No. 652,171. Patented June 19, 1900.

P. DIEHL.

OSCILLATING SHUTTLE MECHANISM FOR SEWING MACHINES.

(Application filed Sept. 12, 1899.)

(No Model.) 2 Sheets—Sheet 1.

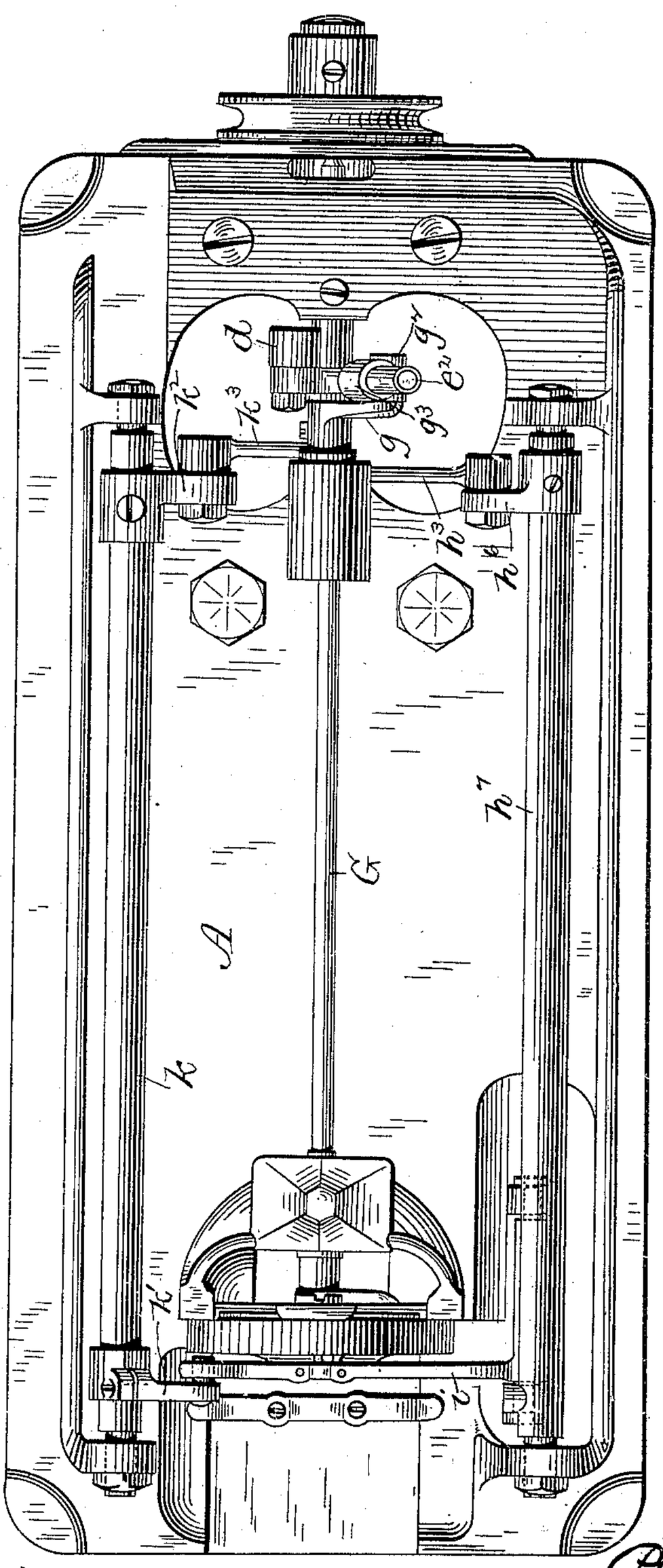

Fig. 1.

Witnesses;
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E. M. Sweeney.

Inventor;
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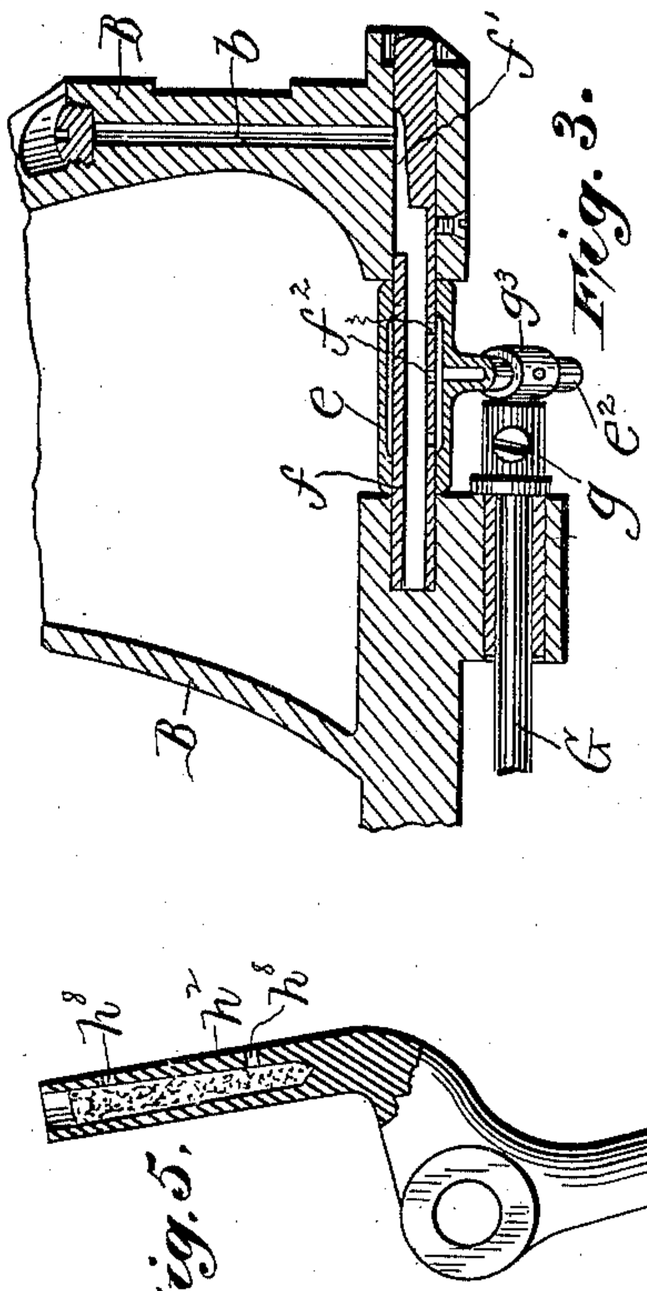

Fig. 3.

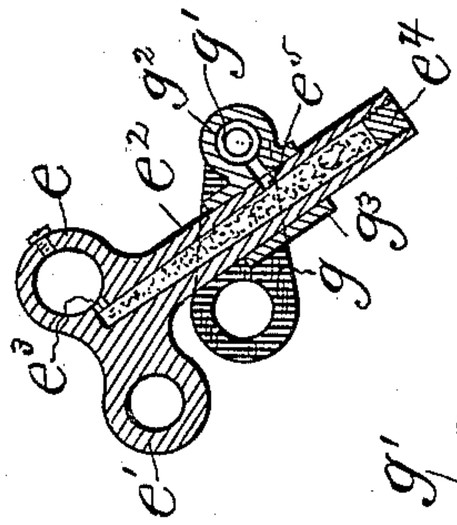

Fig. 7.

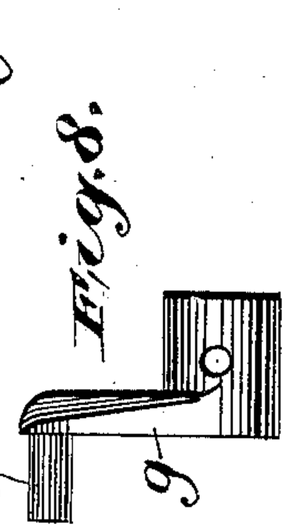

Fig. 8.

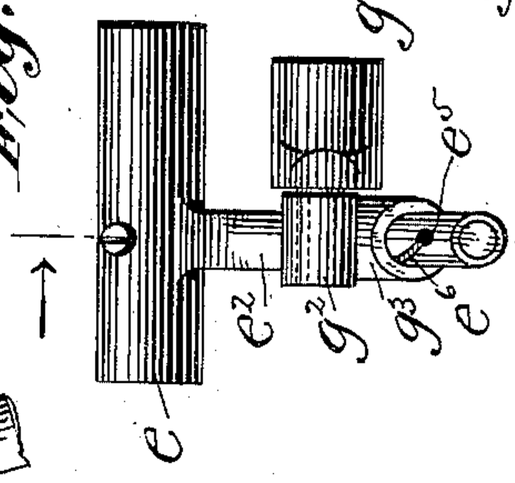

Fig. 6.

Fig. 9.

Fig. 5.

Fig. 2.

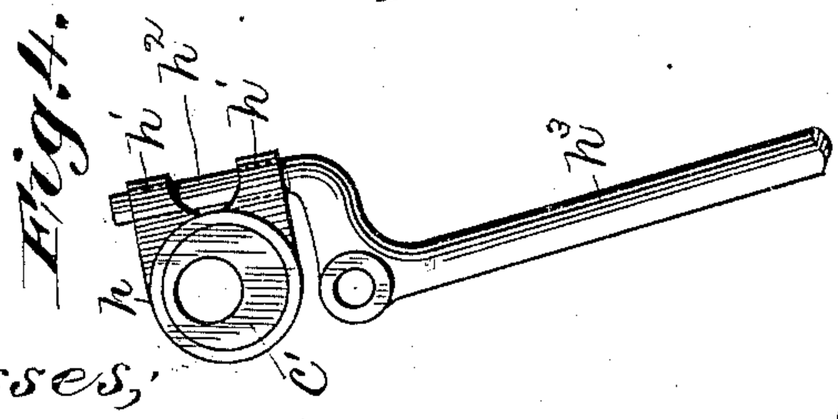

Fig. 4.

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Inventor:
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UNITED STATES PATENT OFFICE.

PHILIP DIEHL, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, OF NEW JERSEY.

OSCILLATING SHUTTLE MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 652,171, dated June 19, 1900.

Application filed September 12, 1899. Serial No. 730,251. (No model.)

To all whom it may concern:

Be it known that I, PHILIP DIEHL, a citizen 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.

This invention has for its object to simplify the construction and lighten the parts of the feeding and shuttle-operating mechanism of a certain well-known class of sewing-machines to adapt the same to higher speed than heretofore, as also to provide better facilities for lubricating the running parts and retaining the oil.

In the accompanying drawings, Figure 1 is a bottom view of a machine embodying the invention. Fig. 2 is a sectional elevation taken through the vertical portion of the arm of the machine. Fig. 3 is a detail section on line 3 3, Fig. 2. Fig. 4 is a detail view of the feed-operating eccentric, its yoke, and a portion of the feed connection or link; and Fig. 5 is a detail view of a portion of the said feed connection or link. Figs. 6 and 7 are detail views of the shuttle-operating rocker and its connections with the shuttle-operating rock-shaft. Fig. 8 is a detail view of the crank-arm of the shuttle-shaft, and Fig. 9 a detail view of the double sleeve connecting said crank with the shuttle-operating rocker.

Referring to the drawings, A denotes the bed-plate, and B the vertical portion of the arm of the machine. The driving-shaft C is journaled in the upper portion of the arm, as usual, and is provided with the usual shuttle-operating crank c, connected by the pitman d with a two-armed rocker having its axis below the top of the bed-plate A and comprising the sleeve e and the arms e' and e^2, the said pitman being jointed to the said arm e'. The sleeve e is fitted to oscillate on a rod f, bored out or formed hollow for a considerable portion of its length to contain oil and provided near its rear end with an opening f', communicating with an oil-feed hole b, formed in the arm B. The rod f is also provided with one or more openings f^2, through which oil can escape to the outside of the said rod within the sleeve e of the rocker to lubricate the bearing portion or portions of the said rocker on said rod. The arm e^2 of the rocker is formed hollow or bored out to provide an oil-chamber communicating by means of a hole or passage e^3 with the interior of the sleeve e, the said chamber being preferably filled with fibrous oil-holding material (as felt or cotton) and the lower end of said chamber being closed by a plug e^4 of leather or other suitable material.

G is the rocking shuttle-operating shaft, provided at its rear end with a crank-arm g, the crank-pin g' of which is encircled by a sleeve g^2, rigid and preferably integral with a second sleeve g^3, arranged transverse to the said sleeve g^2 and fitted to slide freely on the arm e^2 of the shuttle-operating rocker $e\ e'\ e^2$, these connected sleeves $g^2\ g^3$ forming a double sleeve. The hollow arm e^2 is preferably provided with one or more oil-escape holes e^5 and also with a spiral oil retaining and distributing groove, as e^6, formed in its outer surface, so that the exterior of the said arm e^2, on which the sleeve g^3 slides, will be kept lubricated by the oil from the interior of said hollow arm.

From the foregoing it will be understood that the sleeve-bearing of the shuttle-operating rocker $e\ e'\ e^2$ and the bearing for the sliding sleeve g^3 on the arm e^2 of said rocker can without difficulty be kept thoroughly lubricated by the oil introduced into the oil-hole b in the arm B, and any trouble from the heating of these parts when the machine is running at extremely-high speeds will thus be avoided, while the parts themselves are much lighter and thus better adapted for high speeds than are the corresponding parts of similar machines heretofore in use.

The driving-shaft C is provided with a feed-operating eccentric c', encircled by a strap h, having one or more sleeve-like ears h' surrounding an arm h^2 at the upper end of the feed connection or link h^3, which is joined by a link h^4 with the feed-regulating lever h^5, as is usual in the toggle feed mechanism which has long been in use in certain styles of Singer machines, the rod or feed connection h^3 being jointed at its lower end to an arm h^6 at the rear end of the feed-operating rock-shaft h^7, to an arm or arms at the forward end of which the feed-bar i is jointed in the usual

manner. The arm h^2 of the feed connection or link and on which arm the ears of the eccentric-strap h slide is preferably bored out or formed hollow and filled with felt or other oil-retaining material, holes h^8 being formed in the walls of the said hollow arm for the passage of the oil to the outer surface of said arm to lubricate the same. This construction for operating the feed connection is much lighter and can be kept lubricated much better than the constructions heretofore generally in use in the class of machines to which this invention relates.

The feed-bar i is raised and lowered in the usual manner by the rock-shaft k, having at its forward end an arm k', provided with a stud engaged by a fork on the feed-bar, said shaft having at its rear end an arm k^2, to which is jointed the lower end of a connecting-rod k^3, having at its upper end a strap encircling an eccentric c^2 on the driving-shaft C.

I do not herein claim the feeding mechanism above described, as the novel features thereof are claimed in my application, Serial No. 734,678, filed October 24, 1899, and which is a division of this application.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a sewing-machine, the combination with a shuttle-operating rocker having a hollow oil-retaining arm, of a hollow rod on which said rocker is journaled, means for supplying oil to said hollow rod, passages to permit the oil to flow from said hollow rod to said hollow arm, a shuttle-operating rock-shaft with which said rocker is operatively connected, and means for operating said rocker.

2. In a sewing-machine, the combination with the driving-shaft C provided with the crank c, the pitman d, the shuttle-operating rocker having two arms to one of which said pitman is jointed and the other of which is hollow, means for supplying oil to said hollow arm, the shuttle-operating rock-shaft G, and connections between said rock-shaft and the hollow arm of said rocker.

In testimony whereof I affix my signature in the presence of two witnesses.

PHILIP DIEHL.

Witnesses:
HENRY CALVER,
JOSEPH F. JAQUITH.