

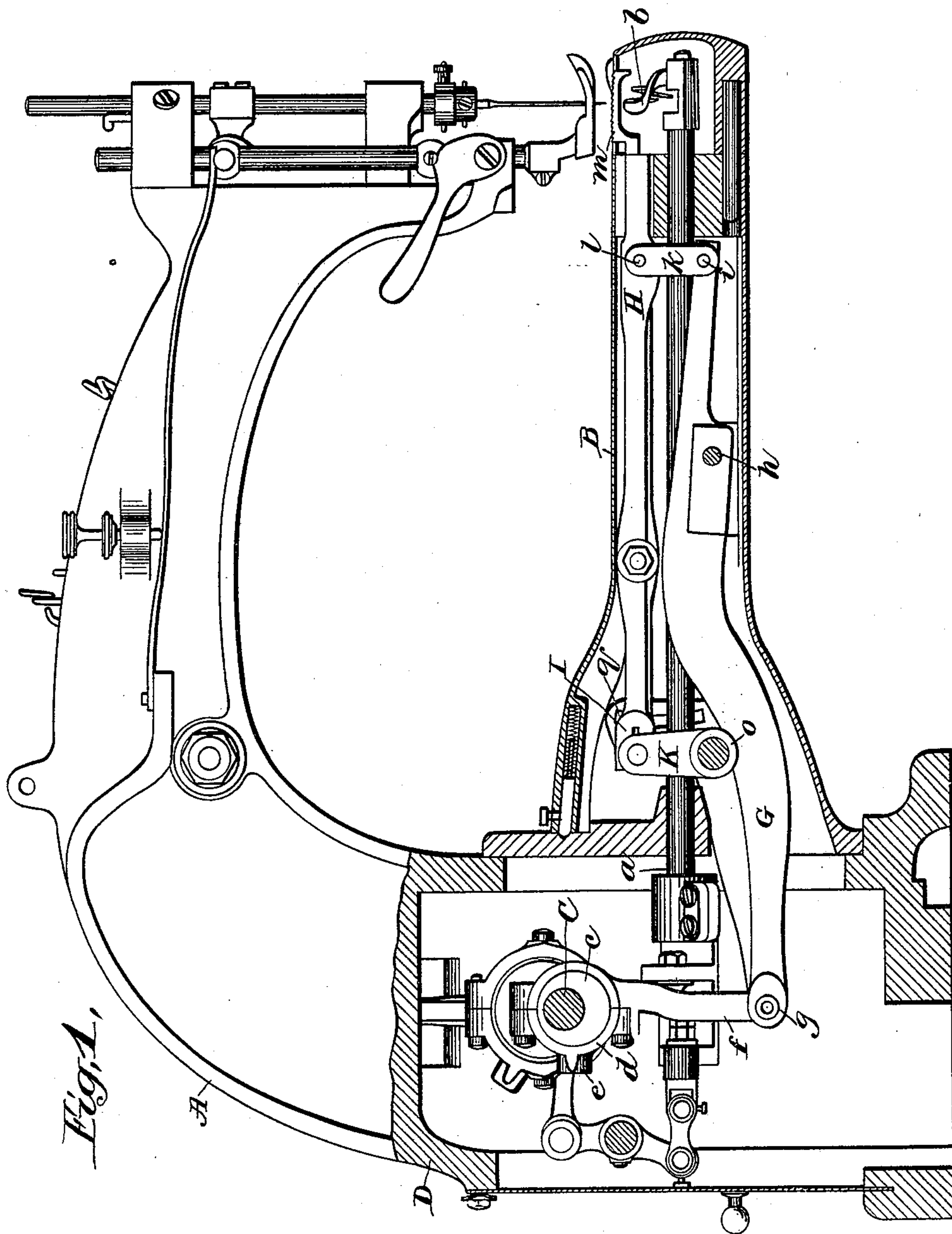
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3 Sheets—Sheet 1.

L. MUTHER, R. G. WOODWARD & E. C. HOLLAND.
FEEDING MECHANISM FOR SEWING MACHINES.

No. 583,414.

Patented May 25, 1897.



Witnesses.
Geo. S. Gleason.
Chas. P. Moore.

Inventors
Lorenz Muther, R. G. Woodward
Elias C. Holland
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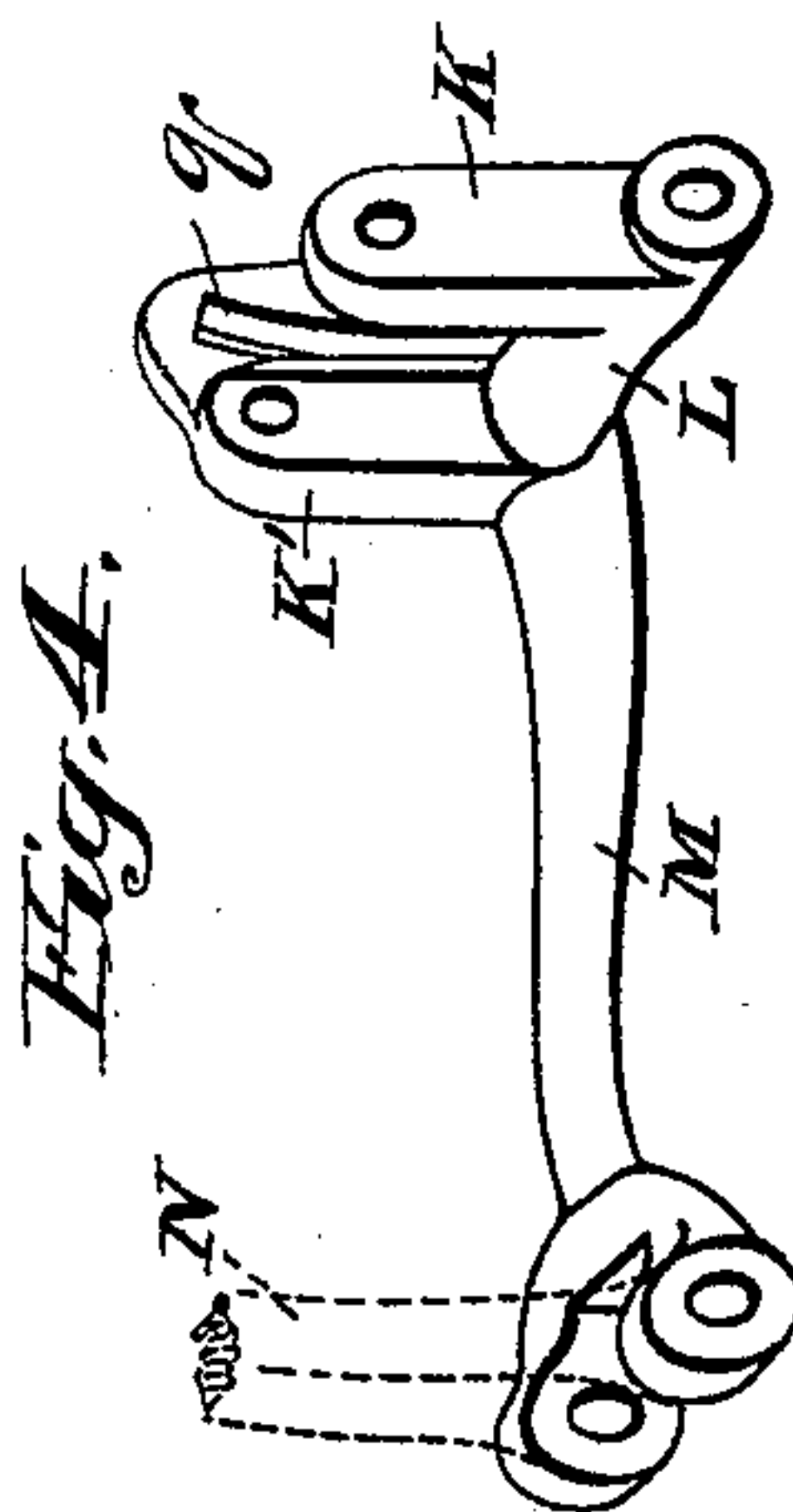
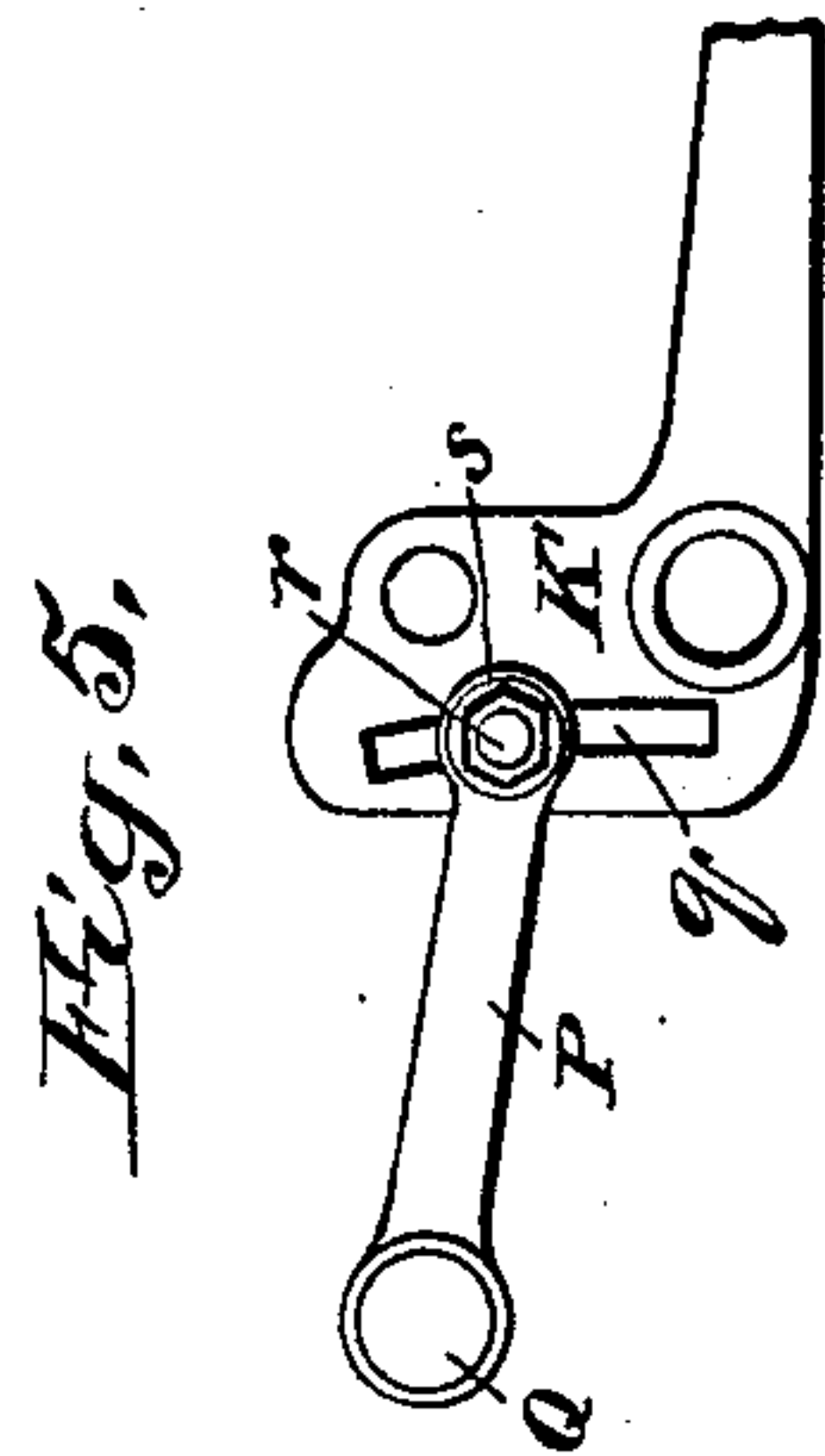
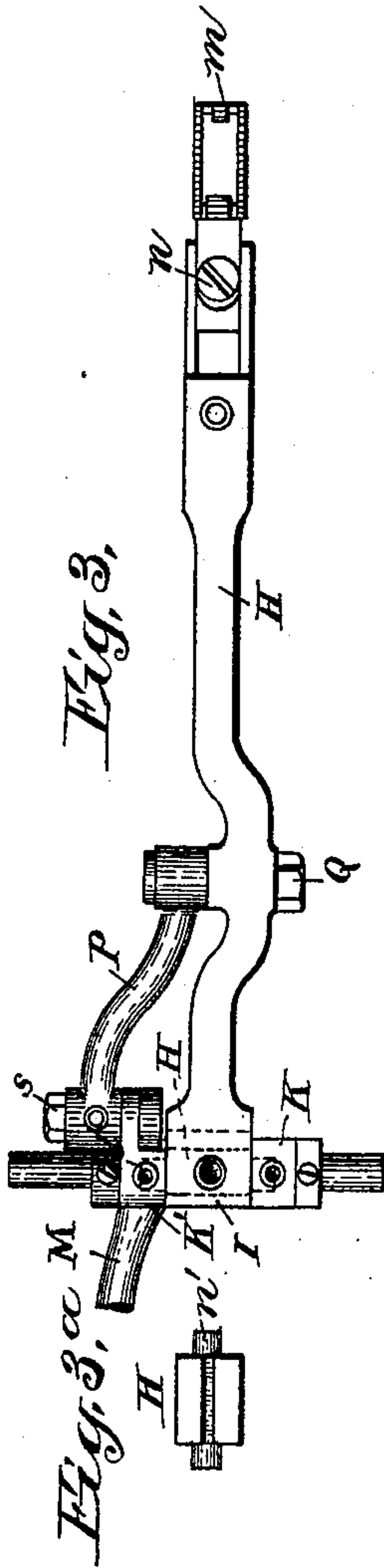
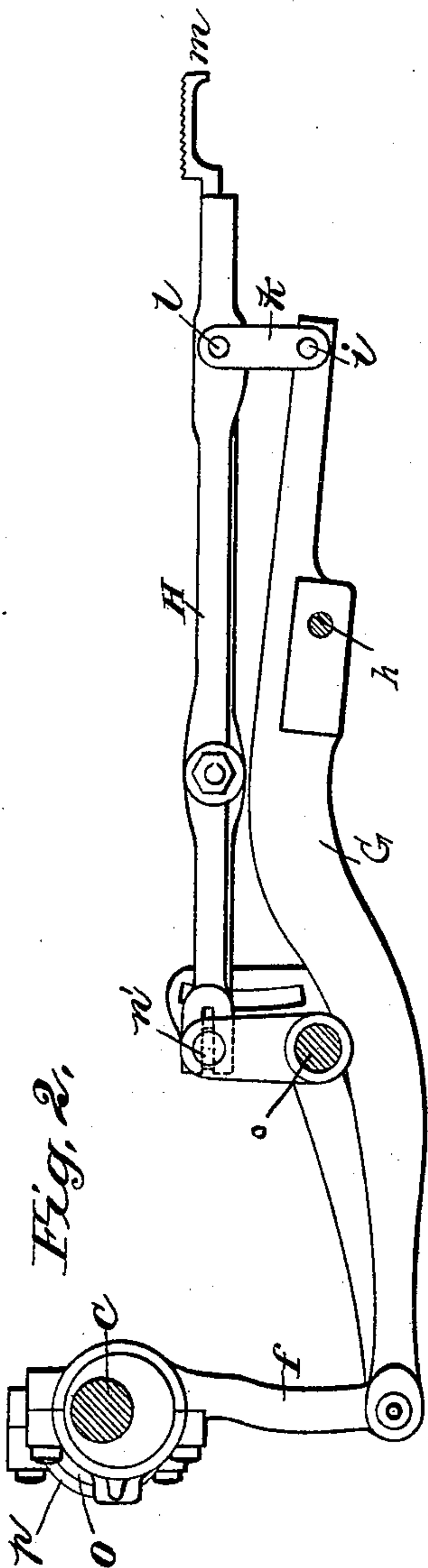
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3 Sheets—Sheet 2.

L. MUTHER, R. G. WOODWARD & E. C. HOLLAND.
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No. 583,414.

Patented May 25, 1897.



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(No Model.)

3 Sheets—Sheet 3.

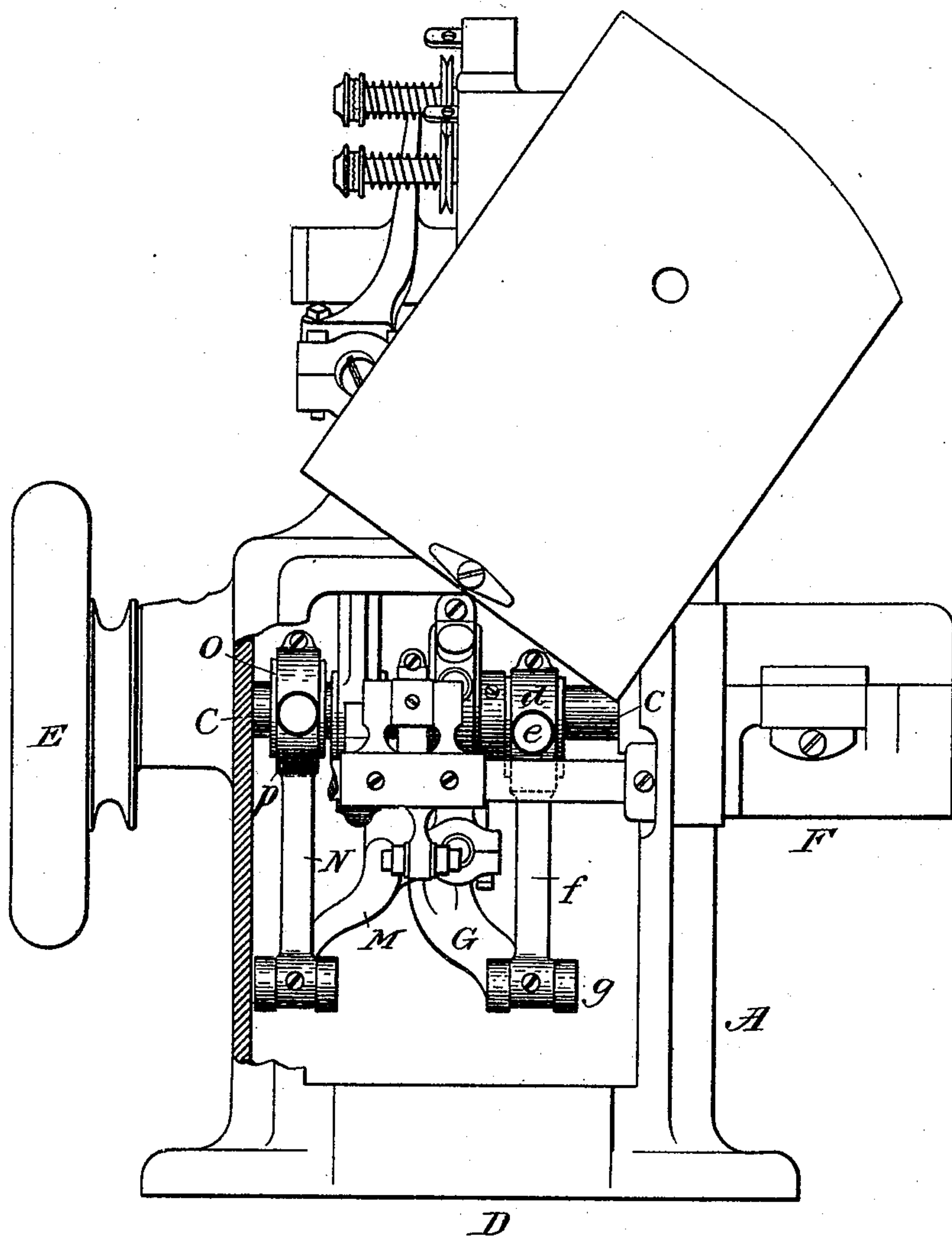
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Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

LORENZ MUTHER, OF OAK PARK, RUSSEL G. WOODWARD, OF WAUKEGAN,
AND ELIAS C. HOLLAND, OF AUSTIN, ILLINOIS, ASSIGNORS TO THE UNION
SPECIAL SEWING MACHINE COMPANY, OF CHICAGO, ILLINOIS.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 583,414, dated May 25, 1897.

Application filed July 12, 1894. Serial No. 517,338. (No model.)

To all whom it may concern:

Be it known that we, LORENZ MUTHER, residing at Oak Park, in the county of Cook, RUSSEL G. WOODWARD, residing at Waukegan, in the county of Lake, and ELIAS C. HOLLAND, residing at Austin, in the county of Cook, State of Illinois, citizens of the United States, have invented certain new and useful Improvements in Feeding Mechanism for Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Our invention relates to an improved feeding mechanism for sewing-machines, and is designed to be used with a machine having a cylindrical bed-plate or arm and adapted to feed lengthwise of the same, being used for sewing tubular work. In our application filed February 5, 1895, Serial No. 537,342, we have shown, described, and claimed the machine as a whole, but as the feed may be useful in other connections we herewith make separate application therefor.

The object of the invention is especially to provide a simple and effective feeding apparatus which is capable of perfect operation at the maximum speed of the machine and which can be packed into small compass, the entire operating parts being capable of being condensed into an exceedingly small bed-plate. Of course as to certain features of the feeding mechanism it may be used on other machines than that above referred to.

The invention therefore consists in the matters hereinafter described, and referred to in the appended claims.

In the accompanying drawings, which illustrate the invention, Figure 1 is a side elevation of a sewing-machine embodying our invention, the casing being partly broken away. Fig. 2 is a view of the feeding mechanism detached. Figs. 3 and 4 are detail views of the feed-dog-carrying bar and rocking crank, respectively. Fig. 3^a is a rear end view of the feed-dog-carrying bar. Fig. 5 is a detail representing the mechanism for changing the length of the stitch, and Fig. 6 is a rear end view of the machine.

In the drawings, A represents the frame of

the machine as a whole, having the cylindrical bed-plate B, in which are contained the feeding and looper mechanisms. The main shaft C is journaled in bearings in the rear portion or box D and has on one end the driving-wheel E, while on the other end and outside the box D, but within a supplemental casing F, is the take-up mechanism. On the main shaft C within the box D are the various eccentrics and connections for reciprocating and rocking the shaft *a*, carrying the looper *b* on its forward end.

On the main shaft is an eccentric *c*, around which is attached the strap *d*, having the oil-reservoir *e* and connecting-rod *f*, pivoted to the forks *g* on the end of the bar G. This bar G is of the form shown, and is grooved on its upper and under surfaces to give requisite stiffness and strength for the work it is compelled to perform, that on the upper side also serving as a trough in which the looper-shaft *a* rocks and reciprocates. Said bar G is pivoted at a point forward of its center on the rod or pin *h*, passed through the lower portion of the bed-plate, whereby in the rotation of the main shaft the bar G is oscillated up and down.

At the forward end of the bar G there is passed through the same a pin *i*, to which the lower ends of two links *k* are secured, while said links at their upper ends are secured to a second pin *l*, passing through the bar H, grooved at its forward end and having secured to it the feed-dog *m* by means of the screw *n*. The rear end of said feed-dog-carrying bar H has a head I, slotted to fit and slide on the flat pin *n'*, pivoted between the vertical arms K K' of the yoke L, pivoted on the rod or bar *o*, secured to the bed-plate. This yoke has a rearwardly-extending arm M, between the forks of which is pivoted the end of the connecting-rod N, having the strap *p*, embracing the eccentric O on the main shaft.

One of the vertical arms K' of the yoke has a vertical projection with a curved slot *q*, through which passes a bolt *r*, upon which is slipped the end of the arm P, the bolt and the end of the arm P being adjustable up and down in the slot *q* by the nut *s*, the bolt act-

ing as a pivot for the arm, so that by raising and lowering the pivot in its relation to the pivot-point of the rocking yoke the throw of the arm P is varied, and as this arm at its forward end is secured to the feed-dog-carrying bar by the pivot-bolt Q the rocking of the yoke L reciprocates the feed-dog-carrying bar forward and back, while the length of the throw is regulated by the means above described, and thus the length of the stitch may be varied at will by securing the bolt r in any desired position.

Motion is transmitted from the two eccentrics on the main shaft to the bar G and rocking yoke L, respectively, the former, by reason of its pivotal arrangement, transmitting to the feed-dog bar H a vertical motion, while the latter, through the arm P, gives to said bar H its forward-and-backward reciprocation, the pivotal connection of the bar G with the feed-dog-carrying bar and the guiding-slot on the rear of the latter, fitting over the flat pivot between the arms K K' of the rocking yoke, serving to prevent any strain on the parts and to keep the bar H always in a horizontal plane when moving up or down. We have of course provided proper openings through which lubricant may be poured for the pivot-points and various bearing-surfaces. It will be noticed that the parts are all formed so as to be packed into the smallest possible space, the lower bar G being formed with the groove to accommodate the looper-shaft, while the vertical arms of the rocking yoke are of such formation as to permit the looper-shaft to pass between them.

By the herein-shown construction of parts we have been enabled to get all the working parts within an inch-and-thirteen-sixteenths cylindrical casing, thus allowing very small tubes to be sewed on our machine.

The parts herein shown, while especially adapted as to certain features to the machine above referred to, as to the main features the invention is applicable to any machine. Hence we do not wish to be limited to the particular application to the machine herein shown and described.

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

1. A feeding mechanism comprising a vertically-oscillating bar, a feed-dog-carrying bar with a link connection between the two, a rocking yoke, the end of said feed-dog-carrying bar having a sliding pivot connection between the arms of the yoke and an adjustable connection between the yoke and the feed-dog-carrying bar; substantially as described.

2. A feeding mechanism for sewing-machines and the like comprising the pivoted bar with means for oscillating it, the links pivoted thereto, the feed-dog-carrying bar pivoted to the opposite end of said links and having a slotted inner end, a rocking crank provided with a guiding-pin fitting in the slot in the inner end of the feed-dog-carrying bar,

and connections between the rocking crank and the feed-dog-carrying bar for giving the forward-and-backward movement thereto; substantially as described.

3. A feeding mechanism comprising a driving-shaft, the pivoted bar and the rocking crank with connections between the two and said driving-shaft, the feed-dog-carrying bar having pivotal connections at its forward end with the pivoted bar, and at the rear end with the rocking crank, and an independent adjustable connection between the rocking crank and the feed-dog-carrying bar; substantially as described.

4. In a feeding mechanism and in combination, the rocking yoke having vertical arms, the pivot-pin between the two, the feed-dog-carrying bar having a sliding movement in the direction of its length on said pivot-pin with a connection between the rocking yoke and the feed-dog-carrying bar for giving a forward-and-backward movement to the latter, and independent means for oscillating said feed-dog-carrying bar to give the upward and downward movements thereto; substantially as described.

5. The herein-described feeding mechanism for sewing-machines and the like comprising the pivoted bar G, the feed-dog-carrying bar, the link connection between the two at the forward end, the rocking yoke, the flat pin between the arms of said yoke, the feed-dog-carrying bar having a slotted head engaging said flat pin and a separate adjustable connection between the rocking yoke and the feed-dog-carrying bar; substantially as described.

6. In a feeding mechanism, the feed-dog-carrying bar, the rocking yoke having vertical arms, the end of said feed-dog-carrying bar having a sliding pivot connection with the vertical arms, one of said arms being provided with a curved slot, a bolt fitting therein, an arm P pivoted at one end on said bolt and at the other end to the feed-dog-carrying bar and means for raising and lowering said feed-dog-carrying bar; substantially as described.

7. In combination with the bed-plate, the pivoted bar extending longitudinally thereof with means for operating the same, the feed-dog-carrying bar arranged above the same and having a pivotal connection with the forward end thereof, the rocking yoke pivotally secured to the rear end of said feed-dog-carrying bar, and an independent connection between the rocking yoke and the feed-dog-carrying bar, for giving the forward-and-backward movement thereto; substantially as described.

8. A sewing-machine comprising a main shaft, a cylindrical casing extending in a direction at right angles to the main shaft, a pivoted bar extending lengthwise of and within the casing with connections between its rear end and the main shaft, a feed-dog-carrying bar also extending lengthwise of the casing and arranged in a plane above the

plane of the pivoted bar, a rocking crank pivoted in said casing and connected to the feed-dog-carrying bar at the rear end thereof, said feed-dog-carrying bar having pivotal connection with the pivoted bar at its forward end, and connections between said rocking crank and the main shaft for reciprocating said feed-dog-carrying bar back and forth lengthwise of the casing; substantially as described.

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

LORENZ MUTHER.
RUSSEL G. WOODWARD.
ELIAS C. HOLLAND.

Witnesses:

C. McNEIL,
W. L. SWIFT.