

No. 612,409.

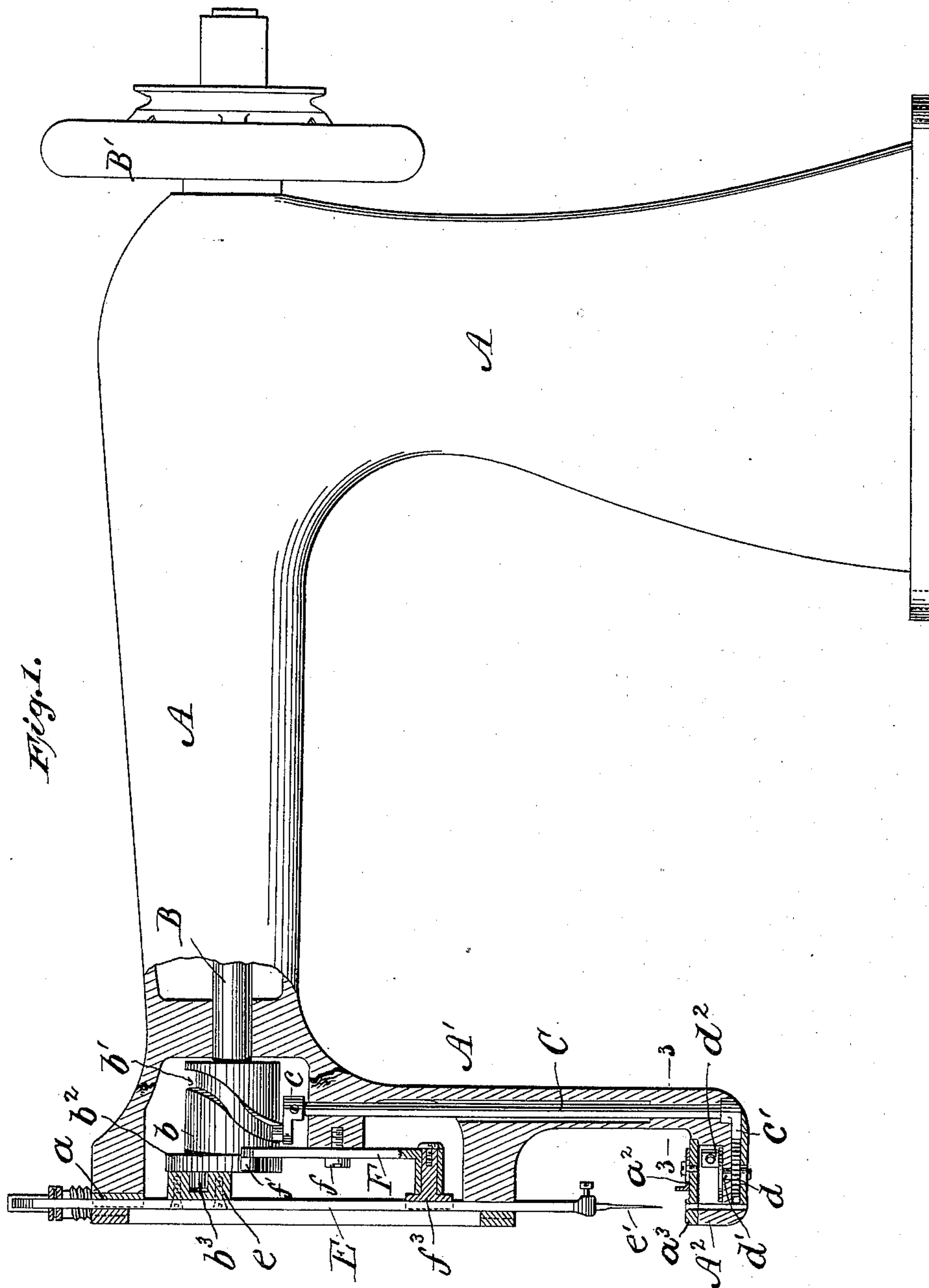
Patented Oct. 18, 1898.

P. DIEHL.
SEWING MACHINE.

(Application filed Oct. 6, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESS
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Fig. 2.

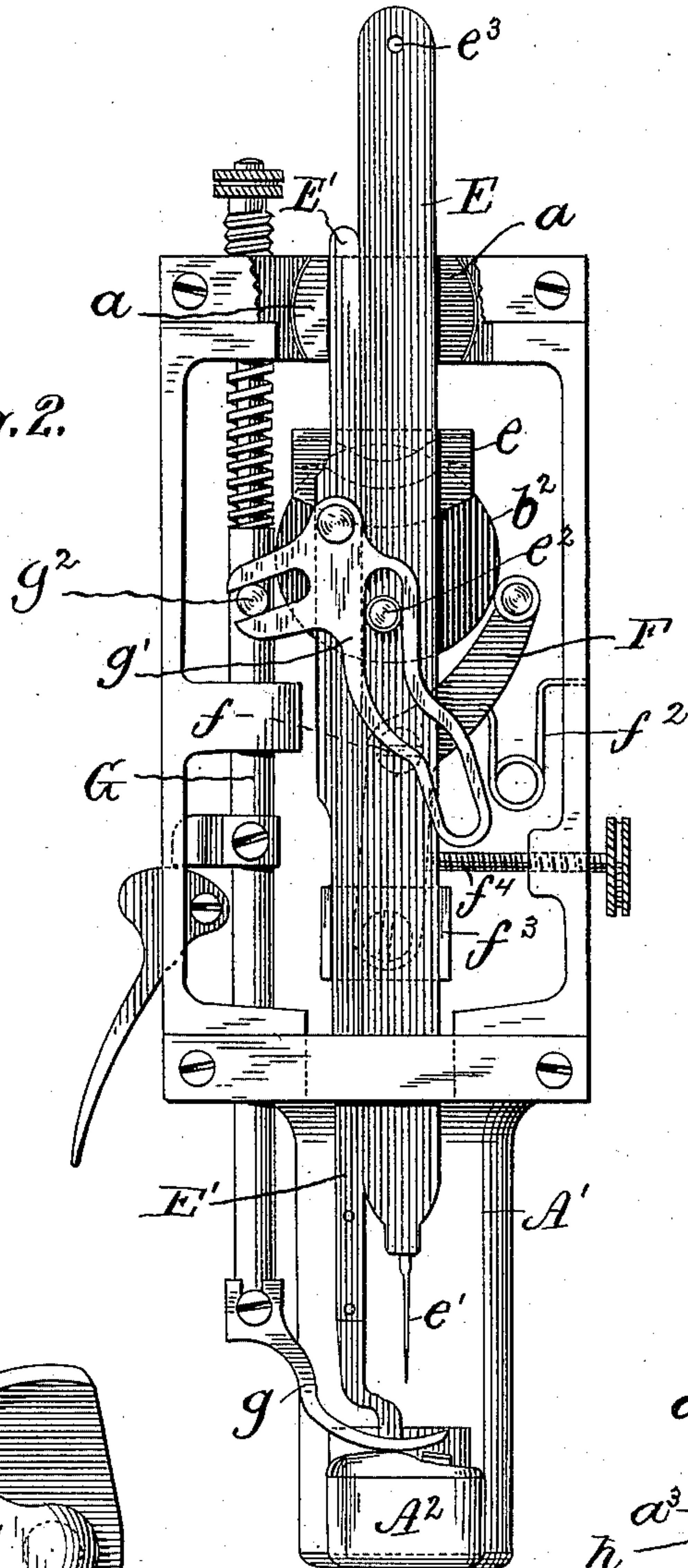


Fig. 4.

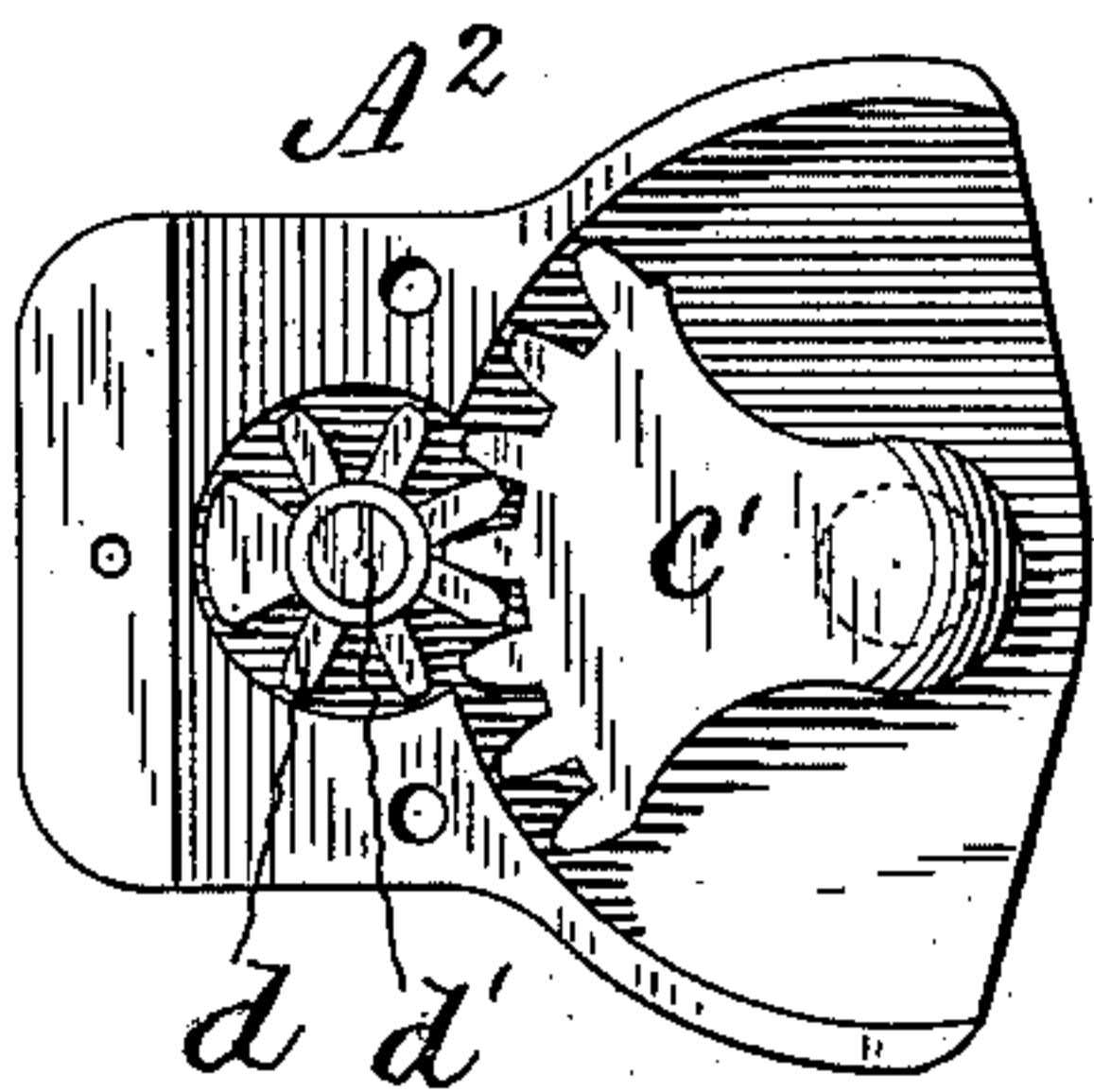


Fig. 5.

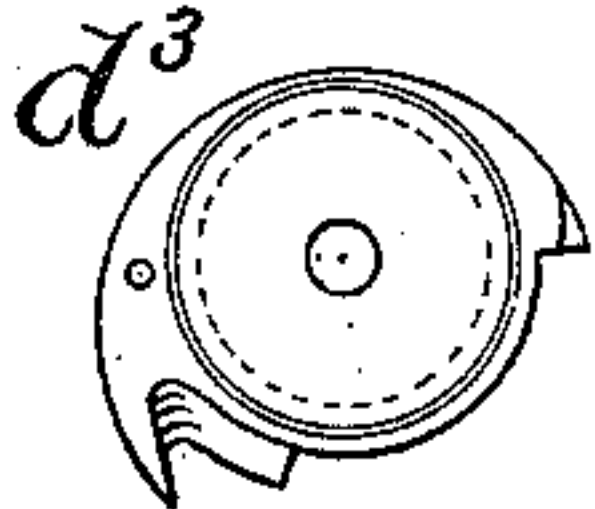


Fig. 3.

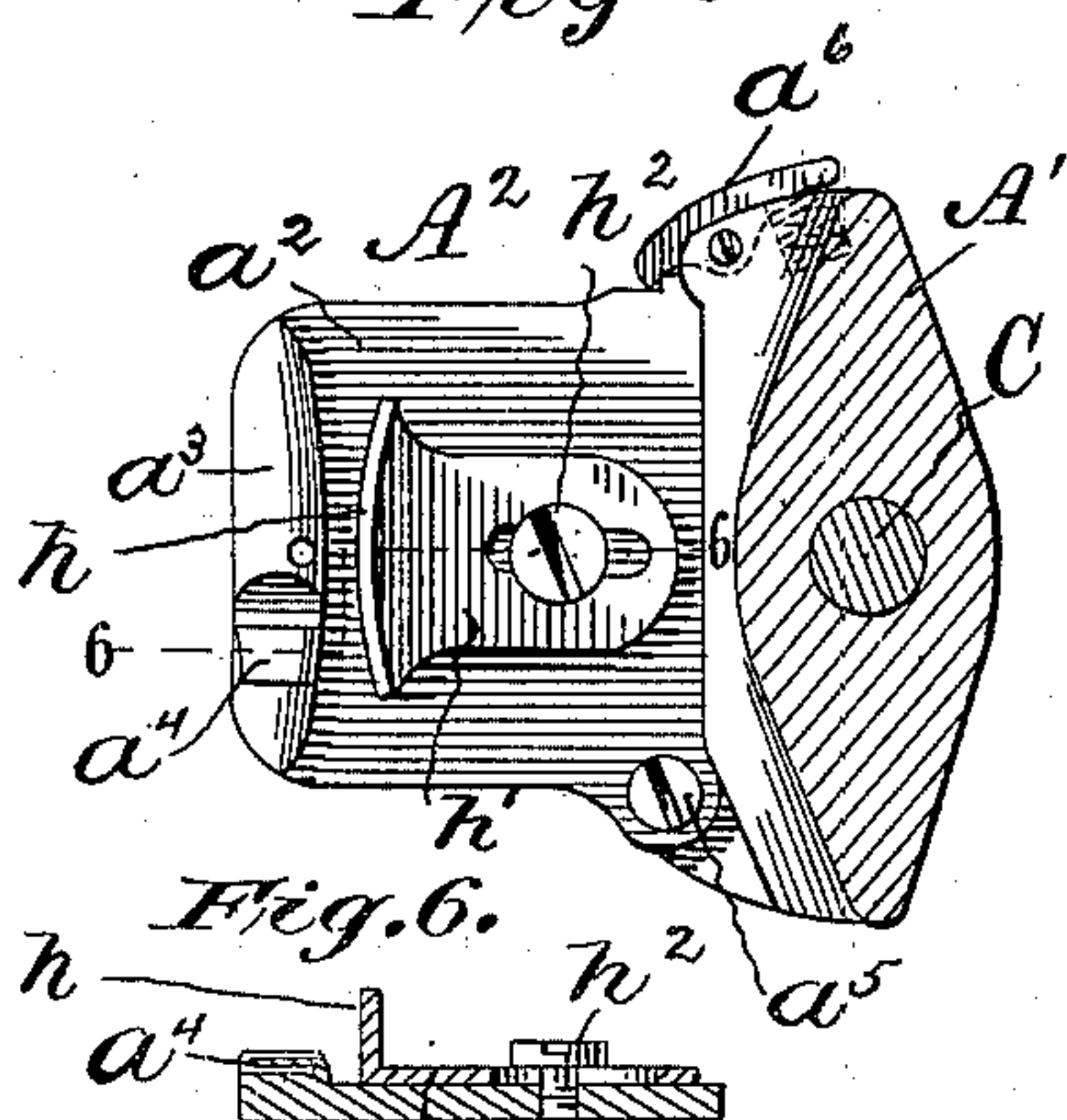


Fig. 6.



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UNITED STATES PATENT OFFICE.

PHILIP DIEHL, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER
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SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 612,409, dated October 18, 1898.

Application filed October 6, 1897. Serial No. 654,202. (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.

My invention has for its object to provide a sewing-machine for binding hats or for doing other work in the performance of which it is desirable that there should be an unobstructed space beneath the work-support and also beneath the horizontal part of the bracket-arm of the machine or the supporting-arm, at the forward end of which the needle-bar is operatively mounted. To this end I have so constructed the head or depending forward part of the bracket-arm that it is adapted to serve as a work-support beneath the top of which the shuttle or other loop-taking device cooperating with the needle is placed, so that the hat or other article being bound or otherwise worked on may be freely moved about beneath the work-support and bracket-arm as the work is being performed. The work is preferably fed by the needle or some other suitable feeding device operating from above the work-support.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a sewing-machine embodying my invention. Fig. 2 is a front end view of the same with the face-plate or cap of the head removed. Fig. 3 is a top view of the work-support, with the shuttle-operating shaft and depending head in horizontal section on line 3 3 of Fig. 1. Fig. 4 is a bottom view of the work-support to show the shuttle-operating mechanism beneath the same, the bottom plate being removed. Fig. 5 is a detail view of the shuttle, and Fig. 6 a section of the work-plate and its attached parts on line 6 6 of Fig. 3.

A denotes the bracket-arm of the machine, having a depending forward end portion or "head" A' extended downward farther than usual and provided at its lower end with a horizontal projecting part or ledge A², extending beneath the needle to serve as a work-support and as a receptacle for the

shuttle or other loop-taking device operatively mounted therein.

B is the driving-shaft of the machine, journaled in the upper part of the bracket-arm and provided at its rear end with the usual fly and pulley wheel B', said shaft carrying at its forward part the cylinder b, having a cam-groove b'.

C is a vertical shuttle-operating rock-shaft journaled in the head A' and provided at its upper end with an arm c, having a roller-stud entering the cam-groove b', said shaft carrying at its lower end, beneath the work-support A², a toothed sector c', meshing with a pinion d on a short vertical shuttle-shaft d', having at its upper end a shuttle-driver d² for operating an oscillating discoidal shuttle d³, working in a suitable chamber in the work-support A².

At the extreme forward end of the driving-shaft B is a cam b², which carries a crank-pin b³, working in a heart-cam e, with which the needle-bar E, carrying the needle e', is provided. The cam b² is or may be formed integral with the cylinder b.

The work is preferably fed by the needle, and to this end the needle-bar E and the helper-bar or auxiliary presser-bar E' have their upper bearings in an oscillating cheek-block a.

F is the feed-lever, having its fulcrum on the screw f and provided at its upper end with a roller-stud f', held in contact with the periphery of the cam b² by a spring f². The lever F carries at its lower end the swivel-block f³, which embraces the needle and helper bars, so that when the said lever is operated by the cam b² said bars will be moved horizontally to feed the work, this horizontal movement occurring, of course, when the needle is in its lowered position. The feed may be regulated by the adjusting-screw f⁴, which serves as a back-stop for the needle-bar under the influence of the spring f².

G is the main presser-bar, to the lower end of which the presser-foot g is attached and which presser-bar is provided with a pin g², and the said pin is connected with the helper-bar E' by a lever g', having a slotted portion engaging said pin and also having a cam-slot

entered by a stud e^2 , with which the needle-bar is provided, so that the said presser-bar, with its presser-foot g , will be lifted when the feed occurs.

5 My improved machine, as herein shown, is constructed for binding hats, and for this purpose the work-plate a^2 , which forms the top of the work-support, is preferably provided at its outer end with a slightly-raised portion or
10 rib a^3 , having forward of the needle a binding-guide a^4 , made in the form of a small lip, beneath which one edge of the binding is passed on its way to the needle, the inner edge of the binding being guided by the inner or vertical
15 edge portion of said guide. The said work-plate is also preferably provided with a curved work-guide h , formed as an upturned lip on a plate h' , adjustably secured to the work-plate by a screw h^2 . The said work-plate
20 serves as a cover for the shuttle-race and is therefore preferably pivoted on a screw a^5 , so that it may be readily swung aside when access to the shuttle is desired, said plate being held in working position by a spring-
25 catch a^6 .

Any suitable take-up and tension devices may be employed. The thread-hole e^3 near the top of the needle-bar E may serve as a take-up for the stitch-forming mechanism
30 herein shown and described.

I do not wish to be understood as limiting my invention to the details herein shown or to the particular form of stitch-forming or feeding mechanisms herein illustrated, (al-
35 though an upper feed is preferred,) as it will be obvious that such details may be varied widely without departing from the spirit of my invention.

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

1. In a sewing-machine, the combination with a supporting or bracket arm having a depending front-end portion or head provided
45 with a work-support at its lower end, of a stitch-forming mechanism comprising a needle and a cooperating loop-taking device, one of which elements of said stitch-forming mechanism is located above and the other of
50 which is located beneath the top of said work-support.

2. In a sewing-machine, the combination with a supporting-arm having a depending front-end portion or head provided at its lower
55 part with a work-support, a needle-bar operatively mounted in said head, a loop-taking device operatively mounted beneath the top of said work-support, and means for operating said needle-bar and loop-taking device.

60 3. In a sewing-machine, the combination with a supporting-arm having a depending front-end portion or head provided at its lower part with a work-support, a needle-bar oper-

atively mounted in said head, a loop-taking device operatively mounted beneath the top
65 of said work-support, means for operating said needle-bar and loop-taking device, and an upper feeding device.

4. In a sewing-machine, the combination with a supporting-arm having a depending
70 front-end portion or head provided at its lower part with a work-support, a needle-bar operatively mounted in said head, a loop-taking device operatively mounted beneath the top of said work-support, and means for operat-
75 ing said needle-bar and loop-taking device, said work-support being provided with binding and work guides.

5. In a sewing-machine, the combination with a supporting or bracket arm having a
80 depending front-end portion or head provided at its lower end with a chambered work-support, a horizontal driving-shaft journaled in said arm, a vertical shuttle-operating shaft journaled in said depending head, a shuttle
85 located in the chamber of said work-support and operatively connected with said shuttle-operating shaft, a needle-bar operatively mounted in said head, and means for actuating said needle-bar and shuttle-operating
90 shaft.

6. In a sewing-machine, the combination with a supporting or bracket arm having a depending front-end portion or head provided
95 at its lower end with a chambered work-support, a horizontal driving-shaft journaled in said arm, a shuttle-operating cam at the forward part of said shaft, a vertical shuttle-operating shaft, actuated by said cam, journaled in said depending head, a shuttle lo-
100 cated in the chamber of said work-support and operatively connected with said shaft, a needle-bar operatively mounted in said head, and means for actuating said needle-bar.

7. The combination with the bracket-arm A
105 having the depending head A' provided at its lower end with a chambered work-support A^2 , of the driving-shaft B journaled in the upper part of said arm and provided at its forward end with a shuttle-operating cam, a needle-
110 bar mounted in said head and operatively connected with said shaft, the vertical shuttle-operating rock-shaft C operatively connected with said cam and provided at its lower end with a toothed sector c' the shuttle-shaft
115 d journaled in said work-support and provided with the pinion d^3 , meshing with said sector, and with a shuttle-driver in the chamber of said work-support, and a discoidal shuttle to be actuated by said driver.
120

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

PHILIP DIEHL.

Witnesses:

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HAROLD W. BROWN.