

(No Model.)

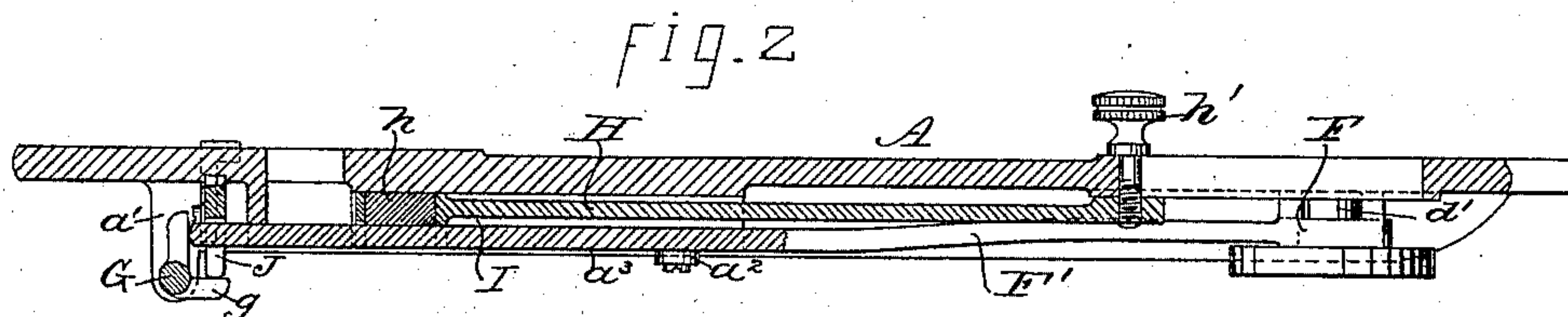
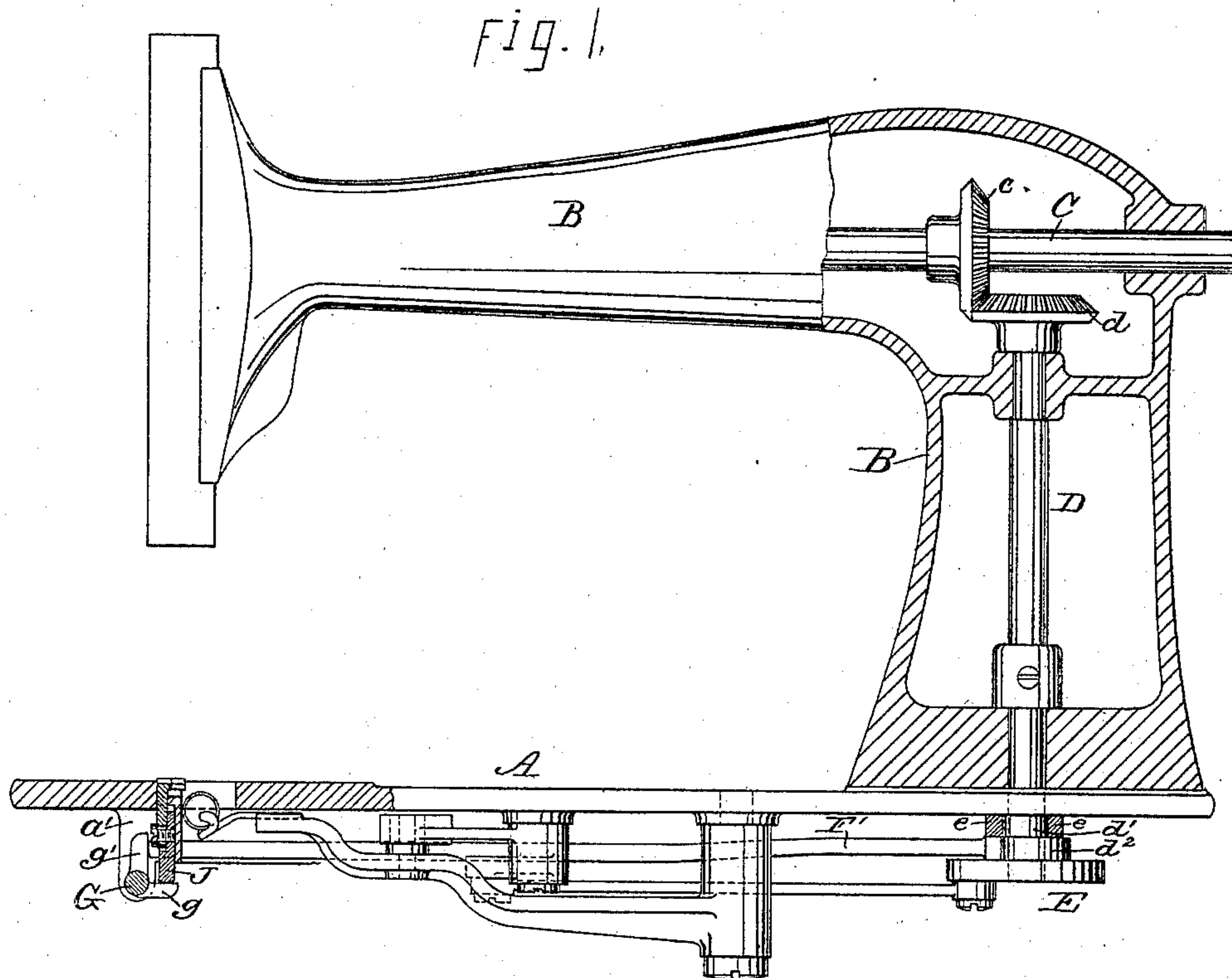
2 Sheets—Sheet 1.

P. DIEHL.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 330,385.

Patented Nov. 17, 1885.



WITNESSES:

R. A. Smith
E. D. Smith

INVENTOR

Philip Diehl

BY

Henry Calver
ATTORNEY,

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

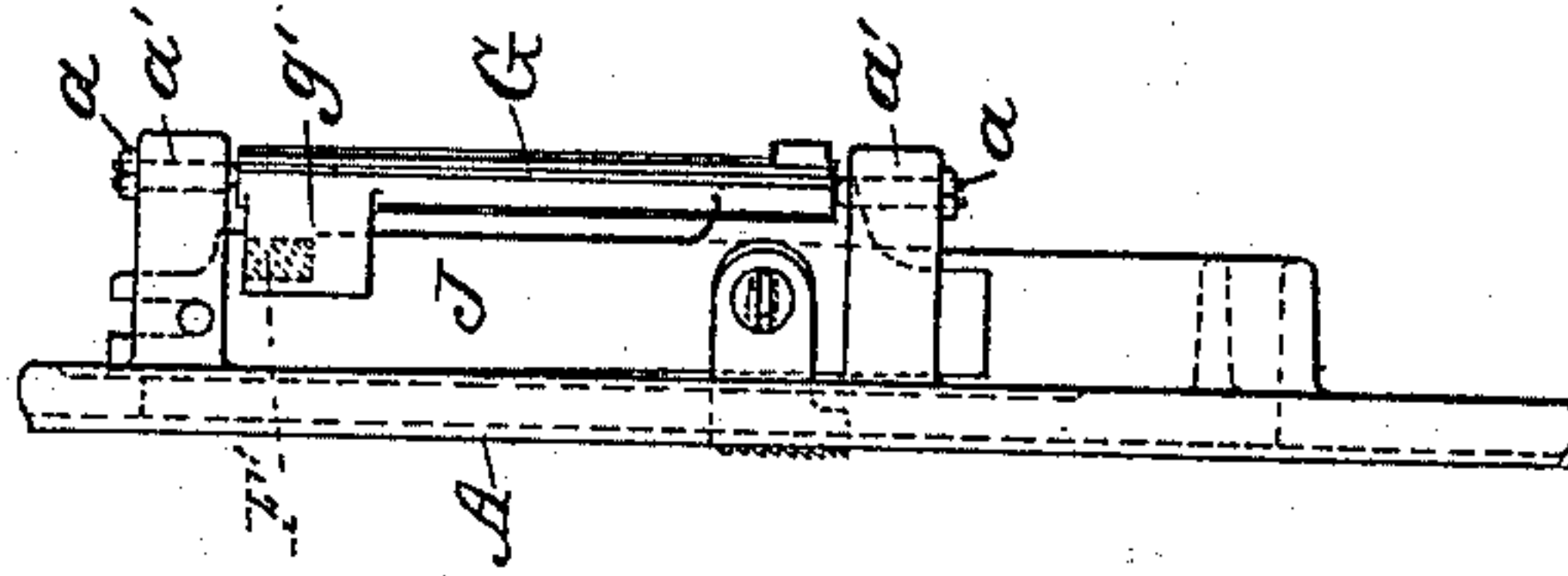


Fig. 3.

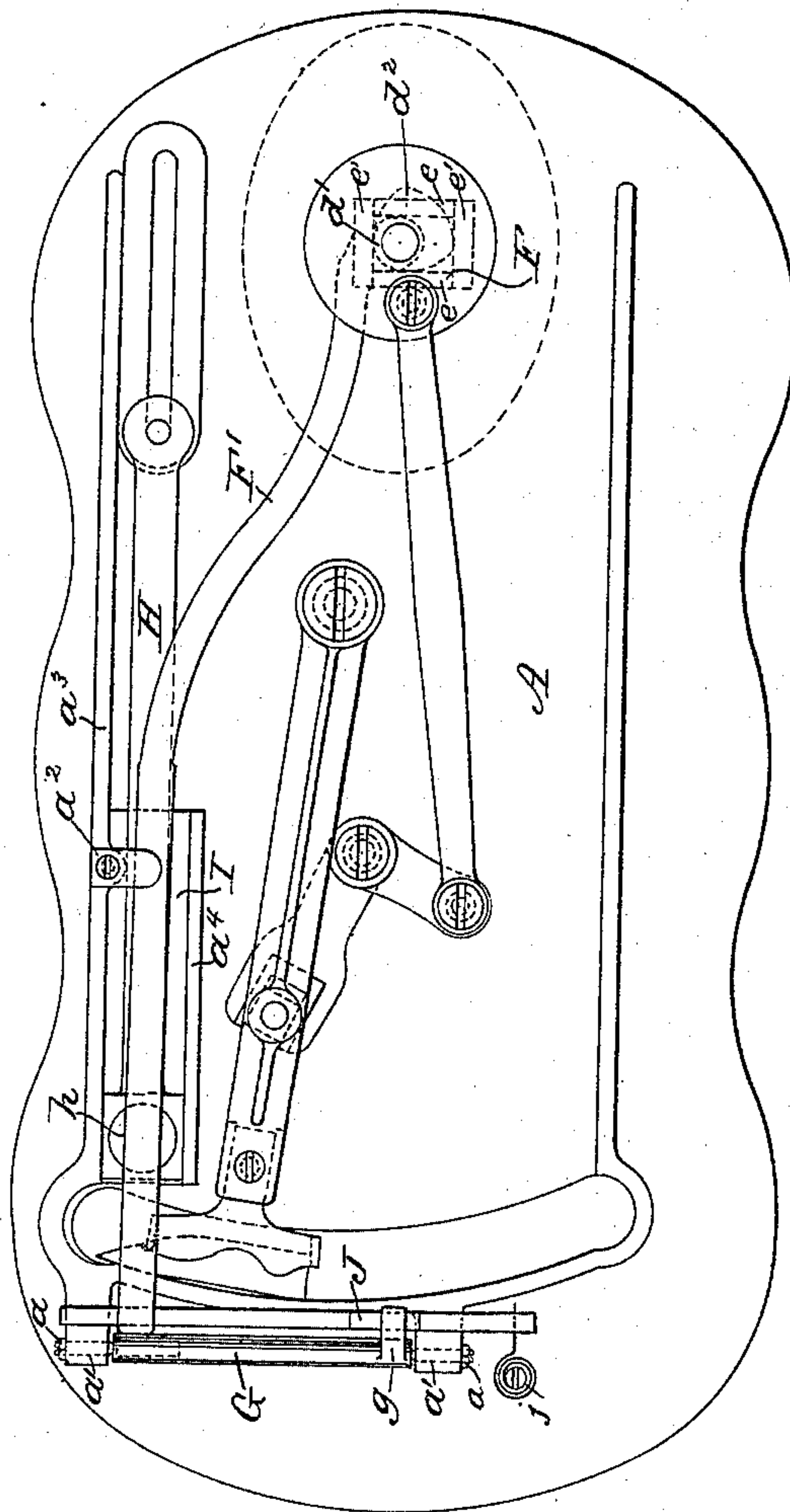
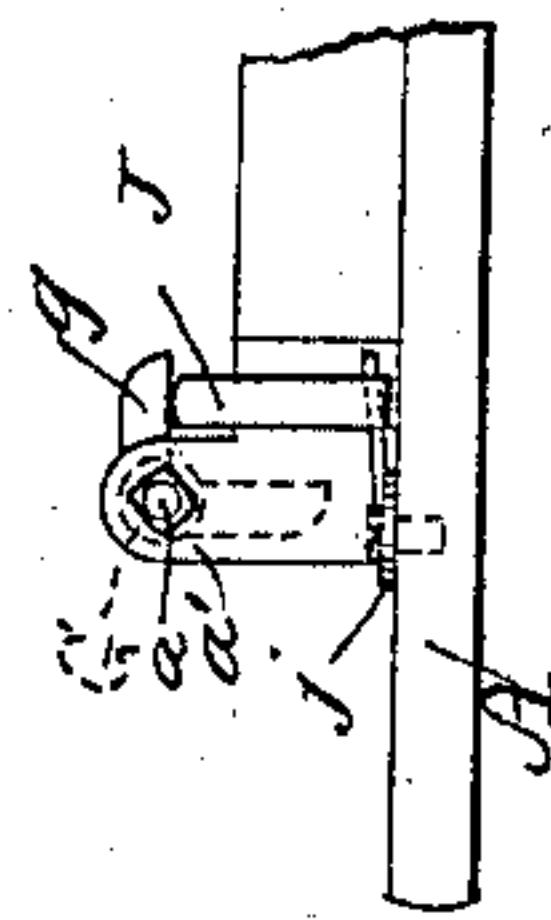


Fig. 5.



WITNESSES:

Edmund J. Smith
E. J. Smith

INVENTOR

Philip Diehl

BY

Henry C. Calver
ATTORNEY.

UNITED STATES PATENT OFFICE.

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

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 330,385, dated November 17, 1885.

Application filed June 20, 1885. Serial No. 169,300. (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 Feeding Mechanism for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of my invention is to produce a simple and effective feeding mechanism for sewing-machines in which the side-thrust of the feed-lever on the feed-bar, incidental to some feeds now in use, is avoided, and friction
15 is thereby lessened.

In my invention the feed-bar rests on and is lifted by a horizontal arm of a rock-shaft, the latter having a vertical arm against which the forward end of the feed-lever impinges.
20 The said lever is provided at its rear end with a yoke having two offset portions embracing two cams on the vertical counter-shaft of the machine. One of said cams has but a very small throw, and serves to give a slight end-
25 wise movement to the feed-lever to vibrate the rock-shaft, and thus lift the feed-bar, and the other cam has sufficient throw to give the feed-lever its usual vibratory movements to move the feed-bar forward and back. The
30 feed-lever is pivoted by a fulcrum-block carried by an adjusting-slide movable in a groove formed in the under side of the bed-plate of the machine.

In the drawings, Figure 1 is a sectional elevation of a sewing-machine embodying my invention. Fig. 2 is a partial longitudinal section of the same through the feeding mechanism. Fig. 3 is a bottom view of my machine, and Fig. 4 is an end view of the bed-plate reversed, looking from the left of Fig. 3; and
40 Fig. 5 is a detail view showing the spring for lowering the feed-bar.

A indicates the bed-plate of the machine, and B the bracket-arm thereof. Journaled
45 in the upper part of the bracket-arm is the horizontal driving-shaft C, having a bevel-gear, *c*, meshing with a similar gear, *d*, on the upper end of the vertical counter-shaft D, the latter having at its lower end the usual shuttle-
50 operating crank, E. On the shaft D, just above

the crank E, are two feed-cams, *d'* *d''*, working within a yoke, F, on the rear end of the feed-lever F', said yoke having two offset portions, each of which engages one of the said cams. One of said offset portions is formed by bars
55 *e* extending transversely of the machine, and between these transverse bars works the feed-cam *d'*, which has but a very small throw, so as to impart but a slight endwise movement to the feed-lever. The larger feed-cam, *d''*,
60 works between the bars *e'*, extending longitudinally of the machine, and thus serves to impart the usual vibratory or feeding movements to the feed-lever.

G is a rock-shaft, herein shown as being
65 pivoted on center screws, *a*, passing through lugs *a'*, depending from the bed-plate A. The rock-shaft G is provided with a horizontal arm, *g*, on which the feed-bar J rests, and with a vertical arm, *g'*, engaged by the forward end
70 of the feed-lever F, said end being preferably slightly rounded, as shown, to lessen frictional contact with the arm *g'* as the lever vibrates in feeding. The arms of the rock-shaft are at opposite ends of said shaft, as shown in Fig.
75 3. The feed-lever engages the feed-bar J by a slot in the latter, which permits said bar to move vertically independently of the feed-lever, while the latter fits snugly in said slot horizontally, so as to impart positive horizon-
80 tal or feeding movements to said bar in both directions. The feed-lever is supported by a small lug or bracket, *a''*, attached to a rib, *a''*, on the bed-plate, and said lever has its fulcrum in a block, *h*, swiveled in the forward end of
85 a feed-regulating slide, H, adjustably attached to the bed-plate in the usual manner by a set-screw, *h'*. The forward end of the slide H, in which the block *h* is swiveled, is squared and fits snugly in a groove or guiding-way, I, be-
90 neath the bed-plate, formed by the ribs *a'''* and *a'''*. Motion being imparted to the driving and vertical shafts, the feed-cams on the latter shaft, working in the yoke of the feed-lever, will impart positive endwise or longitudinal
95 and vibratory movements to said lever, the cams being arranged so that said endwise and vibratory movements will alternate or occur between each other. The outward thrust of the feed-lever against the arm *g'* of the rock-
100

shaft G will turn said shaft slightly on its axis, and thus cause its arm *g* to lift the feed-bar. The feed-lever then swings to move said bar forward in feeding. The backward endwise movement of said lever then occurs, to permit the feed-bar to descend, and said lever then swings reversely to return the feed-bar to its first position. Thus a strong and easily working feed will be produced with a very slight endwise movement on the feed-lever, and as the feed-bar rests on an arm of the rock-shaft side-thrust on the said bar is avoided.

In the construction shown the downward movements of the feed-bar may be effected by gravity, assisted in operation by the pressure of the presser-foot; but a spring, as *j*, for lowering the feed-bar will preferably be employed, and said spring will also hold the feed-bar back against the feed-lever if there is any lost motion between these parts.

I do not claim the shuttle-operating mechanism herein shown in this application, as the same is claimed in my application No. 169,191, filed June 19, 1885.

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

1. In a sewing-machine, the combination, with a two-armed rock-shaft, of a feed-bar

resting on one of the arms of said shaft, a feed-lever engaging the other of said arms, and mechanism for reciprocating and vibrating said feed-lever, substantially as set forth.

2. In a sewing-machine, the combination, with a rock-shaft having horizontal and vertical arms; of a feed-bar engaging said horizontal arm, a feed-lever engaging said vertical arm and having at its rear end a yoke, two cams working within said yoke, and means for operating said cams, substantially as set forth.

3. In a sewing-machine, the combination, with the bed-plate, bracket-arm, and horizontal and vertical shafts and their gearing, of a rock-shaft having horizontal and vertical arms, a feed-bar resting on said horizontal arm, a feed-lever engaging said vertical arm and having at its rear end a yoke with two offset portions, and two cams on said vertical shaft working within said yoke, substantially as set forth.

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

PHILIP DIEHL.

Witnesses:

J. G. GREENE,

H. J. STRATEMEYER, Jr.