

No. 686,032.

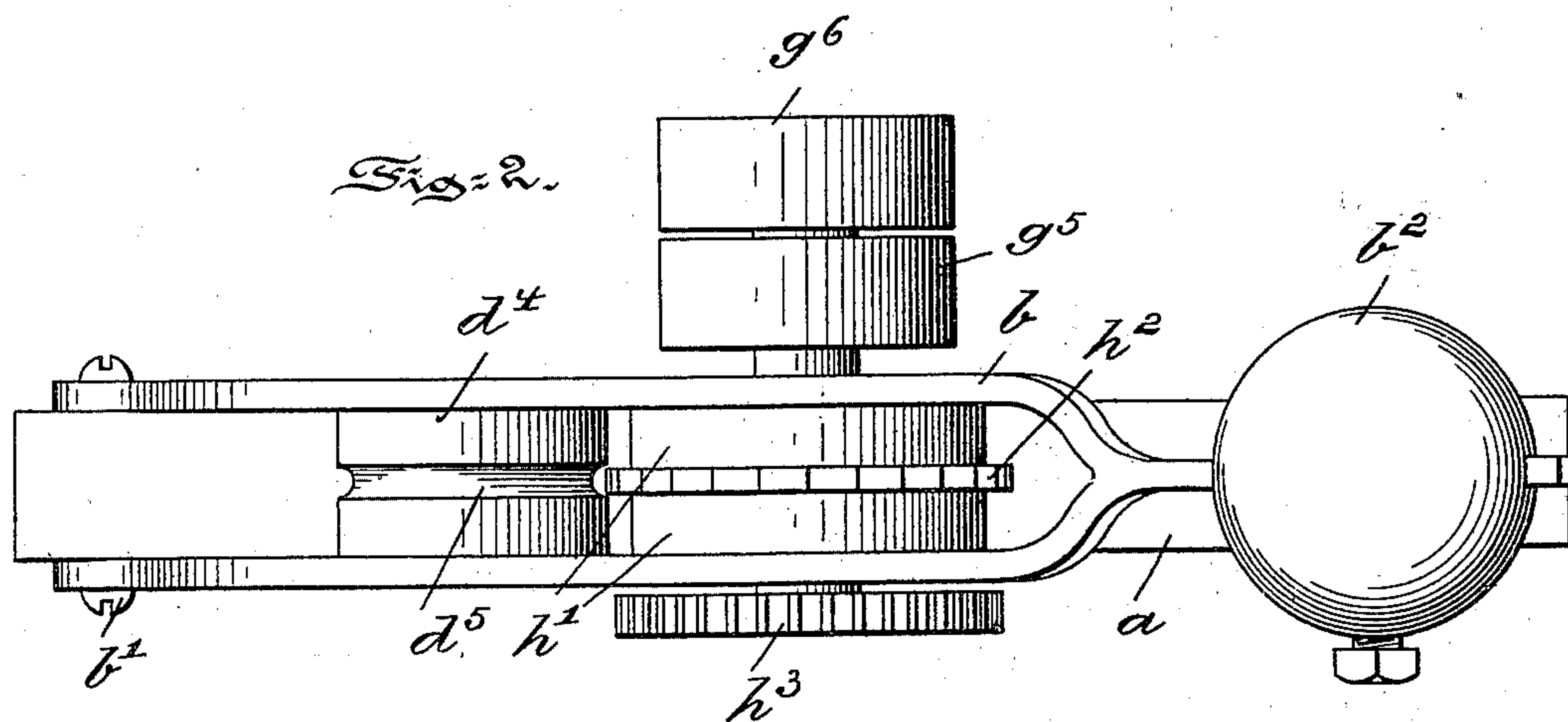
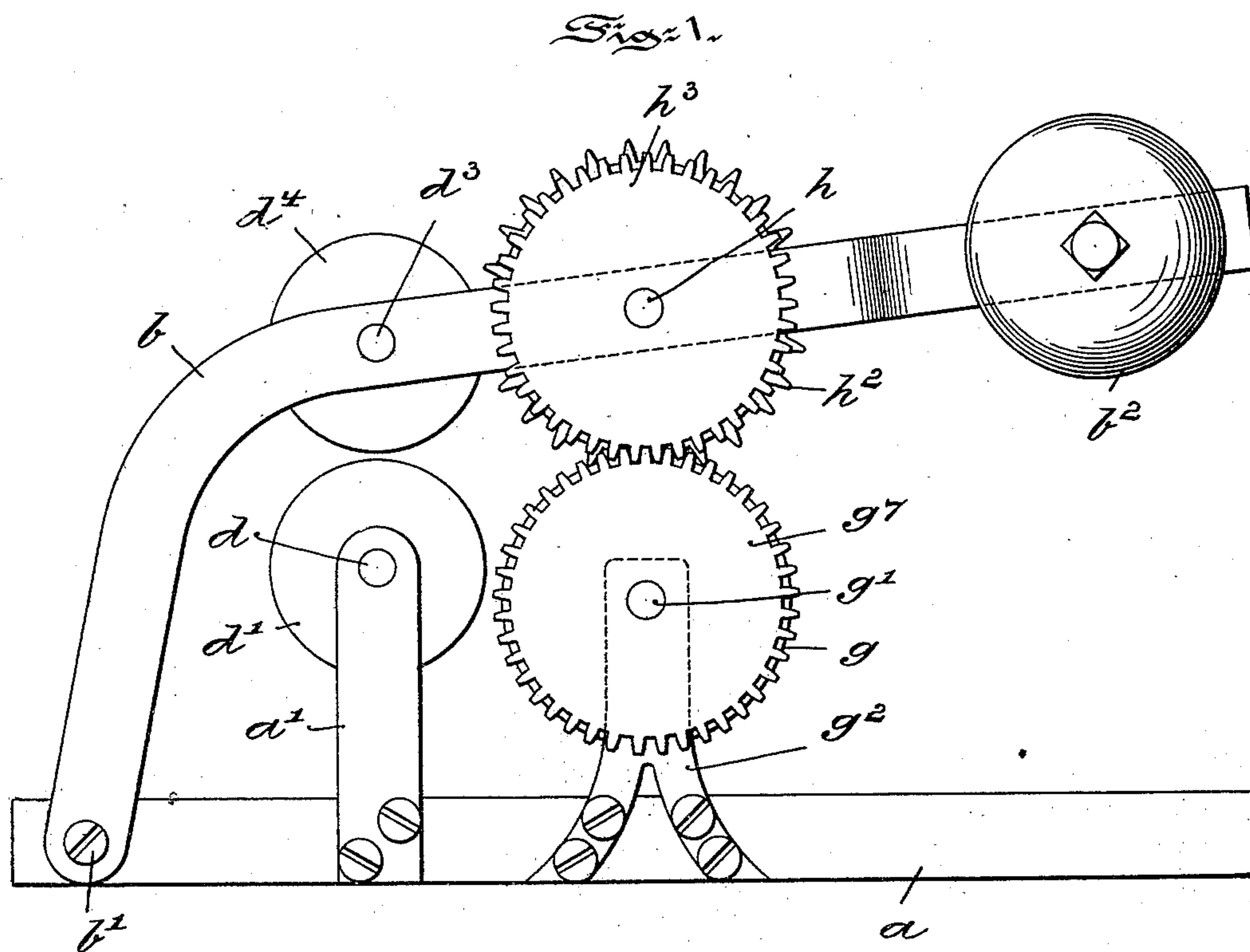
Patented Nov. 5, 1901.

J. DAVIS.
PLAITING APPARATUS.

(Application filed May 23, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
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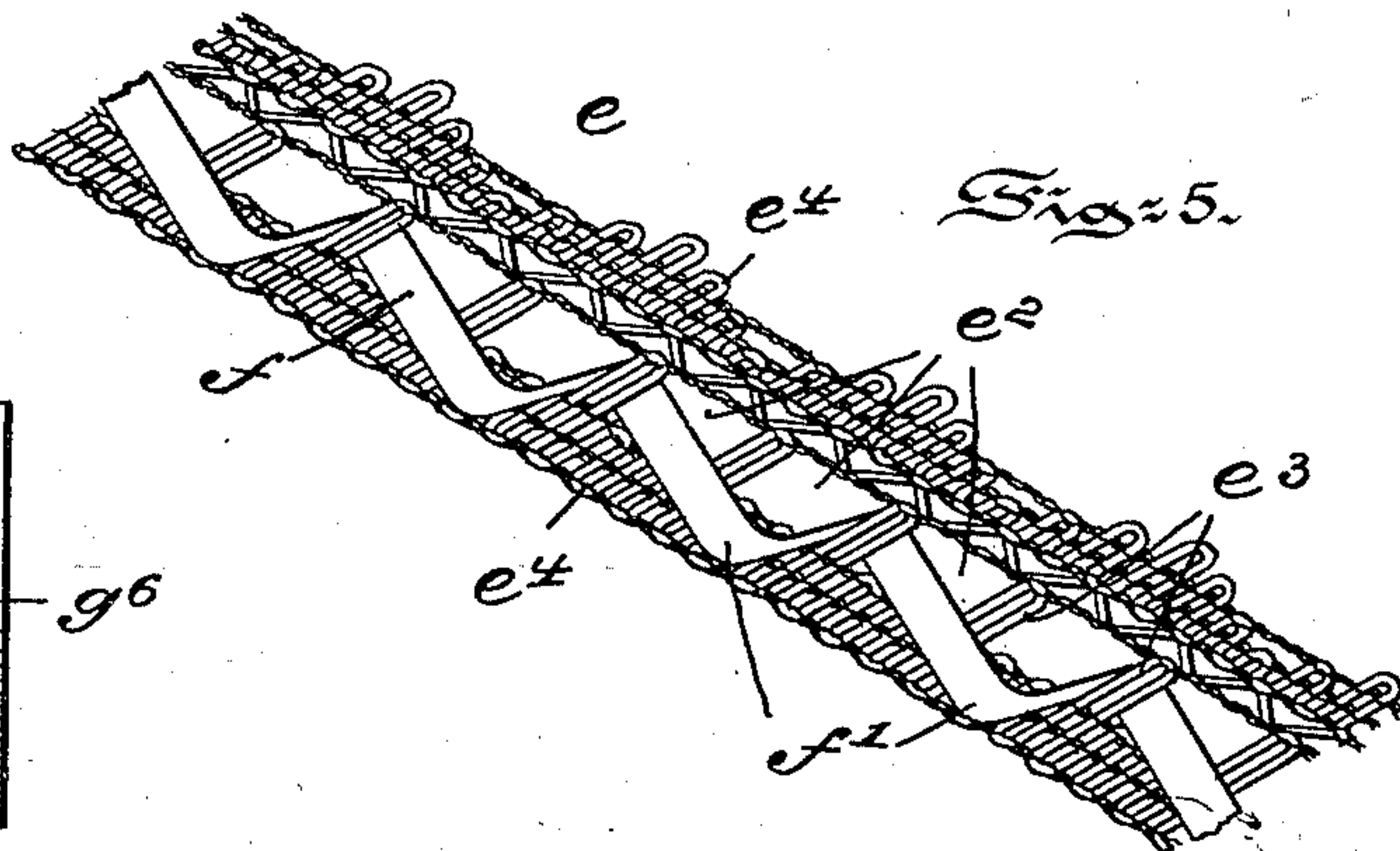
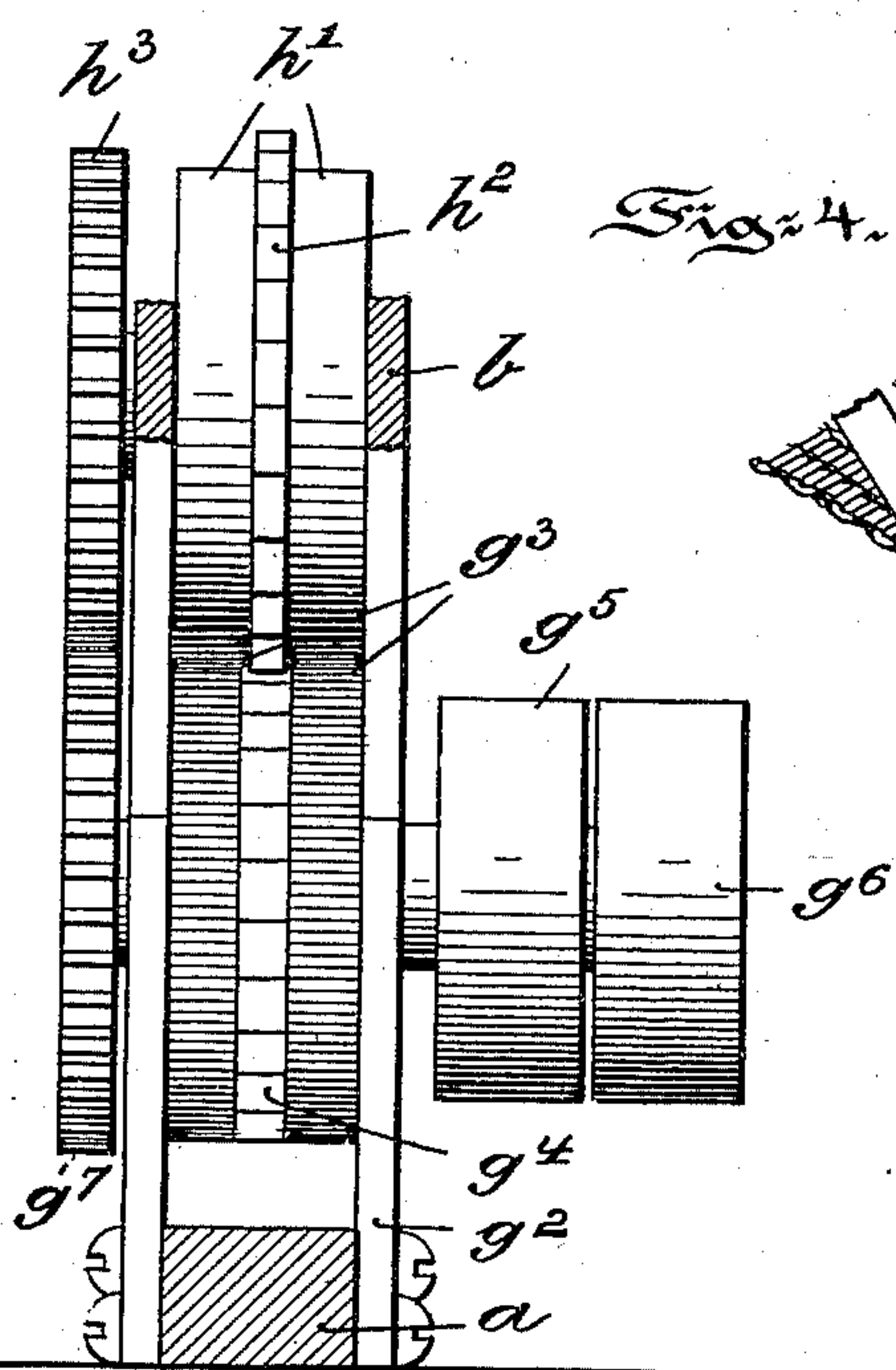
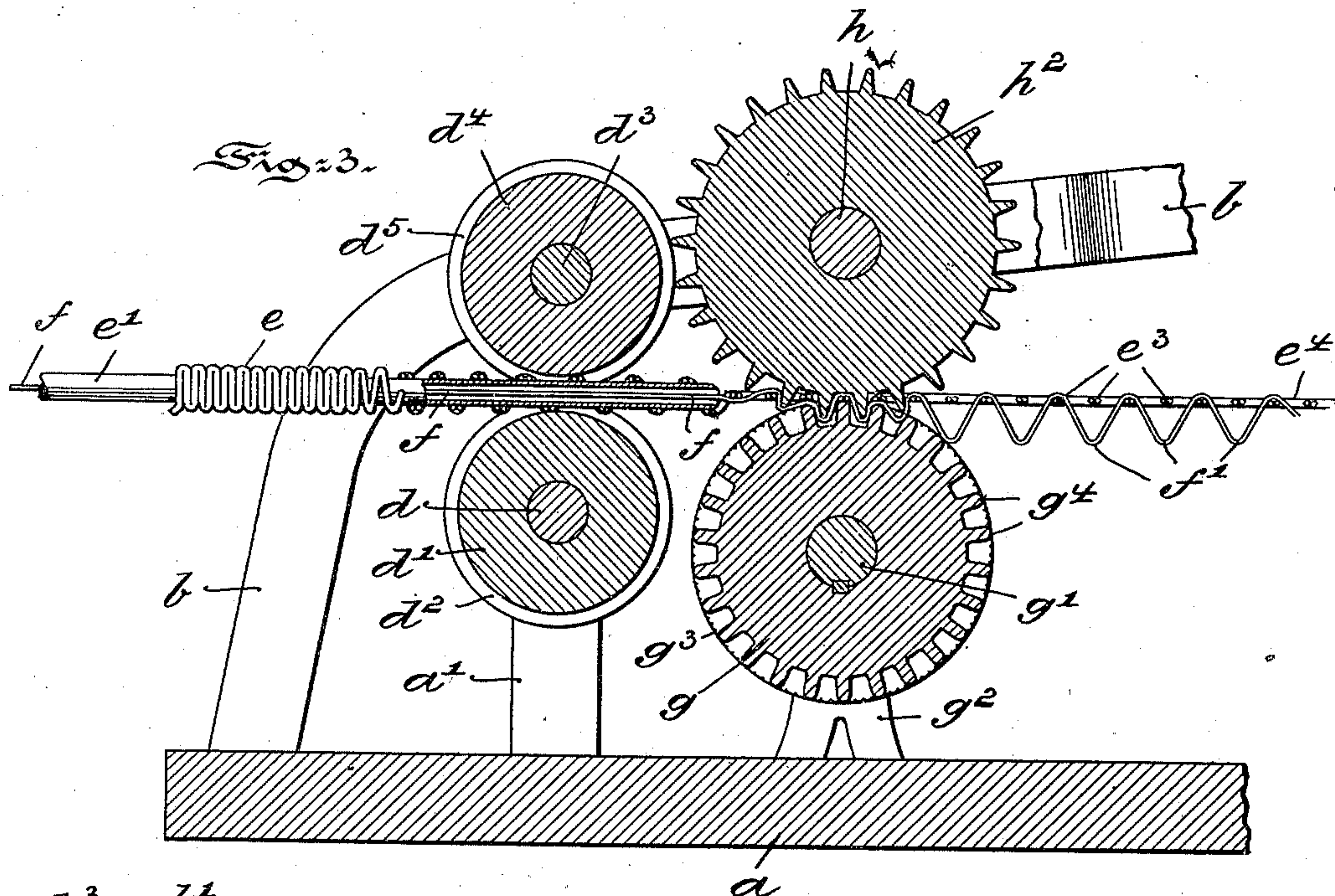
J. DAVIS.

PLAITING APPARATUS.

(Application filed May 23, 1901.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JONATHAN DAVIS, OF PHOENIXVILLE, PENNSYLVANIA.

PLAITING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 686,032, dated November 5, 1901.

Application filed May 23, 1901. Serial No. 61,489. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN DAVIS, a citizen of the United States, residing at Phoenixville, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Plaiting Apparatus, of which the following is a specification.

My invention has relation to a machine or apparatus for plaiting or inserting tape in lace edgings and the like; and in such connection it relates to the construction and arrangement of such a machine or apparatus.

The principal object of my invention is to provide in a machine or apparatus for inserting tape in lace edgings a mechanism which shall positively insert the tape in lengths longer than the edging, so that said tape shall depend in folds or plaits from the edging to permit of its being drawn and tied in a bow or knot when the edging has been secured to the garment.

Heretofore it has been suggested that by imparting to the tape as it passes through the apparatus a greater speed than the accompanying edging the requisite fullness of the tape could be obtained. A manifest disadvantage to this means of inserting the tape resides in the fact that the feed of the tape could not be made positive or accurate, and hence the amount of the excess of tape could not be correctly gaged.

By my present invention the tape is not positively fed at a speed varying with the feed of the edgings. It travels loosely therewith until prior to the delivery of the edging and tape. The tape is expanded in a plane transversely to the plane of the edging, so that it will project therethrough in plaits or folds of required length.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevational view of a plaiting apparatus embodying main features of my invention. Fig. 2 is a top or plan view thereof. Fig. 3 is a longitudinal sectional view of the apparatus and illustrating the plaiting operation. Fig. 4 is a rear end view of the apparatus, and Fig. 5 is a perspective view of

the finished article looking upward from underneath the fabric.

Referring to the drawings, *a* represents the bed of the machine, and *b* the frame in which the bearings for certain of the rollers and operating-wheels are carried. This frame *b* is preferably forked and pivoted, as at *b'*, to the bed *a*, and its free end is counterweighted, as at *b²*. In a standard *a'*, projecting upward from the bed *a*, is arranged a shaft *d*, carrying a guide-roller *d'*, the center of which is grooved, as at *d²*. In the movable counterweighted frame *b* in alignment with the shaft *d* is a shaft *d³*, carrying a roller *d⁴*, grooved, as at *d⁵*, in correspondence to the roller *d'*. The two guide-rollers *d⁴* and *d'* do not, by preference, engage at their unchanneled peripheries, but are separated a distance sufficient to permit of the comparatively free passage of the edging *e*. The function of the rollers *d⁴* and *d'* is to maintain in position the tube *e'* and to flatten or straighten out the lace edging *e* prior to the presentation of tape *f* thereto. The lace edging *e* prior to its presentation to the apparatus is strung upon a tube *e'*, and the tape *f* is fed through this tube *e'*. The delivery end of the tube *e'* is arranged adjacent to the grooves *d²* and *d⁵* of the rollers *d'* and *d⁴*, as clearly illustrated in Fig. 3, so that the rollers *d'* and *d⁴* flatten or straighten out the edging *e* while the tape *f* is passing in and out the openings *e²* of the edging *e* at the grooved or channeled portion of said rollers. In front of the guide-roller *d'* is arranged a feed-roller *g*, having a shaft *g'*, rotating in a bearing or standard *g²*, arranged above the bed *a* of the machine. The roller *g* has two burred surfaces or peripheries *g³*, between which is arranged a cogged or indented surface or periphery *g⁴*. The exterior face of the teeth of the periphery *g⁴* projects to the burred peripheries *g³*, as clearly illustrated in Figs. 3 and 4. Upon one end of the shaft *g'* of the roller *g* are secured the fast and loose pulleys *g⁵* and *g⁶*, and at the other end is keyed or otherwise secured a gear-wheel *g⁷*. In the frame *b* above the shaft *g'* is arranged a second shaft *h*, to which are secured two plain-faced rollers *h'*, between which and loosely turning on the shaft *h* is arranged a star or expanding wheel *h²*, the teeth of which when

the frame is lowered are adapted to enter the cogged periphery g^4 of the roller g . Upon one end of the shaft h is secured a gear-wheel h^3 , meshing with the gear-wheel g^7 and adapted to receive motion therefrom when the frame b is lowered.

In operation the edging e , with the spaces e^2 and cross bars or threads e^3 , is guided by the guide-rollers d' and d^4 in flat condition and interwoven with the tape f , issuing from the tube e' . Its margins or sides e^4 are then caught and fed by the burred faces g^3 and the rollers h' , and at the same time the cross bars or threads e^3 are supported upon the cogs g^4 . The teeth of the star or expanding wheel h^2 force the tape f in a vertical plane into the indentations between the cogs g^4 , and after the tape f escapes from between the teeth h^2 and cogs g^4 it is in the form of V-shaped plaits or folds f' , depending from alternate cross bars or threads e^3 , and has the necessary fullness to permit of its being drawn up in the edging e and tied into a bow or knot without shirring or gathering the edging e . In my present form of apparatus the edging e is always maintained in flat condition, and the movement of the tape when expanded only occurs when the edging e is suitably supported by the cross threads or bars e^3 , resting upon the cogs g^4 . By altering the depth of the indentations in the cog-wheel g^4 and making a corresponding increase or decrease in the length of the teeth upon the star or expanding wheel h^2 the length vertically of the plaits or folds e^5 may be accurately gaged. The machine is thrown out of operation either by shifting the power-belt from the fast pulley g^5 to the loose pulley g^6 on the shaft g' or by lifting the frame b bodily, so as to draw the gear-wheel h^3 out of mesh with the gear-wheel g^7 .

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

1. In an apparatus of the character described, in combination with means for inserting tape into lace edging, means for positively feeding the edging during the tape-inserting operation and means for expanding the tape in the edging during the feeding of said edging and in a plane transversely to the plane in which the edging moves, said expanding means located beyond the tape-inserting means.

2. In an apparatus of the character described, a tube on which the edging is strung and through which the tape is fed, two guide-rolls adapted to maintain the tube in position

and to permit of the transfer of the edging and tape in flat condition from the tube, means for positively feeding the edging away from the tube and means located beyond the tube for expanding the tape in a plane transversely to the plane in which the edging is fed, said means coacting with the means for feeding said edging.

3. In an apparatus of the character described, mechanism for feeding the edging and tape to be combined, comprising a burred feed-roller and a plane-surfaced feed-roller coacting therewith in combination with mechanism for expanding the tape in a plane transversely to the plane in which the edging is fed, said mechanism comprising a cogged roller and a star or expanding wheel coacting therewith.

4. In an apparatus of the character described, a lower guide-roller supported in a fixed bearing, a lower feed and indented roller also supported in a fixed bearing, in combination with an upper guide-roller and an upper feed-roller and a star or expanding wheel having their bearings arranged in a counter-weighted frame adapted to be elevated or depressed toward or away from the lower rollers, substantially as and for the purposes described.

5. In an apparatus of the character described, mechanism for feeding edging and tape to be combined, comprising upper and lower feed-rollers, mechanism for expanding the tape in a plane transversely to the plane in which the edging is fed, said mechanism comprising a cogged roller and a star or expanding wheel loose on the shaft of one of said feed-rollers and movable independent of said feed-roller.

6. In an apparatus of the character described, mechanism for feeding edging and tape to be combined, comprising two feed-rollers, mechanism for expanding the tape in a plane transversely to the plane in which the edging is fed, said mechanism comprising a cogged roller fixed to one of the shafts of said feed-rollers, and a star or expanding wheel loose on the other of the shafts of said feed-rollers and movable independent of said feed-roller.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JONATHAN DAVIS.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.