

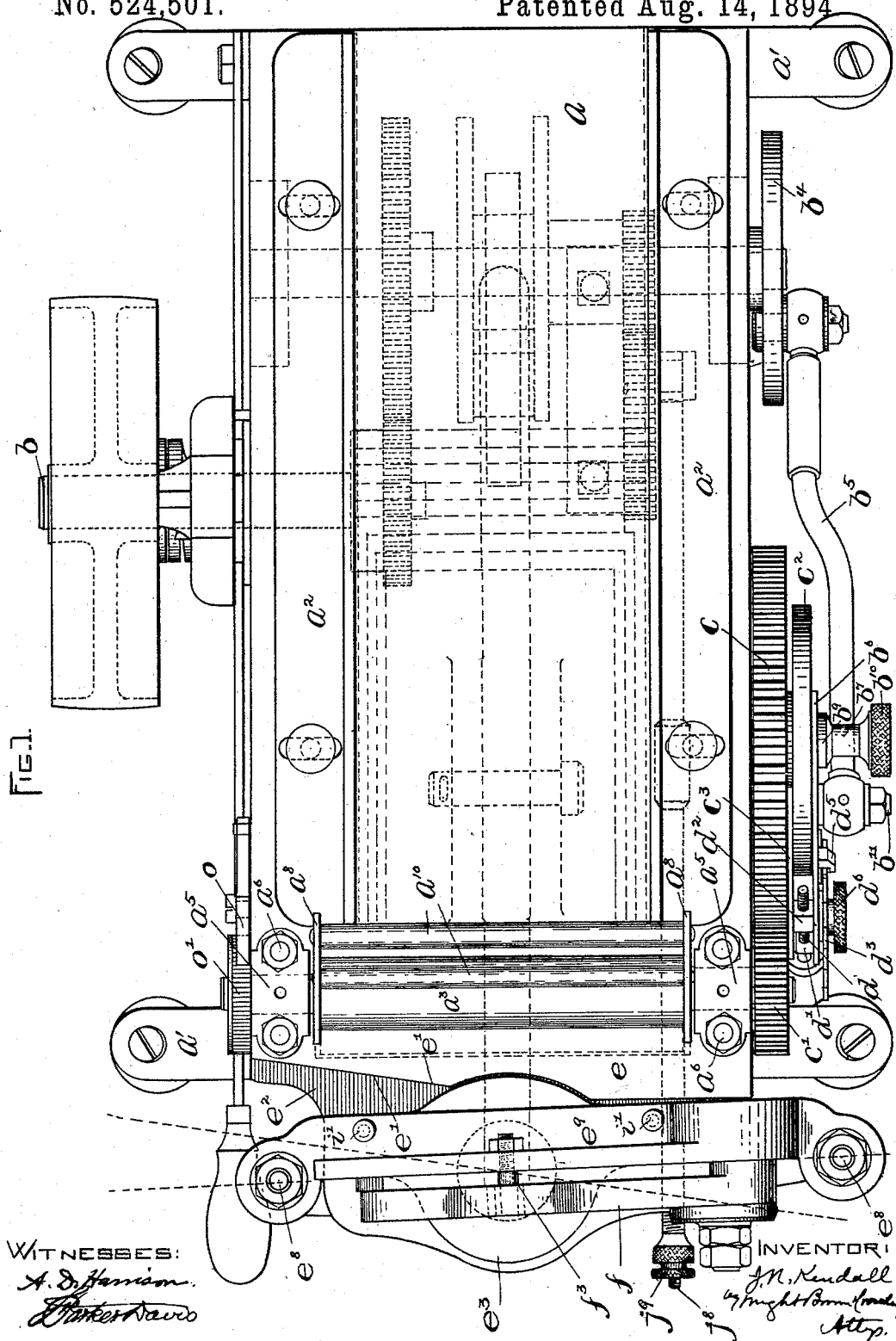
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7 Sheets—Sheet 1.

J. N. KENDALL.
GORE CUTTING MACHINE.

No. 524,501.

Patented Aug. 14, 1894



*THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

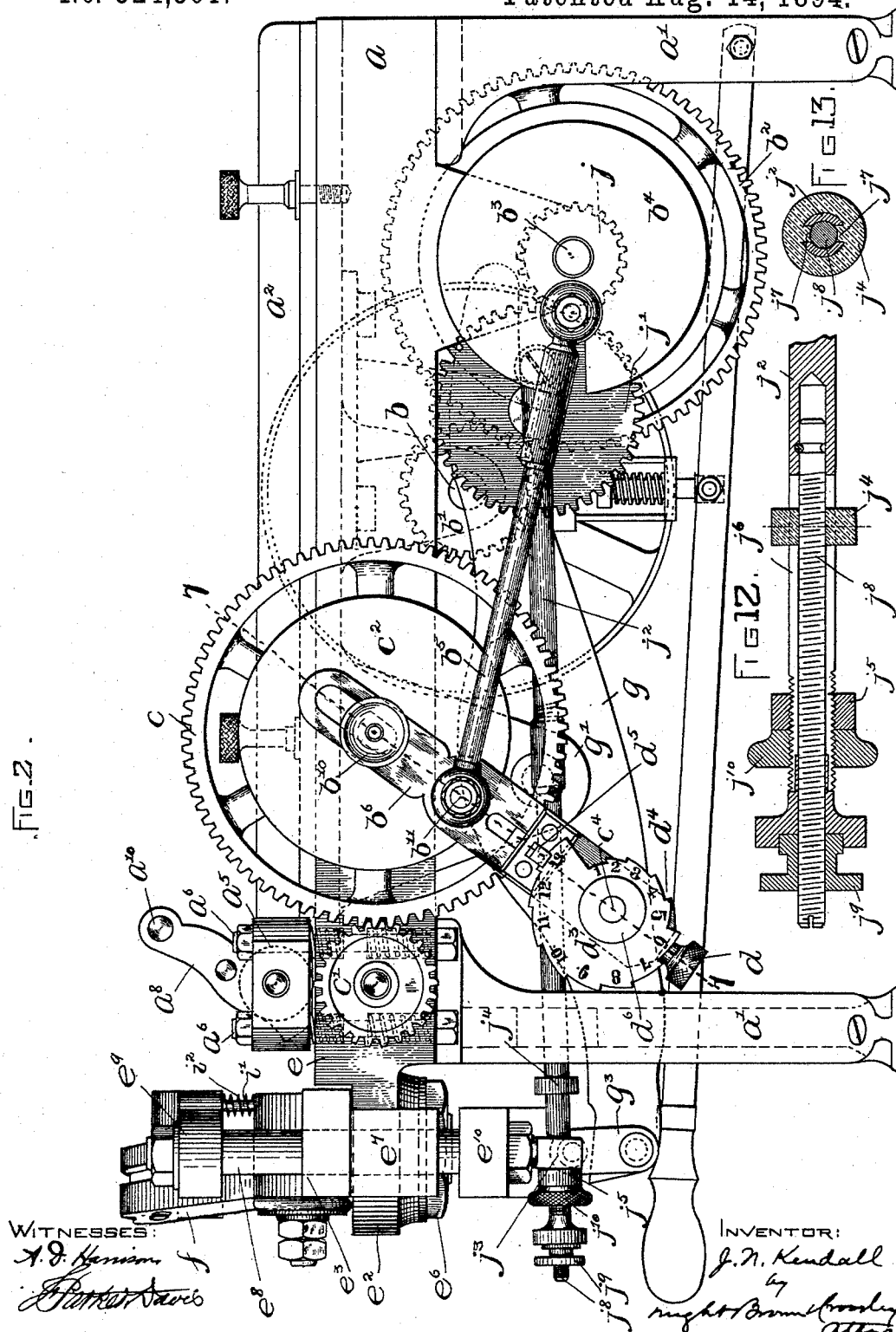
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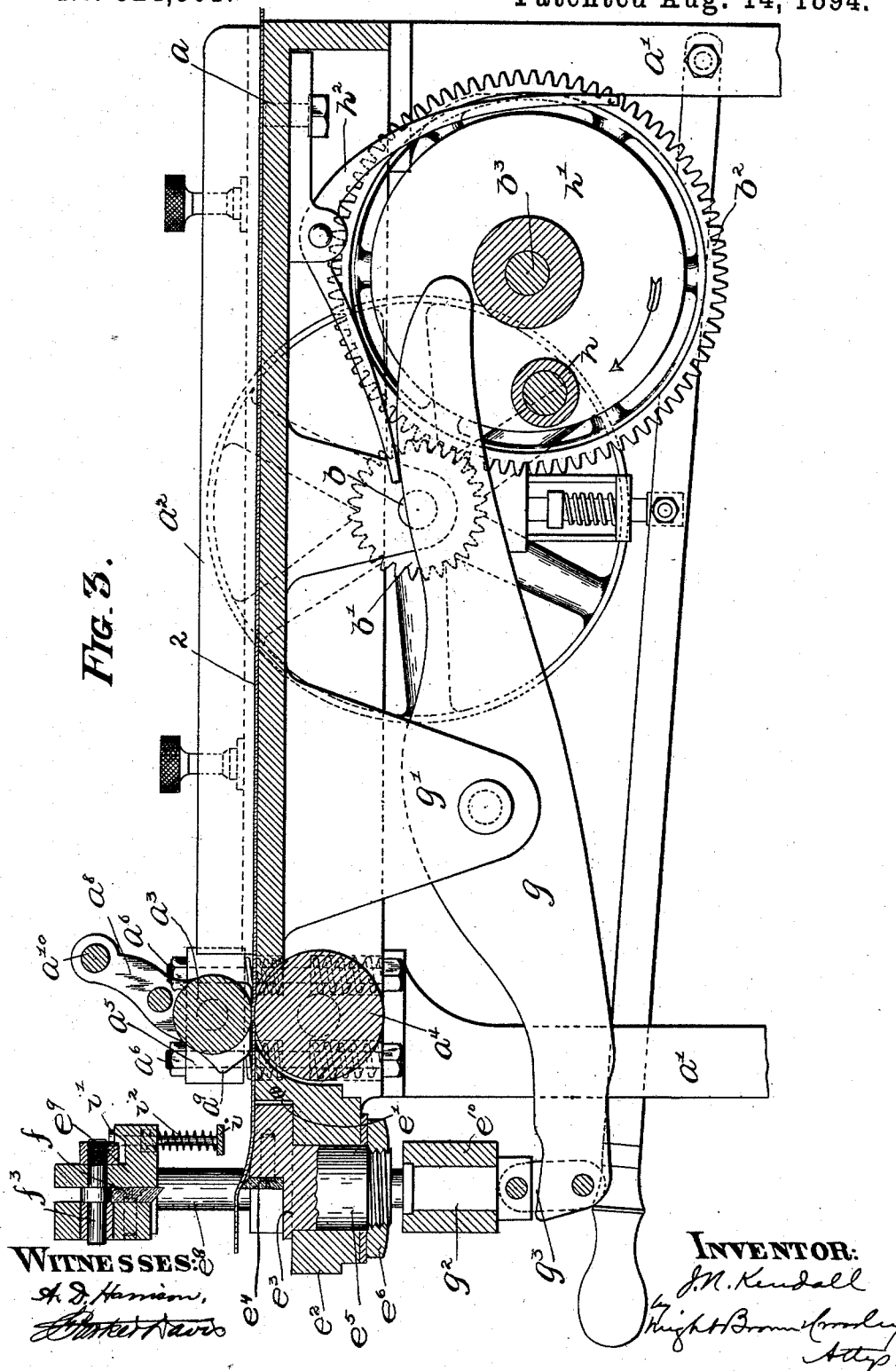
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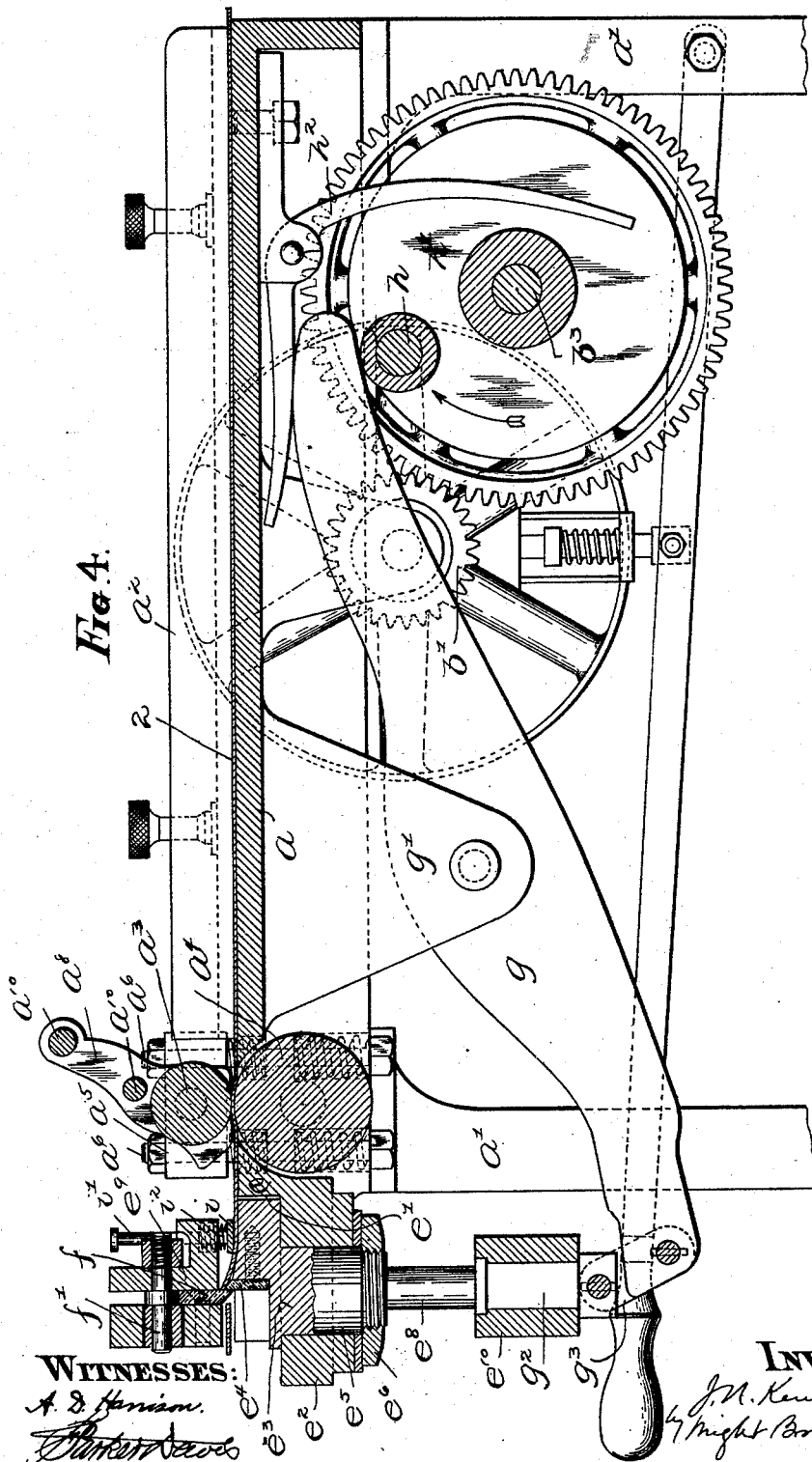
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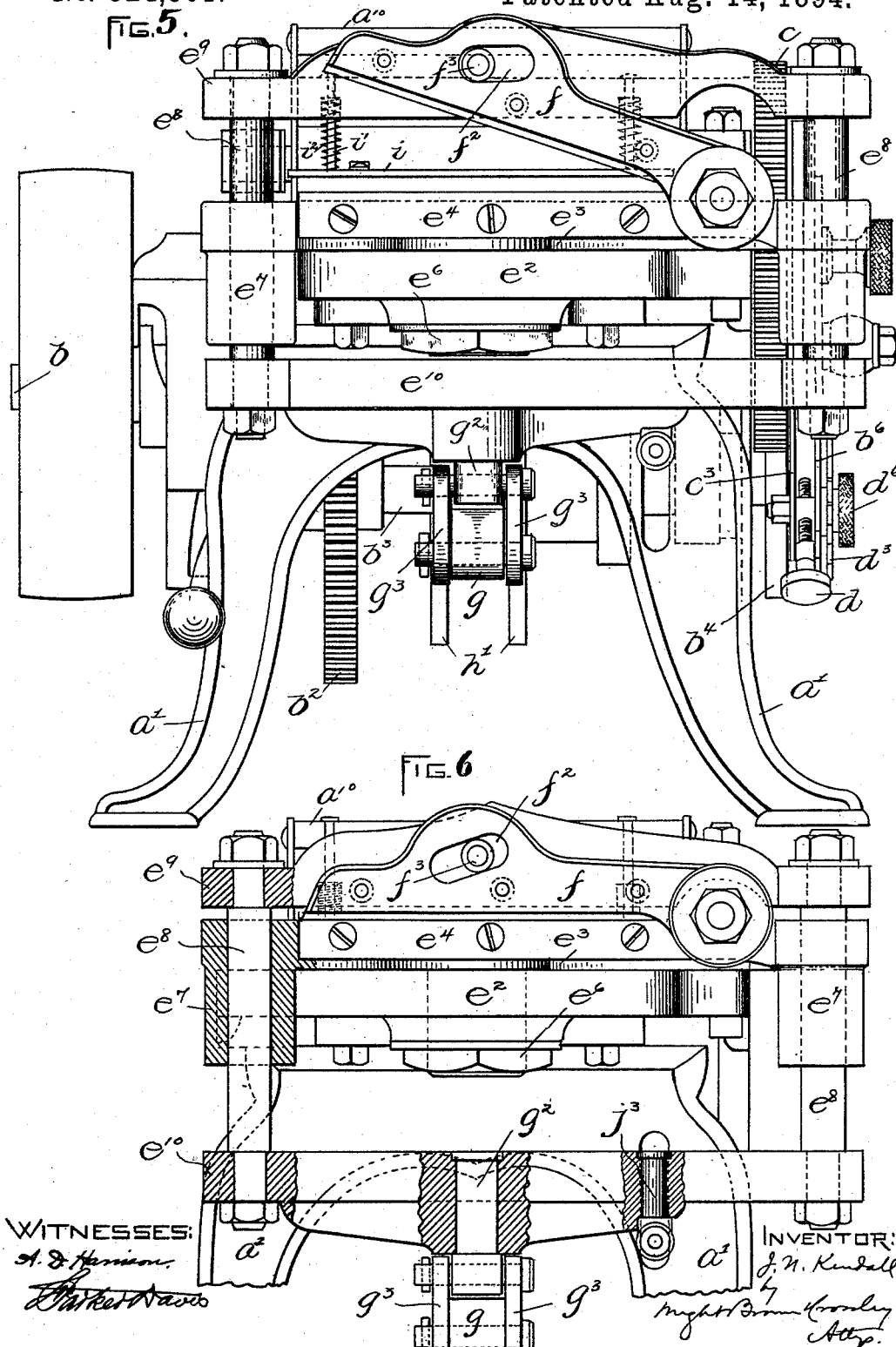
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J. M. Kendall
by Night Brown & Howley
Attys.

7. Sheets—Sheet 5.

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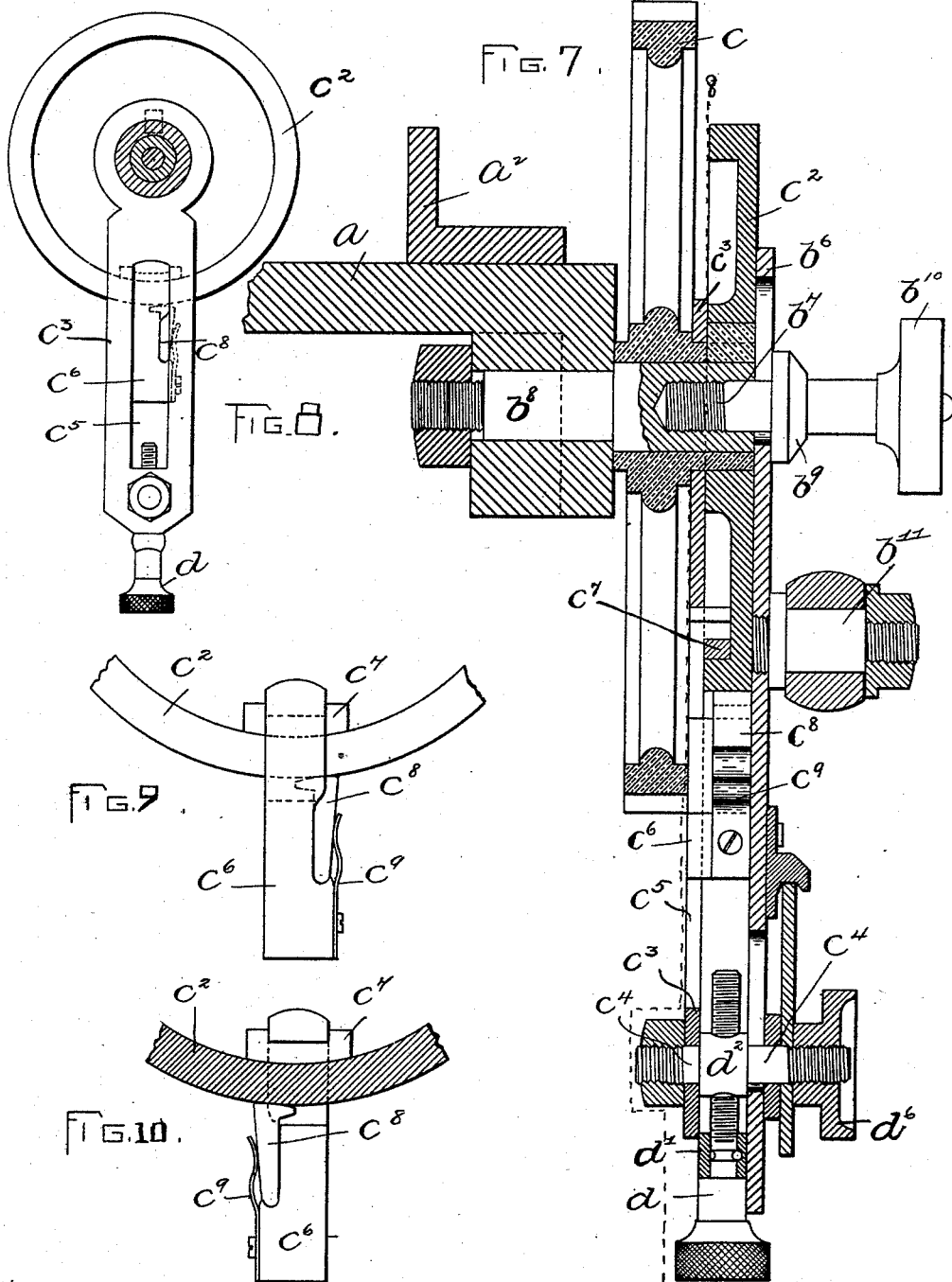
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Patented Aug. 14, 1894.



WITNESSES:

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Franklin Davis

INVENTOR

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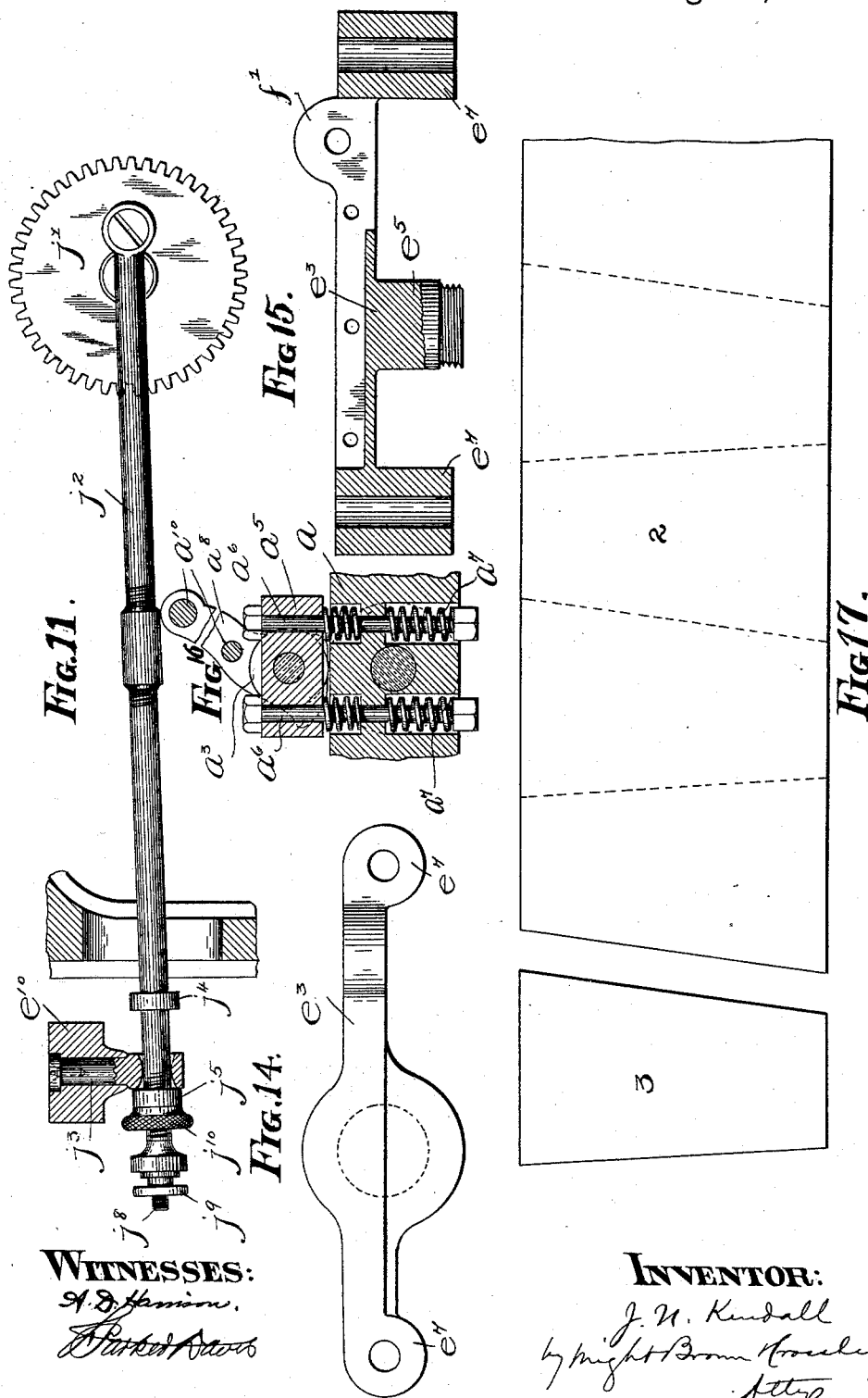
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J. N. KENDALL.
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Patented Aug. 14, 1894.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JAMES N. KENDALL, OF NASHUA, NEW HAMPSHIRE.

GORE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,501, dated August 14, 1894.

Application filed August 31, 1893. Serial No. 484,442. (No model.)

To all whom it may concern:

Be it known that I, JAMES N. KENDALL, of Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Gore-Cutting Machines, of which the following is a specification.

The object of this invention is to provide a machine for cutting elastic gores for boots and shoes, an operation which has heretofore been found necessary to perform by hand.

The invention resides chiefly in means whereby the cutter is turned to the proper angles for cutting the opposite sides of the gore.

It also has in view certain improvements in feed mechanism and other details hereinafter described and claimed.

The accompanying drawings illustrate a construction for carrying out the invention.

Figure 1 shows a top plan view of a machine embodying the invention. Fig. 2 shows a side elevation of the machine. Figs. 3 and 4 each show a central longitudinal section of the machine, the knife being elevated in one view, and lowered in the other. Fig. 5 shows a front elevation of the machine. Fig. 6 shows a partial front elevation and partial section. Fig. 7 shows a section on line 7—7 of Fig. 2, the parts appearing on an enlarged scale. Fig. 8 shows a section on line 8—8 of Fig. 7. Figs. 9 and 10 are detail views of parts appearing in Fig. 7. Fig. 11 shows a detail of the means for shifting the cutter. Figs. 12 and 13 show sectional views of adjusting means for regulating the angle of the cutter, Fig. 12 being a longitudinal section, and Fig. 13 a cross section on line 13—13 of Fig. 12. Figs. 14 and 15 show details of the stationary-knife bed, Fig. 14 being a top plan view, and Fig. 15 a longitudinal section. Fig. 16 shows a detail cross section view of the bearings for the feed-rollers. Fig. 17 shows a strip of material from which the gores are cut, a gore being represented as having been severed therefrom, and broken lines indicating the lines on which the cuts are made.

The reference letter *a* designates a table which is supported on legs *a'*, and over which the strip 2 passes, said strip being guided between adjustable gages *a''* extending lengthwise of the table. The surface of the table

is marked as indicated in Fig. 1, so that the proper adjustment of the gages for different widths of stock may be readily determined.

Feed rollers *a³* *a⁴* are located at the front end of the table, and the lower one, *a⁴*, is supported in fixed bearings below the table and projects through an opening in the table, while the upper one, *a³*, is supported in yielding bearings *a⁵* connected with the table by rods *a⁶*, (see Fig. 16) and drawn toward the table by springs *a⁷* on said rods and occupying recesses in the table.

Arms *a⁸* are mounted on the journals of the roller *a³*, and are squared at the lower ends so as to rest evenly on the table and are formed with cam-like projections *a⁹* which, when the arms are turned toward the front of the machine, cause the roller *a³* to be separated from the roller *a⁴* by their engagement with the table. The arms *a⁸* are connected by rods *a¹⁰*, which constitute handles for turning the arms and together with latter form a frame. By turning this frame forward the feed-rollers may be separated to admit the stock 2, and when the frame is turned back again the top roller will be drawn against the lower one by the springs as aforesaid, and the square ends of the arms will be drawn against the table so that the frame will be held stiff.

The lower feed-roller *a⁴* is driven through the following connections with the driving shaft *b*: A pinion *b'* on said driving shaft meshes with a gear *b²*, on a counter-shaft *b³* which also carries a disk *b⁴*; the latter carries a crank-pin to which a pitman *b⁵* is connected and the opposite end of said pitman is connected with a wrist-pin *b¹¹* fastened in an arm *b⁶*, having a slot at one end which receives a screw *b⁷* entering a stud *b⁸* supported by the table *a* (see Fig. 7) and having a collar *b⁹* to bear against the arm *b⁶*, and a head *b¹⁰* by which to turn it. The stud *b⁸* supports a gear *c* which meshes with a pinion *c'* on the feed-roller *a⁴*, and has an extended hub receiving a drum *c²* which is keyed thereto. An arm *c³* is loosely mounted on the hub of the gear between the latter and the drum, and extends down behind the arm *b⁶* with which it is connected by a bolt *c⁴*, said bolt being fastened in the arm *c³*, and extending through a slot in the arm *b⁶*. The arm *c³* is slotted throughout a portion of its length as

shown at c^5 , and a block c^6 engages said slot, and has a shoe c^7 at its upper end engaging the inner side of the rim of the drum c^2 ; the said block carries a dog c^8 fulcrumed to it, and having a cam-face to bear against the outer side of the rim of the drum c^2 , and said dog is actuated by a spring c^9 in a direction to cause it to bind against the drum so that the rim of the latter is gripped between it and the shoe c^7 . Thus under one direction of movement of said arm b^6 , the dog c^8 will slip owing to the cam-like formation of its engaging face and no motion will be imparted to the drum. Backward rotation of the roller a^4 is prevented by the engagement of a pawl o with a ratchet o' on said roller. Now it is obvious that by changing the distance between the wrist-pin b^{11} and the stud b^8 , the amount of rotary motion transmitted to the gear c may be varied and consequently the extent of the feed. By changing the distance between the points named, I am enabled to adjust the machine for gores of different widths.

It will be observed that the connection between the arms b^6 and c^3 is such as to cause them to turn together, but also provides for longitudinal movement of the arm b^6 independent of the arm c^3 . Such movement of the arm b^6 is effected by means of a screw d , which is supported in a nut d' on the plate b^6 and passes through a threaded hole in an enlargement d^2 of the bolt c^4 .

A disk d^3 having a spiral-like perimeter is mounted on the bolt c^4 , and said perimeter is notched as at d^4 , and the notches are numbered consecutively from the lowest portion of the perimeter to the highest, the numbers running from 1 to 13, and designating the size of shoe. A nut d^5 is screwed on the bolt to bear against the disk d^3 . A lug d^5 fastened to the arm b^6 projects over the disk d^3 .

To effect adjustment of the feed to advance proper lengths of stock for gores for a certain size of shoe, the bolt b^7 and nut d^6 are loosened, and the disk d^3 is turned until the notch numbered to correspond with the size of shoe is brought under the lug d^5 . Then the screw d is turned to bring said lug tight upon the disk, and the nut d^6 and bolt b^7 are tightened. By this adjustment the position of the wrist-pin b^{11} is determined and the proper feed established.

The table a extends forward beyond the feed-rollers as at e and has an oblique shoulder e' , and at the base of said shoulder a shelf e^2 which supports a bed e^3 having secured to it a stationary knife e^4 , the said bed being pivotally connected with the shelf by a trunnion e^5 engaging a circular hole in the shelf and having a screw-threaded lower end which receives a nut e^6 . The bed e^3 projects on each side of the supporting shelf e^2 and is formed with bosses e^7 through which rods e^8 extend, said rods being capable of sliding vertically in the said bosses. These rods support cross-bars e^9 e^{10} between them at their

upper and lower ends. A knife f is pivoted to an ear f' on the bed e^3 , and has a slot f^2 which is engaged by a pin f^3 fastened to the upper cross-bar e^9 , and said knife is adapted to co-act with the stationary knife e^4 . The frame composed of the rods e^8 and bars e^9 e^{10} is supported by a lever g which is pivoted to a hanger g' under the table. The connection is effected by means of a bolt g^2 in the bar e^{10} , and links g^3 connecting the head of the said bolt with the said lever, and the frame may turn on the bolt.

The frame is reciprocated and consequently the knife f by a wrist-pin h fastened between disks h' on the shaft b^3 and adapted to act against the lever g and a bell-crank lever h^2 pivoted to a bearing under the table a , and having one arm projecting over the lever g and the other into the path of the wrist-pin h so that when the latter acts against it, the other arm presses said lever g down.

The upper cross-bar e^9 supports a presser-foot i , rods i' , being fastened to said presser-foot and extending through the said cross-bar, and springs i^2 surrounding the rods. This presser-foot comes down upon the stock and holds it fixed while the cutter acts.

The cutter is shifted from one angular position to the other through the following means: A pinion j on the shaft b^3 meshes with a gear j' which carries a crank-pin. A pitman j^2 is connected with this crank-pin and extends forward and through the head of a bolt j^3 in the lower-cross-bar c^{10} . The pitman carries collars j^4 j^5 on opposite sides of said bolt-head and under reciprocations of the pitman j^2 these collars act against said bolt-head, and thereby shift the cutter. Sufficient space is left between collars j^4 and j^5 to allow time for the knife f to descend and return while the frame is stationary.

The collars j^4 and j^5 are independently adjustable to vary the angular positions of the cutter. The construction by which this adjustment is effected is best illustrated in Figs. 12 and 13.

The pitman j^2 is slotted lengthwise as at j^6 , and the collar j^4 is loose on the pitman and is formed with projections j^7 which engage said slot. A screw-threaded rod j^8 occupies a bore in the pitman and is arranged to turn, but not to move lengthwise therein, and this rod engages screw-threads formed in the projections j^7 of the collar j^4 . It will be seen that by turning the screw-threaded rod, the collar may be adjusted on the pitman. A jam-nut j^9 is screwed on the rod and serves to lock the same at different adjustments. The other collar j^5 engages screw-threads on the pitman and may be adjusted by simply turning it, a jam-nut j^{10} being provided to lock said collar.

The operation of the machine briefly stated is as follows: With the cutter standing at the proper angle to cut one side of a gore, the stock is fed in and its end cut off on that angle. The feed-rollers a^3 and a^4 feed the proper length of stock to form a gore, over

the bed e^s and the cutter is shifted to the proper angle for the opposite side of the gore. Then the knife f descends and severs the gore, and the feed-rollers advance the stock 5 and the cutter is again shifted. Thus the stock will be cut as indicated by the broken lines shown in Fig. 17, and the gore 3 appear as shown in said figure.

With a machine of this character each gore 10 will be exactly the same size, and there will be no waste of stock, and a great saving in time and labor is effected.

It is evident that the invention may be embodied in different form than hereshown, and 15 hence is not limited in this respect.

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

1. The combination of a cutter swiveled to 20 render it capable of assuming different angular positions with respect to the feed, intermittent feed-mechanism for advancing the work past the cutter, and a prime mover operatively connected with the swiveled cutter, 25 and the feed-mechanism whereby a positive relation is established between them, and the cutter is turned with each advance of the stock by the feed-mechanism.

2. The combination of a swiveled support,

a knife thereon movable to cut, feed-mech- 30 anism to advance the work past the knife, and a prime mover operatively connected with the knife-support, the knife, and the feed-mechanism whereby a positive relation is established between them, substantially as 35 described.

3. The combination of a swiveled support, a knife thereon movable to cut, feed rollers, a driving shaft, pitmen operatively connected therewith and with the swiveled holder and 40 feed-rollers respectively, and connections between the prime mover and the knife.

4. The combination of a swiveled bed having a fixed knife, and a pivotal knife which describes a plane parallel with the fixed knife, 45 a sliding frame on the swiveled bed and operatively connected with the pivotal knife, a reciprocating agent, and a swivel-connection between the same and the said frame.

In testimony whereof I have signed my 50 name to this specification, in the presence of two subscribing witnesses, this 22d day of August, A. D. 1893.

JAMES N. KENDALL.

Witnesses:

EDWIN B. GOULD,
J. N. WOODWARD.