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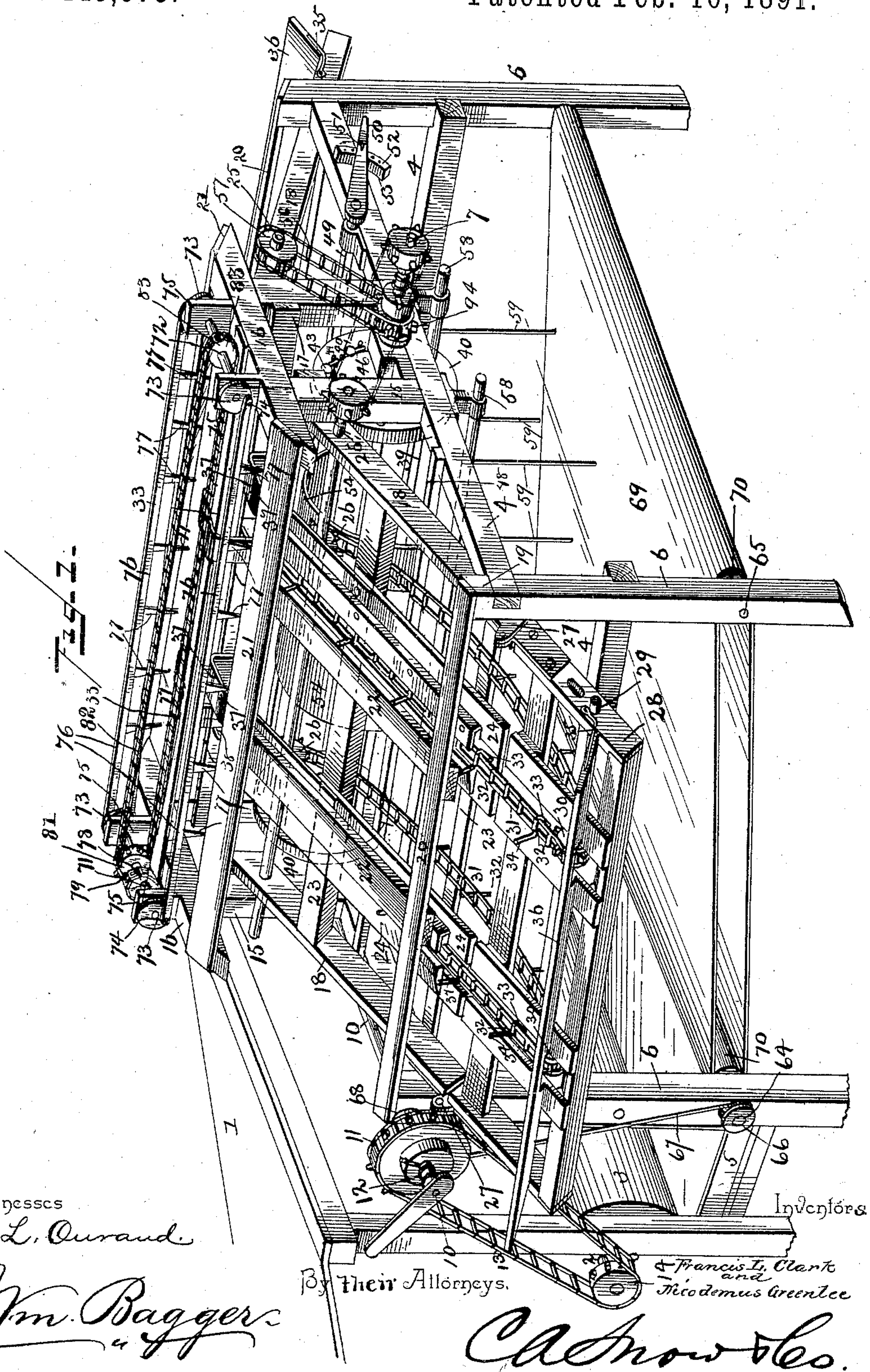
4 Sheets—Sheet 1.

F. L. CLARK & N. GREENLEE.

FEEDER AND BAND CUTTER.

No. 445,973.

Patented Feb. 10, 1891.



Witnesses

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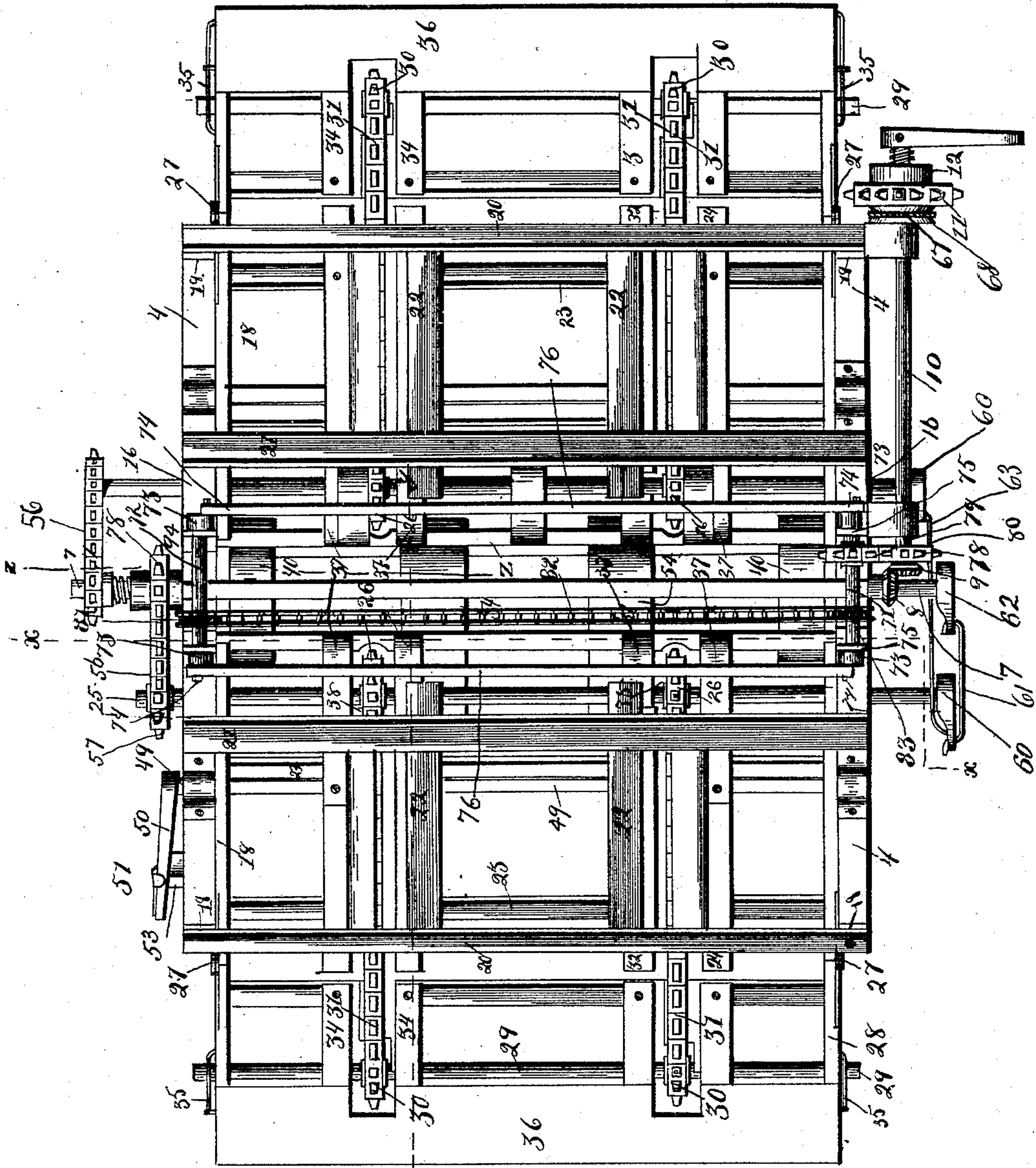
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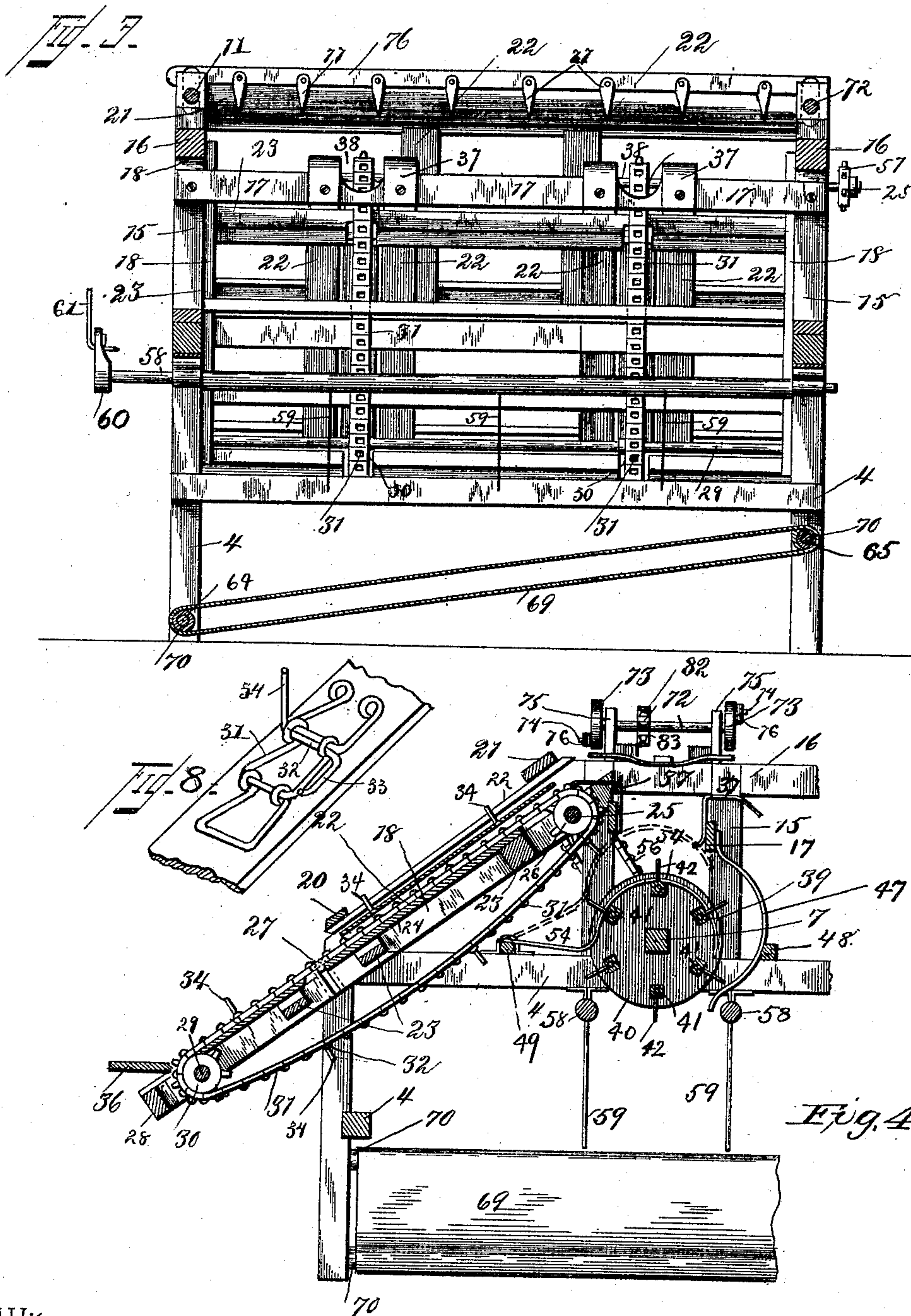
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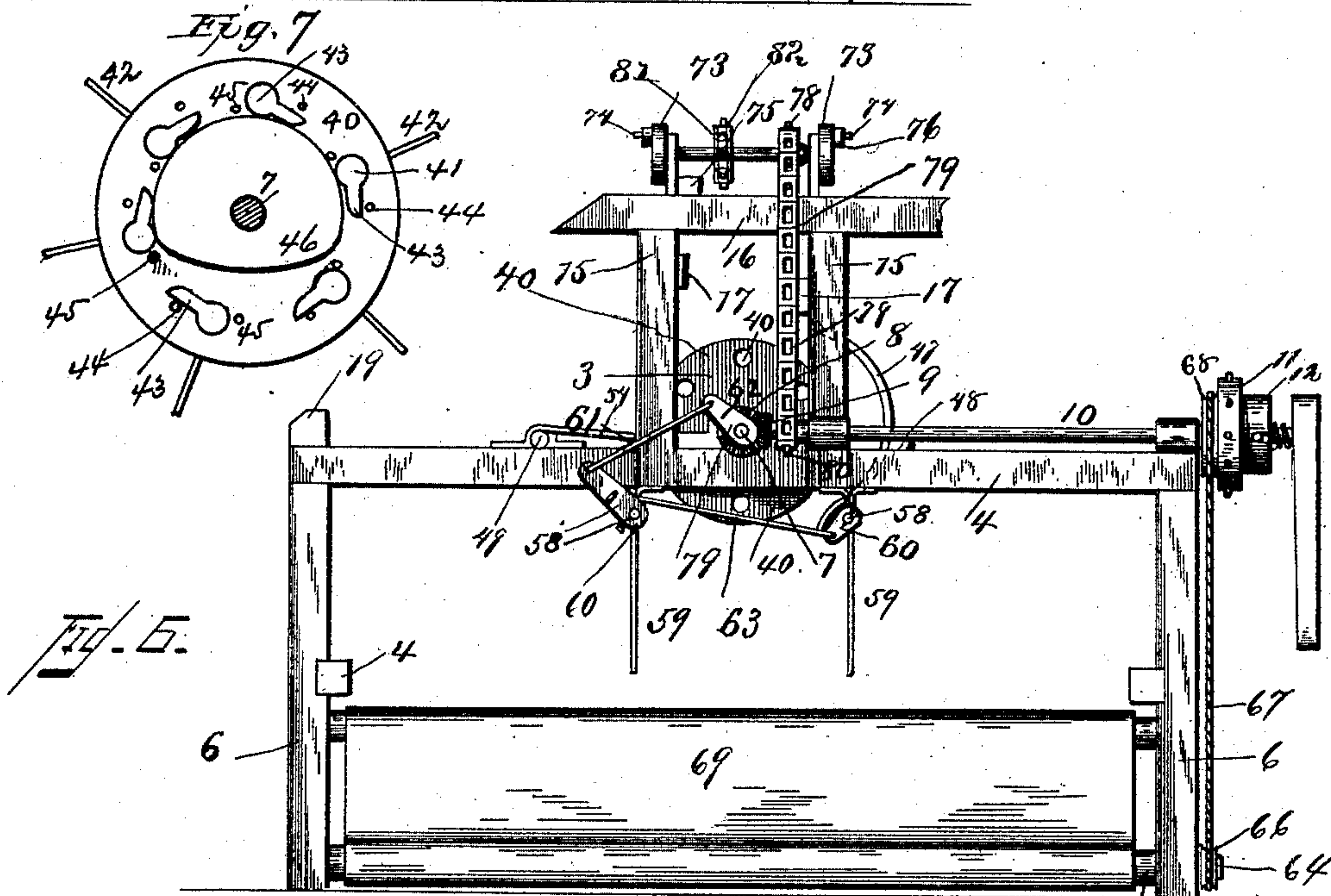
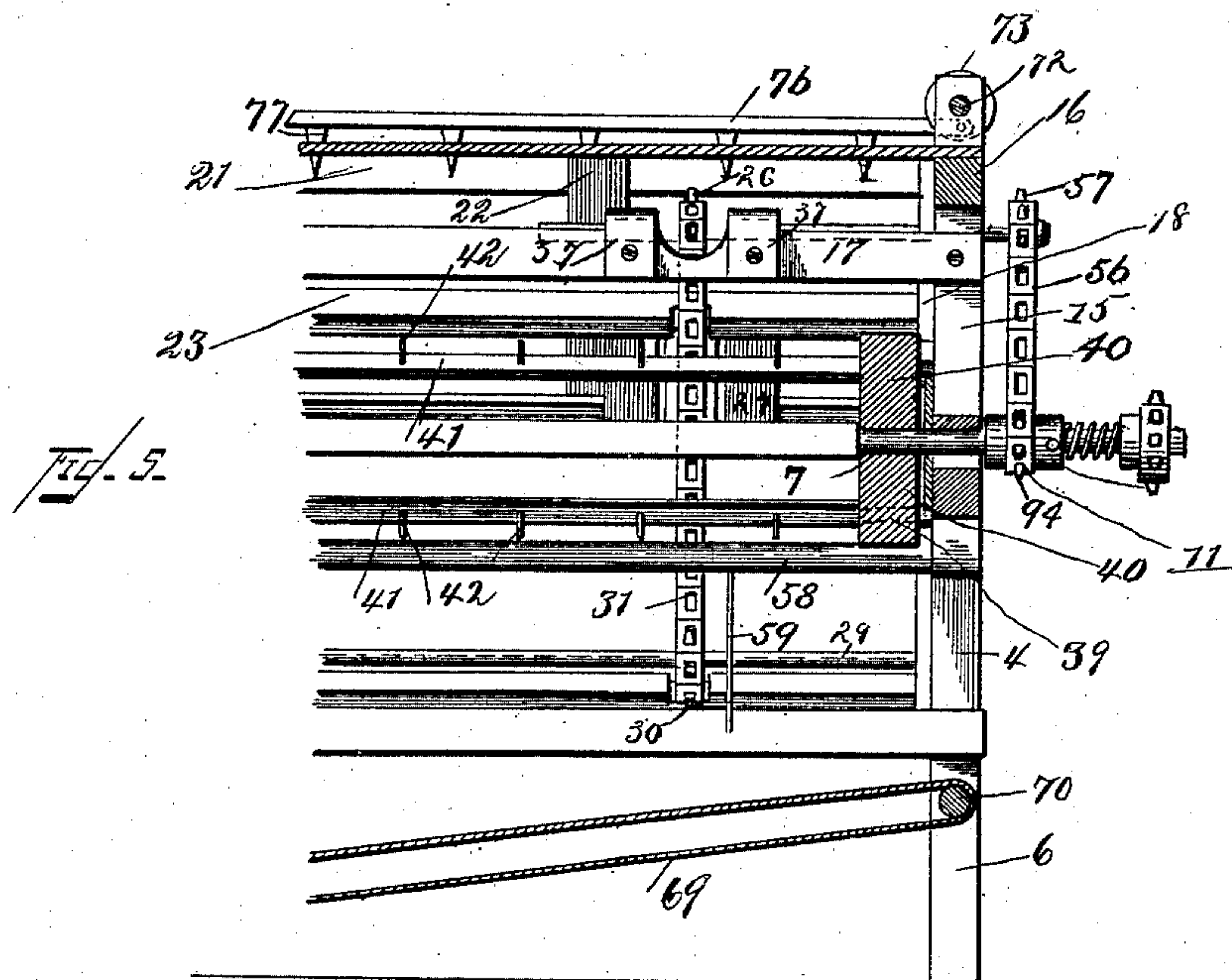
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UNITED STATES PATENT OFFICE.

FRANCIS L. CLARK AND NICODEMUS GREENLEE, OF LEE'S SUMMIT, MISSOURI.

FEEDER AND BAND-CUTTER.

SPECIFICATION forming part of Letters Patent No. 445,973, dated February 10, 1891.

Application filed January 31, 1890. Serial No. 338,706. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS L. CLARK and NICODEMUS GREENLEE, citizens of the United States, residing at Lee's Summit, in the county of Jackson and State of Missouri, have invented a new and useful Feeder and Band-Cutter, of which the following is a specification.

This invention relates to feeders and band-cutters for thrashing-machines; and it has for its object to construct a device of this class which shall be simple in construction, durable and efficient in operation, and which may be attached to a thrashing-machine as a part of said machine, or may be constructed upon an independent truck and adapted to be used in connection with any thrashing-machine of ordinary construction.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view showing our improved feeder and band-cutter attached to the front end of a thrashing-machine in position for operation. Fig. 2 is a top view of the same. Fig. 3 is a longitudinal sectional view taken on the line *x x* of Fig. 2. Fig. 4 is a vertical transverse sectional view taken on the line *y y* of Fig. 2. Fig. 5 is a vertical sectional view taken on the line *z z* of Fig. 2. Fig. 6 is an end view showing the feed-regulating mechanism. Fig. 7 is a detail view of the front end of the feeding-cylinder. Fig. 8 is a detail view of a portion of one of the endless carriers.

The same numerals of reference indicate like parts in all the figures of the drawings.

1 designates a part of the frame of a thrashing-machine to which our improved feeder and band-cutter is attached, and 2 is the main shaft of said machine, carrying the cylinder 3.

4 designates the frame of our improved feeder and band-cutter, which in this instance has been suitably connected with the arms or brackets 5, which usually support the feed-table of the thrashing-machine. Said frame 4 is provided with legs or supports 6, by means of which it may be supported upon the ground.

The frame 4 is provided at its front and

rear ends with bearings for a central longitudinal shaft 7, provided at its rear end with the pinion 8, meshing with the pinion 9 upon the inner end of a transverse shaft 10. The latter is provided at its outer end with a sprocket-wheel 11, connected to said shaft by means of a friction-clutch 12, and connected by means of a chain 13 with a sprocket-wheel 14 upon the beater-shaft 2 of the thrashing-machine. Motion is in this manner transmitted from the beater-shaft of the thrashing-machine to the main shaft 10 of the feeder and band-cutter, and it will be observed that in case the latter should become choked the friction-clutch 11 will slip upon its shaft and no breakage or injury will result to the machine.

The frame 4 is provided at its front and rear ends with uprights or standards 15, the upper ends of which are connected by cross-bars 16. The two pairs of uprights 15 are also connected near the upper ends by longitudinal bars or braces 17. The upper ends of the uprights or standards 15 are connected by inclined braces 18 with the outer ends of the frame 4, which latter is provided with upwardly-extending lugs 19, the upper ends of which are connected by longitudinal braces 20. Similar longitudinal braces 21 connect the outer ends of the cross-pieces 16 at the upper ends of the uprights 15. The longitudinal braces 20 and 21 are connected by means of inclined guards 22, which, together with the braces 20 and 21, serve to prevent the grain from falling back after it has been partially elevated by means of the mechanism to be hereinafter described.

The inclined braces 18 at the front and rear ends of the machine are connected by longitudinal bars 23, which serve to support the inclined tracks or guideways 24. Longitudinal shafts 25 have their bearings in the inclined braces 18, near the upper ends of the latter, and the said longitudinal shafts are provided with sprocket-wheels 26, which are suitably located to register with the upper ends of the guideways 24.

The outer sides of the braces 18 are provided with lugs or brackets 27, to which are hinged the tables or platforms 28, which are provided near their outer ends with bearings

for the longitudinal shafts 29, upon which sprocket-wheels 30 are mounted to register with the sprocket-wheels 26 upon the shafts 25. Endless chains 31, which constitute the 5 carriers, are mounted to run over the sprocket-wheels 30 and 26, and said chains are confined in the grooved guideways 24, which serve to hold the said chains in the proper position for operation. Mounted pivotally in the links 10 of said chain at suitable intervals are the transverse rock-shafts 32, which are provided at their inner ends with arms 33, adapted to engage the grooved guideways which serve to hold them in a level position, while the 15 outer ends of said rock-shafts are provided with fingers 34, adapted to extend upwardly and to engage the grain, which is thus carried in an upward direction over the inclined guide-ways 24 by the action of the endless 20 carriers. Of the latter any desired number may be employed, and they may be located at any desired distance apart.

The hinged tables 28 are provided near their outer ends with hinged arms or brackets 25 35, to which are attached the tables 36, which serve to receive the grain and to guide it onto the endless carriers. The tables 36, owing to their connection with the tables 28 by means of the hinged or pivoted arms or brackets 35, 30 may when not in use be swung or folded over upon said tables 28.

The longitudinal braces 17 on opposite sides of the machine are connected by means of metallic shields 37 with the upper ends of the 35 inclined guideways 24, said shields being slotted, as shown at 38, to afford room for the endless carriers to work in.

The longitudinal shaft 7, which is mounted centrally upon the main frame 4, carries the 40 skeleton cylinder 39, which is composed of the heads or ends 40, in which are journaled a series of longitudinal rock-shafts 41, having outwardly-extending teeth 42. The ends of the rock-shafts 41 extend beyond one of the 45 heads 40, and are provided with short crank-arms 43, which are confined in operative position by means of suitably-arranged pins 44 and 45, which are located on opposite sides of the said cranks. The latter in operation are 50 adapted to bear against a suitably-arranged cam-plate 46, which is attached permanently to one end of the frame 4. By this means the rock-shafts are maintained in such positions that their fingers 42 shall extend rigidly 55 in an outward direction from the cylinder during the upper half of the rotary movement, while during the lower half of the rotary movement the said rock-shafts are free to oscillate in their bearings. It will thus be 60 seen that while the teeth extending from the said rock-shafts will engage the grain which is fed to the cylinder from the inclined endless carriers with certainty there will be no danger of the grain being carried entirely 65 around with the cylinder, because the said toothed rock-shafts will be free to vibrate during the lower half of the rotary movement of

the cylinder, and the grain will thus be discharged from said cylinder upon the endless feeding-apron, which will be presently more 70 fully described.

One of the longitudinal braces 17 is connected by means of curved straps or shields 47 with a longitudinal brace or bar 48, said shields serving to hold the grain in contact 75 with the feeding-cylinder during the operation of the device.

Upon the frame 4 on the side of the feeding-cylinder opposite to the longitudinal bar or brace 48 is mounted a rock-shaft 49, provided at its front end with an operating lever 80 or handle 50, having a pivoted catch 51, adapted to engage any one of a series of perforations 52 in a segment-bar 53, which is suitably attached to the frame 4. The rock- 85 shaft 49 is provided with a series of curved arms 54, which are about concentric with the feeding-cylinder. It will be seen that by operating the rock-shaft 49 the curved arms or guards 54 may be moved in an upward di- 90 rection and into contact with the under sides of the longitudinal braces 17, as will be seen in dotted lines in Fig. 4 of the drawings. The feed will thus be temporarily cut off, inas- 95 much as grain will be prevented from passing between the said braces 17 and into engagement with the feeding-cylinder. It will be observed that by this mechanism the feed may not only be cut off but may be very ac- 100 curately regulated by adjusting the curved arms or shields at any desired distance below the under edges of the longitudinal braces 17, thereby regulating the quantity of grain which shall be carried forward by the action 105 of the said cylinder.

Motion is imparted from the shaft 7 of the feeding-cylinder to the shafts 25 of the end- 110 less carriers by means of sprocket-wheels 94, mounted upon the shaft 7, and held upon the latter by means of friction-clutches 55. Chains 56 connect the sprocket-wheels 94 115 with sprocket-wheels 57 upon the front ends of the shaft 25. It will be observed that in case the endless carriers should become choked the sprocket-wheels 94 will slip upon 120 the shaft 7, and danger of breakage will thus be avoided.

Suitably mounted in bearings at the front and rear ends of the frame 4, below the shaft 7 and on opposite sides of the latter, are the 125 rock-shafts 58, which are provided with downwardly-extending arms or distributors 59. The ends of the rock-shafts 58 next to the thrashing-machine are provided with crank-arms 60, one of which is connected by means 130 of the pivoted rod or pitman 61 with a crank-arm 62, extending from the rear end of the cylinder-shaft 7. A rod or pitman 63 also connects the two crank-arms 60. By this mechanism an oscillating motion will in op- 135 eration be imparted to the rock-shafts or distributors 58.

The lower part of the frame 4 is provided with bearings for a pair of transverse shafts

64 and 65, the rear one of which 64 has a band-wheel 66, which is connected by a twisted belt 67 with a band-wheel 68 upon the shaft 10. An endless carrier or apron 69, of ordinary construction, is mounted to run upon rollers 70, mounted upon the shafts 64 and 65.

The cross-bars 16, connecting the upper ends of the uprights 15 rising from the frame 4, are provided with lugs or brackets 75, forming bearings for the short transverse shafts 71 and 72, the ends of each of which are provided with wheels 73, having wrist-pins 74. The wrist-pins of the wheels upon the front and rear shafts 71 and 72 are connected by means of rods or pitmen 76. The rods or pitmen 76 are provided with downwardly-extending knives or cutters 77, which serve to sever the bands of the bundles of grain as the latter are carried under the said cutters. The rear shaft 71 has a sprocket-wheel 78, which is connected by a chain 79 with the sprocket-wheel 80 upon the inner end of the driving-shaft 10, from which motion is thus imparted to the band-cutting mechanism. A sprocket-wheel 81 upon the shaft 71 is also connected by a chain 82 with a sprocket-wheel 83 of equal size upon the shaft 72, to which motion is in this manner imparted.

The bundles of grain are delivered upon the hinged tables 36 at the outer ends of the hinged tables or platforms 28, and are guided by the said hinged tables onto the endless carriers, whereby the said bundles are carried upwardly upon the inclined guideways 24. Each bundle, when it reaches the slotted straps 37, which connect the upper ends of the inclined guideways 24 with the longitudinal braces 17, remains supported upon the said slotted straps while it is being subjected to the action of the band-cutting devices and until it is pushed off the said straps by the action of the next bundle which takes its place. The loose grain will drop between the braces 17 into the feeding-cylinder, whereby it is carried in a downward direction and dropped upon the endless carrier 69, which carries the loose grain to the cylinder of the thrashing-machine, the loose grain being evenly distributed upon the said endless carrier by the action of the oscillating distributors 58, having the arms 59.

We have herein shown and described what we consider to be the preferred form of our improved feeder and band-cutter; but we desire it to be understood that we reserve the right to any changes and modifications in the construction of the same which may be resorted to without departing from the spirit of our invention.

Having described our invention, what we claim is—

1. The combination of an endless carrier adapted to convey the grain to the cylinder of a thrashing-machine, a feeding-cylinder provided with teeth arranged longitudinally above said endless carrier, and inclined end-

less carriers arranged on opposite sides of the central longitudinal feeding-cylinder and adapted to elevate the grain and deliver it to the upper side of said feeding-cylinder, substantially as set forth.

2. The combination of an endless carrier adapted to deliver the grain to the cylinder of a thrashing-machine, a feeding-cylinder provided with teeth arranged longitudinally above said endless carrier, the inclined endless carriers arranged on opposite sides of said feeding-cylinder, and the oscillating distributors arranged parallel to and below the said feeding-cylinder, substantially as set forth.

3. The combination of an endless carrier adapted to convey the grain to the cylinder of a thrashing-machine, a feeding-cylinder provided with teeth arranged longitudinally above said endless carrier, inclined endless carriers arranged to convey the grain to said feeding-cylinder, and mechanism to regulate the supply of grain from said inclined carriers to said feeding-cylinder, substantially as set forth.

4. The combination of the feeding-cylinder provided with teeth, the inclined endless carriers, and a rock-shaft having a series of curved arms about concentric with the said feeding-cylinder and adapted to regulate and to cut off the supply of grain from said inclined carriers to said feeding-cylinder, substantially as set forth.

5. The feeding-cylinder comprising the heads or ends mounted upon a suitable shaft, the rock-shafts mounted in said heads and having outwardly-extending teeth, and the cranks upon the projecting ends of said rock-shafts, in combination with the pins arranged on opposite sides of said cranks, and the camplate at the ends of the frame of the machine to be engaged by said cranks, substantially as and for the purpose set forth.

6. The combination of the feeding-cylinder provided with teeth, the inclined endless carrier delivering from above said cylinder, the longitudinal braces arranged above said feeding-cylinder, the slotted shields connecting said braces with the upper ends of the inclined guideways of the endless carriers, and the shields connecting one of said longitudinal braces with a longitudinal frame-bar to hold the grain which is being operated upon in contact with the feeding-cylinder, substantially as and for the purpose set forth.

7. The combination, with the feeding-cylinder having the vibrating rock-shafts provided with outwardly-extending teeth, of the inclined endless carriers, the longitudinal braces arranged above the feeding-cylinder, the slotted shields connecting said braces with the upper ends of the inclined guideways of the endless carriers, the curved shields to hold the grain which is being operated upon in contact with the feeding-cylinder, and the rock-shaft arranged parallel to the latter and having curved arms to regulate and cut off

the supply of grain from the inclined carriers to the feeding-cylinder, substantially as and for the purpose set forth.

8. The combination, with the frame, of the longitudinally-arranged feeding-cylinder provided with teeth, the inclined guideways, the platforms hinged at the outer sides of the frame, the inclined endless carriers delivering from above upon said cylinder, mounted to run upon shafts journaled, respectively, in the hinged platforms and at the upper ends of the inclined guideways, grooved tracks upon the said inclined guideways to engage the chains of the inclined carriers, and the folding tables at the outer ends of the hinged platforms, substantially as and for the purpose set forth.

9. The combination of the frame having the longitudinal braces, the inclined endless carriers, the slotted shields connecting the upper ends of the guideways of said carriers with the longitudinal braces and adapted to support the bundles of the grain elevated by said endless carriers, and the rods arranged to reciprocate above the said longitudinal braces, and having the downwardly-extending knives or band-cutters, substantially as herein set forth.

10. The combination of the endless carrier to convey the grain to the cylinder of the thrashing-machine, the feeding-cylinder provided with teeth and arranged longitudinally above the said endless carrier, the inclined endless carriers adapted to elevate the grain and to deposit it upon the upper side of the

feeding-cylinder, and suitable operating mechanism consisting, essentially, of the band-wheels or sprocket-wheels mounted upon the driving-shafts and connected with said driving-shafts by means of friction-clutches, substantially as and for the purpose herein set forth.

11. In a feeder and band-cutter for thrashing-machines, the combination, with the frame, of an endless carrier adapted to convey the grain to the cylinder of the thrashing-machine, a feeding-cylinder arranged longitudinally above said endless carrier and having rock-shafts provided with outwardly-extending teeth, the oscillating rock-shafts having the downwardly-extending arms or distributors, a rock-shaft having curved arms or shields to regulate the supply of grain to the feeding-cylinder, the platforms hinged to the sides of the frame and having the folding tables, the inclined endless carriers adapted to convey the grain to the feeding-cylinder, the reciprocating or vibratory arms or rods having the downwardly-extending band-cutting knives, and suitable operating mechanism, all constructed and arranged substantially as and for the purpose herein shown and specified.

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

FRANCIS L. CLARK.
NICODEMUS GREENLEE.

Witnesses:

GEO. N. LONGFELLOW,
JOHN BOGGS.