

No. 725,631.

PATENTED APR. 14, 1903.

W. H. STEDMAN.

FEEDING AND EDGE CONTROLLING DEVICE FOR SEWING MACHINES.

APPLICATION FILED DEC. 18, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

Fig-1-

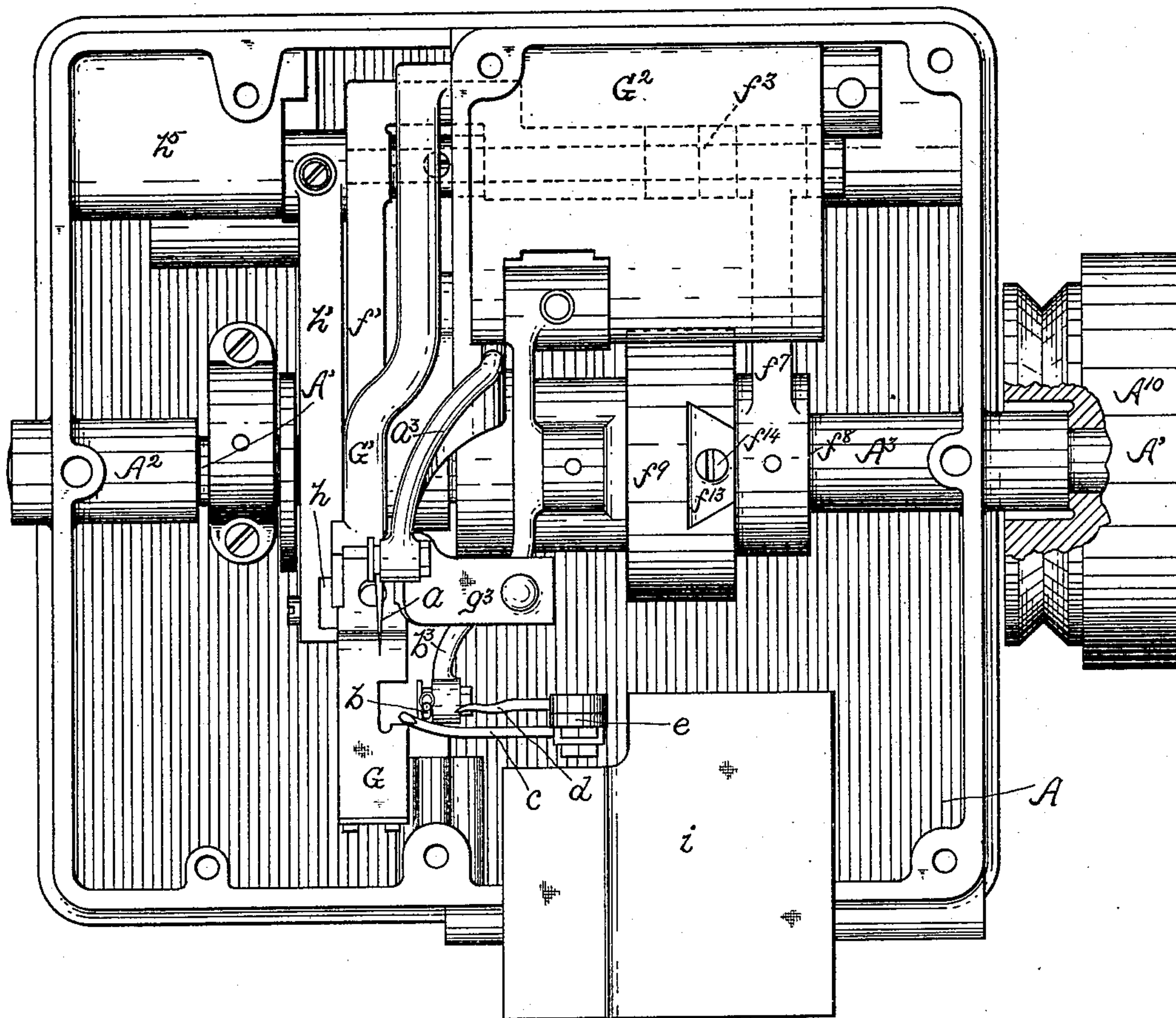
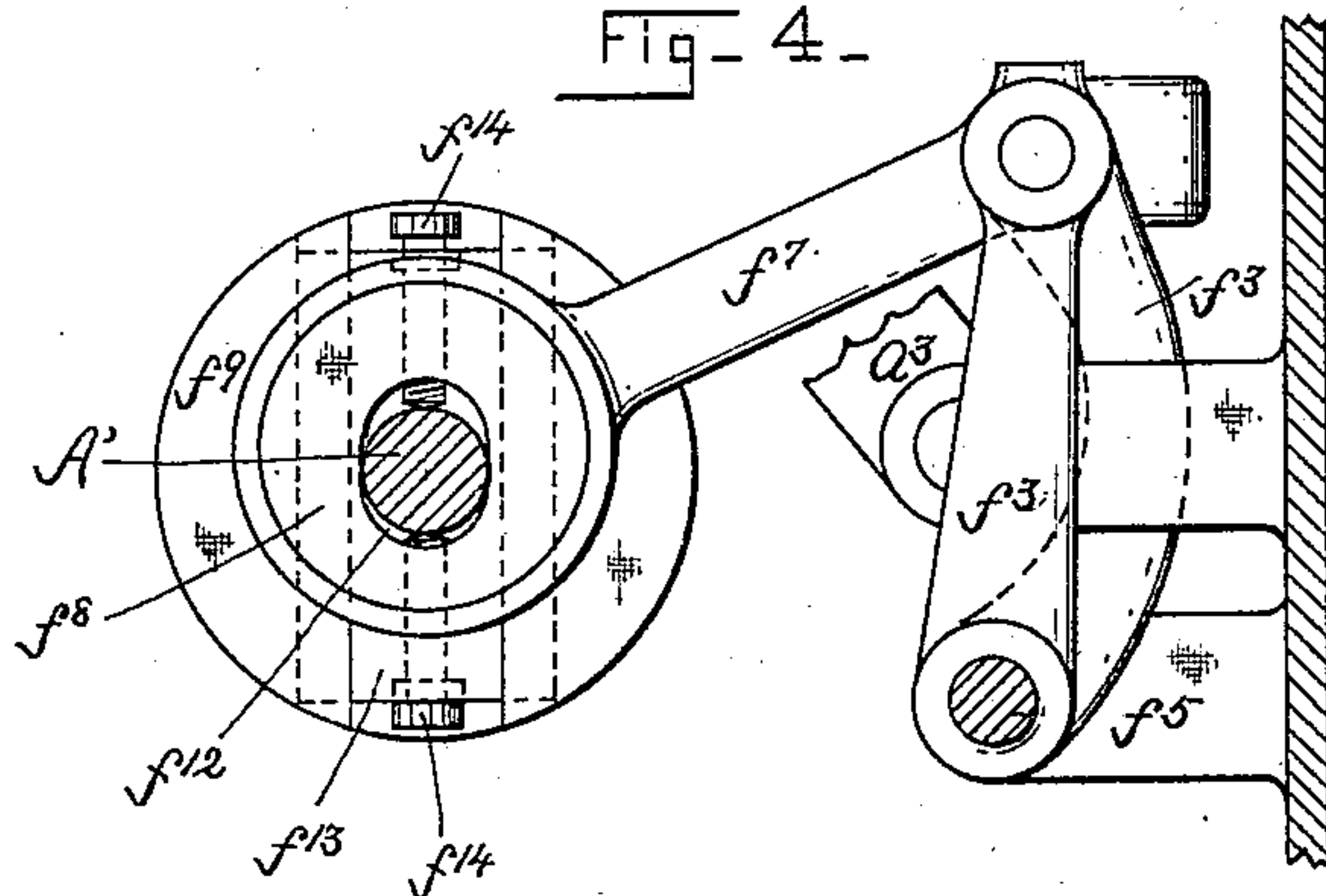


Fig-4-



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2 SHEETS—SHEET 2.

Fig. 3.

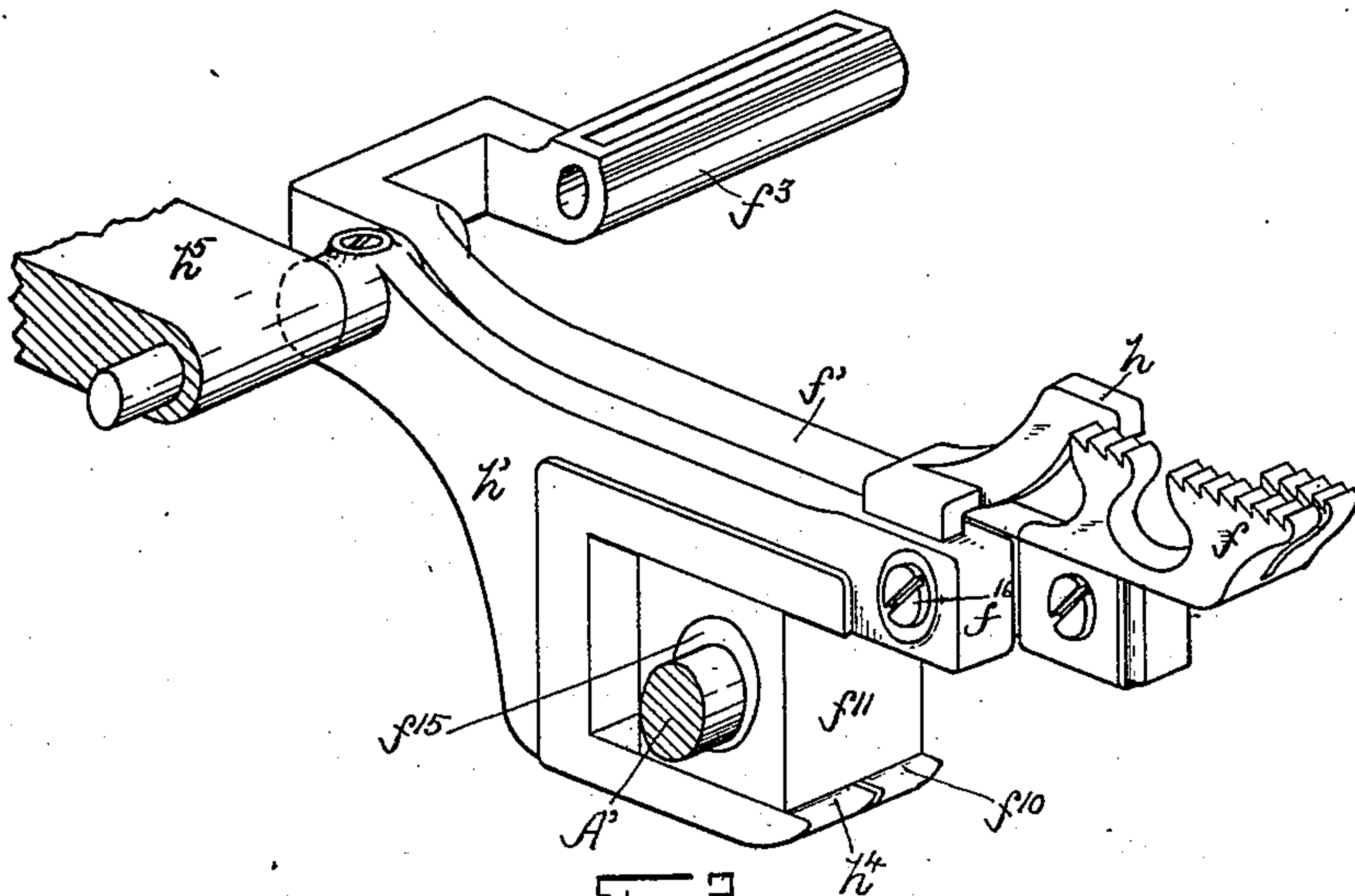
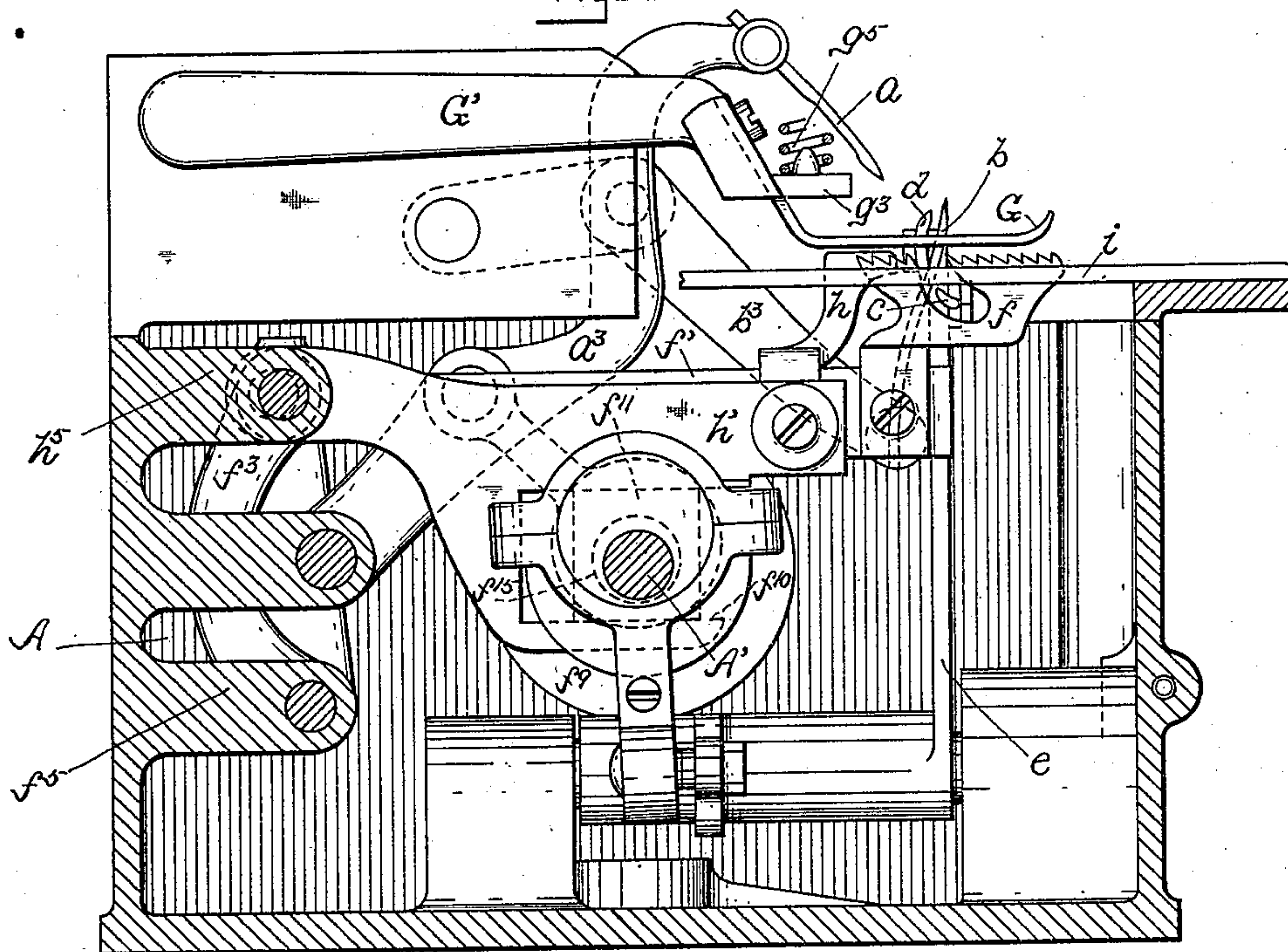


Fig. 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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FEEDING AND EDGE-CONTROLLING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 725,631, dated April 14, 1903.

Original application filed October 17, 1900, Serial No. 33,382. Divided and this application filed December 18, 1901. Serial No. 86,441. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. STEDMAN, a citizen of the United States, residing in the city and county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Feeding and Edge-Controller Devices for Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon, this application being a division of an original application for patent filed October 17, 1900, and bearing Serial No. 33,382, (series of 1900.)

The immediate object of this invention is to provide adjustable feeding and edge-controlling devices for sewing-machines which shall be positive in their action, of simple construction, and capable of being operated at a very high speed. The feeding device, as its name implies, serves to effect the feeding of the fabric being operated upon by the machine, and the office of the edge-controlling device is to engage the said fabric to limit the speed at which the said edge is moved by the feeding device in order that the stitching may be properly applied thereto without pouting or extending the edge.

Mechanism is provided for operating the feeding and edge-controlling devices, a part of said mechanism effecting the rising and falling movements of the said devices and is common to both, while another part of the said mechanism effects the forward and backward movements of the feeding device alone. The last-named part of the mechanism is capable of such adjustment that the amount of the longitudinal travel of the feeding device may be controlled, thereby making it possible to produce a stitch of any desired length within the limits of such adjustment.

My newly-invented feeding and edge-controlling devices, while fully adapted for use with many styles of sewing-machines, are particularly applicable to a sewing-machine embodying the improvements shown and described in the said application of which this is a division, and in order that the construction and operation of the feeding and edge-controlling devices may be better understood

and the more easily explained it has been thought best to illustrate and briefly describe in connection therewith those portions of the sewing-machine of the said original application that are immediately related to the improvements sought to be covered by this application.

In the accompanying drawings, Figure 1 is a plan view of a sewing-machine of the type referred to with the work-plate and the upper portion of the casing removed to disclose the interior mechanism. Fig. 2 is a sectional view of the said machine looking toward the right in Fig. 1. Fig. 3 is a detail perspective view of the feed-dog and edge-controller with their carrying and operating mechanisms. Fig. 4 is an elevation of certain elements of the mechanism of the feeding device, the said elements being detached from the machine to more clearly disclose the same and the manner in which they are operated to effect a feed of any desired length within the limits of the said mechanism.

Like letters of reference in the several figures indicate the same parts.

Describing now in a general way the sewing-machine forming the subject of the said original application and to which machine the improvements of this present application are particularly applicable, as above set forth, the letter A denotes a casing or housing which serves to inclose the major portion of the mechanism of the machine. Opposite side walls of the casing A have journal-bearings A² A³ formed thereon for the reception and support of the main or drive shaft A' of the machine. The main shaft A' crosses the casing A from side to side thereof and at one end, outside the said casing, bears a suitable drive-wheel A¹⁰, preferably of the "hand and belt wheel" pattern. Within the casing A the main shaft A' carries a number of eccentrics, which latter through suitable connections serve to impart proper movement to the several needle or looper arms or carriers of the machine. Of these carriers that bearing the upper or main needle a of the machine, which is of the eye-pointed type, is denoted by the letter a³. A second needle, known as the "lower" needle and designated by the letter b, is carried by an arm b³, while two additional implements (either needles or hooks) c and d

are located on an arm *e*. The needles *a* and *b* are adapted to approach the work, respectively, from above and below the plane of the same and to travel in a vertical plane, while the implements *c* and *d* travel in a plane transversely to the said needles *a* and *b* and are so located on the arm *e* as to operate, respectively, below and above the plane of the work.

With needle mechanism of the kind described a stitch of one, two, three, or four threads may be produced, simple changes only in the operative ends of the implements being necessary to produce a stitch of the desired character.

The reference - letter *i* denotes the work-plate of the machine and is provided with the usual slots or openings for the passage of the feed-dog and edge-controller. The work is held upon the plate *i* by a presser-foot *G*, carried on the end of an arm *G'*, pivotally mounted in a bearing *G²* at the back of the casing *A*. A transversely-extending arm *g³* of the presser-foot arm *G'* has confined between itself and a fixed point above the same (not shown in the drawings) a spiral spring *g⁵*, which acts normally to depress the presser-foot; but as this feature as well as the just-mentioned needle mechanism forms no part of this present invention and are fully set forth and described in the said original application it is not deemed necessary to more fully illustrate and describe such mechanisms herein.

For feeding the work a feed-dog *f* is provided, preferably cut away centrally for the passage of the lower implement *d*, (when used with the sewing-machine of the said original application.) The said feed-dog is mounted adjustably on the end of a feed-dog carrier *f'*, which latter is pivotally mounted on the upper end of a rocking frame *f³*, Figs. 2 and 4, the latter being in turn mounted in fixed bearings *f⁵* in the housing in the rear of the drive-shaft. The rocking frame *f³* imparts the horizontally reciprocatory movements to the feed-dog, for which purpose said frame is connected by a rod and strap *f⁷* with an eccentric *f⁸*, adjustably mounted on the drive-shaft, the eccentric position of adjustment of said eccentric determining the extent of feed or throw of the feed-dog. The adjustability is secured by forming a slot *f¹²* in the eccentric, through which slot the shaft extends, and providing on the sides of the eccentric suitable dovetail projections *f¹³*, Fig. 1, working in a transverse dovetail groove formed in a collar *f⁹*, rigidly mounted on the drive-shaft. Screws *f¹⁴*, passing through the dovetail projections *f¹³*, bear against the drive-shaft and form a convenient and ready means for shifting the position of the eccentric with relation to the drive-shaft. Thus by loosening one screw and tightening the other the eccentricity of the eccentric may be varied at will.

The carrier *f'* for the feed-dog is provided with a rectangular slot or recess constituting

a guide *f¹⁰*, in which works a rectangular block *f¹¹*, having a bearing therein for an eccentric *f¹⁵*, mounted on the drive-shaft, which eccentric and block will impart the necessary vertical movement to the feed-dog, as will be readily understood.

In order to prevent lengthening or "pouting" the edge of the fabric in overseaming the same and particularly when operating on stretchy fabric, such as some varieties of knit fabric, I provide the before-mentioned edge-controller, which is for the purpose of retarding the edge of the material while it is being fed and while stitches are being formed around its edge. This edge-controller is lettered *h* in the accompanying drawings, and it is adjustably mounted on a carrier *h'*, corresponding somewhat in shape to the carrier *f'* of the feed-dog, in that it is provided with a rectangular slot or recess forming a guide *h⁴*, within which the block *f¹¹* before described fits and works for imparting a vertical movement to the edge-controller *h*; but said carrier *h'* instead of being mounted upon an oscillatory support, so as to be capable of horizontal movement, is pivotally mounted in a fixed bearing *h⁵* in the housing in the rear of the drive-shaft and preferably above the plane of the drive-shaft. In operation the edge-controller is elevated simultaneously with the elevation of the feed-dog, the same mechanism actuating both devices, as will be readily understood, and when elevated as just mentioned the said edge-controller engages the fabric at its extreme edge and presses said fabric against the presser-foot during the time the feed-dog is making its operative stroke, thereby retarding slightly the travel of the extreme edge for the purpose before stated.

The mounting of the edge-controller adjustably on its carrier, as aforesaid, may be effected in any well-known and convenient manner, whereby its frictional engagement with the goods may be regulated. Thus, as shown in the drawings in dotted lines, Fig. 2, the hole in the carrier through which the screw *f¹⁶* passes into the shank of the edge-controller is somewhat enlarged, and by loosening the screw the edge-controller may be adjusted vertically to the extent allowed by the hole through which the screw passes.

With the above mechanism it will be seen that, as before mentioned, the movements of the feed-dog and edge-controller are positive, the feed-carrier being moved positively horizontally and vertically and the edge-controller having a positive vertical movement.

The feed-dog and edge-controller are both adjustably secured to their respective carriers, and the portion of the edge-controller that engages the fabric is preferably flattened and the forward upper corner rounded that the fabric may be in no wise injured thereby.

I do not wish to be understood as restricting the feed-dog and edge-controller mechanism for use with the sewing-machine shown

and described, for, as before stated, these improvements are applicable to other styles of machines.

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

1. In a sewing-machine, the combination with the stitch-forming mechanism and work-feeding mechanism including a feed-dog and a presser-foot, an edge-controller for cooperating with the presser-foot to retard the feed at the edge of the work, with means for periodically and positively moving the edge-controller toward and away from the presser-foot, substantially as described.

2. In a sewing-machine, the combination with the stitch-forming mechanism and work-feeding mechanism including a feed-dog and a presser-foot, of an edge-controller movable vertically in unison with the feed-dog for cooperating with the presser-foot to retard the feed at the edge of the work, with means for simultaneously periodically and positively moving the edge-controller and feed-dog toward and from the presser-foot, substantially as described.

3. In a sewing-machine, the combination with the stitch-forming mechanism and work-feeding mechanism embodying a vertically and horizontally movable feed-dog and a presser-foot, of an edge-controller movable vertically only from a fixed axial support in unison with the feed-dog and adapted to cooperate with the presser-foot in the rear of the needle to retard the feed and means for positively operating the said feed-dog and edge-controller, substantially as described.

4. In a sewing-machine, the combination with the stitch-forming mechanism and work-feeding mechanism embodying a vertically and horizontally movable feed-dog and a presser-foot, of an edge-controller adapted to cooperate with the presser-foot in the rear of the needle to retard and control the feeding of the material, a carrier for the edge-controller pivoted on a fixed axis and adapted to oscillate vertically, a carrier for the feed-dog adapted to oscillate vertically and move longitudinally, an eccentric common to both the edge controlling and feeding mechanisms for moving the edge-controller and feed-dog in unison toward and away from the presser-foot, substantially as described.

5. In a sewing-machine, the combination with the stitch-forming mechanism, the drive-shaft and the feed-dog, of a collar on the drive-shaft having diametrically-extending dovetail ways provided in one face thereof, a carriage having dovetails mounted in said ways and having an eccentric secured to the opposite side thereof and an elongated opening extending therethrough and through the eccentric for the passage of the shaft, adjusting-screws mounted in the said carriage and engaging the shaft at points diametrically opposite whereby the adjustment of the carriage in its ways may be accurately accomplished

to vary the eccentricity of the eccentric, and connections between the eccentric and feed-dog for moving the latter horizontally, substantially as described.

6. In a sewing-machine, the combination with the stitch-forming mechanism, work-plate and presser-foot, of a feeding-dog pivotally connected with a rocking frame with means for rocking said frame to move the dog horizontally, an edge-controller mounted on a fixed axis to swing vertically and an eccentric common to both the feed-dog and edge-controller for positively moving the said feed-dog and edge-controller in a vertical plane, substantially as described.

7. In a sewing-machine, the combination with the stitch-forming mechanism, work-feeding mechanism including a presser-foot and a feed-dog, an edge-controller carrier and positively-acting means for moving said carrier toward and away from the presser-foot, of an edge-controller adjustably mounted on said carrier and adapted to cooperate with the presser-foot in proximity to the stitch-forming mechanism, substantially as described.

8. In a sewing-machine the combination with the stitch-forming mechanism including a feed-carrier, presser-foot edge-controller carrier and means for moving said feed and edge-controller carriers periodically and positively toward and away from the presser-foot, of an edge-controller adjustably mounted on the edge-controller carrier and cooperating with the presser-foot to engage the work near its edge and in proximity to the stitch-forming devices, substantially as described.

9. In a sewing-machine the combination of the following instrumentalities, to wit, a work-feeding mechanism, a rock-shaft, an arm mounted on the rock-shaft, an edge-controller mounted on the arm, the said rock-shaft being supported in stationary bearings permitting vertical oscillation of the edge-controller but preventing horizontal motion thereof and positively-acting means for actuating the rock-shaft in both directions, substantially as described.

10. In a sewing-machine, the combination with an oscillatory arm of an edge-controller mounted thereon, means carried by the arm for adjusting the edge-controller with relation to the arm and means for oscillating the said arm and edge-controller carried thereby; substantially as described.

11. In a sewing-machine, the combination with a work-plate having an opening therein, of an edge-controller supported beneath the plane of the work-plate, and an adjusting device for said edge-controller located beneath the opening in the work-plate and means for actuating the edge-controller, as for the purpose set forth.

WILLIAM H. STEDMAN.

Witnesses:

W. A. W. STEWART,
ALONZO M. LUTHER.