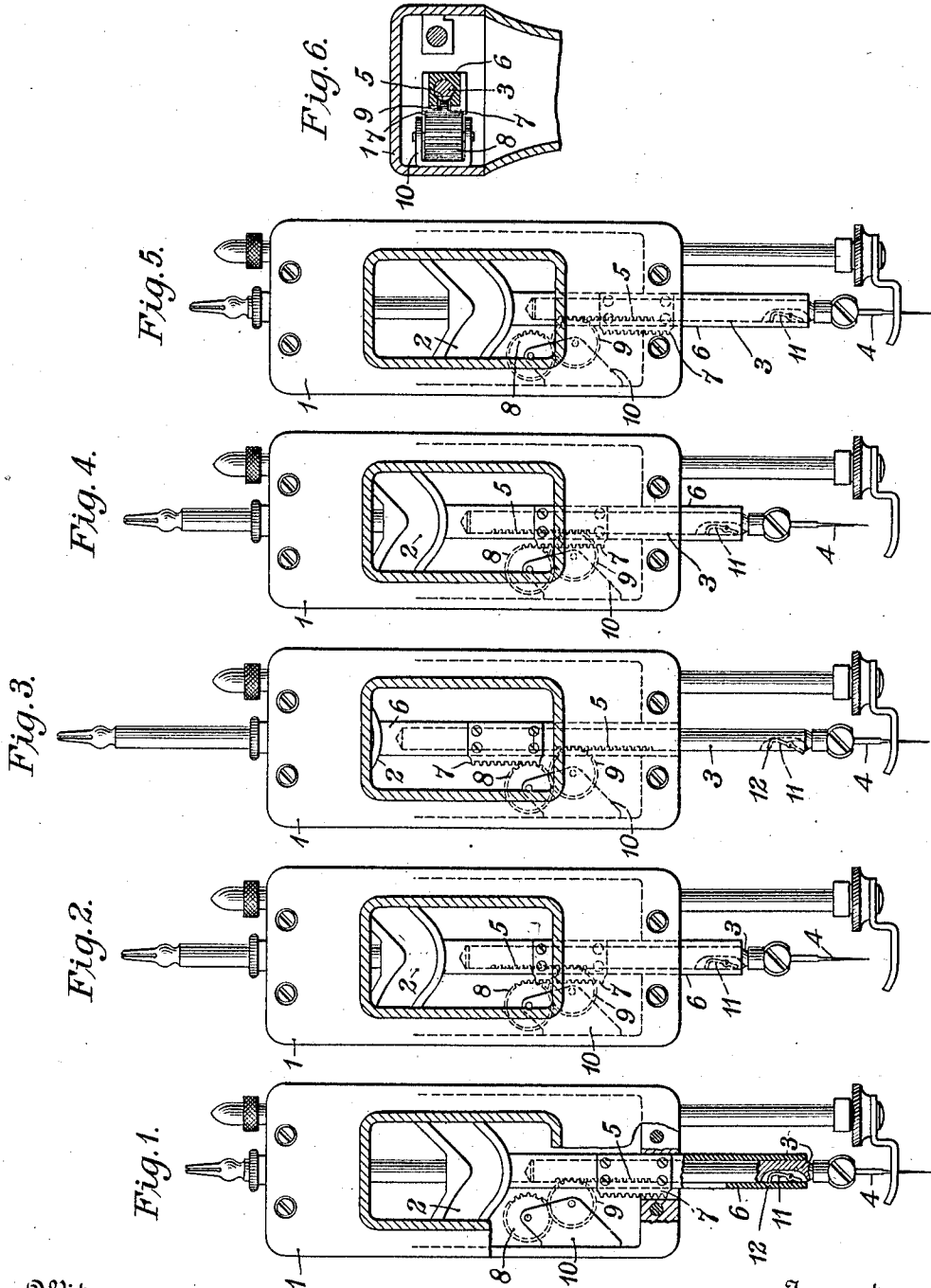


J. W. OLIVER.
SEWING MACHINE.
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1,048,203.

Patented Dec. 24, 1912.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN WILLIAM OLIVER, OF WEEHAWKEN, NEW JERSEY.

SEWING-MACHINE.

1,048,203.

Specification of Letters Patent.

Patented Dec. 24, 1912.

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To all whom it may concern:

Be it known that I, JOHN WILLIAM OLIVER, a citizen of the United States, and a resident of the city of Weehawken, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to sewing machines of the type generally used for the sewing of textiles, although it may be applied to other machines used for different purposes, and is more particularly directed to the mechanism used in that type of machine for reciprocating the needle.

The principal object of my invention is to increase the efficiency and capacity of the machine. This I accomplish without any appreciable increase in the amount of power required to operate the machine, by utilizing a portion of the stroke of the needle operating means which would otherwise be idle and wasteful of power, to produce an additional reciprocation of the needle, and consequently another stitch. By this means I am enabled to produce two stitches in approximately the same time and with approximately the same effort, as is required to produce one in the ordinary type of machine; and the capacity and efficiency of the machine are therefore approximately doubled.

A further object of my invention is to construct the parts comprising the reciprocating mechanism in a compact form, so that it may be applied to the ordinary machines now in use, and at the same time produce a mechanism which is simple and substantial, and is therefore able to withstand the strains of service without likelihood of disablement.

In the drawing which accompanies this specification, Figure 1 shows an end view of my improved machine, partly in section, and Figs. 1, 2, 3, 4 and 5 when taken together show a complete cycle of the machine's operation. Fig. 6 is a sectional view of my improved device showing the location of the parts of the operating means.

Referring to the drawings, there is shown at 1 a case containing the operating mechanism, which case is preferably made as nearly dust-proof as possible; 2 is a cam of the ordinary form, adapted to change the rotary motion of the source of power to a reciprocating motion; 3 is a needle-bar in

which is secured the needle 4. This needle-bar carries a rack 5 and is adapted to reciprocate within a sleeve 6 which is fixedly attached to the under side of cam 2. Sleeve 6 carries a rack 7, which rack is adapted to intermittently engage pinion 8. Pinion 8 is constantly in mesh with pinion 9, which pinion is adapted to be constantly in mesh with rack 5 on needle-bar 3. Pinions 8 and 9 are supported within case 1 by a yoke 10, and are arranged so as to be held in a fixed relation to and in mesh with each other.

At the lower end of needle-bar 3 is located a catch 11 arranged in a recess formed in needle-bar 3, and preferably in the form of a pivoted hook, as shown in the drawing. Catch 11 when out of engagement occupies the position shown in Fig. 3, and when in engagement with sleeve 6 as shown in Fig. 1, exerts pressure at both its ends. The upper end 12 of catch 11 is adapted to enter a slight recess formed in sleeve 6, so as to hold needle-bar 3 and sleeve 6 in engagement, but, nevertheless, to permit these parts to be separated by a slight pull.

The operation of my improved device is as follows: Fig. 1 may be taken as the beginning of a cycle of operations, the needle 4 then being embedded in the material and being at the beginning of its upward stroke. In this position pinion 9 is in engagement with rack 5, and pinion 8 is out of engagement with rack 7. Catch 11 is in engagement with sleeve 6, thus causing sleeve 6 and needle-bar 3 to operate together. It will thus be seen that an upward movement of cam 2 causes an upward movement of both needle-bar 3 and sleeve 6. When the apparatus has attained the position shown in Fig. 2, rack 7 comes into engagement with pinion 8, thus causing it to revolve in an opposite direction. Pinion 8 being in engagement with pinion 9 reverses the direction of rotation of pinion 9, which causes catch 11 to be released and needle-bar 3 to move downward. A continued upward movement of cam 2 causes a continued rotation of pinions 8 and 9 and a continued downward movement of needle-bar 3, thus causing the apparatus to assume the position shown in Fig. 3. In this position the needle 4 has again entered the material to form another stitch. Cam 2 then begins its downward stroke, and through sleeve 6 and rack 7 causes a reversal of the direction of rotation of pinions 8 and 9, thus causing an up-

ward movement of needle-bar 3 until it has reached the position shown in Fig. 4 at which position catch 11 is again thrown into engagement. The continued downward movement of cam 2 produces a downward movement of both sleeve 6 and needle-bar 3, pinion 8 having left rack 7, and further downward movement of cam 2 finally produces the position of the apparatus shown in Fig. 5, in which the needle has again entered the material to form another stitch. This position is the same as that shown in Fig. 1 and completes the cycle of operations; cam 2 then moving upward again and the operations being repeated.

While I have shown the preferred form of my improved apparatus, I do not intend to limit myself to the form shown and described, as it is obvious that many modifications of the apparatus may be made without departing from the spirit of my invention.

What I claim and desire to secure by Letters Patent is:

1. In a device of the kind described, a cam, a sleeve attached thereto, a reciprocating needle-bar adapted to reciprocate within said sleeve, and means for transmitting the motion of the sleeve to the needle-bar in the same direction as the motion of the sleeve, and in a reverse direction.

2. In a device of the kind described, a cam, a sleeve attached thereto and operated thereby, a needle-bar, and means for transmitting the motion of the sleeve to the needle-bar in the same direction as the motion of the sleeve during part of the stroke of the sleeve, and in an opposite direction during the remainder of the stroke.

3. In a device of the kind described, a reciprocating sleeve, a reciprocating needle-bar adapted to operate within the said sleeve, means for holding said sleeve and needle-bar in engagement during a part of the stroke of said sleeve, and operating means for causing the sleeve and needle-bar to move in opposite directions during part of the stroke of said sleeve.

4. In a device of the kind described, a reciprocating sleeve carrying a rack, a needle-bar also carrying a rack, a pinion adapted to be constantly engaged by the rack on said needle-bar, a second pinion adapted to be constantly engaged by the first, and adapted to be engaged intermittently by the rack of said sleeve.

5. In a device of the kind described, a reciprocating sleeve, a reciprocating needle-bar adapted to operate within said sleeve and carrying a rack, a pinion adapted to be constantly engaged by said rack, and means controlled by said sleeve for reversing the direction of rotation of said pinion.

6. In a device of the kind described, a reciprocating sleeve, a reciprocating needle-bar adapted to operate within said sleeve, means for causing an upward movement of the needle-bar during part of the upward stroke of the sleeve and downward movement of the needle-bar during the remainder of the stroke of said sleeve.

In witness whereof I have hereunto signed my name in the presence of two witnesses.

JOHN WILLIAM OLIVER.

Witnesses:

WALTER S. JONES,
MARGARET S. MACINTYRE.

It is hereby certified that in Letters Patent No. 1,048,203, granted December 24, 1912, upon the application of John William Oliver, of Weehawken, New Jersey, for an improvement in "Sewing-Machines," an error appears in the printed specification requiring correction as follows: Page 1, line 100, for the word "rauses" read *causes*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of January, A. D., 1913.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.