No. 834,195. PATENTED OCT. 23, 1906.

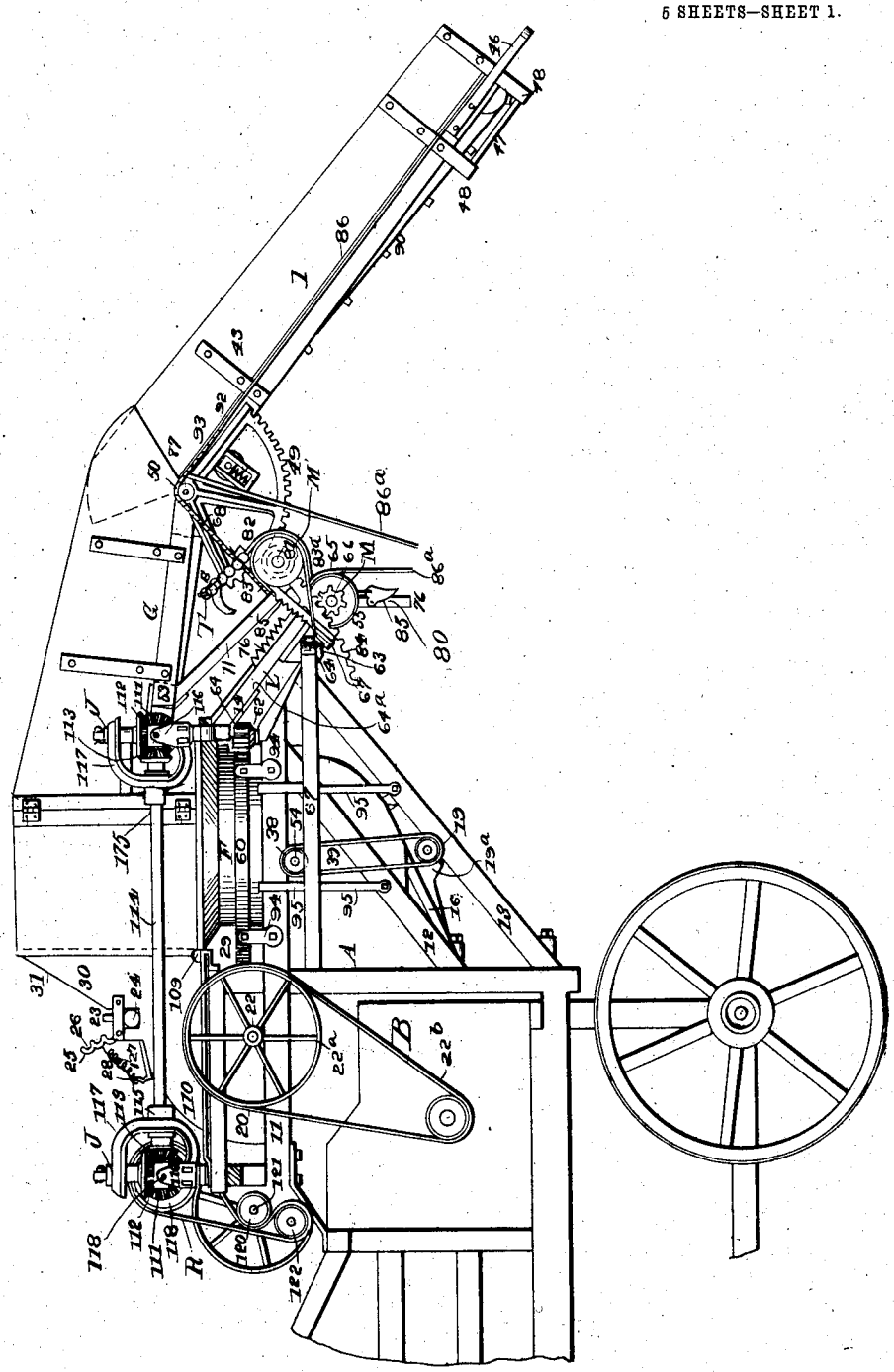
T. L. CUMMINGS.

BAND CUTTER AND FEEDER FOR THRESHING MACHINES.

APPLICATION FILED MAY 28, 1904.

5 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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5 SHEETS—SHEET 2.

Fig. 2

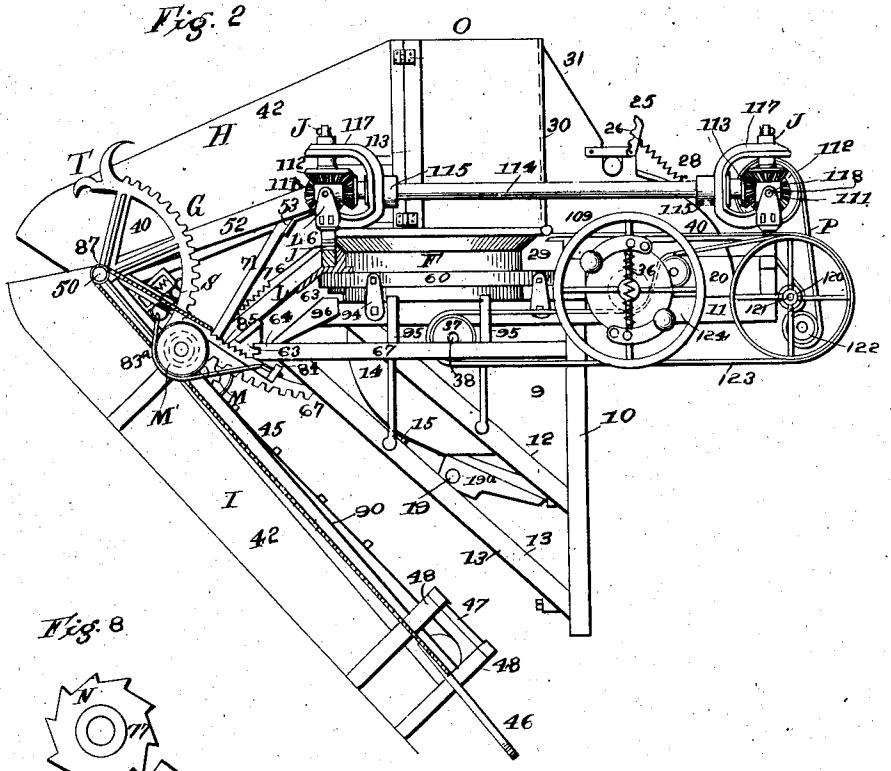


Fig. 8

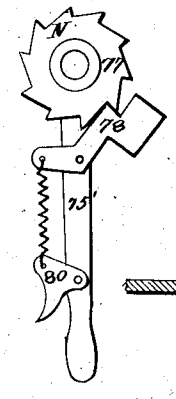


Fig. 6



Fig. 7



Fig. 5

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5 SHEETS—SHEET 3.

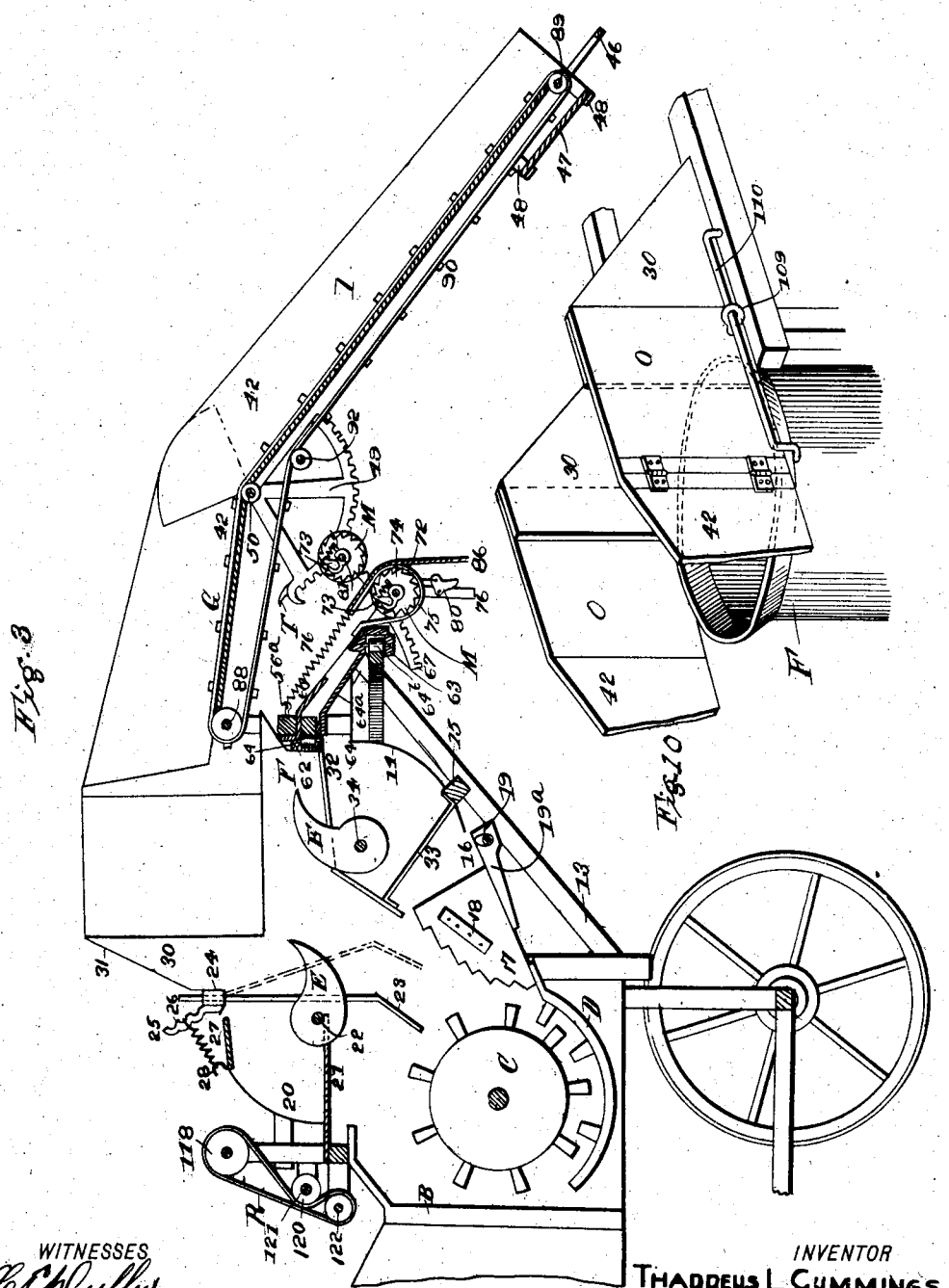


Fig. 3

Fig. 10

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APPLICATION FILED MAY 28, 1904.

5 SHEETS—SHEET 4.

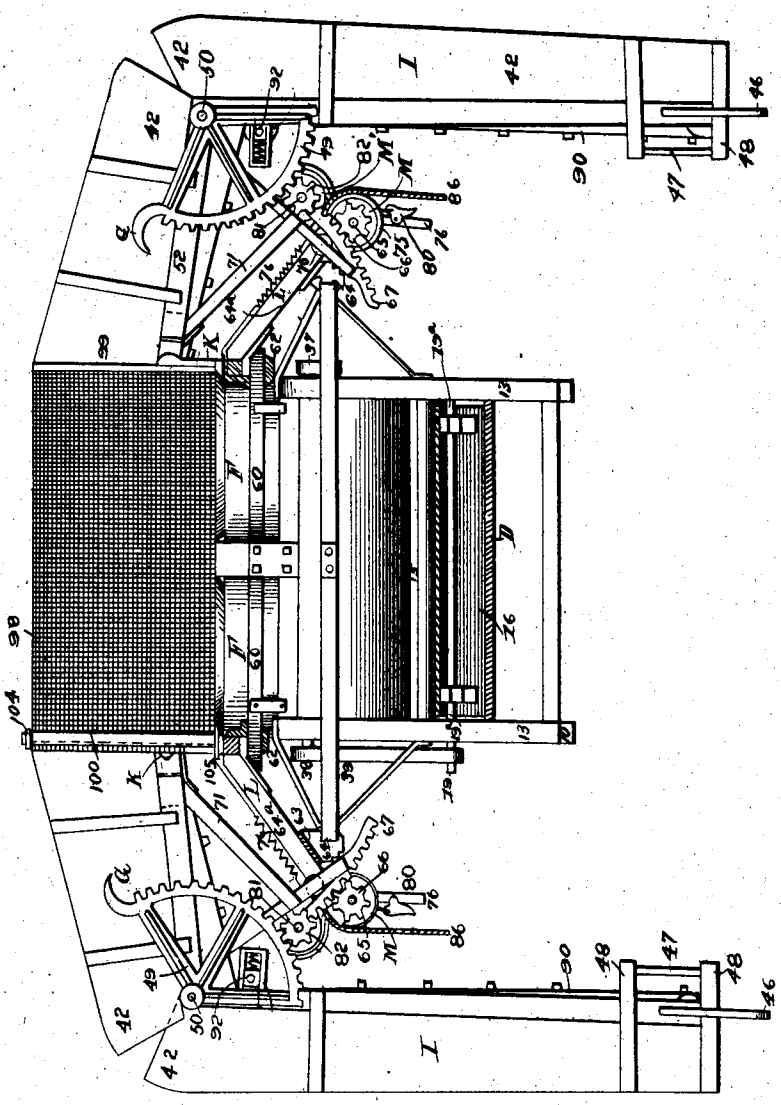


Fig. 4.

WITNESSES.

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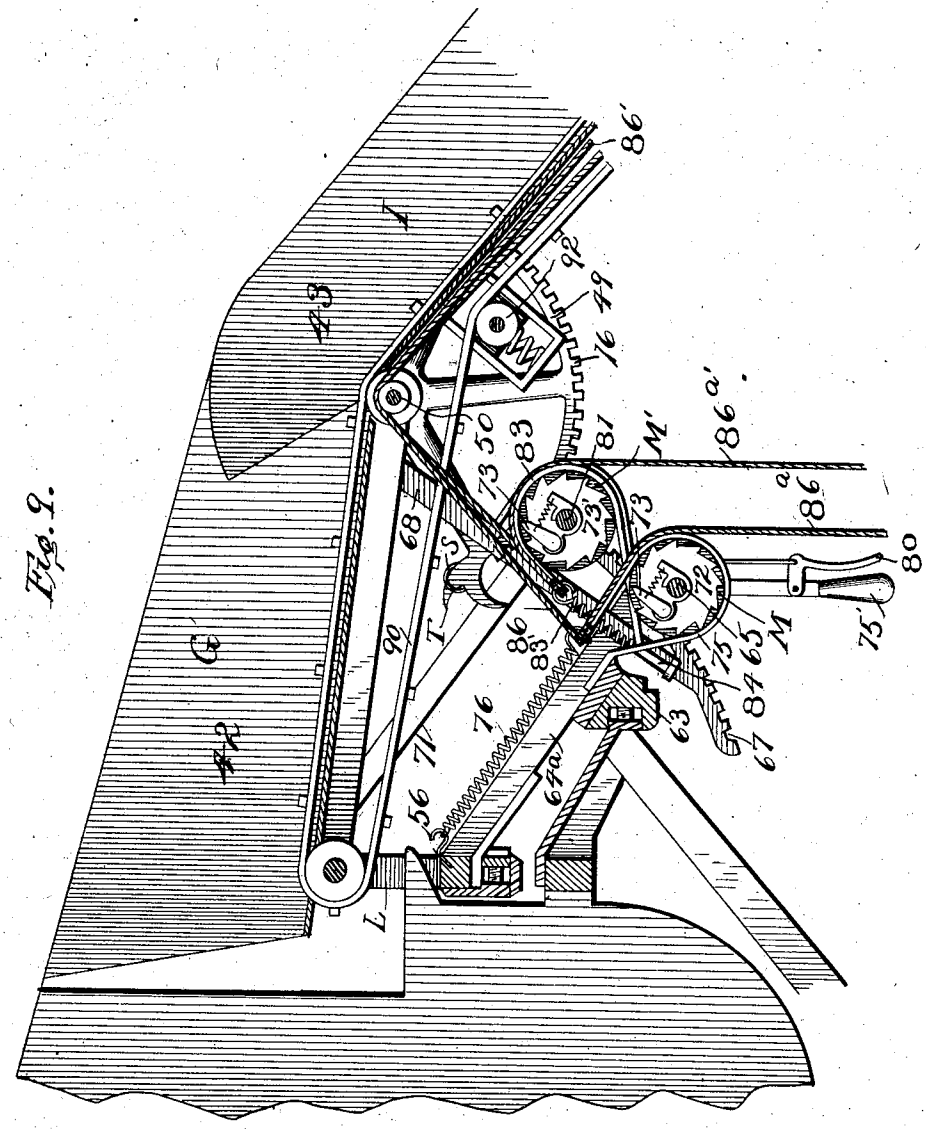
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BAND CUTTER AND FEEDER FOR THRESHING MACHINES.

APPLICATION FILED MAY 28, 1904.

5 SHEETS—SHEET 5.

Fig. 9.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THADDEUS L. CUMMINGS, OF SPENCER, IOWA.

BAND-CUTTER AND FEEDER FOR THRESHING-MACHINES.

No. 834,195. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed May 28, 1904. Serial No. 210,299.

To all whom it may concern:

Be it known that I, THADDEUS L. CUMMINGS, a citizen of the United States, residing at Spencer, in the county of Clay and State of Iowa, have invented a new and Improved Band-Cutter and Feeder for Threshing-Machines, of which the following is a full, clear, and exact description.

My invention is an improvement in band-cutters and feeders for threshing-machines; and it consists in certain novel constructions and combinations of parts hereinafter described and claimed.

Referring to the drawings forming a part hereof, Figure 1 is a side view of my invention with the aprons elevated. Fig. 2 is a side view with the apron folded. Fig. 3 is a longitudinal section. Fig. 4 is a front view of my device. Fig. 5 is a transverse section of the attachment of the apron to the frame. Figs. 6 and 7 are details of the bearings of the drive-shaft. Fig. 8 is a detail of the hand-lever and pawl. Fig. 9 is an enlarged detail of the apron-elevating mechanism, and Fig. 10 is a perspective view of the upper end of the hopper and closing-plates.

In the practical embodiment of my invention I provide a T-shaped framework A, comprising the upright pieces 10, the longitudinal pieces 11, the cross-pieces 15, and the braces 12 and 13. A circular track 61 is supported in the framework below the longitudinal pieces 11, and above the longitudinal pieces a second circular track 60 is supported by the uprights 94, secured to the longitudinal pieces 11.

My invention provides means for feeding bundles from either or both sides of the machine, comprising two feed-aprons revolubly mounted upon a trackway and adapted to be swung to the front or the sides of the machine. As the construction of each apron is the same, I will describe but one, it being understood that the description is clearly applicable to both.

The frames L, comprising the upright pieces 57 58 and the cross-pieces 56 59, are supported by the upper track 60 and are retained thereon by wheels 64, journaled in brackets 62, depending within the circular track. A bracket 64^a passes outwardly and downwardly from the framework L and engages the outer side of the lower track, with wheels 64^b journaled in the casting 63 on the lower end of the bracket 64^a. Brackets J K, as shown in Fig. 5, are secured to the cross-piece 56 of the frame L and are provided with bearings in their free ends, supporting a cross-shaft 88, provided at one end with a bevel-gear 116, for a purpose to be hereinafter described. A jointed feed-apron, comprising inner and outer sections G and I, is movably journaled upon the shaft 88 and is provided with grain-boards 42 on either side. A shaft 50 is journaled in the outer end of the inner section, and loosely mounted thereon is the outer section I, also provided with grain-boards 42 on either side and having journaled in its outer end a cross-shaft 89 for supporting an endless carrier 90 of ordinary construction and arranged to travel inwardly over rollers on the shafts 50 and 89. A tension-roller 92, mounted below the outer section, is provided for tensioning the carrier.

A shaft 65, journaled in bearings on the depending brackets 64^a, is provided at either end with pinions 66 for engaging a depending gear-segment 67, supported by brackets 68 and 71 from the inner section of the apron, and has loosely mounted thereon within the pinions a friction-disk M, having internal ratchet-teeth 72, adapted to be engaged by a pawl 73, rigid with the shaft. A ratchet-wheel 77, rigidly secured to the shaft, is adapted to be engaged by a pawl 78, pivoted on a lever 75′, loosely mounted on the shaft and having thereon a grip 80, yieldingly connected with the pawl to actuate the same.

By means of the hand-grip and ratchet-wheel 77 the shaft 65 may be rotated, thus moving upward the gear-segment 67 and elevating the inner section of the apron. A band 75, secured at one end to the depending bracket 64^a, passes around the friction-disk and is connected, by means of a spring 76, with a hook 56^a on the framework L. A rope 86, secured to the outer end of the spring, passes over a pulley on the shaft 50 and to the outer end of the outer section, while a second rope 86^a, also secured to the spring, passes backward over the friction-disk and to the ground, thus providing a means for relaxing the pressure on the disk either from the wagon or from the ground.

A shaft 81, journaled in brackets 68 71, is provided with pinions on its outer end for engaging a segment-gear 49, rigid with the shaft 50 and with the outer section of the apron. The friction-disk M′ is loosely mounted on the shaft and is provided with internal ratchet-teeth adapted to be engaged

by a pawl 73′, rigid with the shaft 81. A belt 83, secured at 84 to the framework, passes around the friction-disk M′ and engages a spring 83′, also secured at 84 to the framework, and a chain S, attached to the belt 83, is adapted to engage a hook T on the gear-segment 49 when it is desired to prevent the shaft 81 from turning. The band 83 is provided with ropes 86′ and 86ᵃ′, arranged in all respects similar to the ropes 86 and 86ᵃ, for relaxing the tension on the band when it is desired to elevate the apron.

On the outer end of the outer section are provided handles 46 for elevating and depressing the same, and to prevent interference with the movement of the endless carrier a support for the end of the apron is provided, comprising the depending pieces 48, having secured thereto the cross-pieces 47.

A circular hopper F is supported within the upper track 60 by means of uprights 95, secured to the braces 12 and 13. A shaft 38 is journaled below the hopper upon the lower track and is provided with the cutters E, rigidly secured thereto. A pulley 54 on the shaft 38 is adapted to impart motion by means of a belt 39 to a pulley 19, journaled on the braces 13 and having eccentric portions thereon. A grain-board 16, having sides 17 and a dividing-board 18, is mounted on the eccentric portions of the shaft 19 and rests with its lower edge on the concave D. Guard-fingers 32 are secured to the front of the hopper and extend rearwardly between the cutters E on the shaft 34 and are supported at their lower ends by brackets 33, secured to the cross-pieces 15.

A downwardly-extending hood 20 is secured to the upper rear portion of the frame A, and the shield 21 closes the bottom portion of the hood. A shaft 22 is journaled in the framework adjacent to the hood and is provided with a series of cutters E′, similar in all respects to the cutters E and rotating between the guard-fingers 23, depending from the bar 24, journaled in the framework.

A bracket 25, having notches 26, extends upward from the bar 24 and is normally held retracted by a spring 27 engaging therewith and secured to the hook 28 on the hood. The outer end of the shaft 22 is provided with a hand-wheel 22ᵃ, adapted to be actuated by a band 22ᵇ from the shaft of the cylinder C.

A friction-governor 36 is arranged on the opposite end of the shaft 22 and imparts motion to the shafts 120 and 38 by means of a belt 123 passing over an idler 124 and around the pulleys 121 and 37 on the shafts 120 and 38, as shown in Fig. 2. Since the governor 36 forms no part of my present invention, but is described and claimed in my pending application of Serial No. 210,298, filed May 28, 1904, I have not deemed it necessary to further describe it.

A plate 30 closes the ends of the frame, as shown in Fig. 3, and is provided with an extension reaching to the level of the grain-board on the inner section of the apron. The cross-piece 31 connects the opening between the sides above the hood. A door O is hinged to the rear end of the outer grain-board on the inner section and is provided with a ring 109 at its lower rear corner for sliding on a rod 110, secured to the framework, and to approximately the center of the sides of the hopper. When the aprons are swung outwardly, the door may move forward along the rod to the full extent thereof, thus providing a closure for the space which would otherwise be left open. A curtain 98 is secured to the inner grain-board of the inner section of the apron at one end, at 99, and passes across the opening between the aprons to the rod 104, journaled in bearings 105 on the bracket 101, secured by plates 102 103 to the framework L and the bracket K. The rod 104 is spring-actuated to wind up the curtain in the same manner as in an ordinary window-shade.

A shaft 88, as before stated, is journaled in ball-bearings in the brackets J K on the cross-pieces of the frame L and is provided with a bevel-gear 116 on its outer end meshing with the bevel-gear 111 on the stud-shaft H, mounted in a bearing in an extension of the bracket J and meshing in turn with the bevel-gear 113 on the shaft 114, journaled in a sleeve 115 in a bracket 117, having an opening to receive the bearing of the stud-shaft J and provided with an extension on its lower part for engaging a pin on the extension from the bearing J.

It will be evident from the description that the framework L is capable of angular motion with respect to the shaft 114 without disturbing the arrangement of the bevel-gears. The shaft 114 extends rearwardly and derives motion from a cross-shaft 118 through a mechanism similar in all respects to that just described. The cross-shaft 118 is provided with a band-wheel 118′, receiving motion through a band R on a second band-wheel 120 on a cross-shaft 121, driven through the belt 123 before described from the shaft of the cylinder C, the said band R being tensioned by the pulley 122, suitably journaled in the thresher-frame.

In operation the framework is secured upon the machine and the feed-aprons are turned to the proper angle to each other. The aprons are elevated to a suitable height by means of the hand-lever 76 or from the wagon by means of the handle 46. The parts are retained in their elevated position by friction-bands, and should it be desired to lower the same it is only necessary to draw on the ropes 86 and 86ᵃ to release the band, when the parts may be depressed. Bundles thrown upon the carrier are carried inwardly

and fall into the hopper. The revolving knives cut the band and thoroughly separate and mix the grain.

It will be evident that among the advantages obtained by the use of my machine may be mentioned adjustability and convenience of transportation. Danger of choking the machine is minimized by my construction.

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

1. In a band-cutter and feeder for threshing-machines the combination of the frame, a circular track supported in the frame, a second circular track supported on the frame above and within the first-named track, a hopper supported within the upper track, a shaft supported on the lower track, knives rigid with the shaft and projecting into the hopper, fixed guard-fingers below the hopper and between the knives, a shaft journaled behind the hopper, knives rigid with the shaft, yielding guard-fingers behind the hopper and between the knives, means for actuating the knives, a shaft journaled in the framework below the track and provided with eccentric portions, a grain-board journaled on the eccentric portions, a plurality of frames supported in the tracks and provided with wheels for engaging the same, a shaft journaled in the upper part of the frame, a feed-apron comprising inner and outer sections movably mounted on the shaft, gear-segments projecting from the inner sections of the apron, a shaft journaled in the free end of the inner section, the outer section being journaled thereon, gear-segments rigid with the shaft and attached to the apron, hooks on the segments, an endless carrier supported on the shaft, the shaft between the sections and the shaft at the inner end of the inner section, means for actuating the last-named shaft, a second shaft journaled in the brackets on the frame below the apron-supporting shaft, pinions on the ends of the shaft for engaging the segments of the inner sections, a friction-wheel loosely mounted on the shaft and provided with internally-arranged ratchet-teeth, a pawl on the shaft for engaging the teeth, an elastic band secured to the shaft and secured at either end to the frame, a rope secured to and depending from the disk, a second rope secured to the band and extending to the outer end of the outer section, a second ratchet-wheel rigid with the shaft, a lever mounted on the shaft, a pawl on the lever for engaging the ratchet-teeth to actuate the shaft, brackets depending from the inner section, a shaft journaled in the brackets, and provided at either end with pinions for engaging the segments on the outer section, a friction-disk loosely mounted on the shaft and provided with internally-arranged ratchet-teeth, a pawl on the shaft for engaging the teeth, an elastic band surrounding the disk and secured at either end to the depending brackets, a chain connecting with the band for engaging the hook on the segments, a rope secured to the band and depending from the disk, and a second rope secured to the band and extending to the end of the outer section.

2. In a band-cutter and feeder for threshing-machines the combination of the frame, a circular track supported on the frame, a second circular track supported on the frame above and within the first-named track, a hopper supported within the upper track, a shaft supported on the lower track, knives rigid with the shaft and projecting into the hopper, fixed guard-fingers below the hopper and between the knives, a shaft journaled behind the hopper, knives rigid with the shaft, yielding guard-fingers behind the hopper and between the knives, means for actuating the knife-bearing shafts, a vibrating grain-board journaled in the frame below the lower track, means for vibrating the grain-board, a plurality of frames supported on the tracks and provided with wheels for engaging the same, a shaft journaled on the upper part of the frame, a feed-apron comprising inner and outer sections movably mounted on the shaft, gear-segments projecting from the inner section, a shaft journaled in the free end of the inner section, the outer section being journaled thereon, gear-segments rigid with the shaft and attached to the outer section, a shaft journaled in the free end of the outer section, an endless carrier supported on the shaft, the shaft between the sections, and the shaft at the inner end of the inner section, means for actuating the last-named shaft, means engaging the segments on the inner section to elevate and depress the same, means for actuating said means, means for maintaining the elevating means in adjusted position, means for releasing the said retaining means, means whereby the outer section may be elevated and depressed, means engaging the segments of the outer sections and for retaining the section in its adjusted position, and means for releasing said retaining means.

3. In a band-cutter and feeder for threshing-machines, the combination with the framework, of feed-aprons comprising inner and outer sections and movably mounted upon the framework, gear-segments on the inner sections, pinions engaging the segments, means whereby to rotate the pinions to elevate the inner sections, gear-segments on the outer sections, pinions engaging the segments, means whereby to rotate the pinions, friction devices connected with each of the pinions for maintaining the sections in their adjusted position, and means for releasing said friction devices.

4. In a band-cutter and feeder for threshing-machines, the combination with the

framework, of feed-aprons comprising inner and outer sections, and movably mounted upon the framework, gear-segments upon each of the inner sections, pinions engaging the segments, pawl-and-ratchet mechanism for rotating the pinions to elevate the segments, and a releasable friction device for maintaining the sections in their elevated position.

5. In a band-cutter and feeder for threshing-machines, the combination with the framework, of feed-aprons comprising inner and outer sections, and movably mounted upon the framework, gear-segments mounted upon the inner and outer sections, pinions engaging the segments, a pawl-and-ratchet mechanism for rotating the pinions of the inner gear-segments, to elevate the inner sections, manual means for elevating the outer sections, and releasable friction devices connected with all of the pinions for maintaining the feed-aprons in their adjusted position.

6. In a band-cutter and feeder for threshing-machines, the combination with the framework, of feed-aprons comprising inner and outer sections and movably mounted upon the framework, gear-segments upon each of the sections, pinions engaging the segments, means whereby to elevate the inner and outer sections, and friction devices connected with the pinions for maintaining the aprons in their adjusted position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THADDEUS L. CUMMINGS.

Witnesses:
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J. W. CORY.