(No Model.) 3 Sheets—Sheet 1.

R. L. DENNISON.

BAND CUTTER AND FEEDER.

No. 536,270. Patented Mar. 26. 1895.

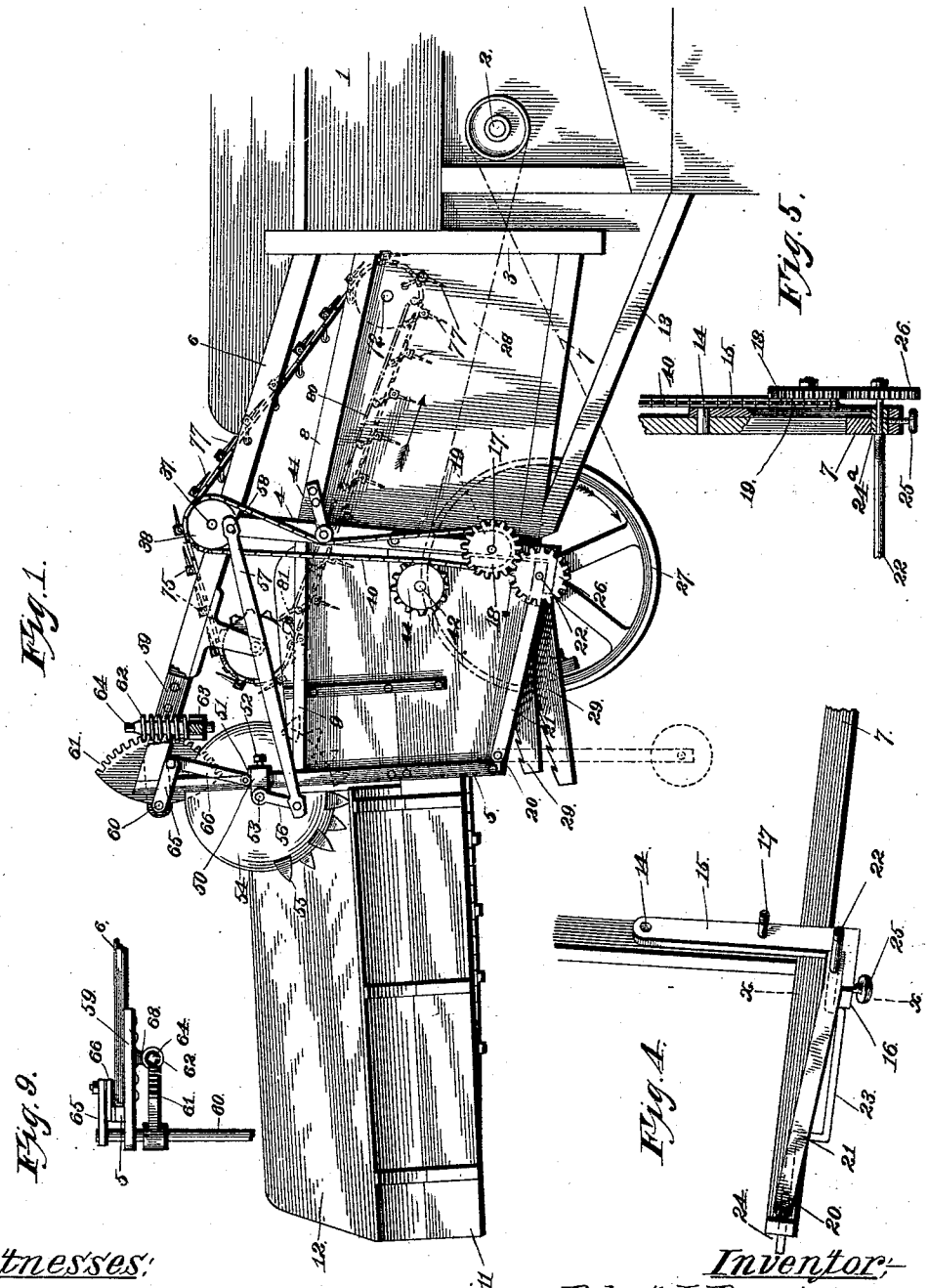

Fig. 1.

Fig. 5.

Fig. 2.

Fig. 4.

Witnesses:

M. R. Remley

Inventor:

Robert L. Dennison,

By Higdon & Higdon

Attys.

(No Model.) 3 Sheets—Sheet 2.

R. L. DENNISON.

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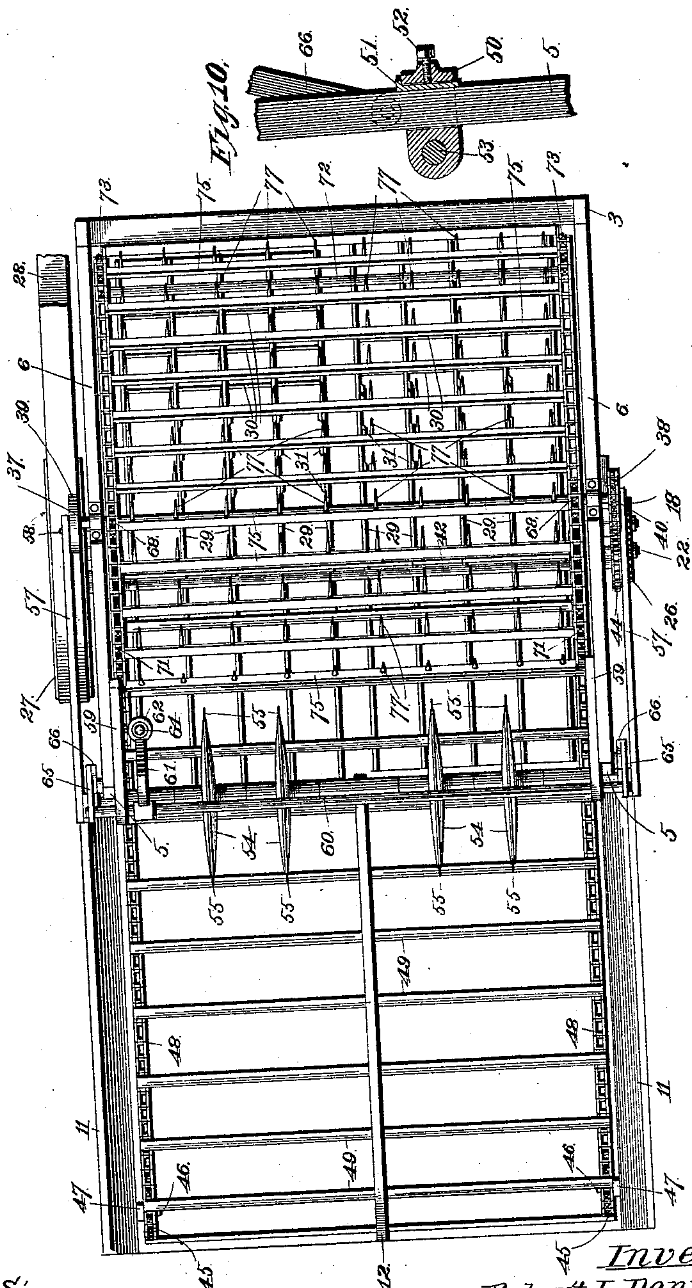

Fig. 2.

Fig. 10.

Witnesses:

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Inventor:

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(No Model.) 3 Sheets—Sheet 3.

R. L. DENNISON.

BAND CUTTER AND FEEDER.

No. 536,270. Patented Mar. 26, 1895.

Fig. 8.

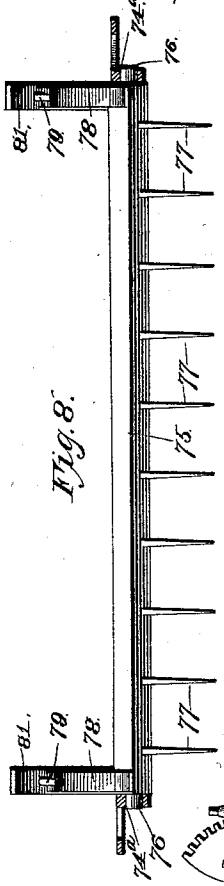

Fig. 3.

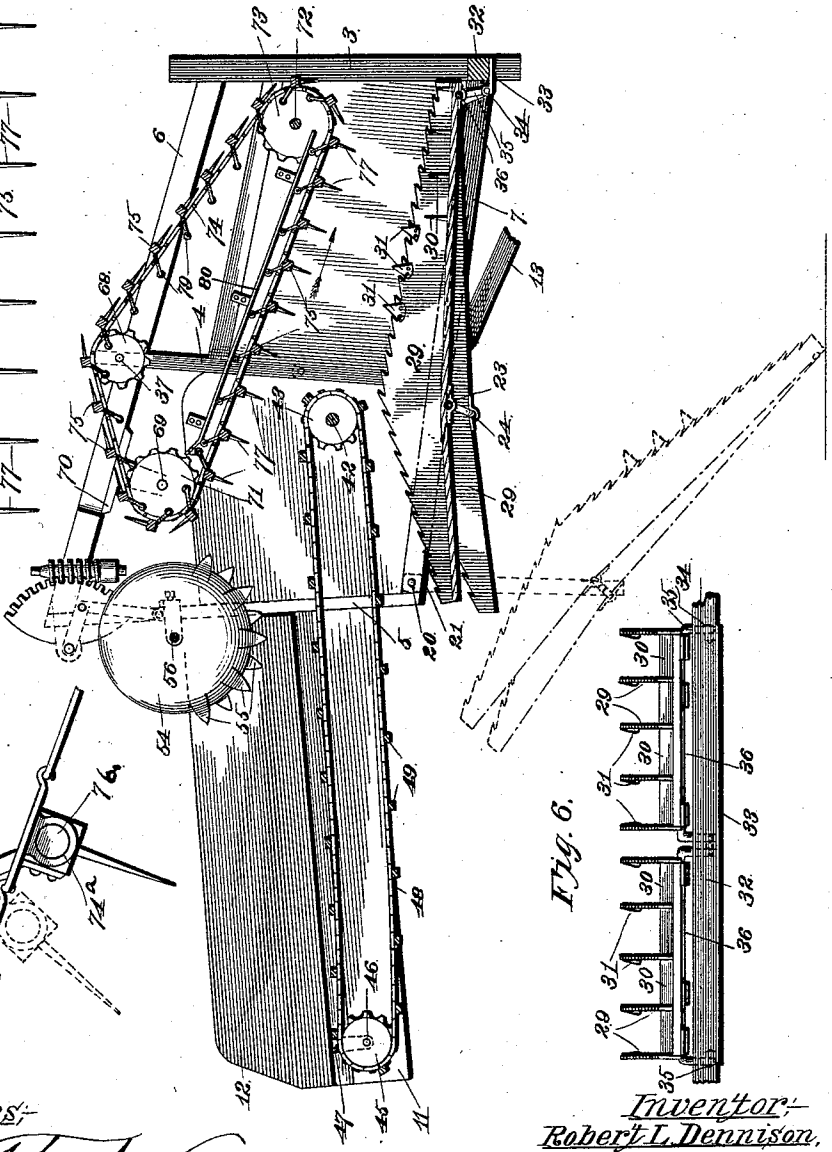

Fig. 7.

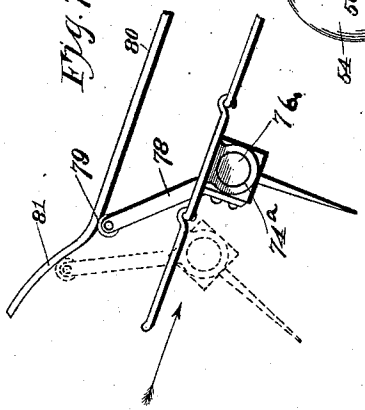

Fig. 6.

Witnesses:
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M. R. Remley.

Inventor:
Robert L. Dennison.
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UNITED STATES PATENT OFFICE.

ROBERT L. DENNISON, OF KANSAS CITY, MISSOURI.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 536,270, dated March 26, 1895.

Application filed June 9, 1894. Serial No. 514,028. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. DENNISON, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Band-Cutters and Feeders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings forming a part hereof.

My invention relates to band-cutters and feeders for thrashing machines, and the object of the same is to produce a construction which will allow access quickly and easily to the cylinder of the thrasher; wherein the band cutting mechanism may be adjusted toward or from the endless carrier, and wherein the upper feed mechanism automatically resumes its operative position when about to engage the straw passing to the cylinder, and is caused by the resistance offered by the straw at its disengagement therewith, to resume its inoperative position.

With these objects in view, the invention consists in certain peculiar and novel features of construction and combinations of parts, as hereinafter described and claimed.

In order that the invention may be fully understood, reference is to be had to the accompanying drawings, in which—

Figure 1. is a side elevation of a band-cutter and feeder embodying my invention. Fig. 2. is a top plan view of the same. Fig. 3. is a vertical longitudinal section of the same. Fig. 4. is a detail perspective view enlarged of the lower feed crank-shaft carrying mechanism. Fig. 5. is a vertical section taken on the line x—x of Fig. 4. Fig. 6. is a view of the mechanism for supporting the discharge end of the lower feed mechanism. Fig. 7. is a side elevation enlarged of a portion of the top feed mechanism, and one of the guide-rails therefor. Fig. 8. is a front view of the same on a reduced scale. Fig. 9 is a vertical sectional view enlarged of one of the sliding boxes which carry the shaft of the band-cutters. Fig. 10 is a top view of the mechanism for raising or lowering the band-cutting mechanism.

In the said drawings, 1 designates the receiving end of a thrashing machine, and 2 designates the shaft of the thrashing cylinder (not shown). Each side of the framework proper of the band-cutter and feeder consists of the upright bars 3, 4 and 5, the inclined top and bottom bars 6 and 7, which connect the upper and lower ends of the upright bars, the brace bar 8, which connects the uprights 3 and 4 a suitable distance below the top bar 6, the brace bar 9, which connects the uprights 4 and 5 a suitable distance below the top bar 6, and the vertically arranged boarding 10 which connects the said uprights and extends from the bottom bar to the brace bars 8 and 9. The carrier framework, which is detachably bolted to and carried by the framework described, comprises the oppositely disposed sides 11, which sides, a suitable distance from their lower margins, diverge upwardly, and the longitudinally extending division board 12. The uprights 3 of the framework, are secured to the receiving end of the thrasher in any suitable manner, and said framework is also additionally supported in such position by the inclined braces 13, there being one near each side of the machine.

Pivotally mounted at 14 upon the outer side of the uprights 4, and extending pendently downward therefrom, are the bars 15, and these bars at their lower ends are provided with the forwardly projecting shoulders or foot portions 16, which are laterally extended so as to project beneath the bottom bars 7 of the framework, and are so arranged as to leave a space therebetween. Projecting outwardly from one of the side-bars 15, is a stub shaft 17, upon which is rotatably mounted the cog-wheel 18 and the small sprocket-wheel 19; said wheels being preferably cast integral. Pivotally mounted at 20 upon the outer side and forward end of the side-bars 7, are the bars 21, and these bars carry rotatably a shaft 22, which is provided with the oppositely disposed crank sections 23, and 24, and when this crank shaft is in its operative position the ends of said bars in which said shaft is journaled rest upon and are supported by the shoulders or foot portions 16 of the bars 15, and said ends of said bars are also laterally extended as shown at 24^a, so as to fit snugly between the bottom bars 7 of the framework and the laterally extended portion of the shoulders 16, as shown clearly in Fig. 5, and in order to securely clamp the bars in this position, a set-screw 25, carried by the shoulder

or foot-portion of each bar 15, is screwed firmly into a recess or cavity in the under side of the lateral extensions of the bars 21. Mounted rigidly upon one projecting end of the crank-shaft, is the governor-wheel 27, which is connected by a cross-belt 28, in the ordinary manner, to a pulley, shown in dotted lines, on the corresponding end of the shaft 2 of the thrasher cylinder and this governor, should the cylinder fall below its proper speed, will allow the speed of rotation of the crank-shaft to correspondingly diminish, so that the cylinder will not be fed beyond its capacity, and will automatically cause said crank-shaft to resume its proper speed immediately the cylinder resumes its original speed. It is not deemed necessary, or desirable, however, to describe or illustrate this governor-wheel in detail, as its construction and operation are fully disclosed in a patent granted to me on April 10, 1894, No. 517,845, on a band-cutter and feeder for thrashing machines, reference to which is herewith made. Journaled upon the crank-section 23 of said shaft a suitable distance from its front end, is a feed pan, which comprises the vertically arranged and longitudinally extending plates 29, serrated or toothed in their upper margins mounted upon a base portion; the transversely extending knives or blades 30, and the upwardly projecting sickle-teeth 31, carried by the longitudinal toothed plates 29. A similar feed pan is mounted operatively upon the section 24 of said crank-shaft. Secured to the under side of the cross-bar 32, at the discharge end of the framework, is a plate 33, and pivotally mounted at 34 upon ears projecting upwardly from said plate, are the loops 35, upon the bridge-portion 36 of which are journaled the discharge ends of said feed pans.

It will be apparent from the foregoing, that the governor receives its motion from the operation of the cylinder, and imparting motion to the crank-shaft, causes the reciprocatory motion of the said feed pans, the loops 36 rocking upon their pivots 34 during this operation, as will be readily understood.

Journaled transversely of the machine, in the upper margin of the top bars 6, is the shaft 37, and mounted upon one end of this shaft outward of the adjacent bar 6, is a sprocket-wheel 38, and mounted upon the opposite end of the shaft is a disk 39.

An endless chain 40 operatively connects the sprocket-wheels 19 and 38, and is tensioned by an idler 41. The shaft 42 extends horizontally of the machine and a suitable distance above and forward of the axial line of the sprocket-wheel 19, and mounted upon said shaft adjacent to each inner side of the framework, are the sprocket-wheels 43, and mounted upon the projecting end of said shaft is the sprocket-wheel 44, engaging at all times the sprocket-chain 40. A pair of sprocket-wheels 45 are journaled upon stub-shafts 46 projecting inwardly from brackets 47 secured to the inner side of the carrier-frame at its front end, and these sprocket-wheels 45 are connected by the endless chains 48 to the sprocket-wheels 43, and these chains are connected at suitable intervals by the cross-slats or bars 49, and form, in conjunction therewith, an endless carrier. Mounted adjustably upon the front uprights 5, are the rectangular boxes 50, and interposed between the rear side of each box and its corresponding upright is the wedge-plate 51, upon which impinge the ends of the set-screws 52, which secure said boxes at the required elevation. Extending transversely and horizontally of the framework, and journaled near its opposite ends in said boxes, is the shaft 53, upon which are mounted at suitable intervals the disks 54, which are provided with a suitable number of depending sickle teeth 55. Mounted rigidly upon and depending from the ends of the shaft 53, are the arms 56, and these arms are pivotally connected by the pitman bars 57 with the wrist pins 58 projecting outwardly from the sprocket-wheel 38 and the disk 39 of the shaft 37. Secured to the inner side and front end of the top bars 6 of the framework are the castings or brackets 59, and journaled in the forward ends of the same and extending transversely and horizontally of the machine, is a shaft 60, upon which is mounted the toothed segment 61, which operatively engages the screw 62, carried rotatably in the arm 68 of one of the castings or brackets 59, and the upper end of the screw is squared, as shown at 64, so that it may be engaged by a wrench when it is necessary or desirable to operate the segment 61. Mounted rigidly upon the opposite ends of the shaft 60, and projecting rearwardly therefrom, are the arms 65, and these arms are pivotally connected by the link-bars 66 to the lugs projecting upwardly from the boxes 50.

From the foregoing, it will be apparent that by the operation of the screw 62, when the set-screws 52 are loosened, the boxes carrying the band-cutting disks 54 may be adjusted toward or from the endless carrier previously described, and it will be equally obvious that the set-screws 52 are used only because they relieve the segments and their component parts of the weight of the band-cutting mechanism, and all the strain imposed thereby during the operation of the machine.

Mounted upon the shaft 37 adjacent to the inner sides of the framework, are the sprocket-wheels 68, and mounted rotatably upon the stub-shafts 69, projecting inwardly from the brackets 70 secured to the top-bars 6 in advance of the shaft 37, are the sprocket-wheels 71, which are in the same vertical plane as the sprocket-wheels 68. Extending transversely and horizontally of the machine near its discharge end, and journaled in the side-walls thereof, and occupying a plane considerably lower than the plane of the stub-shafts 69, is a shaft 72, and mounted upon said shaft and longitudinally aligned with the sprocket-wheels 68 and 71, are the sprocket-wheels 73.

An endless chain 74 operatively connects each set of these sprocket-wheels 68, 71 and 73, and certain of the links of said chain are provided at their inner side with extensions having the circular opening 74^a. The links of said chains, provided with the extensions referred to, are arranged at suitable intervals, and are oppositely disposed, and extending transversely of the machine and connecting said chains, are the slats or bars 75, which are provided with reduced cylindrical ends 76, mounted operatively in the circular openings 74^a of said extensions, and projecting from one side of said bars are the teeth or fingers 77. Secured to each cross slat or bar 75, near its ends, and projecting therefrom at an angle of about one hundred and thirty-five degrees to the teeth or fingers 77, are the arms 78, and these arms have journaled rotatably in their ends the anti-friction rollers 79. Extending parallel with and a suitable distance above that portion of the top feed mechanism connecting the sprocket-wheels 71 and 73, are the guide-rails 80, and these guide-rails, at their forward and upper or receiving ends are bent upwardly so as to form the oppositely disposed and inclined cam-surfaces or shoulders 81.

The operation of the machine is as follows: The bundles of grain are pitched so as to assume a longitudinal position upon the endless carrier at the front end of the machine, and this longitudinal position they are positively caused to assume because of the division-board 12, and as they are carried rearwardly they come in contact with and the bands thereof are severed by the oscillatory or rocking cutting-disks; these cutting-disks being operated by the rotation of the shaft 37, through the medium of the pitman bars 57. The carrier delivers the grain immediately back of the band cutters to the endless top feed mechanism, and the reciprocating feed pans, which, being mounted on the sections of the crank shaft, vibrate and cut and tear apart the grain so delivered. That portion of the top feed mechanism engaging the grain has its fingers or teeth slanting backward at a suitable degree, and this backward slant of said teeth prevents the cylinder of the thrashing machine from jerking the grain away from the feeder, and thereby insures a steady and uniform supply of the grain to the cylinder. This top feed mechanism, in connection with the lower feed pans, makes a positive force-feed, and prevents an accumulation of the grain near the discharge end of the machine.

In operation, the fingers or teeth of that portion of the feed mechanism traveling in the direction indicated by the arrow, Fig. 3, are caused to hold their backward slant because the anti-friction rollers in the upper ends of the forwardly projecting arms 78 engage the lower side of the track-rails 80, and as these rollers successively clear the rear end of said track-rails and start upward around the sprocket-wheels 73, the resistance offered by the grain or straw with which said fingers are engaged causes them to assume a position with their fingers or teeth approximately parallel with the chains, and with their roller carrying arms projecting in advance; said slats rocking in the bearing 74^a. The slats occupy this position until they arrive at the inclined cam or shoulder surfaces 81, with which they come in contact, and the resistance offered by these inclined cam surfaces or inclined shoulders causes them to rock pivotally in the bearings 74^a, as shown in Fig. 7, until said roller carrying arms project rearwardly or toward the front end of the machine, and the teeth or fingers 77 project downwardly at right-angles to the chain.

From the foregoing, it will be apparent that each toothed slat or bar, as it first engages the straw or grain, automatically presents a rigid surface which grasps and forces the grain positively to the rear, and which, after the point of delivery is reached, automatically becomes disengaged from the grain.

When access to the thrasher cylinder is desired for any purpose, the feed pans are first disengaged at their discharge ends from the loops 35, and then the set-screws 25 are loosened, which allows the pivotal bars 15 to be swung rearwardly until the shoulders or foot-portions 16 clear the free ends of the bars 21. Immediately this disengagement takes place, the weight of the pans causes the bars to swing forwardly to the position shown in dotted lines, Figs. 1 and 3, and with the discharge end of the pans resting upon the ground. To resecure the pans in their operative position the bars 21 are again swung upwardly to the position shown in full lines, and the bars 15 brought forward until their shoulders or foot-portions bear against the under side of said bars 21, where they are secured by again tightening the set screws 25. The pans are now operated pivotally and their discharge ends are pivotally mounted upon the loops 35, as before.

From the above description, it will be apparent that I have produced a band-cutter and feeder for thrashing machines wherein the cutting mechanism is adjustable from or toward the grain carrier; wherein the feed pans may be shifted easily and expeditiously to a position allowing free access to the cylinder of the thrasher, and wherein the top feed mechanism automatically engages the grain or straw with an unyielding surface, and after delivering the same to the cylinder releases the same and allows it to be drawn under the cylinder easily and freely.

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 thrashing-machines, the combination with a suitable framework, of a pair of pivoted bars having shoulders, a second pair of pivoted bars supported upon the shoulders of the first-mentioned bars, a crank-shaft journaled in said second pair of pivotal bars, and feed-pans

mounted upon said crank-shaft, substantially as set forth.

2. In a band-cutter and feeder for thrashing machines, the combination with a suitable framework, a pair of pivotally pendent bars carried thereby and having shoulders or foot-portions, and a second pair of bars pivoted at one end to said framework and having their opposite ends supported by the shoulders or foot-portions of the first-mentioned bars, of a crank-shaft carried by said second pair of bars, pivoted loops mounted near the discharge end of the machine, and feed-pans pivotally mounted upon said crank-shaft, and pivotally mounted at their discharge ends upon said loops, substantially as set forth.

3. In a band-cutter and feeder for thrashing machines, the combination with a suitable framework, a pair of pivotally pendent bars carried thereby, and an endless top feed mechanism carried by said framework, of a second pair of pivotal bars carried by said framework and supported at one end upon the shoulders of the first-mentioned bars, a crank-shaft carried by said second pair of pivoted bars, feed-pans mounted operatively upon said crank-shaft, and an intermediate mechanism connecting said crank-shaft with and causing the operation of the endless top feed mechanism, substantially as set forth.

4. In a band-cutter and feeder for thrashing machines, the combination with a suitable framework, a pair of pivotally pendent bars carried thereby, and having forwardly projecting shoulders at their lower ends, a pair of bars pivoted at their front ends and having their rear ends supported upon the shoulders of the first-mentioned bars, a rotating crank-shaft mounted in and carried by the said last-mentioned pivoted bars, feed-pans mounted upon and actuated by said rotating crank-shaft, and an intermeshing mechanism carried by one set of said engaging pivoted bars, of a shaft journaled in the upper portion of the framework, sprocket-wheels mounted thereon, sprocket-wheels rotatably carried in advance and in the rear of the first-mentioned sprockets, endless chains connecting said sprocket-wheels, cross-slats having fingers or teeth, connecting said endless chains, a sprocket-wheel mounted upon one end of the shaft in the upper portion of the framework, a sprocket-wheel operated by the intermeshing mechanism of the pivoted bars, and a chain connecting said last-mentioned sprocket-wheels, substantially as set forth.

5. In a band-cutter and feeder for thrashing machines, the combination with a suitable framework having uprights, boxes mounted loosely upon said uprights, a wedge-plate interposed between one side of each of said uprights and the inner side of the corresponding box, set-screws engaging said boxes and impinging upon said wedge-plates, a shaft journaled in said boxes, cutting knives or disks mounted thereon, a shaft 60 located above the cutting-disk shaft, a toothed segment 61 mounted upon shaft 60, and a screw 62 engaging said toothed segment, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT L. DENNISON.

Witnesses:
G. Y. THORPE,
M. R. REMLEY.