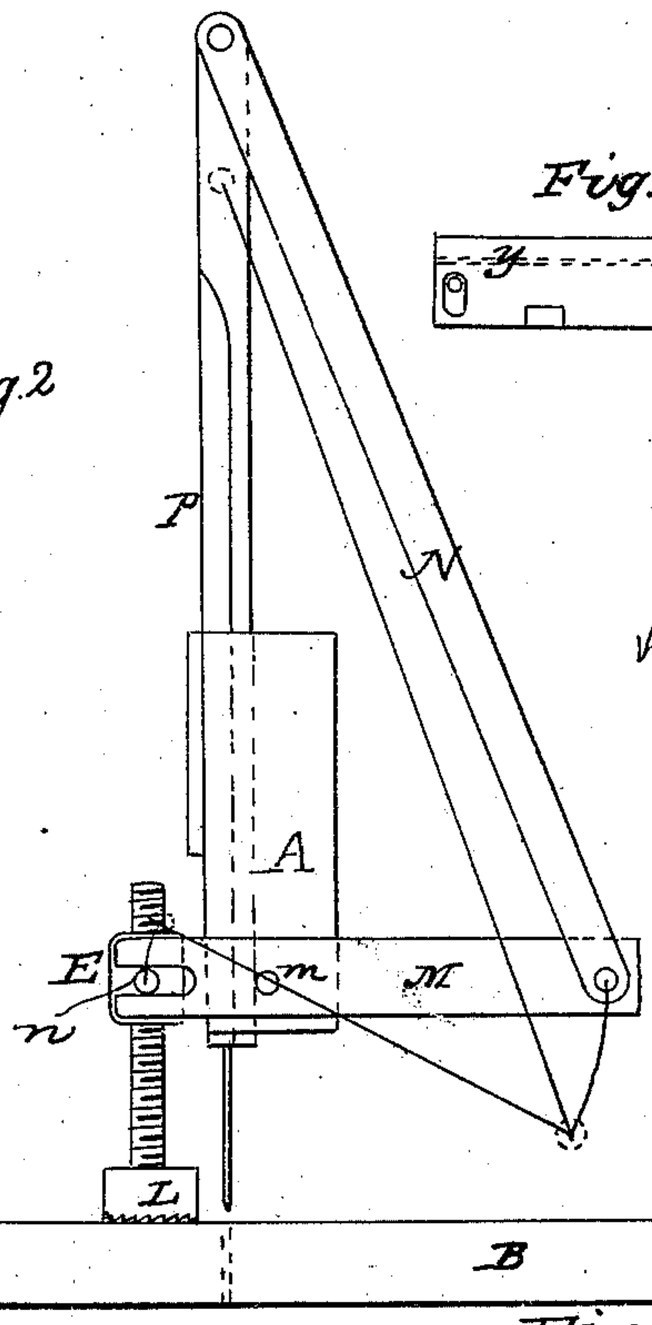
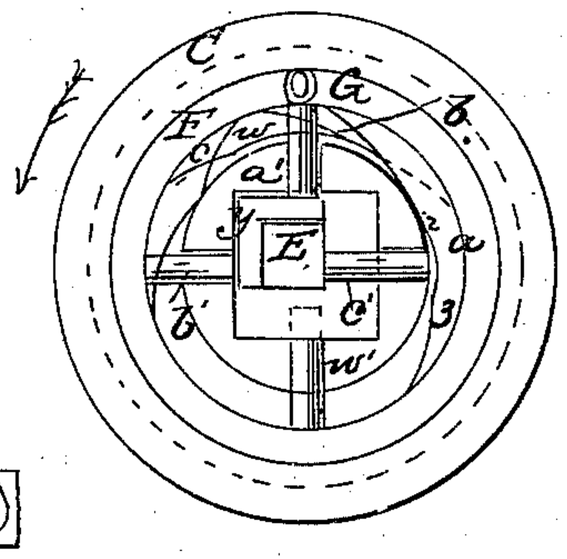


Fig. 3



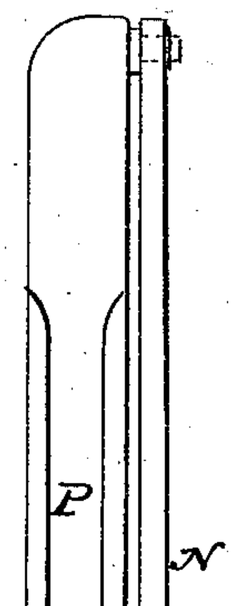
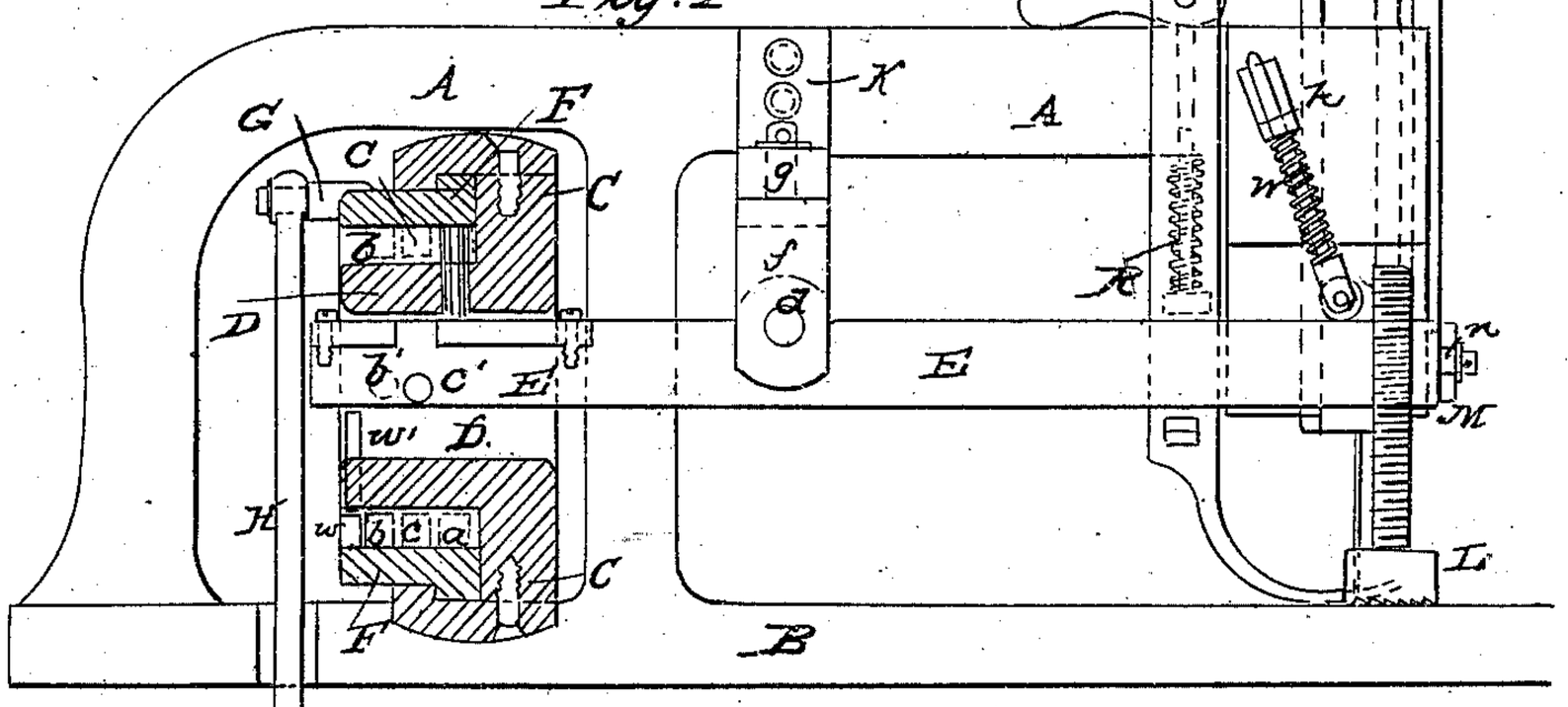


Fig. 1



WITNESSES.

Henry E Borden

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AUGUST WITTNEBEN, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **48,007**, dated May 30, 1865.

To all whom it may concern:

Be it known that I, AUGUST WITTNEBEN, of New York, in the county and State of New York, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure I represents a front view of my improved sewing-machine with the driving mechanism in section. Fig. II is an end view showing the manner of working the needle. Fig. III is an end view of the driving-wheel. Figs. IV and V are details.

Similar figures represent similar parts.

The nature of my invention consists in the arrangement of a revolving driving-wheel acting through movable or sliding pins upon a lever by means of internal cams or projections, said lever operating the feeding-pad, as well as the needle-bar.

In the accompanying drawings, A represents the frame of the machine, and B the table or foot of the same, both cast in one piece. To this foot B a frame, C, is firmly secured, provided with a central hub, D, having an opening for the end of the lever E to pass through. This frame C is turned out cylindrical, and the driving wheel or ring F is fitted so as to be supported in said frame C and to turn freely in the same. A pin, G, is attached to the outer end of this driving-wheel F, to which the rod H is attached, and through which the wheel or ring F is made to turn. On the inner side of this ring three cams or projections, *a b c*, are arranged, situated in different planes and through the heel D. Three pieces, *a' b' c'*, are fitted in a position corresponding with the cams *a*, *b*, and *c*, respectively, and capable of sliding easily in their holes in said hub D.

E is a lever turning on the pin *d* in the bracket *f*. This bracket *f* is attached by means of a bolt or pin, *g*, to a bracket, *k*, fastened to the frame A in such a manner that said bracket *f* can turn around this pin *g*, forming thereby a universal joint, so as to allow the lever E to be moved upward and downward, as well as sidewise, as may be desired, and for the purpose hereinafter described. Near the forward end of this lever E the feeding-pad L is attached. The same may either be screwed into this lever E, as shown in the drawings, for the purpose of raising or lowering the said pad L, or the same may be attached by means of a sliding rod and secured in the desired position by means of a set-screw. This pad acts upon the top side of the material to be operated on, and is situated near the front of the needle. A spring-rod, W, provided with a small roller and passing through a guide, *h*, fast to the frame A, acts on the top of the lever E so as to press the feeding-pad L down upon the material.

M is a lever turning on a pin, *m*, fast to the end of the frame A and connected with the lever E through the pin *n*, working in a slot made in said lever M. The other end of said lever M is connected through the rod N with the needle-bar P.

R is the presser-bar, situated close behind the needle, and constructed in the usual way, except that a projection, S, is arranged on the same below the lever E and so situated that when for the purpose of introducing or removing the cloth said presser-bar R is moved upward by means of the cam-lever T, this projection S will come in contact with said lever E and lift thereby the same, as well as the feeding-pad L, upward and press the needle-bar P slightly downward; but the parts must be relatively so adjusted as that when this is done the needle shall not descend far enough to penetrate the cloth.

The operation of the machine is as follows: Motion being given to the wheel or ring F through the rod H, the cam *a* in said ring F comes in contact with the pin *a'*, forcing the same inward and down upon the end of the lever E, so as to force thereby the forward end of said lever E upward against the action of the spring-rod W, by which operation the feeding-pad L will be lifted up and motion be given to the lever M, and through the same to the needle-bar P, forcing the needle downward through the material. (See Fig. II, red lines.) When the point 2 of the cam *a* comes against the pin *a'*, the needle-bar and consequently the needle, will be moved a little upward, so as to form thereby a loop in the thread, and remain in that position while passing through that part of the circle from 2 to 3 (see Fig. III) where the surface of the cam is concentric, and during which time the shuttle (not shown in the drawings) is made to pass through the loop which the thread has formed. When the point 3 of cam *a* has passed the pin *a'* the spring-rod *w*

can act again upon the lever E so as to force the same, and consequently the feeding-pad L, downward, and by which downward operation the needle-bar P is likewise moved again upward, so as to bring the needle out of and clear of the material. At the same time the pin *a'* was near the point 2 of the cam *a*, and consequently while the pad L was lifted up from the material, the cam *b* has begun to act against the pin *b'*, pressing the same against the back side of the bar E, by which operation the forward end of said bar or lever E, together with the feeding-pad L, has been moved near to the needle and remains in that position when the same is brought again down upon the material. When the cam *a* has moved clear of the pin *a'*, and the feeding-pad L is forced down again upon the material, and the needle-bar P has been moved upward, the cam *c* will come against the pin *c'*, forcing the same against the front side of the lever E, so as to move thereby the forward end of the lever E outward or away from the needle, and as the feeding-pad L is pressing now upon the material the same will move thereby the material so much forward and away from the needle equal to the length of one stitch. The cam *a* comes then against the pin *a'*, when the same operation above described will be repeated.

The rear end of the lever E, where the same passes through the opening in the hub D, is provided with a plate, Y, capable of being moved nearer to or farther away from the side of said lever, by which arrangement the length of the stitch may be regulated, for as much as this plate Y is extended so much in proportion will the forward end of the lever E, and consequently the feedidg-pad L. be moved nearer to to or farther from the needle, and consequently the motion given to the same by the action of the cams upon the pin, and consequently upon the lever E, will be increased or diminished.

Instead of the spring-rod W, a fourth cam, *w*, (see red lines, Fig. III,) may be arranged in the ring F, operating a pin, *w'*, acting against the under side of the after end of the lever E, so as to press the forward end of said lever, and consequently the feeding-pad L, downward upon the material at the desired times, and at the same time move thereby the needle-bar P upward.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The employment and use of a revolving wheel, F, with internal cams acting through movable pins upon the lever E, in the manner and for the purpose substantially as described.

2. The arrangement of the lever E, moving on a universal joint, in combination with the feeding-pad L, and operated by the wheel F and the spring-rod W or its equivalent, in the manner as specified.

3. Operating the needle-bar P from the end of the lever E by means of the lever M and rod N, in the manner substantially as set forth.

4. The arrangement of the plate Y on the end of the lever E for the purpose of regulating the amount of feed, operating substantially in the manner specified.

5. The application of the feeding-pad above the material operated upon, when arranged and operated in the manner substantially as described.

6. The combination of the revolving ring F with internal cams, the pins *a' b' c'*, lever E, feeding-pad L, spring-rod W, lever M, rod N, and needle-bar P, when arranged and operating in the manner and for the purpose substantially as set forth and specified.

AUGUST WITTNEBEN.

Witnesses:

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CHAS. MCCARTHY.