

(No Model.)

2 Sheets—Sheet 1.

M. E. JOHNSON & A. M. PHILLIPS.
BAND CUTTER AND FEEDER.

No. 481,570.

Patented Aug. 30, 1892.

Fig. 1.

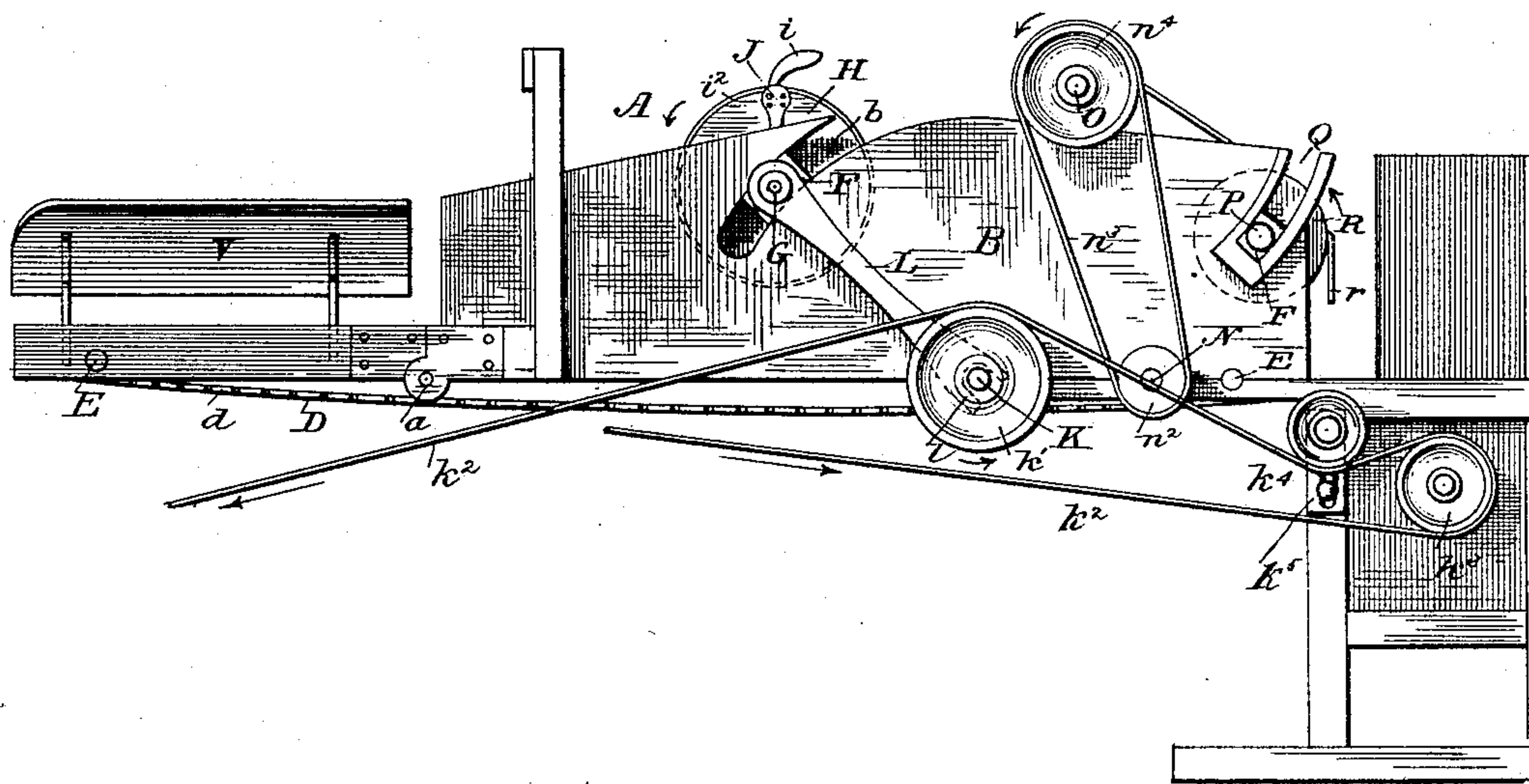
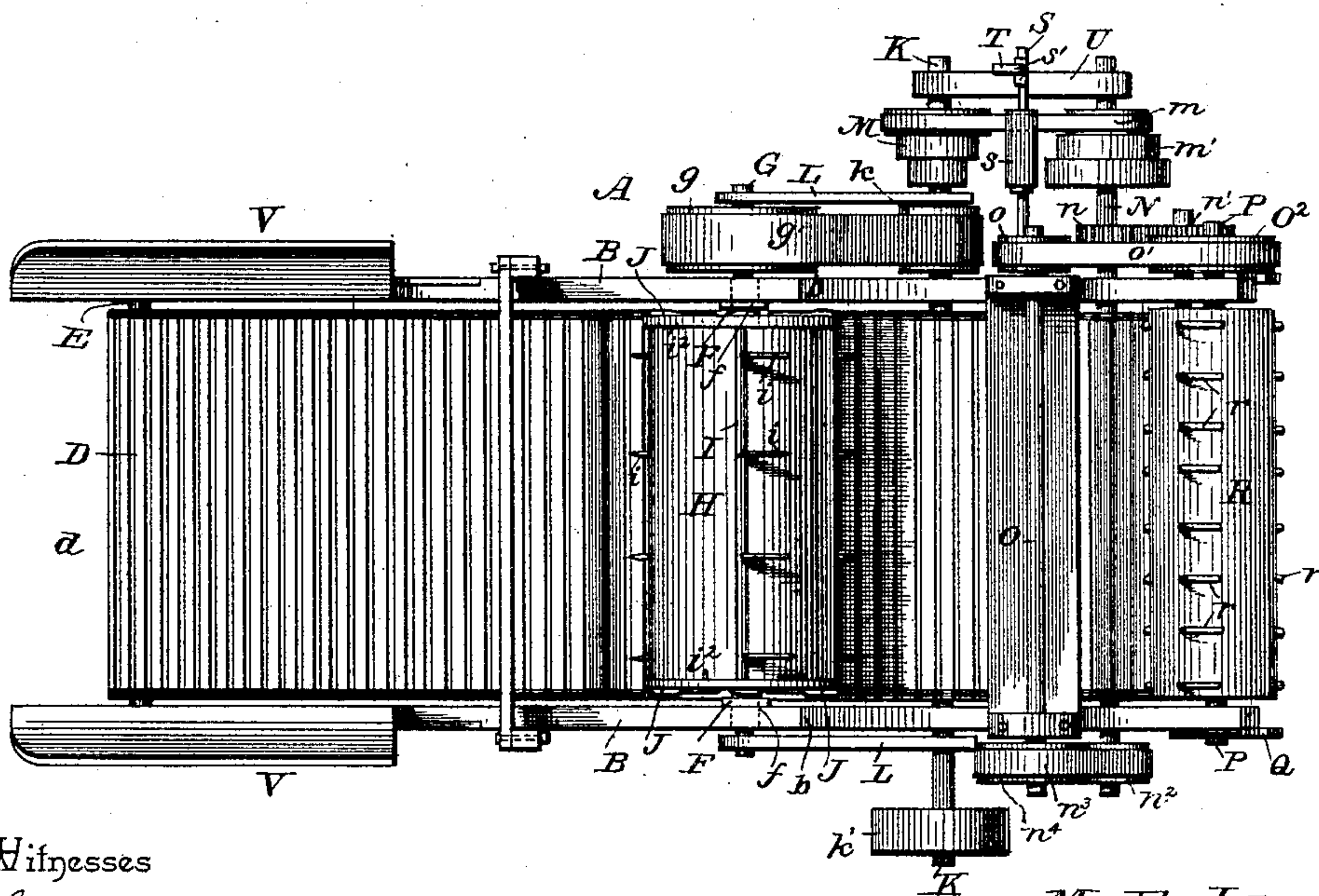


Fig. 2.



Witnesses

Chas. H. Ourand
D. P. Holmhauser

Inventors

M. E. Johnson
A. M. Phillips

By their Attorneys,

C. A. Snow & Co.

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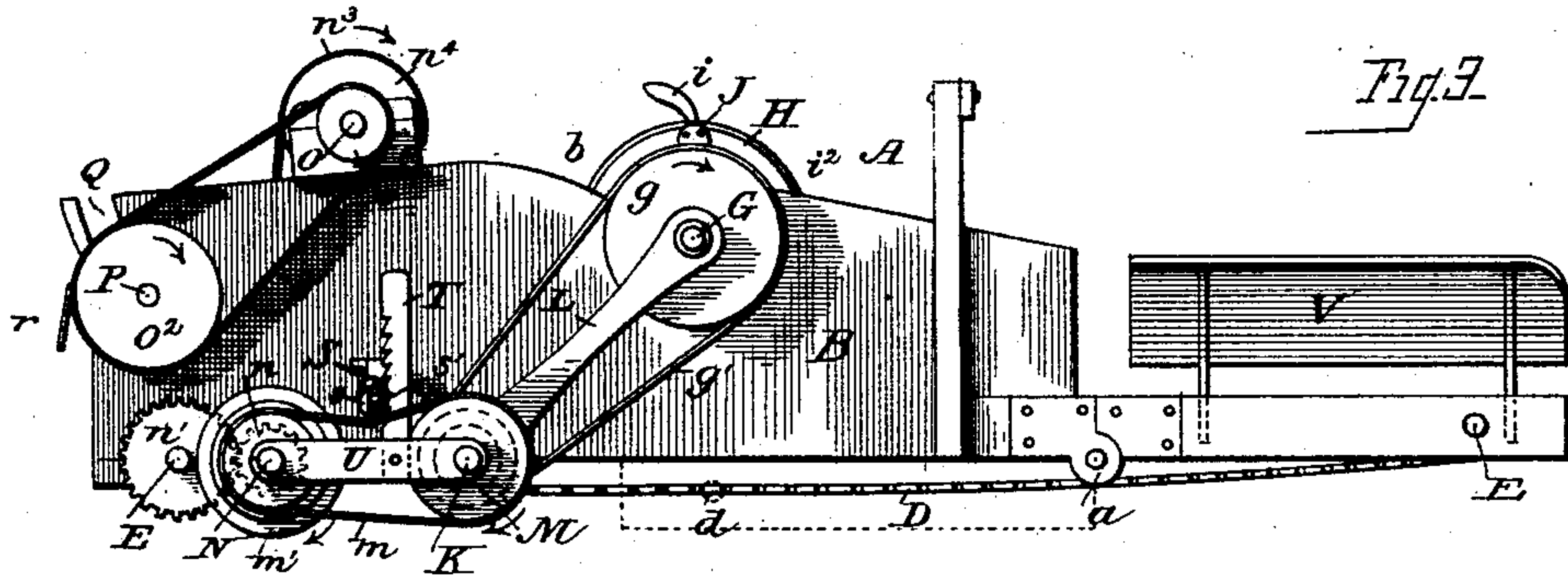


Fig. 4

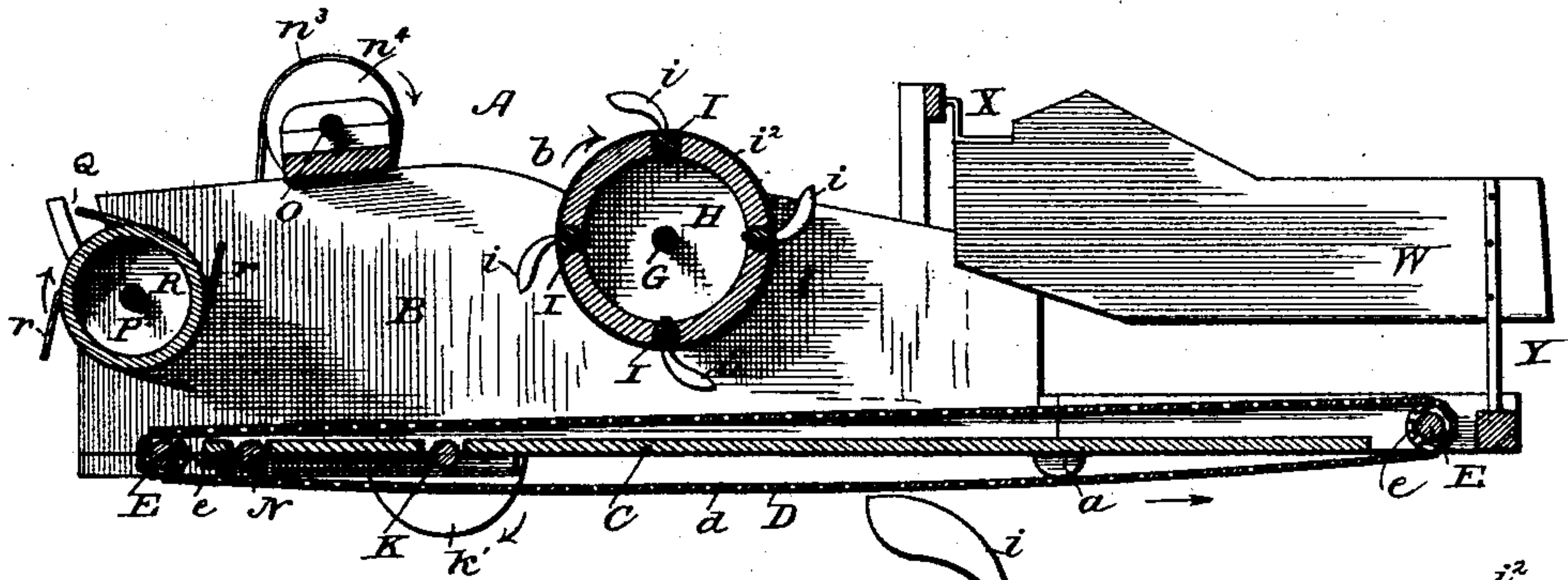


Fig. 5

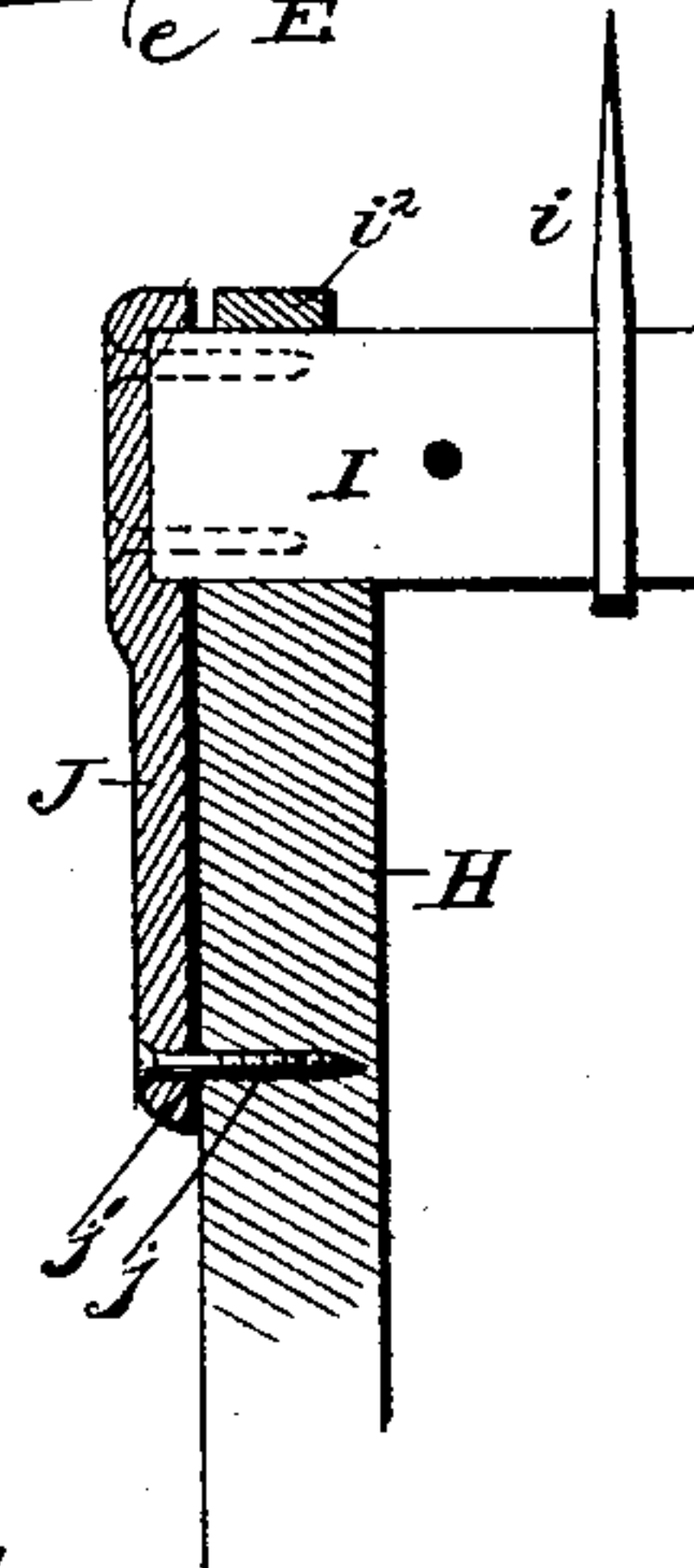
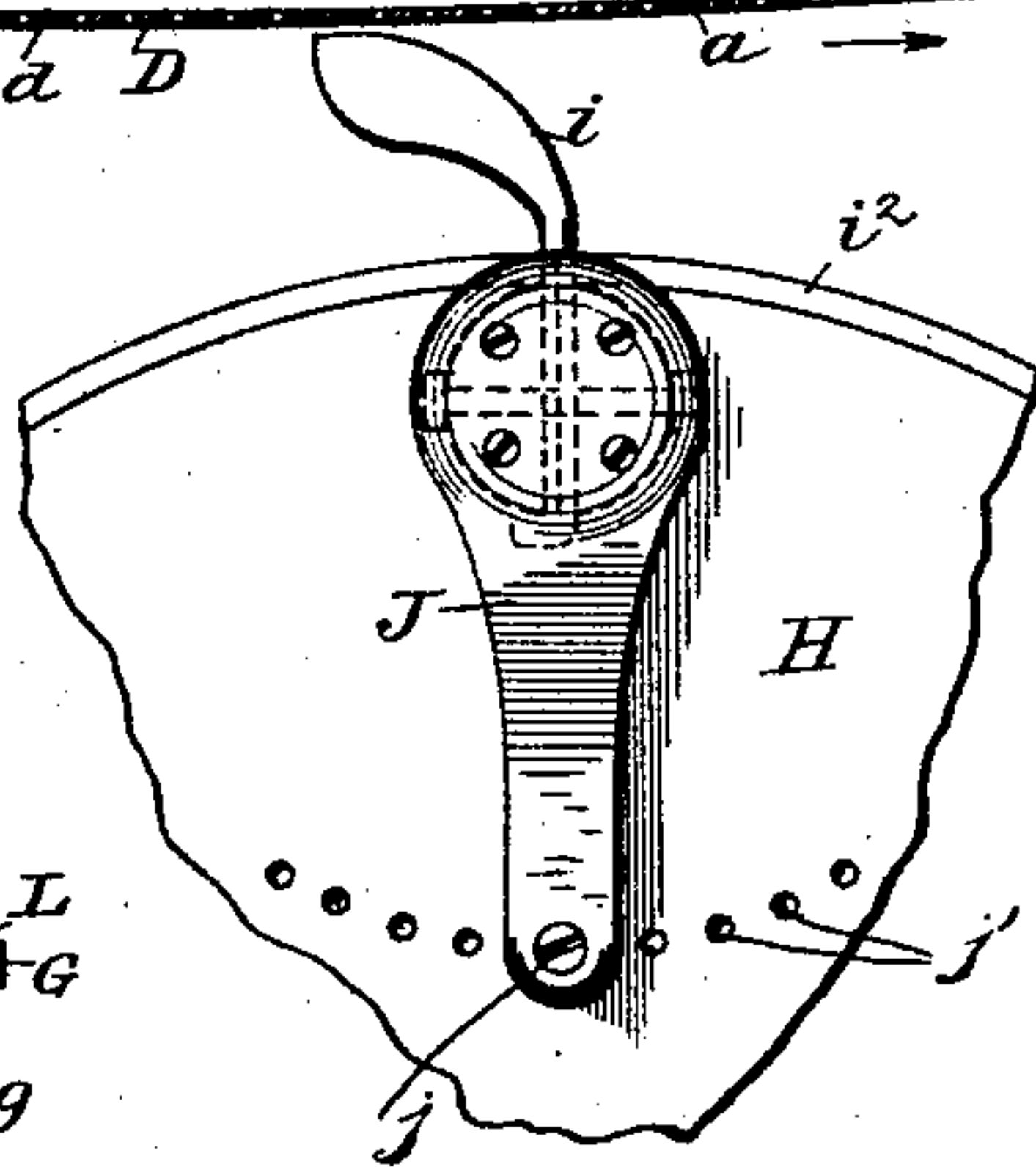
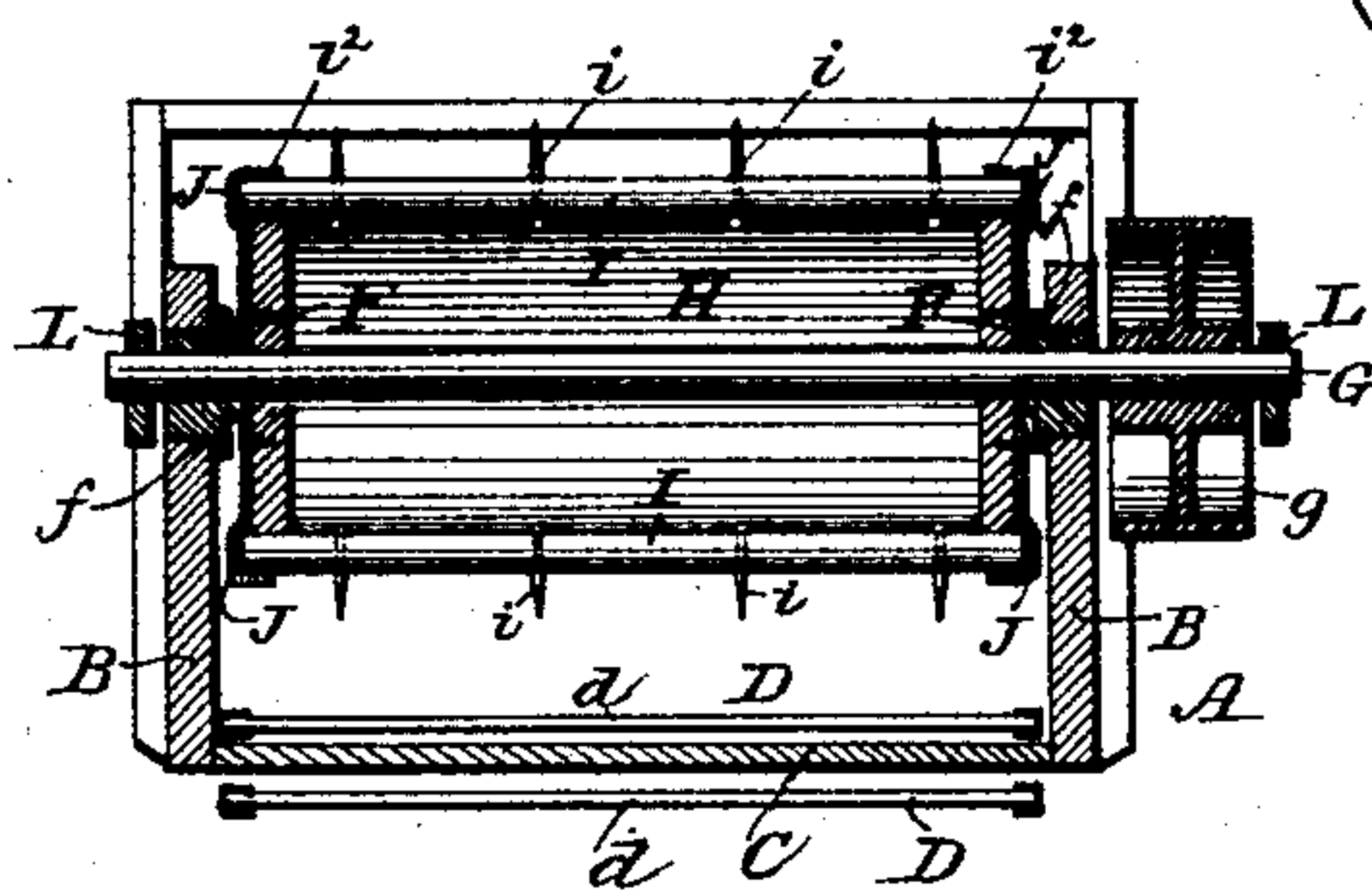


Fig. 6

Witnesses

Charles Curand
D. P. Holhaupter.

Inventors

M. E. Johnson
A. M. Phillips

By their Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

MONROE ELLIOTT JOHNSON, OF PITTSBURG, KANSAS, AND AUSTIN M. PHILLIPS, OF NASHVILLE, MISSOURI.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 481,570, dated August 30, 1892.

Application filed January 18, 1892. Serial No. 418,476. (No model.)

To all whom it may concern:

Be it known that we, MONROE ELLIOTT JOHNSON, of Pittsburg, in the county of Crawford and State of Kansas, and AUSTIN M. PHILLIPS, of Nashville, in the county of Barton and State of Missouri, citizens of the United States, have invented a new and useful Band-Cutter and Feeder, of which the following is a specification.

This invention relates to band-cutters and feeders for thrashing-machines; and it has for its object to provide a machine of this character adapted for use in feeding grain to a thrasher, which will cut and spread the grain and at the same time evenly and regularly feed the same to the cylinder of the separator.

To this end the primary object of the invention is to provide a machine which by a variety of adjustments may be accurately and determinately regulated to feed at any speed, according to the option of the operator.

With these and many other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a band-cutter and feeder and one end of the thrasher with which the same is connected. Fig. 2 is a top plan view of the band-cutter and feeder. Fig. 3 is a side elevation of the band-cutter and feeder upon the side not shown in Fig. 1. Fig. 4 is a vertical longitudinal sectional view of the same. Fig. 5 is a transverse sectional view through the cutter-cylinder. Fig. 6 is a detail enlarged end elevation and sectional view of the knife-cylinder.

Referring to the accompanying drawings, A represents the feeder-box, having the inclosing sides B, parallel with each other, and the intermediate bottom floor C, over which travels the endless carrier apron or belt D, provided with the ordinary slats *d* and passing around the front and rear apron-rollers E, each of which are provided with the longitudinal grooves *e*, which as the said apron is carried thereover are designed to receive the slats on said apron and to allow the same

to evenly pass thereover. The feeder-box A is hinged at *a* in order to allow the machine to be folded upon itself and into a small compass when not in use for convenience in removal and transportation. Each of the parallel sides B is provided with the curved guide and bearing slots *b*, which are adapted to receive the sliding bearing sleeves or boxes F, working therein, and provided with the retaining-flanges *f*, bearing against the sides of said slots and preventing the same from displacement. Each of the opposite adjustable sleeves or boxes F receive the ends of the shaft G, working therein, and carrying said bearings up and down in said slots.

Mounted upon the shaft G and carried thereby is the hollow knife-cylinder H. Longitudinally secured in the knife-cylinder H is a series of knife or cutter bars or rollers I, each of which is provided with a series of band-cutting knives *i*, projecting beyond the periphery of the knife-cylinder, and said knives are curved and beveled upon their cutting-edges, so that the same will not only effectually cut the band of the grain sheaves, but will also act in the capacity of spreaders to assist in carrying the grain through the feeder. The ends of said cutter-bars are journaled in the heads of the cylinder H and are securely held therein by the encircling bands *i*², passing around the cylinder H at each end thereof.

Fastened to the ends of the cutter bars or rollers I are the adjusting-arms J, working over or upon the heads of the cylinder, and by being moved in either direction circumferentially with relation to the cutter-rollers and secured in any adjusted position to the cylinder-heads by means of the adjusting-pins *j*, passing through the moving ends of said arms and engaging one of the series of adjustment holes *j*¹, the cutting-knives can be set at any desired angle and so curved and set as to shed all grain and obviate the winding up of the grain around the cylinder. By being journaled in the sliding sleeve-bearings working in the side slots it will be readily seen that the cutter-cylinder readily adjusts itself to all sizes and thicknesses of the grain fed through the feeder-box.

In constructing the cutter-rollers I the same are preferably made in two sections and clamp

therebetween the quarter-twisted curved cutting-knives *i*.

Upon one end of the shaft G is keyed the pulley *g*, over which passes the connecting-belt *g'*, working over the belt-pulley *k*, carried by the drive-shaft K, journaled in bearings in the under sides of the feeder-box and carrying upon its opposite end the drive-pulley *k'*. The drive-pulley *k'* is caused to revolve by the main thrasher-driving belt *k*², passing from the engine to the cylinder-pulley *k*³. The belt *k*² is held firmly on the drive-pulley *k'* by means of the adjustable belt-tightener pulley *k*⁴, adjustably connected with the side of the thrasher or separator between the cylinder-pulley *k*³ and the drive-pulley *k'*, said belt-tightener pulley being mounted upon one end of the slotted adjusting-plate *k*⁵, thus providing for a convenient and novel connection between the cylinder-pulley and the drive-pulley of the feeder. Swinging knife-cylinders carrying and bearing arms L work upon opposite sides of the feeder-box and are provided with bifurcated ends *l*, engaging the drive-shaft K, while the opposite perforated ends of said arms take over and support the outer projecting ends of the shaft G, and thus steady the knife-cylinder in its up-and-down movement, and also always keep the belt driving said knife-cylinder tight, so that the same is always in gear and ready to revolve with the other parts of the machine when the same are thrown in gear. The end of the drive-shaft K, adjacent to the pulley *k* thereon, carries the cone speed-pulley M, over which passes the connecting-belt *m*, working over the adjacent and reversely-disposed speed-pulley *m'*, secured upon one end of the speeding-shaft N, also journaled in the bottom sides of the box and extending across the same. The said shaft N is provided adjacent to the cone-pulley thereon with the pinion *n*, meshing with the pinion *n'*, keyed upon the front apron-roller E, located at the delivering end of the feeder-box, and thus communicates motion to the carrier-belt at any speed desired or required, according to the position of the belt *m* upon the adjacent cone-pulleys, which provides for a regulation of the speed of the carrier. The opposite end of the shaft N upon the opposite side of the feeder-box carries the pulley *n*², driving the belt *n*³, passing over the pulley *n*⁴, carried upon one end of the top shaft O. The said shaft is journaled in suitable bearings and the top of the feeder-box and is provided upon the end opposite to the pulley *n*⁴ with the smaller speeding-pulley *o*, driving the belt *o'*, passing over the feeder-roller pulley *o*², keyed upon one end of the feeder-roller shaft P, said speeding-pulley being of such a size as to secure the desired speed for the feeder-roller, which is to run slightly slower than the feeding-apron. The ends of said feeder-roller shaft P work in sliding or movable bearing sleeves or boxes F, similar to those previously described, and also moving up and down in

curved bearing guide-slots Q, located at the extreme front ends of the opposite sides of the feeder-box. The shaft P carries a feeder-roller R, in the periphery of which is secured a series of feeding teeth or fingers *r*, which are bent rearwardly from the direction of the rotation of said cylinder and are so disposed as not to wind any straw or other substance going under it, and is thus always kept clean without a fender. As stated, this cylinder is at liberty to play up and down of its own accord to suit all kinds and thicknesses of grain and of its own weight to hold the grain down, while the teeth thereof are so disposed as to hold the grain until the thrashing-cylinder catches the same, and as said feeding-roller is speeded down to revolve with comparative slowness the grain is therefore held back, as stated, until released by the teeth passing beyond the apron. The feeding-roller is run at any rate of speed desired and is regulated by the cone-pulleys upon one side of the feeder-box, motion being communicated therefrom through the top shaft O to said adjustable roller.

Hinged to one of the sides B is the belt-tightener bar S, upon which is journaled a wide tightening-pulley *s* of a width corresponding to the width of the adjacent cone-pulleys between which the said belt-tightener is located. The outer end of the bar S, forming an operating-handle, is provided with a securing-bar *s'*, fastened thereto and adapted to engage the teeth of the ratchet-bar T, rigidly secured to the supporting rod or bar U, connected to the outer ends of the shafts K and N, respectively, upon which are keyed the opposite cone-pulleys, as stated. It may now be readily seen that by tightening the pulley *s* upon the top of the normally-loose cone-pulley belt *m'* that the various parts of the band-cutter and feeder are thrown into gear with each other, and that by releasing the same the machine may be stopped at will, while, as before noted, the cutter-cylinder may continue to rotate and be always ready to perform its work at the very moment the other parts of the machine are geared together, as just described.

The receiving end of the feeder-box is provided with the opposite detachable side boards V, adapted to confine the grain in being placed upon the receiving end of the carrying-belt, while when feeding sheaves of grain to the cutter and feeder a central partition-board W is supported between said side boards, in order to allow the sheaves to be fed on either side thereof. The said board W is secured to a suitable bracket X, supported above the top of the feeder-box, and is provided with a supporting-leg Y, resting upon the framework at the receiving end of said box.

It is thought that the construction, operation, and advantages of the herein-described band-cutter and feeder are apparent without further description, and at this point we would

lay especial stress upon the novel mode of gearing the machine to the thrasher, and that, also, in relation to the other parts of the machine we do not confine ourselves to the precise details of construction, but reserve the right to make such changes as are necessary without departing from the spirit of our invention.

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

1. In a band-cutter and feeder, the combination, with the feeder-box and the revolving cutter-cylinder, of a series of cutter or knife rollers journaled in opposite ends of said cylinder and carrying cutting-knives, means for turning said rollers in their bearings to adjust the knives, and operating mechanism, substantially as set forth.

2. The combination of the knife-cylinder having the opposite heads, knife or cutter rollers loosely mounted in said heads and provided with a series of curved cutting-knives, retaining-bands encircling opposite ends of the cylinder around said rollers, and adjusting-arms secured to the ends of said knife-rollers and circumferentially adjustable upon the opposite heads of said cylinder, substantially as set forth.

3. In a band-cutter and feeder, the combination of the feeder-box having opposite curved bearing and guide-slots at one end and at an intermediate point the revolving cutter-cylinder journaled in said slots and free to move in an arc therein, the main drive-shaft, swinging arms engaging over opposite ends of the drive-shaft and the opposite ends of the cylinder-shaft, a toothed feeder-roller journaled in the end slots and free to move therein, and suitable gearing connecting the cutter-cylinder and roller, so that the latter revolves slower than the former, substantially as set forth.

4. In a band-cutter and feeder, the combination, with the feeder-box and the knife-cylinder and feeder-roller journaled in said box, of the main drive-shaft K, journaled in said box, a speeding-shaft N, journaled in said box adjacent to said drive-shaft, reversely-arranged cone-pulleys keyed upon adjacent ends of said drive and speeding shafts, a belt connecting said pulleys, the top shaft O, a belt connecting the shafts N and O, and belting connecting the knife-cylinder with the drive-shaft and the feeder-roller with said top shaft, respectively, substantially as set forth.

5. In a band-cutter and feeder, the combination, with the feeder-box, the knife-cyl-

der, and feeder-roller, of the endless-apron rollers journaled at opposite ends of said box, one of said rollers carrying an operating-pinion n' , a main drive-shaft, a speeding-shaft adjacent to said drive-shaft N and provided with a pinion n , meshing with said roller-pinion, reversely-arranged cone-pulleys keyed upon adjacent ends of the speeding-shaft and drive-shaft, a normally-loose belt m , connecting said cone-pulleys, an adjustable belt-tightener arranged over said belt, the top shaft O, a belt connecting the shafts N and O, and belting connecting the knife-cylinder with the drive-shaft and the feeder-roller with said top shaft, respectively, substantially as set forth.

6. In a band-cutter and feeder, the combination, with the endless-apron feeder-box and the knife-cylinder and feeder-roller movably journaled in said box, of the main drive-shaft K, a speed-shaft N, adjacent to said drive-shaft, belting connecting the knife-cylinder with said drive-shaft, reversely-arranged cone-pulleys keyed upon adjacent ends of the drive-shaft and speed-shaft, a normally-loose belt m , connecting said cone-pulleys, a vertical ratchet-bar supported from the ends of said feeding and drive shafts and between the same, an adjustable hinged belt-tightener hinged to the side of the feeder-box and adjustably engaging said ratchet-bar and said normally-loose belt, the top shaft O, a belt connecting the shafts N and O, and belting connecting said top shaft with the feeder-roller, substantially as set forth.

7. In a band-cutter and feeder, the combination, with the endless-apron feeder-box and the knife-cylinder and feeder-roller movably journaled in said box, of the main drive-shaft, a speeding-shaft N, adjacent to said drive-shaft below said feeder-box, belting connecting the cylinder with said drive-shaft, reversely-arranged cone-pulleys keyed upon adjacent ends of the drive and speeding shafts, a belt connecting said pulleys, a supplemental top shaft O, journaled upon said feeder-box, and belting connecting the speeding-shaft with said top shaft and the latter with the feeder-roller, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

MONROE ELLIOTT JOHNSON.
AUSTIN M. PHILLIPS.

Witnesses:

H. B. SPARKS,
MART SOPHER.