

(No Model.)

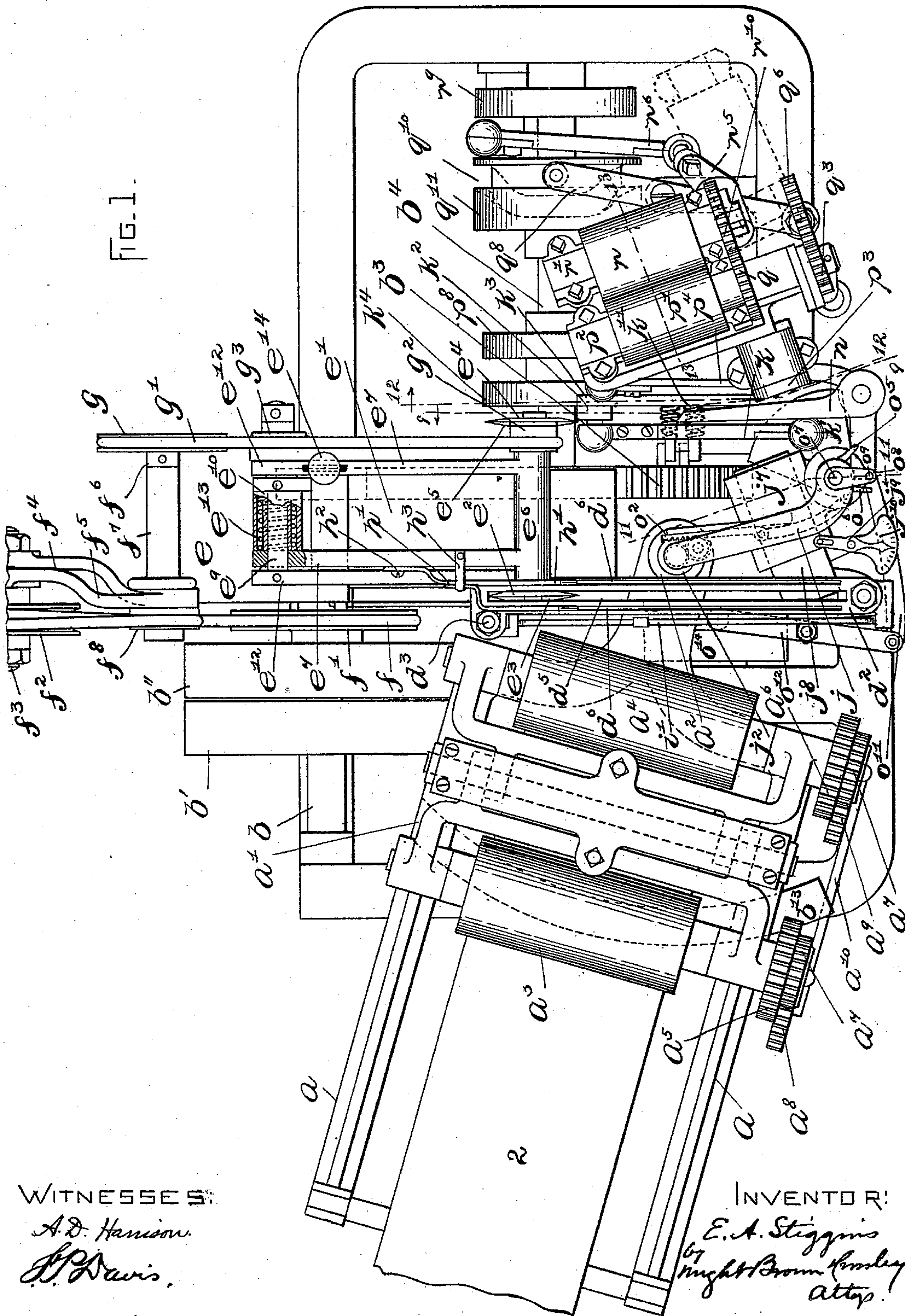
8 Sheets—Sheet 1.

E. A. STIGGINS.

CUTTING, MARKING, AND PRINTING MACHINE.

No. 532,491.

Patented Jan. 15, 1895.



WITNESSES:

A. D. Hanson.

J. P. Davis.

INVENTOR:

E. A. Stiggins
by
Hugh Brown Hensley
attor.

(No Model.)

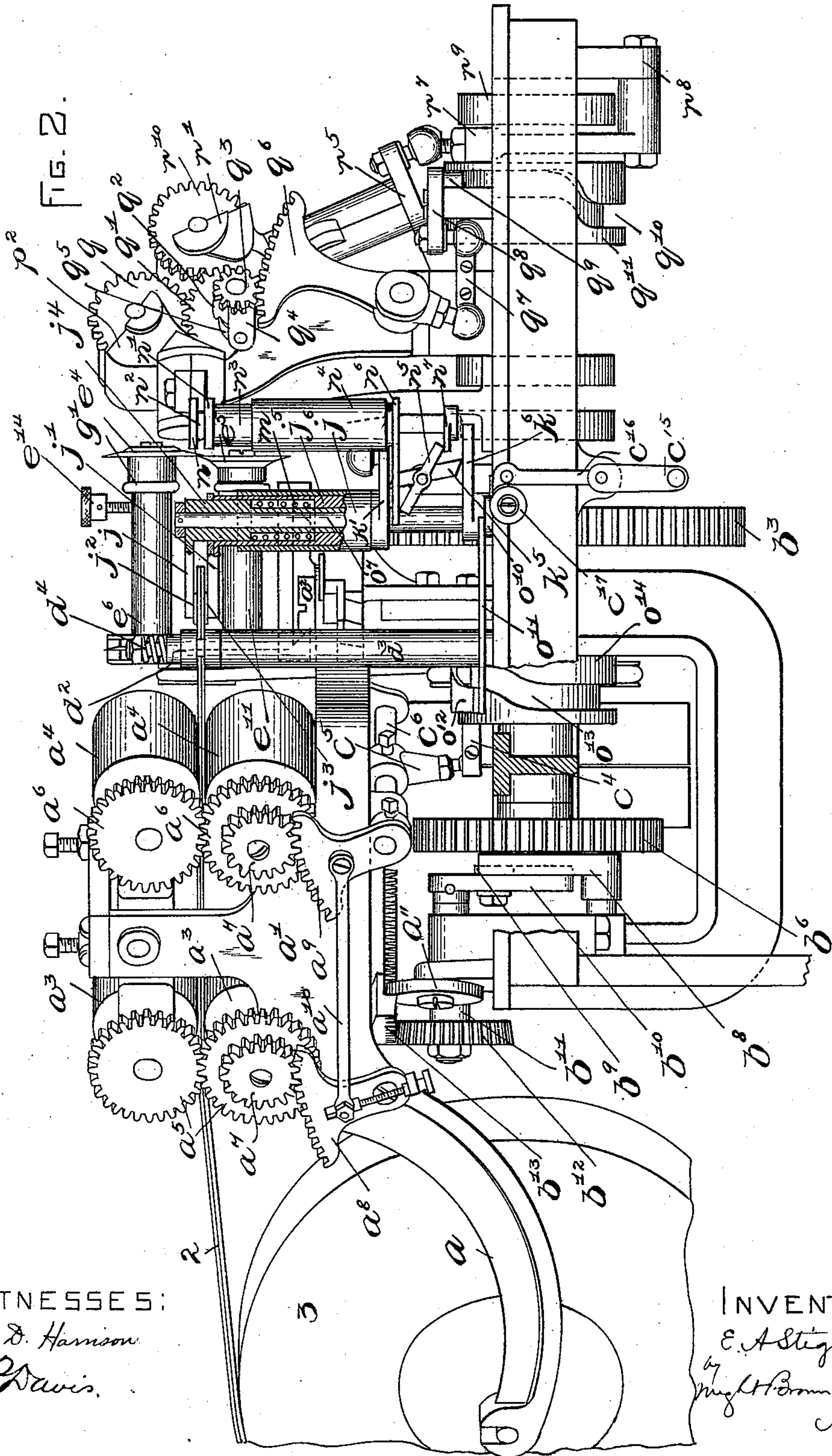
8 Sheets—Sheet 2.

E. A. STIGGINS.

CUTTING, MARKING, AND PRINTING MACHINE.

No. 532,491.

Patented Jan. 15, 1895.



WITNESSES:

A. D. Harrison
J. P. Davis.

INVENTOR:

E. A. Stiggins
by
NIGHT BROWN & COMPANY
Attys.

(No Model.)

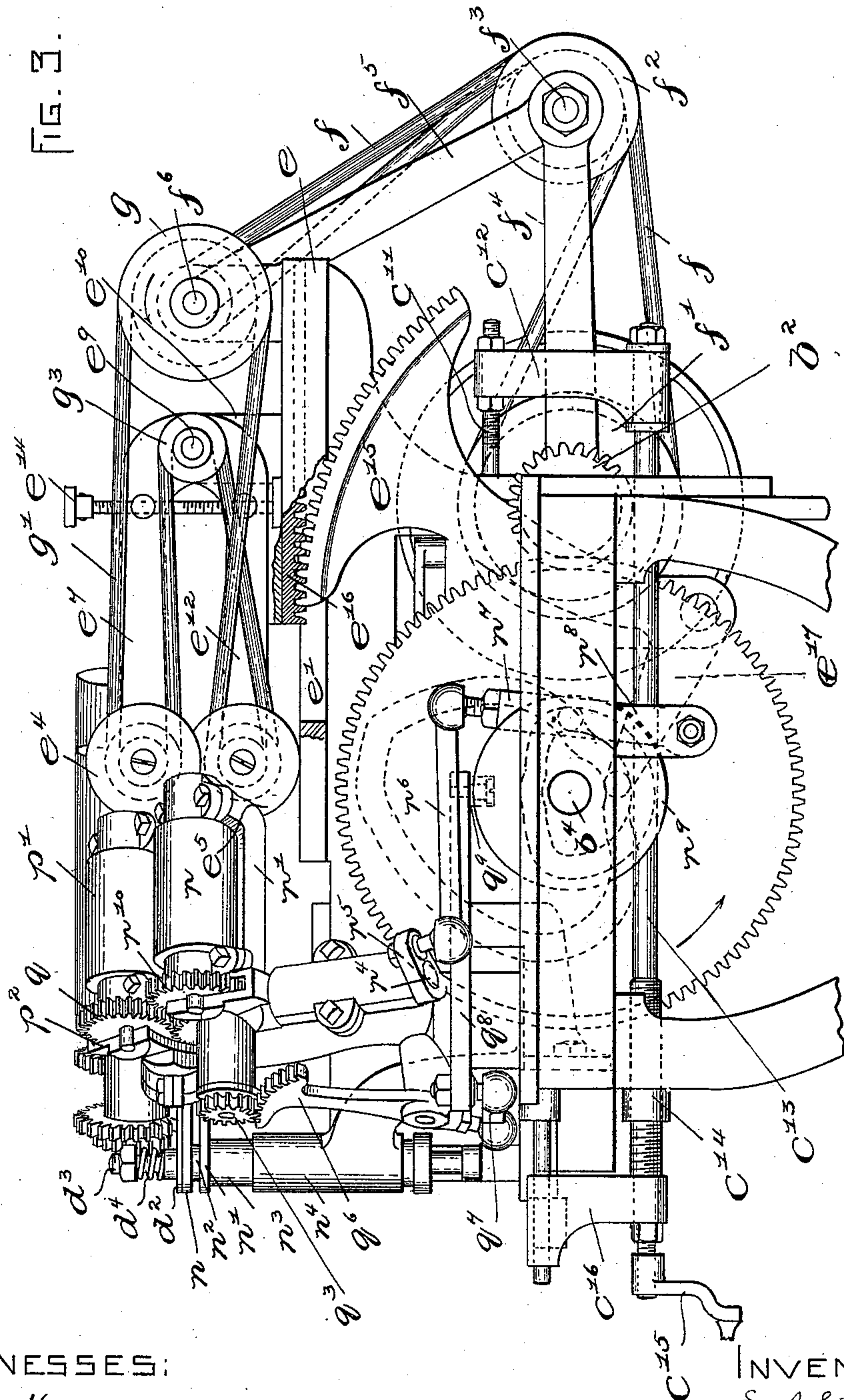
8 Sheets—Sheet 3.

E. A. STIGGINS.

CUTTING, MARKING, AND PRINTING MACHINE.

No. 532,491.

Patented Jan. 15, 1895.



WITNESSES:

A. D. Hanson.

J. P. Davis.

INVENTOR:

E. A. Stiggins

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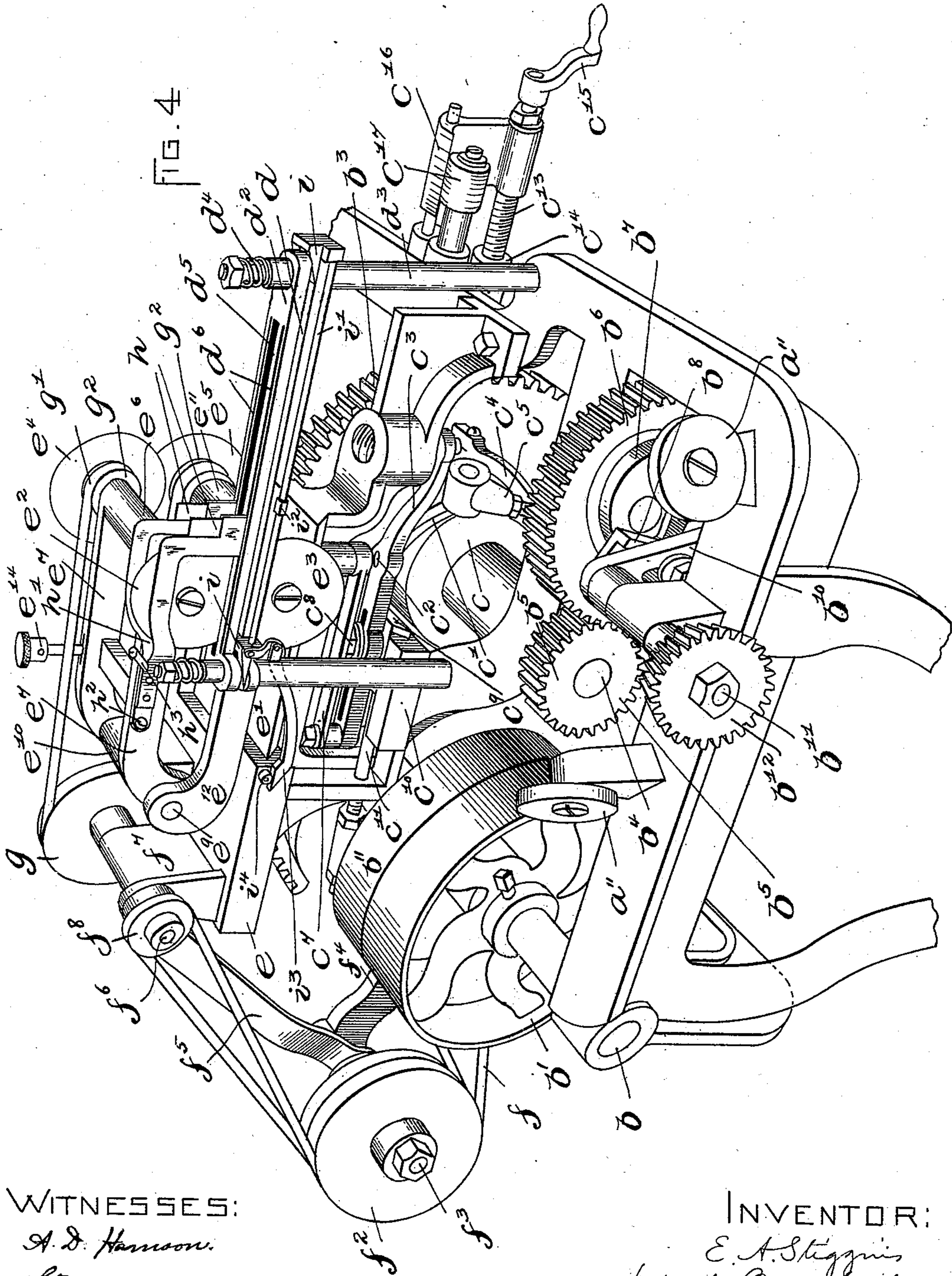
(No Model.)

8 Sheets—Sheet 4.

E. A. STIGGINS.
CUTTING, MARKING, AND PRINTING MACHINE.

No. 532,491.

Patented Jan. 15, 1895.



WITNESSES:

A. D. Harmon.

J. P. Davis.

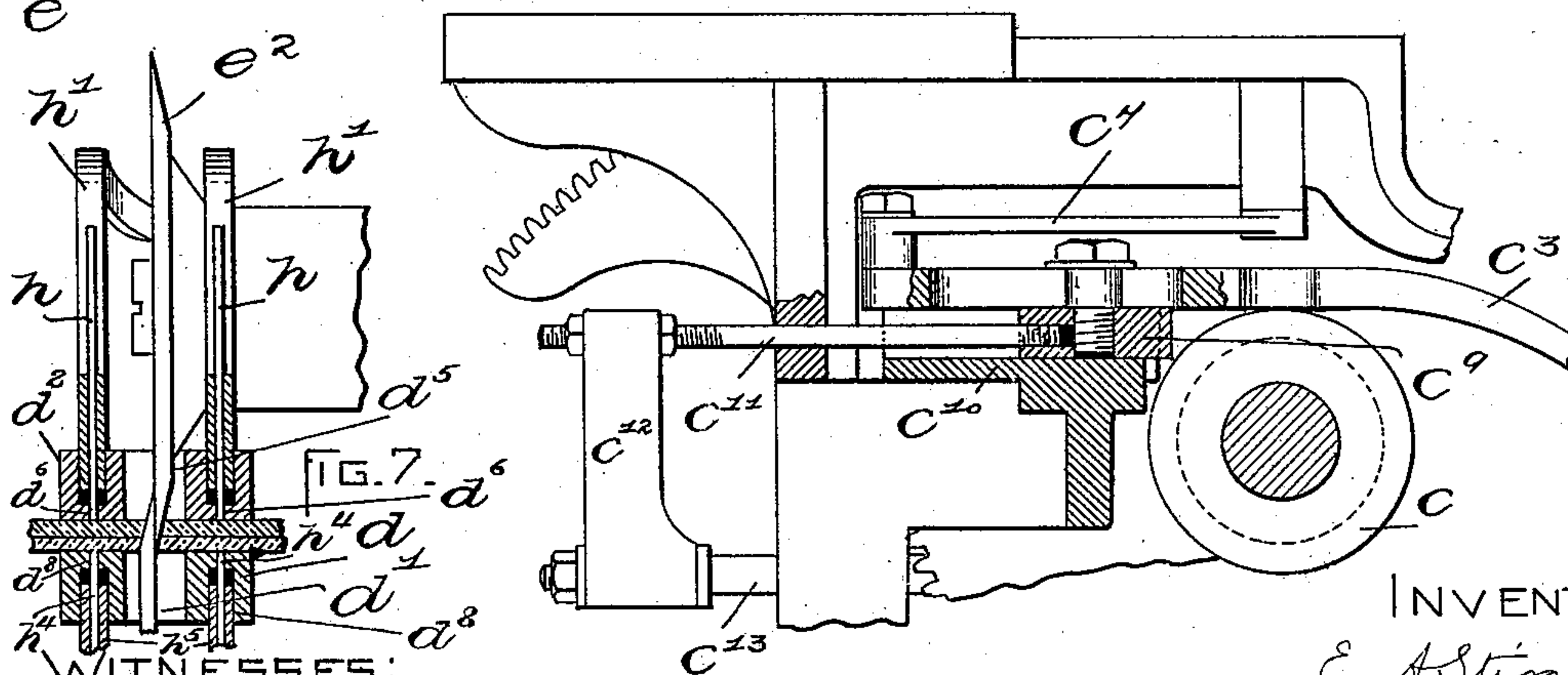
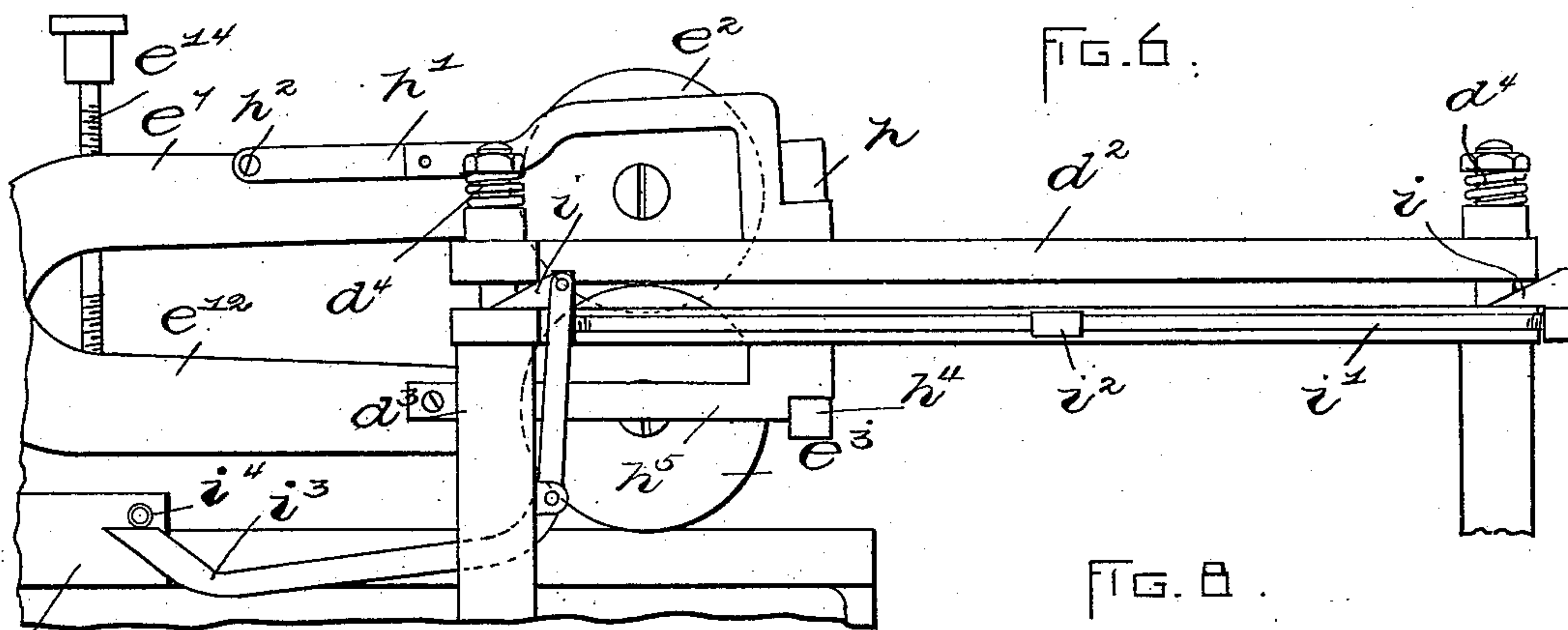
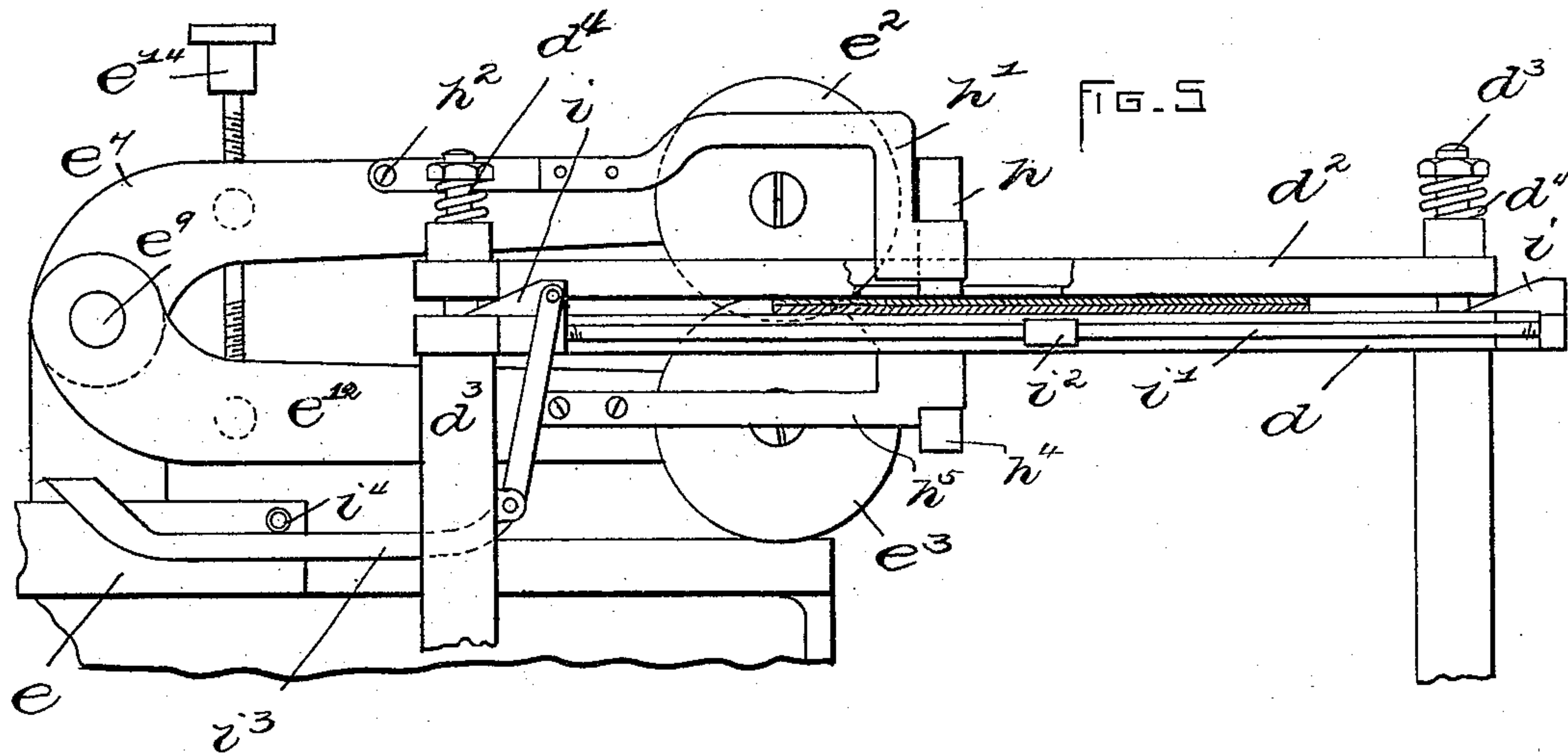
INVENTOR:

E. A. Stiggins
by *Wm. Brown* *Attorney*
- atty

8 Sheets—Sheet 5.

No. 532,491.

Patented Jan. 15, 1895.



A. J. Harrison.

A. Davis

E. A. Steggin's
by Wm. J. B. Brown & Co.
attys.

(No Model.)

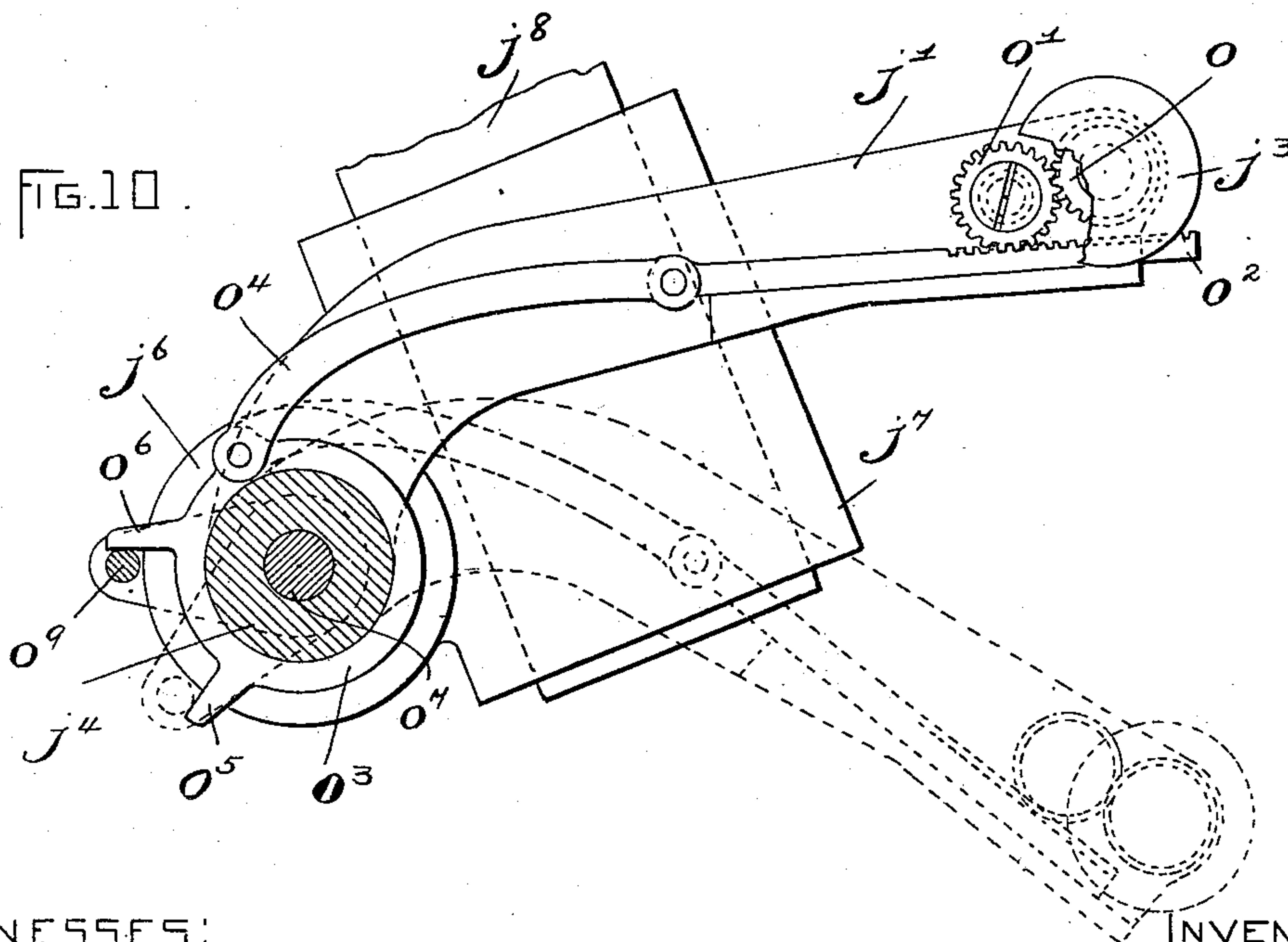
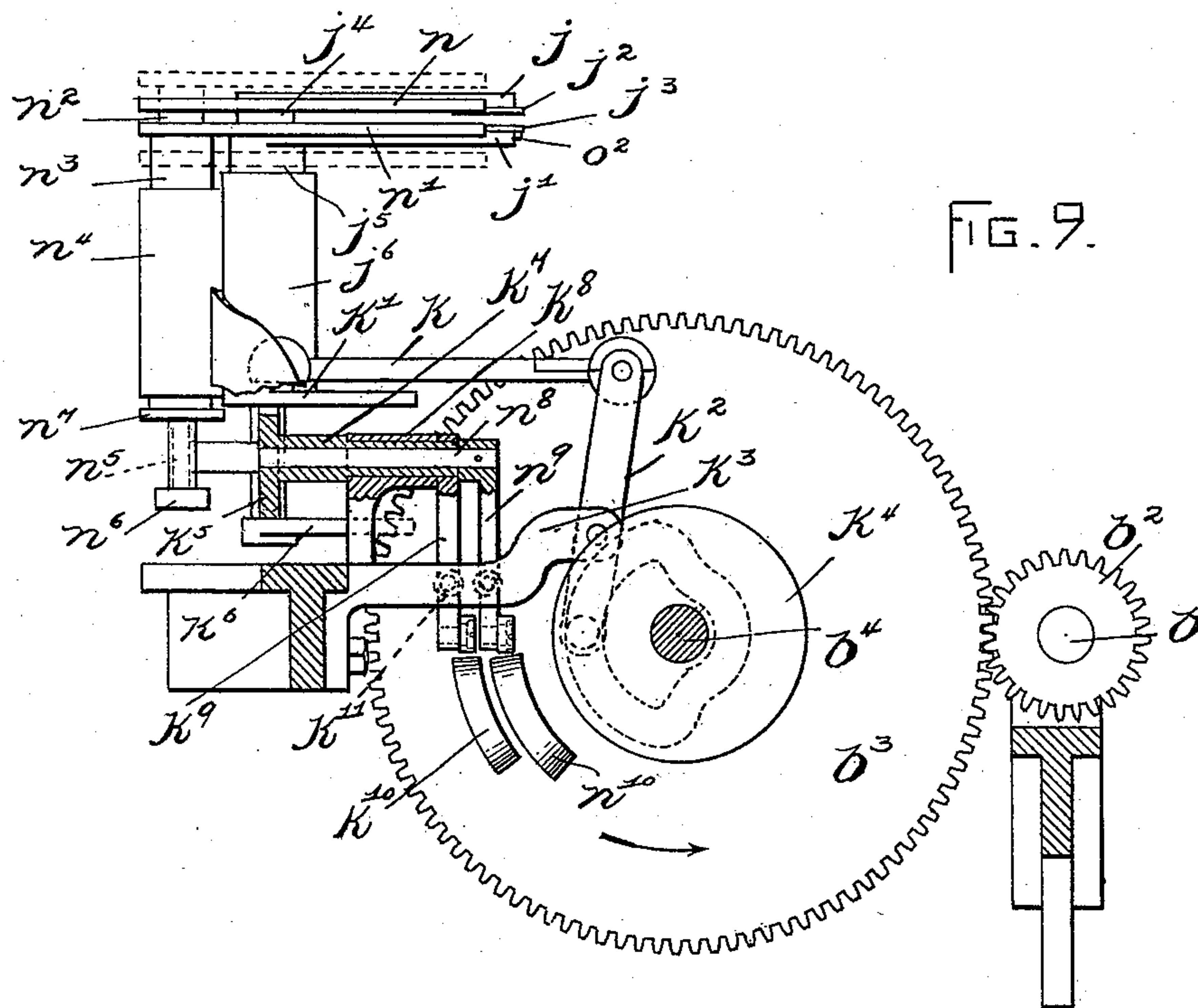
8 Sheets—Sheet 6.

E. A. STIGGINS.

CUTTING, MARKING, AND PRINTING MACHINE.

No. 532,491.

Patented Jan. 15, 1895.



WITNESSES:

A. D. Harrison
L. Davis

INVENTOR:

E. A. Stegman
by Hugh Brown Forsdyke
Atty.

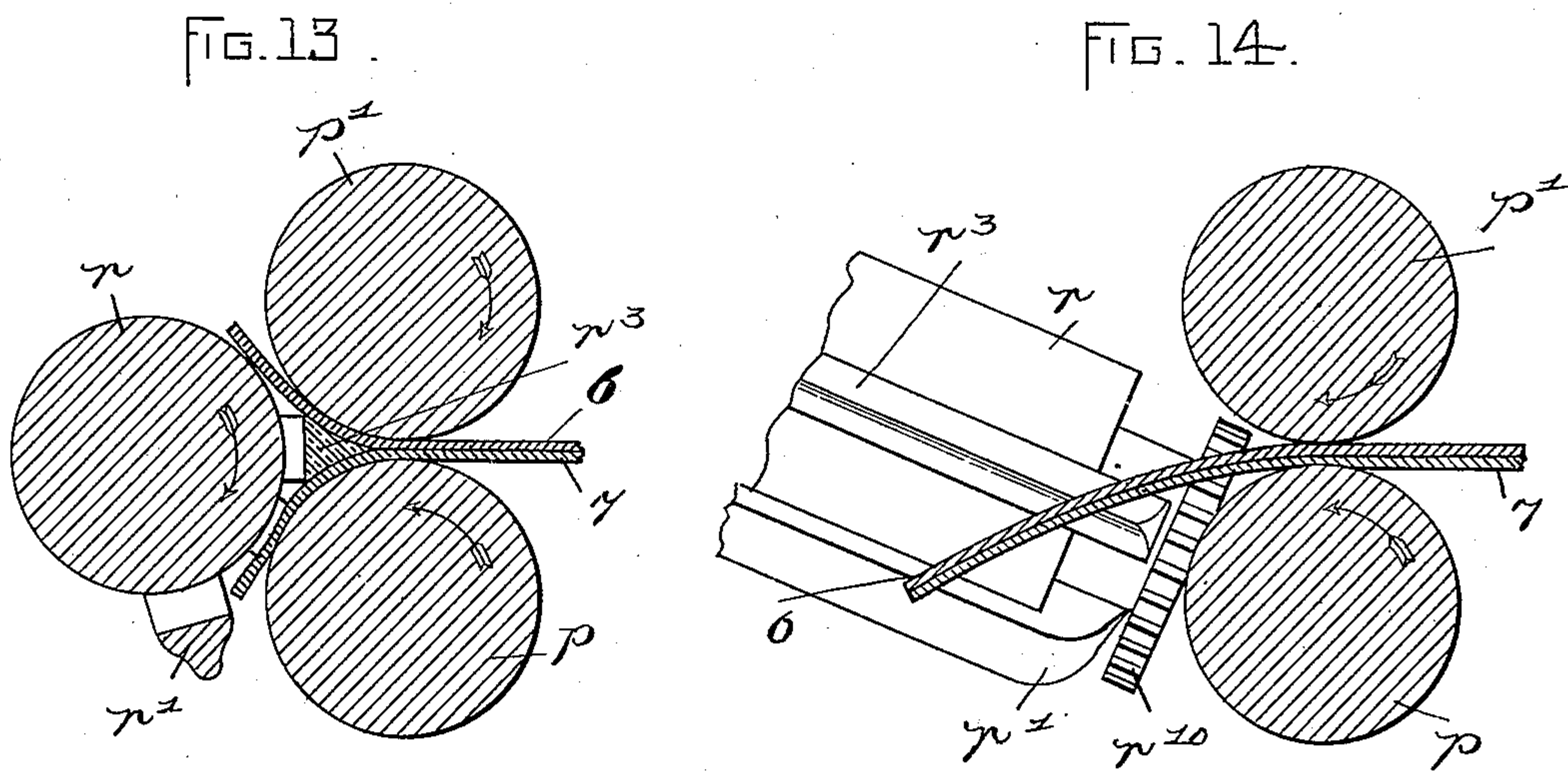
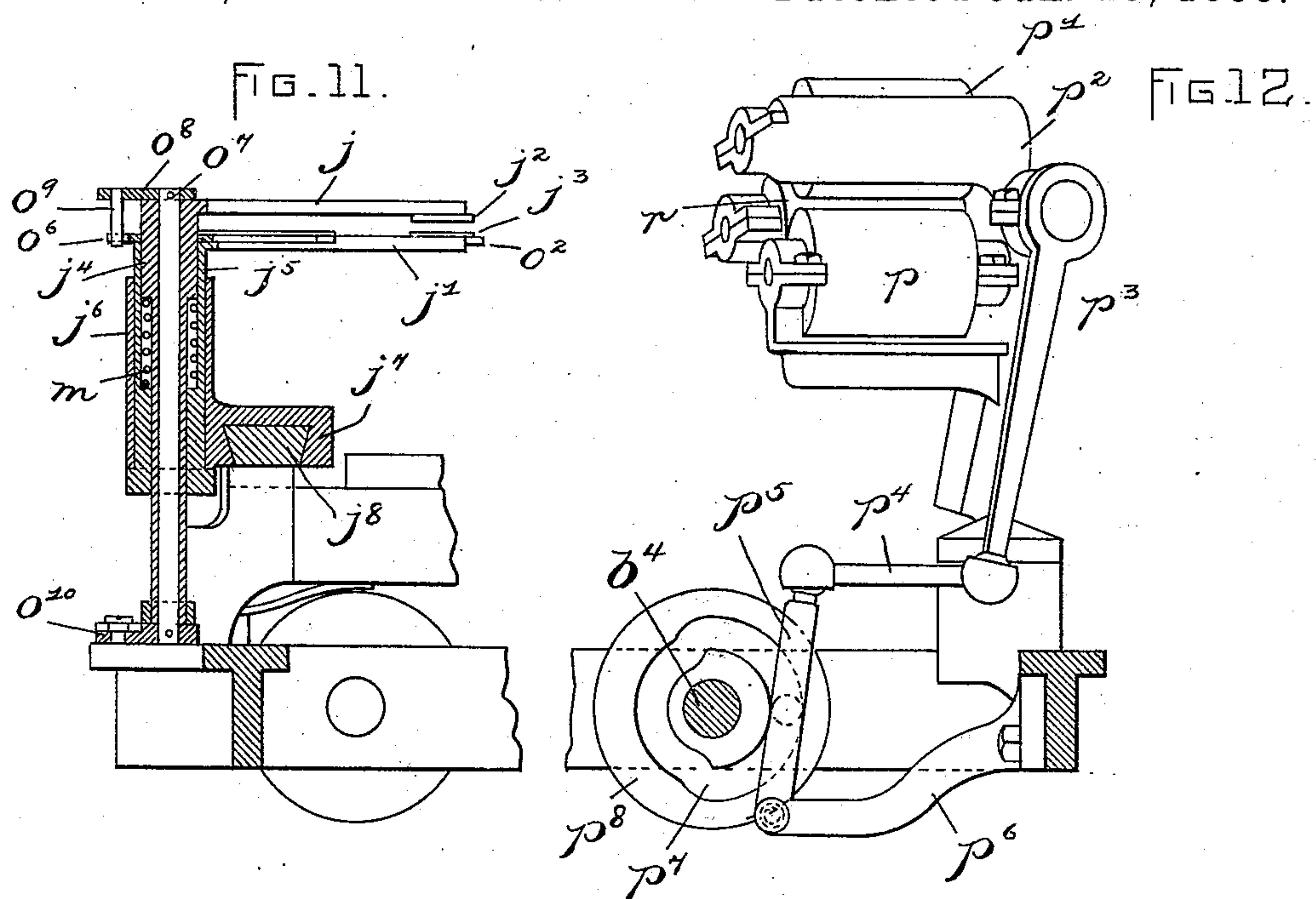
(No Model.)

8 Sheets—Sheet 7.

E. A. STIGGINS.
CUTTING, MARKING, AND PRINTING MACHINE.

No. 532,491.

Patented Jan. 15, 1895.



WITNESSES:

A. S. Hanson.
J. P. Davis.

INVENTOR:

E. A. Stiggins
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attys.

(No Model.)

8 Sheets—Sheet 8.

E. A. STIGGINS.

CUTTING, MARKING, AND PRINTING MACHINE.

No. 532,491.

Patented Jan. 15, 1895.

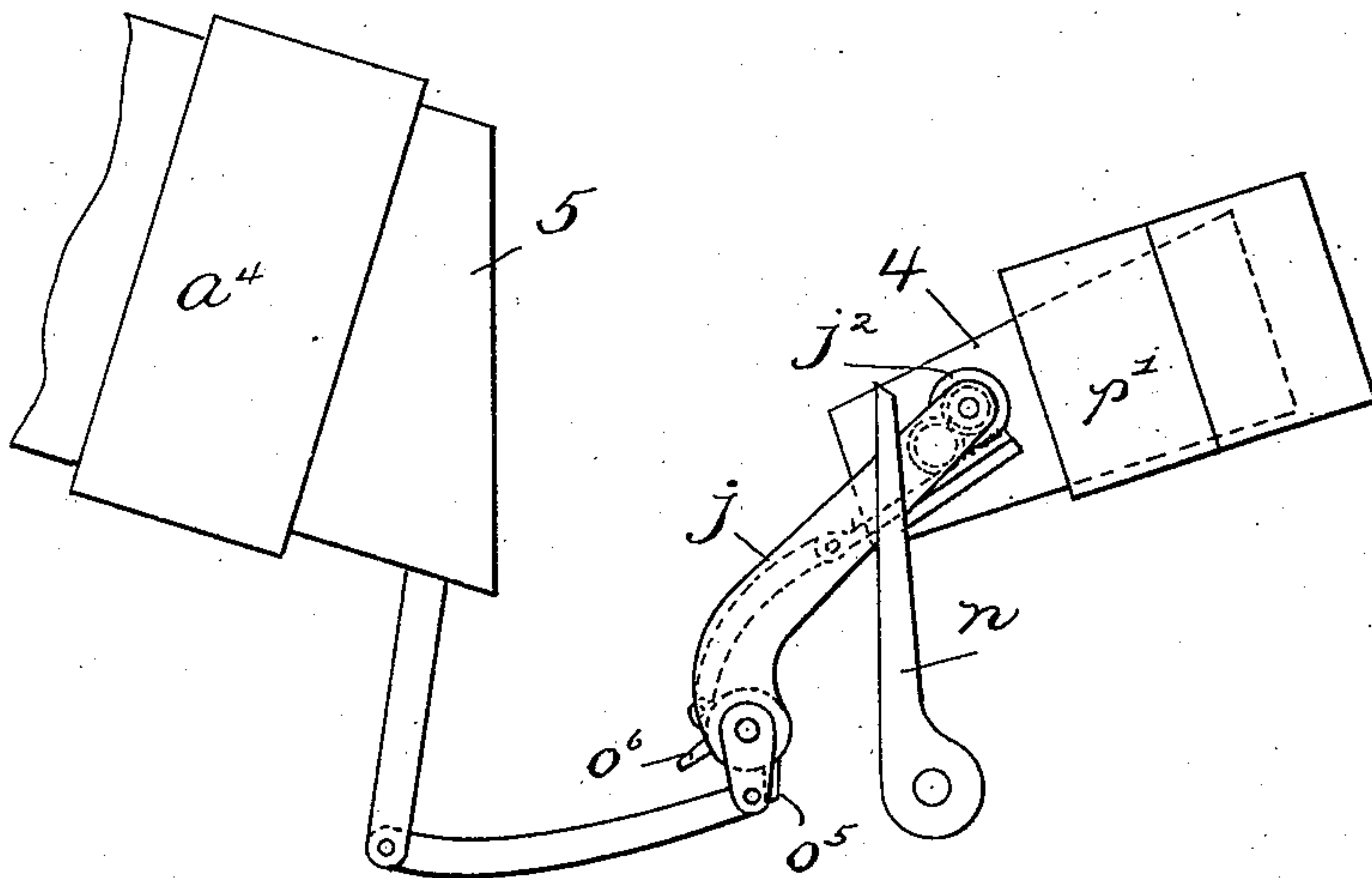


FIG. 15.

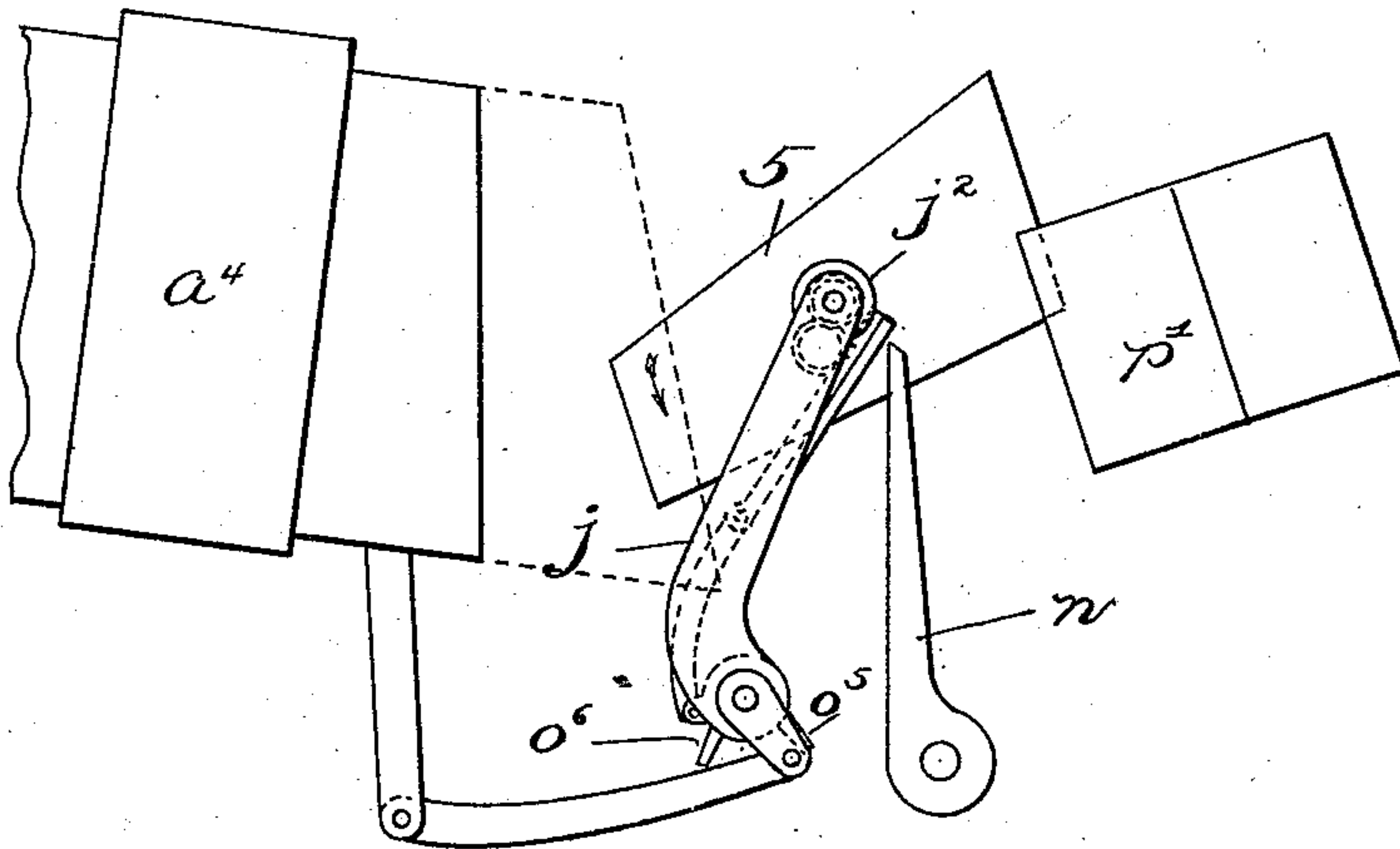


FIG. 16.

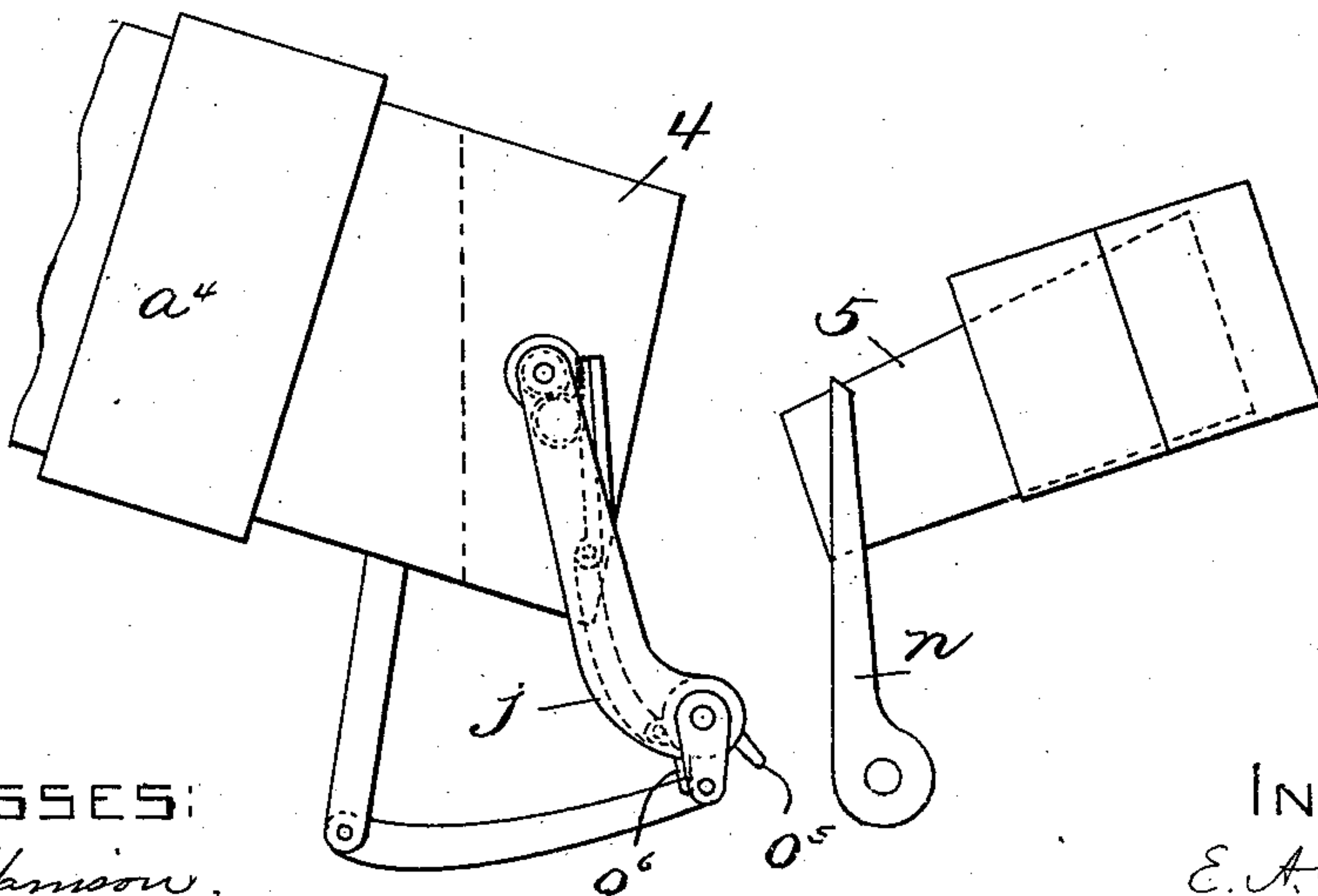


FIG. 17.

WITNESSES:

A. D. Hanson.
J. P. Davis.

INVENTOR:

E. A. Stiggins
by Night Bros & Co.
attys.

UNITED STATES PATENT OFFICE.

EDWARD A. STIGGINS, OF BROCKTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO THOMAS A. NORRIS, OF SAME PLACE.

CUTTING, MARKING, AND PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 532,491, dated January 15, 1895.

Application filed March 2, 1894. Serial No. 502,136. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. STIGGINS, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Cutting, Marking, and Printing Machines, of which the following is a specification.

This invention relates to a machine to be used for making elastic gores for boots and shoes, and the object of the invention is to provide an organized mechanism which will cut the gores from a continuous strip, mark them along the side edges, cut one end, and print one gore of each pair.

To this end, the invention consists in the novel constructions, combinations, and arrangements of parts, as defined in the appended claims, and more specifically described hereinafter.

The accompanying drawings, which form part of the specification, illustrate a machine embodying the invention.

Figure 1 shows a top plan view of the machine. Fig. 2 shows a side elevation thereof, partly in section. Fig. 3 shows a front elevation. Fig. 4 shows a perspective view of part of the machine. Figs. 5 and 6 show cutting and marking devices, in side elevation, and co-operating devices under two different adjustments. Fig. 7 shows a sectional detail of these devices. Fig. 8 shows a sectional detail of means for adjusting the feed. Fig. 9 shows a detail of means for controlling a swinging gore-conveyer and a clamp, this view being taken on line 9—9 of Fig. 1. Fig. 10 shows an enlarged detail in plan of the gore-conveyer, with the top member thereof omitted. Fig. 11 shows a section on line 11—11 of Fig. 1, looking toward the left. Fig. 12 shows a section on line 12—12 of Fig. 1, looking toward the right. Figs. 13 and 14 show enlarged sectional details of delivering rollers and a printing roller under different adjustments. Figs. 15, 16, and 17 show diagrammatic views illustrative of the manner of turning the gores end-on, after they have been severed from the stock.

The design is to cut the gores in pairs, and the two strips, 2, of stock are placed with their corresponding faces—preferably their inner sides—together, and supported in a roll,

3, carried by arms, a , of a swiveled support or holder, a' , pivoted at a^2 to a fixed part of the machine frame. The stock is carried over said swiveled support, and by the periodical shifting thereof is properly presented to the cutter, so as to be cut alternately on different angles. The holder, a' , supports two sets of feed rollers, a^3 and a^4 , between which the stock is carried, said feed rollers being preferably geared together so that the rear set, a^3 , will be driven faster than the front set, with the object of preventing distention of the stock and removing any distending strain which it may be under. The feed rollers of each set are shown as connected by gears, a^5 , a^6 ; and gears, a^7 , are frictionally connected with the lower gears, a^6 , through any of the well-known means which will cause the gears, a^7 , to drive when turned in one direction and slip when turned in the opposite direction. Segments, a^8 and a^9 , engage the gears, a^7 , and are connected together by a rod, a^{10} , adjustably connected with the rear segment, a^8 , radially of its axis, to provide for determining the relative speed of the rollers. (See Fig. 2.)

The swiveled support, a' , is shifted through the following connections with the driving-shaft, b , which is provided with fast and loose pulleys, b' , b'' , for receiving power, (see Figs. 3 and 4:) A spur-gear, b^2 , on said driving-shaft meshes with a large gear, b^3 , on a counter-shaft, b^4 , and a spur-gear, b^5 , on the latter meshes with a larger gear, b^6 , which is formed in one face with a cam-groove, b^7 receiving a roll on an arm, b^8 , pivoted to the machine frame and formed with a slide-way for a roll, b^9 , adjustable radially in a slot of an arm, b^{10} , affixed to a rock-shaft, b^{11} , carrying a bevel-pinion, b^{12} , in mesh with a segmental rack, b^{13} , on the swiveled support, a' . (See Fig. 2.) The segmental rack has a plain portion which bears on a pair of obliquely set trundle-rolls, a'' .

By adjusting the roll, b^9 , the extent of movement of the swiveled holder can be determined, and thereby the angles on which the stock is cut.

The feed rollers are periodically actuated through the following connections with the driving-shaft, (see Fig. 4:) A disk, c , on the counter-shaft, b^4 , is formed with a peripheral

cam-groove, c' , which is engaged by a pin, c^2 , in a lever, c^3 , one end of which is connected by a rod, c^4 , with an arm, c^5 , affixed to a rock-shaft, c^6 , carrying the segment, a^9 (see Fig. 2), the connection between said rod and cam being made by a ball and socket joint to allow for the shifting of the swiveled holder. The opposite or rear end of the lever, c^3 , is supported by a radius bar, c^7 , pivoted to a fixed support, and the pivot of said lever is a pin, c^8 (see Fig. 8), affixed in a slide, c^9 , engaging a way, c^{10} , in a fixed part of the frame. The pivot pin, c^8 , engages a slot in the lever, so that by adjustment of the slide, c^9 , the throw of the lever and consequently the extent of the feed may be determined. For this purpose, a rod, c^{11} , is connected with the slide, and is joined by a cross-bar, c^{12} , with a screw-shaft, c^{13} , extending to the front of the machine and engaging a fixed nut, c^{14} , and provided with a handle, c^{15} , by turning which the slide, c^9 , is adjusted. By means of a scale, c^{16} , carried by the screw-shaft and a fixed scale, c^{17} , the proper adjustment can be determined. (See Fig. 4.)

The stock is fed by the rollers into a clamp the lower member, d , of which is fixed and formed with a central longitudinal slot, d' , and slots, d^8 , on each side thereof, and the upper member, d^2 , of which is movable on guides, d^3 , and actuated toward the lower one by springs, d^4 , said upper member being provided with a central longitudinal slot, d^5 , to register with the slot, d' , in the lower member, and with longitudinal slots, d^6 , on each side of the central slot and equidistant therefrom.

A carriage, e , is arranged to reciprocate transversely of the machine, forward and back; said carriage engaging a fixed slide-way, e' , and supports two sets of circular rotary knives, e^2 , e^3 , and e^4 , e^5 . The two upper knives, e^2 and e^4 , are affixed on a shaft journaled in a bearing, e^6 , supported by arms, e^7 , which loosely embrace a shaft, e^9 , journaled in a bearing, e^{10} , on the carriage, e ; and the two lower knives, e^3 and e^5 , are affixed to a shaft journaled in a bearing, e^{11} , supported by arms, e^{12} , which are affixed to said shaft, e^9 . The upper knives overlap corresponding sides of the lower knives, and are pressed thereagainst by a spiral spring, e^{13} (see Fig. 1), inclosed in a pocket in the bearing, e^{10} , and pressing against one of the arms, e^7 . By means of a screw, e^{14} , extending through two arms, e^7 and e^{12} , the knives may be adjusted as to extent of overlapping.

The knives, e^2 and e^3 extend through the slots, d' and d^5 , of the clamp, and traverse the same under reciprocations of the carriage, and sever the stock lying across said slots. (See Fig. 7.) It will be seen that the overlapping knives produce a shearing cut, which is highly desirable in cutting gore-stock, where a clean cut is of great importance.

The carriage is reciprocated through the following means: A segment, e^{15} , meshes with

a rack, e^{16} , on the under side of the carriage, and said segment has an arm, e^{17} , which carries a roll in engagement with a cam-groove in one side of the gear, b^3 . (See Fig. 3.)

The knives are continuously rotated through the following means: A belt, f , engages a pulley, f' , on the driving-shaft, b , and is carried over a double pulley, f^2 , mounted on a stud, f^3 , which is supported by a jointed bracket, f^4 , f^5 , and constitutes the pivot connecting its members. One member of said bracket is jointed to the machine frame, and the other embraces a shaft, f^6 , supported in a bearing, f^7 , on the carriage, e . The belt, f , passes over a pulley, f^8 , on said shaft, f^6 , and transmits motion thereto. On the opposite end of the said shaft is affixed a pulley, g ; and a belt, g' , passes over the same, and its two stretches are carried respectively over pulleys, g^2 , on the two knife-carrying shafts and affixed to the knives. The said belt, g' , is carried from the knife-pulleys around an idle pulley, g^3 , loose on the shaft, e^9 .

It will be observed that the jointed bracket allows for the movement of the carriage, so that the revolution of the knives will continue during the same.

Slabs, h , of marking material, as chalk, engage the slots d^6 , of the upper clamp-member, d , and are carried in holders, h' , occupying enlargements of the said slots, and supported by one of the arms, e^7 , being connected therewith by a pivot-pin, h^2 , and yieldingly held down by a flat spring, h^3 , secured to the upper side of said arm, e^7 , and bearing on the chalk-holders. Similar chawks, h^4 , engage the slots, d^8 , of the lower clamp-member, and are supported in a holder, h^5 , secured to one of the arms, e^{12} . The upper clamp-member, d^2 , is elevated by wedges, i , engaging between it and the lower member and connected by a rod, i' , fitted to slide through a guide, i^2 , on the lower member. An elbow-lever, i^3 , is connected with one of said wedges and pivoted to a fixed support, and by engagement with a roll, i^4 , on the carriage, e , is depressed so as to force the wedges between the clamp-members. (See Fig. 6.) When the carriage advances, the said roll, i^4 , is carried off the end of the lever, and the upper clamp-member is pressed down upon the stock by the springs d^4 . When the clamp is closed on the stock and the carriage advances, the chawks, h , are held upon the stock and mark lines thereon on opposite sides of and equidistant from the line of the cut made by the knives, and the chawks, h^4 , correspondingly mark the underside of the stock. By this arrangement, these marks are sure to be parallel with the edges of the gores, and uniform as to their distance from the edges thereof. Upon the return movement of the carriage, the roller, i^4 , encounters the upturned end of the lever, i^3 , and depresses the same, thereby forcing the wedges between the clamp-members and elevating the upper member. When the upper member is thus elevated, the shoulders at

the base of the enlargements of the slots, d^6 (see Fig. 7) encounter the holders, h' , and lift the latter sufficiently to take the chalks out of the path of the stock so as not to obstruct its entrance into the clamp.

The mechanism thus far described cuts the gores from the stock on lines alternating in direction, *i. e.*, first substantially at right angles to the longitudinal edge of the stock and then obliquely. Thus, adjacent gores are reversed end for end. It is desirable that the narrow end of the gores be cut diagonally, and I employ the following means to accomplish this: A horizontally swinging carrier, composed of two arms, j and j' , adapted to extend over and under the severed pieces and provided with rotary clamping buttons, j^2 and j^3 , to engage the same, is designed to take the pieces as they are severed from the stock and partially turn them so as to deliver them end-on. The said arms, j and j' , are formed with tubular stems or spindles, j^4, j^5 , one of which extends through the other, and the outer one is supported in a vertical bearing, j^6 , formed on a block, j^7 , fitting a fixed slide-way, j^8 , and adjustable thereon by means of a lever, j^9 , pivoted to a fixed support and extending over a scale, j^{10} , by which to determine the adjustment. The object of these adjusting means is to so locate the swinging carrier that it will always grasp the severed piece midway between its sides, whatever may be its width.

The carrier is vibrated through the following means: A rod or bar, k , is connected by a ball and socket joint with a broadened arm, k' , on the stem, j^5 , and at its opposite end with a lever, k^2 , pivoted to a fixed bearing, k^3 (see Fig. 9), and carrying a roller in engagement with a cam-groove in a disk, k^4 , on the shaft, b^4 . The arms, j and j' , are brought together to clamp the gores by means of a cross-head or spreader, k^5 , between the broadened arm, k' , and a similar arm, k^6 , on the stem, j^4 , said cross-head being affixed to a tubular stem, k^7 , supported in a fixed bearing, k^8 (see Fig. 9), and having affixed to it an arm, k^9 , carrying a roll in the path of a cam-strip, k^{10} , on the gear, b^3 . A spiral spring, k^{11} , is inserted between the arm, k^9 , and the fixed bearing, k^8 , and presses the said arm away from the bearing. A spiral spring, m , (see Figs. 2 and 11) tends to open or move apart the carrier-arms, j and j' , its ends bearing against internal shoulders of the stems, j^4 and j^5 . This spring, m , is inferior to the spring, k^{11} . When the cam-strip, k^{10} , acts against the roller or arm, k^9 , said spring, k^{11} , is overcome, the spreader, k^5 , is turned, and the spring, m , moves the arms, j and j' , apart.

The swinging carrier takes the severed piece into a clamp composed of two arms, n and n' , whose controlling devices are of similar construction to those employed in connection with the carrier, said clamp-members, n , and n' , having telescoping stems or spindles, n^2 and n^3 , supported by a fixed bearing,

n^4 , and being moved toward each other by a spreader or cross-head, n^5 , acting against arms, n^6 and n^7 , on said stems, and affixed on a spindle, n^8 , which extends through the tubular spindle, k^8 , and carries a spring-pressed arm, n^9 , having a roller in the path of a cam-strip, n^{10} , on the gear, b^3 . Said cam-strip, by acting against the arm, n^9 , overcomes the spring holding the same, turns the spreader, n^5 , and permits a spring within the stem, n^3 , to open the clamp wide enough to admit the carrier.

The gores are turned end-on as they are conveyed by the swinging carrier, and are delivered in the clamp so that the latter extends transversely thereof and constitutes a guide by which to cut the narrow ends of the gores diagonally. (See Fig. 15.) The knives, e^4, e^5 , traverse the edge of the clamp and sever the protruding gore-end.

In view of the fact that the gores are reversed end for end as they are cut from the stock, they must be alternately turned in opposite directions in order to dispose them uniformly in the clamp and cut the corresponding ends diagonally. The following means are employed to accomplish this:—The rotary clamping button, j^3 , of the lower carrier-arm, j' , has affixed to it a gear, o , (see Fig. 10) and an intermediate gear, o' , on a stud fastened in said arm connects the gear, o , with a rack, o^2 , arranged to slide longitudinally of the arm. A collar, o^3 , embraces the stem, n^2 , and may turn thereon, said collar being connected by a link, o^4 , with the rack, o^2 , and being formed with a pair of lugs, o^5 and o^6 . A spindle, o^7 , extends through the tubular spindle, n^2 , and has affixed to its upper end an arm, o^8 , (see Figs. 1 and 11) which carries a pin, o^9 , extending down between the lugs, o^5 and o^6 . An arm, o^{10} , affixed to the lower end of said spindle, o^7 , (see Fig. 11) is connected by a rod, o^{11} (see Fig. 1) with a lever, o^{12} , pivoted to a fixed support and carrying a roller in engagement with a cam-groove, o^{13} , (see Fig. 2) in the periphery of a disk, o^{14} , on the shaft of the gear, b^6 . While the roll on lever o^{12} is in one part of the cam-groove, the pin, o^9 , maintains an adjustment which permits the carrier to swing back and forth without the lugs, o^5 or o^6 , encountering said pin, and hence the gearing connected with the button, j^3 , remains dormant. This condition obtains when a gore whose wide end extends out from the end of the carrier is transferred, as the gore, 4, in Figs. 15 and 17, and the swing of the carrier turns the gore with its wide end on and takes it into the clamp, n, n' , so that the narrow end will be left protruding between said clamp, with the latter extending diagonally of the gore. In the next gore, as 5 in Figs. 15, 16, and 17, the narrow end will extend out from the carrier, and hence this gore must be turned in the opposite direction to that in which the preceding gore was turned in order to bring it to the same position in the clamp. The other part of the cam-groove, o^{13} , by engaging the roll on the lever, o^{12} , moves the pin, o^9 , toward the lug, o^5 —

assuming the carrier to be in its normal position, ready to take the severed piece—so that upon the carrier swinging to the right the lug, o^5 , will encounter said pin, o^9 , and the collar, o^3 , will thus be held thereby. Hence, as the carrier continues, the rack, o^2 , will be held back and the gears, o' , o , caused to rotate and turn the buttons, j^3 and j^2 , which turn the gore in the direction indicated by the arrow in Fig. 16, being the reverse of that in which the carrier would turn it. On the return of the carrier, the lug, o^6 , encounters the pin, o^9 , and the gears, o' and o , are run back. Thus the gores are alternately turned in opposite directions, so that notwithstanding the fact that as cut from the stock they are alternately reversed end for end, they will be uniformly disposed for the second cutting.

A pair of delivering rollers, p and p' , are arranged to receive the gores from the swinging carrier, the lower one of said rollers being supported in fixed bearings and the upper one in a vertically swinging bearing, p^2 , so that the rollers may open to receive the gores. Said vertically swinging bearing, p^2 , is vibrated through the following means, which are best shown in Fig. 12: An arm, p^3 , is affixed to its journal and connected by a rod, p^4 , with a lever, p^5 , pivoted to a fixed bracket, p^6 , and carrying a roller in engagement with a cam-groove, p^7 , in a disk, p^8 , on the shaft, b^4 . The rod, p^4 , is connected with the arm, p^3 , and lever, p^5 , by ball and socket joints. Through these devices the roller, p' , is moved into and out of operative relation with the roller, p , at the proper times. These rollers are intermittently driven through the following means: They are connected by gears, q and q' , so arranged that the axis of the swinging holder, p^2 , is tangent to the pitch line of the gears, so that the movement of the latter can take place without disconnecting the gears. The lower gear, q' , carries a ratchet-wheel, q^2 ; and a small gear, q^3 , arranged to turn independently of the roller, carries an arm, q^4 , having a pawl, q^5 , to engage the ratchet and drive the same and the rollers under one direction of rotation. A segment, q^6 , meshes with the gear, q^3 , and is connected by a rod, q^7 , with a lever, q^8 , pivoted to a stationary support and carrying a roller, q^9 , in engagement with a cam-groove, q^{10} , in the periphery of a disk, q^{11} , on the shaft, b^4 . The rod, q^7 , is connected with the segment, q^6 , and lever, q^8 , by ball and socket joints, as shown.

As hereinbefore stated, the gores are cut in pairs. In order to print the size on one gore of each pair, the following construction is employed: A roller, r , is supported in a laterally swinging holder, r' , and carries printing characters, the roller being so arranged that the lower delivering roller, p , constitutes an impression bed for the type. The holder, r' , supports a wedge-shaped bar, r^3 , which takes position between the rollers, p and p' , in the path of the gores, and separates the same, as illustrated in Fig. 13, where 6 and 7 designate

two gores of a pair. The lower one of said gores feeds down between the roller, p , and the printing roller and is printed, while the upper one goes up over the wedge. After the printing has been done, the printing roller and wedge are swung clear of the gores, so that they may fall together and be so delivered. (See Fig. 14.)

The means for swinging the holder, r' , laterally, are arranged as follows: The spindle or stem, r^4 , of said holder has affixed to its lower end an arm, r^5 , which is connected by a rod, r^6 , with a lever, r^7 , pivoted to a fixed support, r^8 , and carrying a roller in engagement with a cam groove in a disk, r^9 , on the shaft, b^4 . The rod, r^6 , is connected with the arm, r^5 , and lever, r^7 , by ball and socket joints as shown. Through these means the holder is swung laterally, so as to carry the printing roller out of the path of the gores, as indicated in dotted lines in Fig. 1, and is returned again for the next pair of gores.

The printing roller carries a gear, r^{10} , in mesh with the gear, q' , on the lower delivering roller, the arrangement being such as to make the line of the axis of the holder tangent to the pitch line of the gears, so that the gears will not be disconnected by the movements of the holders.

I do not limit myself to the employment of knives arranged in co-operating or overlapping pairs, as either knife of each pair may be used without the corresponding knife, that is, the cutting may be performed wholly by the upper knives, the lower knives being omitted, or wholly by the lower knives, the upper knives being omitted.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. A machine of the character described, comprising in its construction a swiveled work holder, feed rollers supported thereon, a prime mover, suitable operating connections between the latter and the swiveled holder whereby the said holder is shifted from one position to another, and suitable operating connections between the said prime mover and the feed rollers whereby they are intermittently operated.

2. In a machine of the character described, the combination of a work-holder swiveled to the frame of the machine, a carriage movable from side to side of said work-holder in ways fixed to said frame, a cutter on said carriage, and means for reciprocating the carriage.

3. A machine of the character described, comprising in its construction a clamp having a movable slotted member, a carriage movable transversely of the feed and having a cutter which travels in a slot of said clamp-member, and means for opening the clamp by the return movement of the carriage.

4. A machine of the character described,

comprising in its construction a clamp having a movable slotted member, a carriage movable transversely of the feed and having a cutter which travels in a slot of said clamp-member, a marker yieldingly held in operative position beside the cutter, and occupying a slot in the movable clamp-member and adapted to be retracted by the opening of the clamp, and means for opening the clamp by the return movement of the carriage.

5. A machine of the character described, comprising in its construction a clamp having a movable slotted member, a carriage movable transversely of the feed and having a cutter which travels in a slot of said clamp-member, markers engaging slots in the said clamp-member on either side of the cutter and both carried by a yieldingly held support adapted to be retracted by the opening of the clamp, and means for opening the clamp by the return movement of the carriage.

6. A machine of the character described, comprising in its construction two cutters or sets of cutters operating to sever the stock, and work-grasping, transferring, and turning means arranged to move back and forth between said cutters and adapted to take a piece of stock severed by one cutter and present it end-on to the other cutter.

7. A machine of the character described, comprising in its construction a carriage movable transversely of the feed and carrying two cutters or sets of cutters, and work-grasping, transferring, and turning means arranged between said cutters and adapted to take a piece of stock severed by one cutter and present it end-on to the other cutter.

8. A machine of the character described, comprising in its construction two cutters or sets of cutters, a swinging work-grasping and turning device adapted to take a piece of stock severed by one of the cutters and turn said severed piece end-on, and a clamp which receives the severed piece and holds it for the other cutter.

9. A machine of the character described, comprising in its construction means for feeding and severing the stock, a swinging carrier which turns the severed piece end-on, an adjustable support for said carrier, whereby it may be adjusted for pieces of different widths, a clamp in which said carrier delivers the severed piece, and a cutter to cut crosswise thereof while in said clamp.

10. In a machine of the character described, the combination with means for feeding the stock and severing the same on lines alternating in direction whereby the severed pieces are alternately reversed end for end, of means for turning the severed pieces alternately in opposite directions to dispose them each with the corresponding end on, and a cutter for severing each piece crosswise of the opposite end.

11. In a machine of the character described, the combination with means for feeding the stock and severing the same on lines alter-

nating in direction whereby the severed pieces are alternately reversed end for end, of a swinging carrier to take the pieces as severed and deliver them end-on, said carrier having rotary clamps to engage the severed pieces, and means for rotating the clamps for each alternate piece, whereby it is turned in a direction reverse to that in which the carrier would turn it.

12. In a machine of the character described, the combination with means for feeding the stock and severing the same on lines alternating in direction, whereby the severed pieces are alternately reversed end for end, of a swinging carrier to take the pieces as severed and deliver them end-on, said carrier having rotary clamps to engage the severed pieces, means for rotating the clamps, and devices for rendering said rotating means operative, with conveyance of each alternate piece by the carrier for the purpose described.

13. In a machine of the character described, the combination with means for feeding the stock and severing the same on lines alternating in direction, whereby the severed pieces are alternately reversed end for end, of a swinging carrier to take the pieces as severed and deliver them end-on, said carrier composed of two separate members having rotary clamps, a sliding rack supported by one member of said carrier, gearing connecting said rack with the rotary clamp of said member, a turn-piece on the boss of one carrier-member and connected with the rack and having a pair of lugs or abutments, a movable stop between said lugs, and a cam controlling the said stop whereby it is periodically shifted, substantially as and for the purpose described.

14. A machine of the character described, comprising in its construction means for feeding and severing the stock, a swinging carrier for taking the severed pieces and delivering them end-on, said carrier being composed of two members movable toward and from each other, and having telescopic spindles provided with broadened arms, a rocking spreader engaging said arms to hold the carrier closed, a spring for opening the carrier, means for rocking said spreader, to allow said spring to act, and means for vibrating the carrier.

15. A machine of the character described, comprising in its construction means for feeding and severing the stock, a swinging carrier for taking the severed pieces and delivering them end-on, said carrier being composed of two members movable toward and from each other and having telescopic spindles provided with broadened arms, a clamp in which the carrier delivers the pieces, said clamp being composed of two members movable toward and from each other and having telescopic spindles provided with lateral arms, rocking spreaders between the arms of the carrier spindles and those of the clamp spindles, respectively, and themselves having

telescopic spindles, a disk having cam projections to rock said spreader-spindles, respectively, springs for opening the carrier and clamp, and means for vibrating the carrier.

5 16. A machine of the character described, comprising in its construction means for feeding and severing the stock, means for turning the severed piece end-on, delivering rollers to receive the pieces end-on, one of said
10 rollers being movable toward and from the other, and means for periodically moving said roller for the purpose described.

17. A machine of the character described, comprising in its construction means for feeding and severing the stock, means for turning the severed piece end-on, delivering rollers to receive the pieces end-on, and a printing roll operating in conjunction with one of
15 said delivering rollers.

20 18. A machine of the character described, comprising in its construction means for feeding and severing the stock, means for turning the severed piece end-on, delivering rollers to receive the pieces end-on, a separator
25 between the said rollers and adapted to separate

rate two pieces of a pair, and a printing roll operating in conjunction with one of the delivering rollers to print one piece of the pair.

19. A machine of the character described, comprising in its construction means for feeding and severing the stock, means for turning the severed piece end-on, delivering rollers to receive the pieces end-on, a separator between the said rollers and adapted to separate two pieces of a pair, a printing roll
30 operating in conjunction with one of the delivering rollers to print one piece of the pair, a movable support for the separator and the printing roll, and means for moving said support to carry the separator and printing roll
35 out of the path of the pieces.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 15th day of February, A. D. 1894.

EDWARD A. STIGGINS.

Witnesses:

A. D. HARRISON,
F. P. DAVIS.