

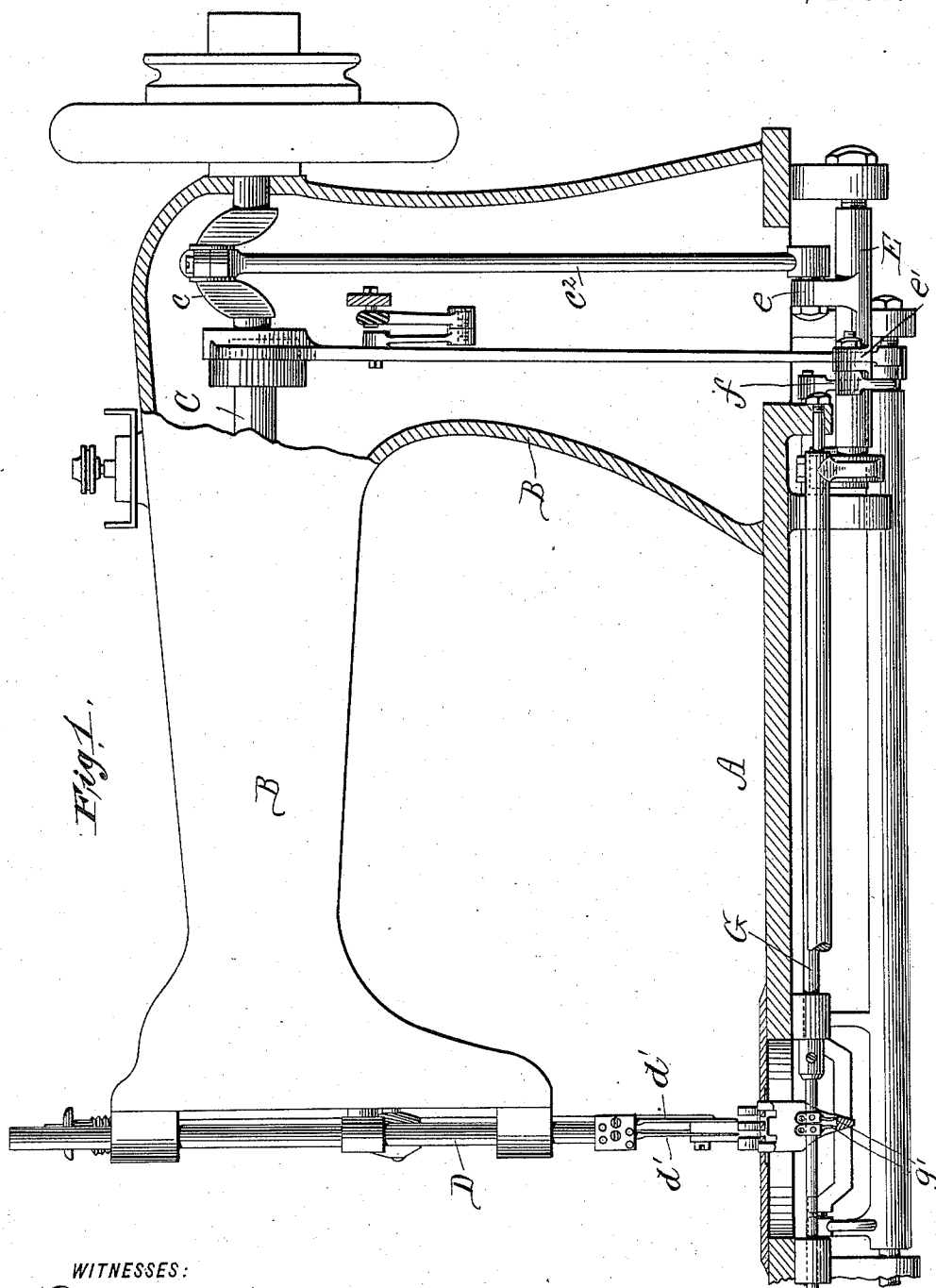
(No Model.)

3 Sheets—Sheet 1.

P. DIEHL & W. R. HOUGHTON.
SEWING MACHINE.

No. 579,223.

Patented Mar. 23, 1897.



WITNESSES:

C. W. Berryman
C. M. Sweeney

Inventors:
Philip Diehl
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(No Model.)

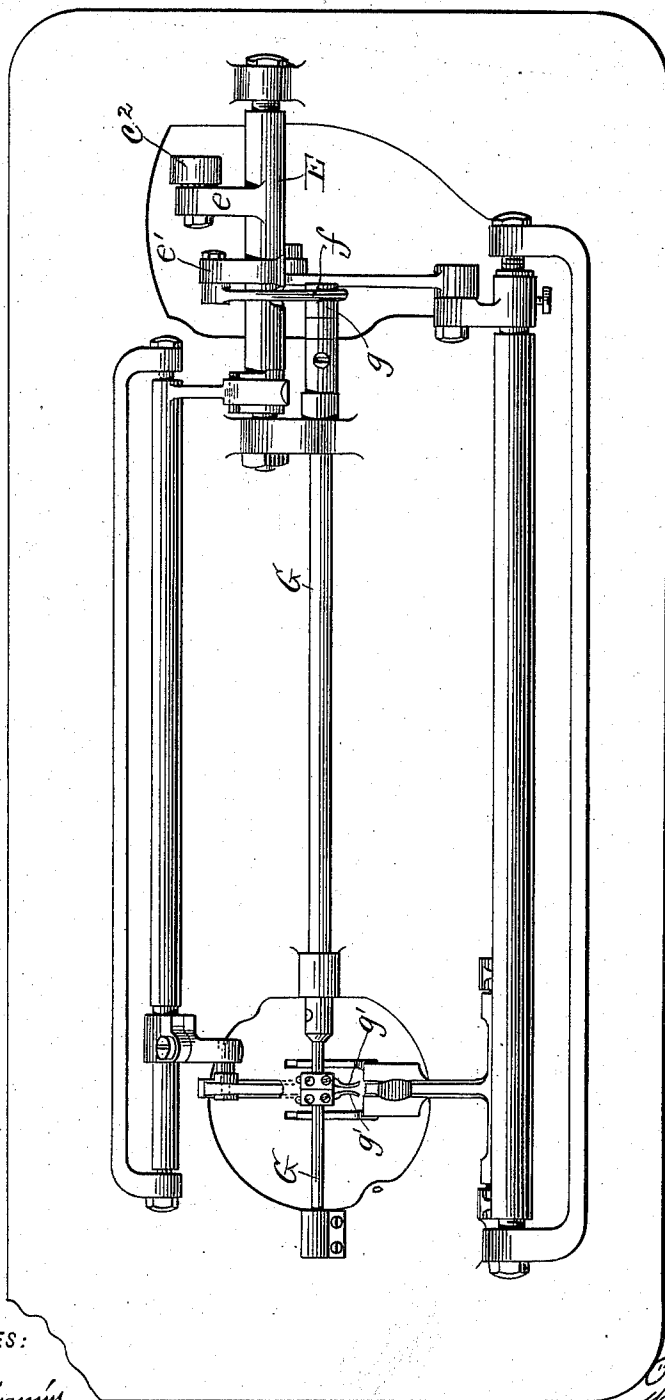
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SEWING MACHINE.

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Patented Mar. 23, 1897.

Fig. 2.



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(No Model.)

3 Sheets—Sheet 3.

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SEWING MACHINE.

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Fig. 4.

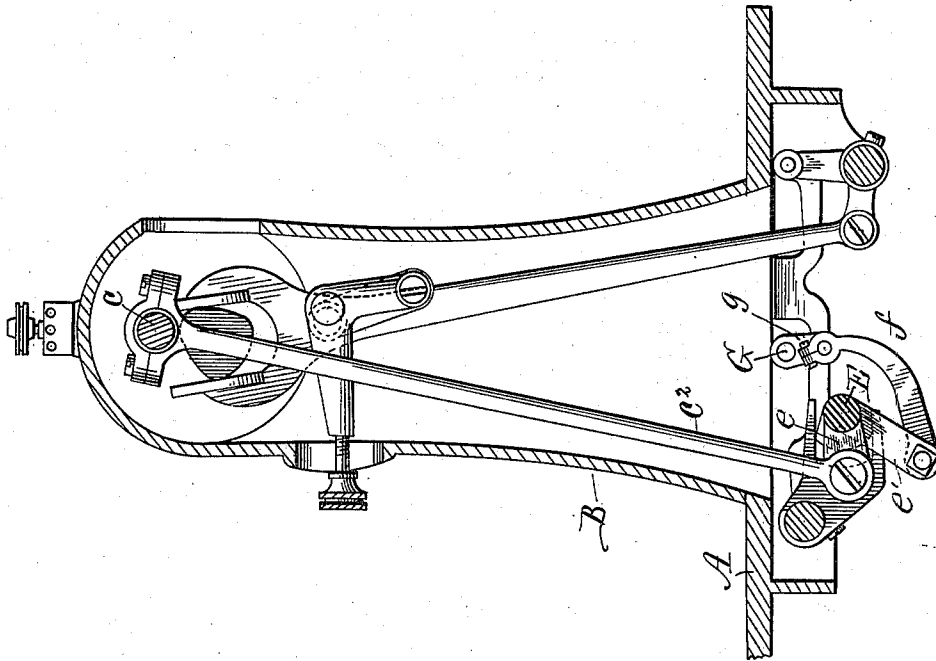
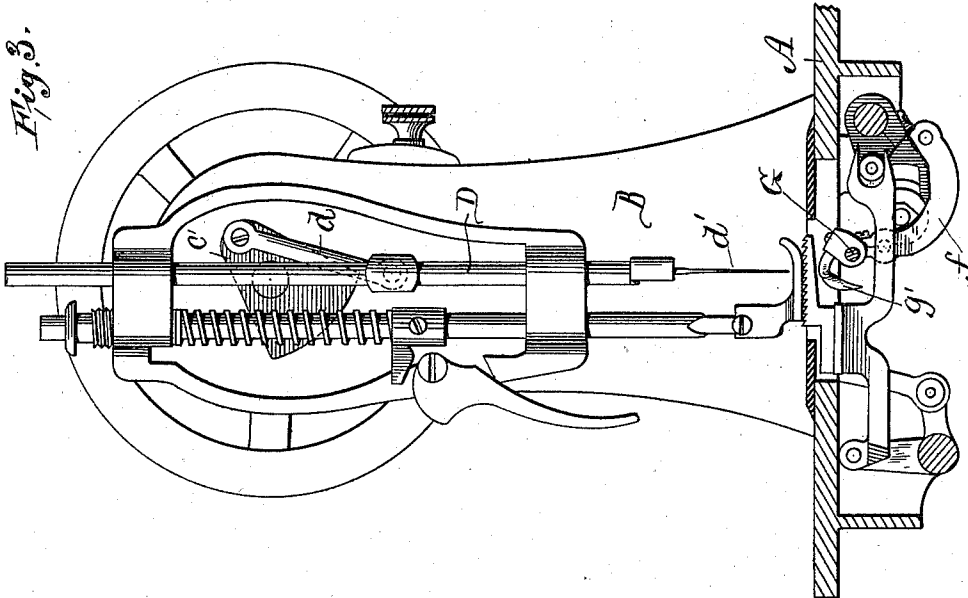


Fig. 5.



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UNITED STATES PATENT OFFICE.

PHILIP DIEHL AND WILLIAM R. HOUGHTON, OF ELIZABETH, NEW JERSEY, ASSIGNORS TO THE SINGER MANUFACTURING COMPANY, OF NEW JERSEY.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 579,223, dated March 23, 1897.

Application filed June 26, 1895. Serial No. 554,114. (No model.)

To all whom it may concern:

Be it known that we, PHILIP DIEHL and WILLIAM R. HOUGHTON, citizens of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention has for its object to provide a single-thread chain-stitch sewing-machine of simple construction in which a looper-carrying rock-shaft beneath the work-plate is operated from a rotating crank of a driving-shaft journaled in the upper part of the bracket-arm through a second rock-shaft, also beneath the work-plate, and suitable connections which give properly-timed rocking movements to the looper-shaft, so that the latter is particularly adapted to carry a plurality of loopers coöperating with a plurality of needles carried by the needle-bar to form a plurality of parallel single-thread chain-stitch seams simultaneously.

In the accompanying drawings, Figure 1 is a sectional side view of our improved machine with the face-plate removed. Fig. 2 is a bottom view thereof. Fig. 3 is a front end view and Fig. 4 a section through the vertical portion of the bracket-arm.

A denotes the work-plate, and B the bracket-arm, in the upper part of which latter is journaled the rotating driving-shaft C, having near its rear end a crank *c* and provided at its forward end with a crank *c'*, connected by the pitman *d* with the needle-bar D, which will preferably carry a plurality of needles *d'*. The crank *c* is connected by a pitman *c²* to an arm *e* of a rock-shaft or rocker E, having a second arm *e'*, connected by a link or pitman *f* to an arm *g* of a looper-carrying rock-shaft G, provided at or near its forward end with one or more loopers *g'*. The arm *e'* is between the ends of the rock-shaft E, and the link or pitman *f* is curved so that it may in the operation of the machine extend beneath said rock-shaft and thus connect the said arm *e'* with the arm *g* in such a manner as to secure a proper timing of the rocking movement of the latter, as hereinafter described. Prefer-

ably a plurality of these loopers will be employed to coöperate with a plurality of needles carried by the needle-bar to form parallel single-thread chain-stitch seams simultaneously.

By connecting the looper-carrying rock-shaft G with the crank on the rotating driving-shaft C through the second rocker or rock-shaft E in the manner shown and described we are enabled to impart rocking movements to the said shaft G in such manner that the said looper-carrying shaft will have a "dwell" after the loops of needle-thread have been taken by the loopers and the latter have moved to their extreme forward position, this dwell continuing, with a very slight reaction, while the driving-shaft is performing nearly or quite one-half of its revolution, so that proper timing of the looper or loopers to enable the work to be fed and the needle or needles to rise and again descend nearly or quite to the work is secured without requiring the use of a cam for operating the looper-carrying shaft. In other words, we are enabled by the construction herein shown and described to operate the rocking looper-carrying shaft in proper time relative to the other parts of the machine from a rotating crank on a driving-shaft journaled in the upper part of the bracket-arm of the machine, and thus secure a smoothly-working and silently-running single-thread chain-stitch machine of a desirable type, particularly adapted for forming several parallel seams simultaneously.

The feeding mechanism herein incidentally shown is not a part of the present invention and need not therefore be herein described.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. In a sewing-machine, the combination with the bracket-arm B, of the rotating driving-shaft C journaled in the upper part of said arm and having the crank *c* near its rear end, a needle-bar operatively connected with the forward end of said shaft, the looper-carrying rock-shaft G placed beneath the work-plate and having the arm *g*, the second rock-shaft E also beneath the work-plate and having the arms *e* and *e'* arranged relatively to

each other as shown, the pitman c^2 connecting said crank with the said arm e , and the curved link or pitman f connecting the said arms e' and g , said pitman f being thus adapted to extend beneath the said rock-shaft E, between the ends of the latter.

2. In a sewing-machine, the combination with the bracket-arm B, of the rotating driving-shaft C journaled in the upper part of said arm and having the crank c near its rear end, a needle-bar operatively connected with the forward end of said shaft and carrying a plurality of needles, the rock-shaft G placed beneath the work-plate and having the arm g , a plurality of loopers carried by said rock-shaft, the second rock-shaft E also beneath

the work-plate and having the arms e and e' arranged relatively to each other as shown, the pitman c^2 connecting said crank with the said arm e , and the curved link or pitman f connecting the said arms e' and g , said pitman f being thus adapted to extend beneath the said rock-shaft E, between the ends of the latter.

In testimony whereof we affix our signatures in presence of two witnesses.

PHILIP DIEHL.
WILLIAM R. HOUGHTON.

Witnesses:

HENRY CALVER,
JOSEPH F. JAQUITH.