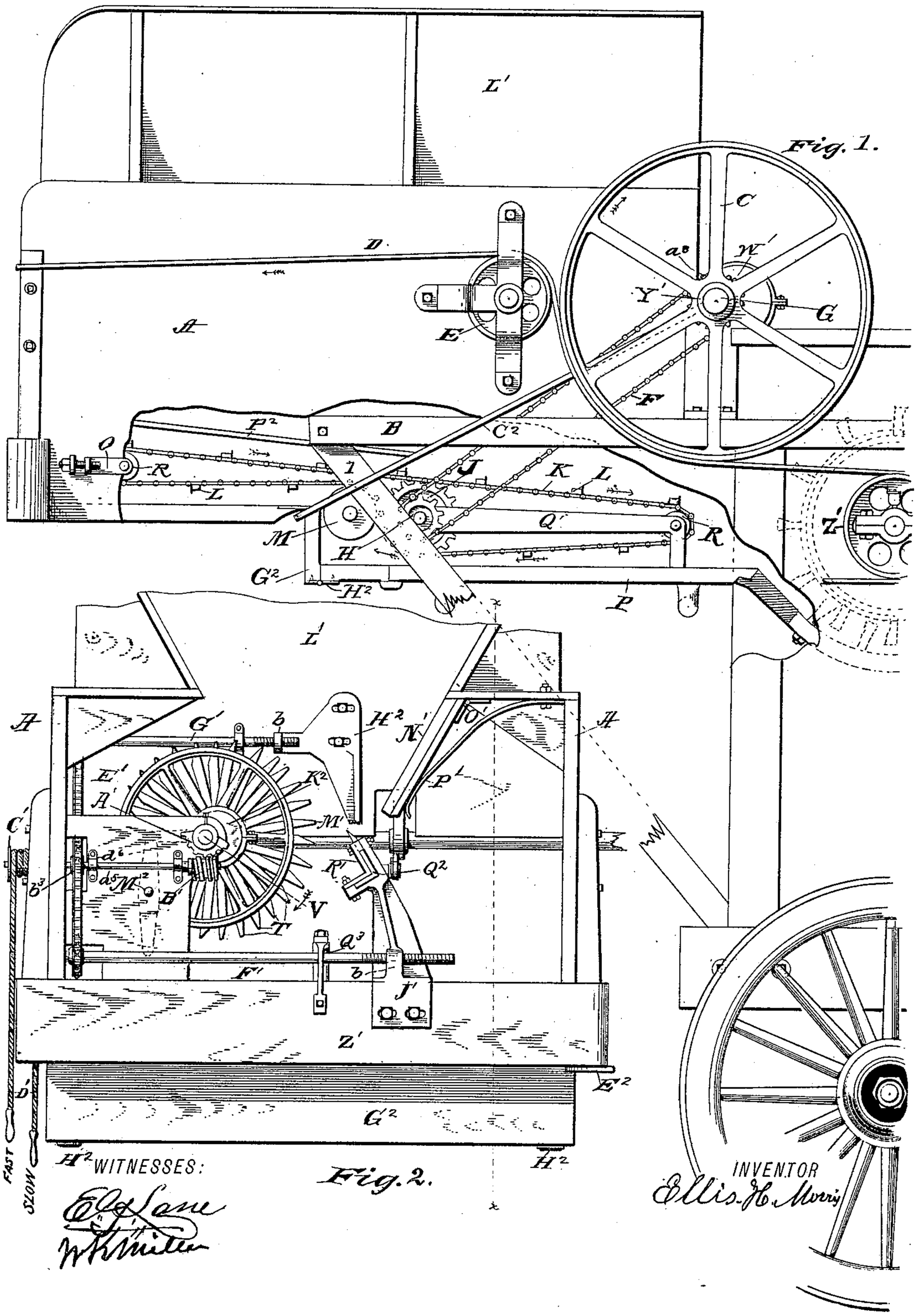
(No Model.) 3 Sheets—Sheet 1.

E. H. MORRIS.

BAND CUTTER AND FEEDER.

No. 435,942. Patented Sept. 9, 1890.

Fig. 1.



WITNESSES:

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Fig. 2.

INVENTOR

Ellis H. Morris

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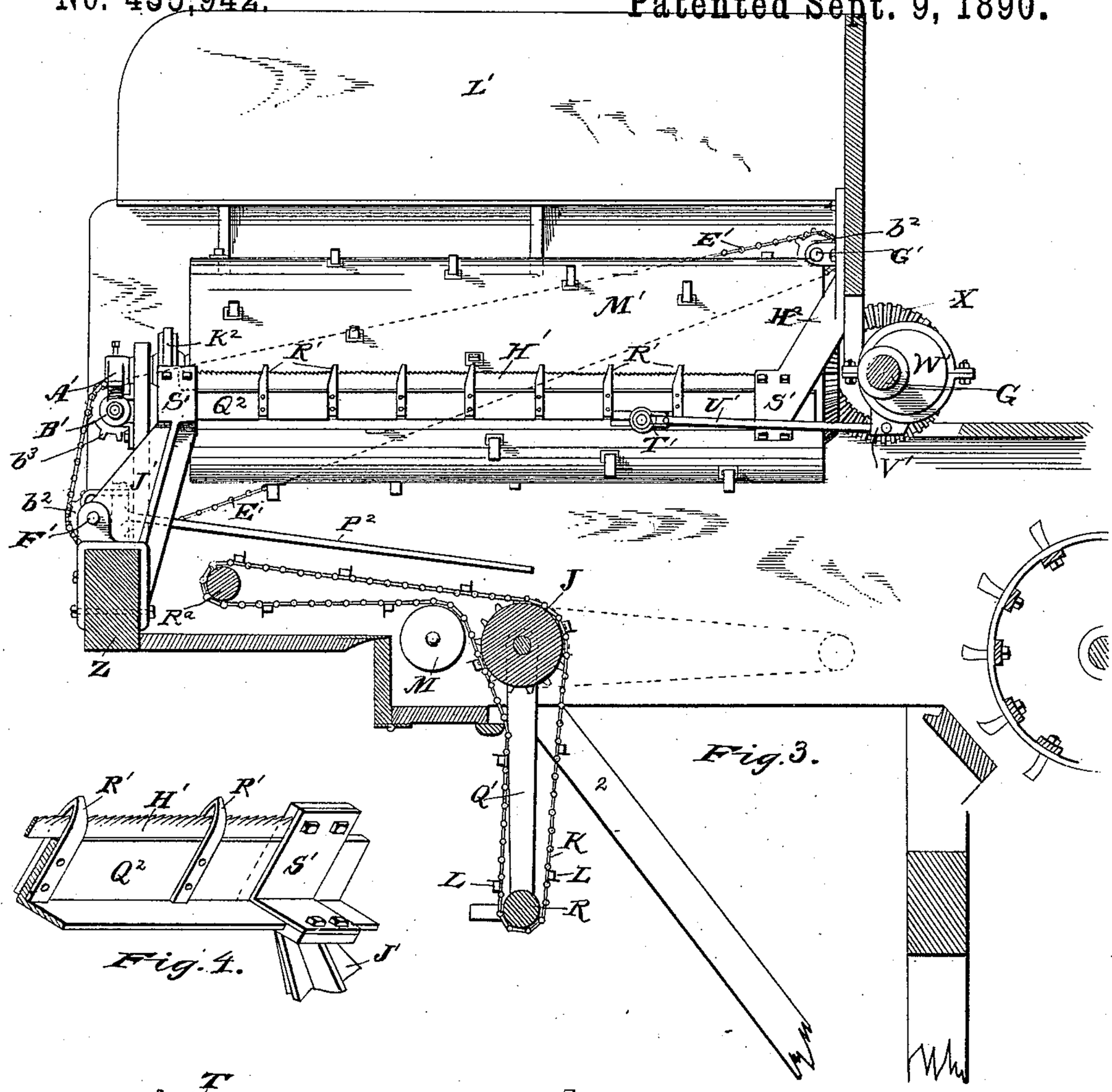

Fig. 3.

Fig. 4.

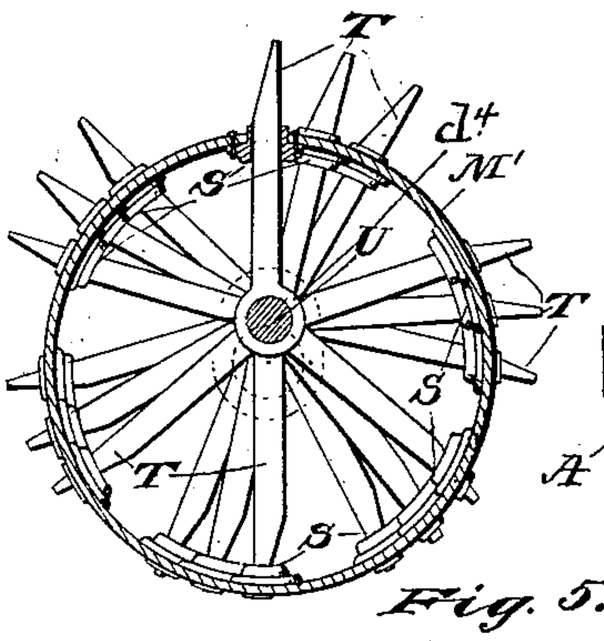

Fig. 5.

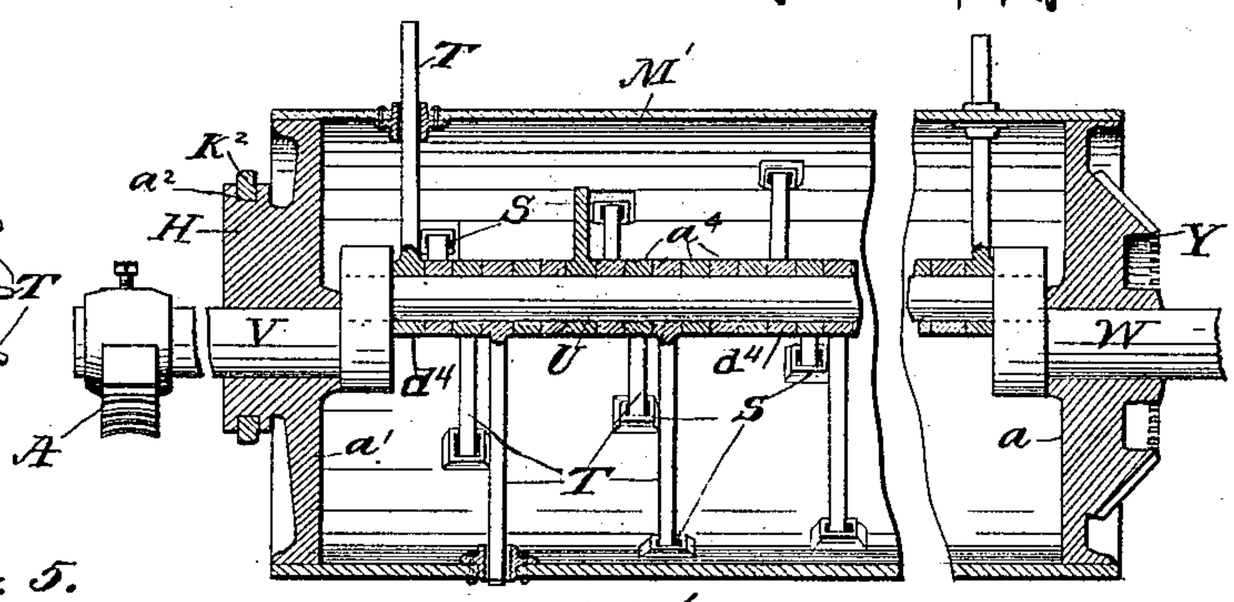

Fig. 6.

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(No Model.) 3 Sheets—Sheet 3.

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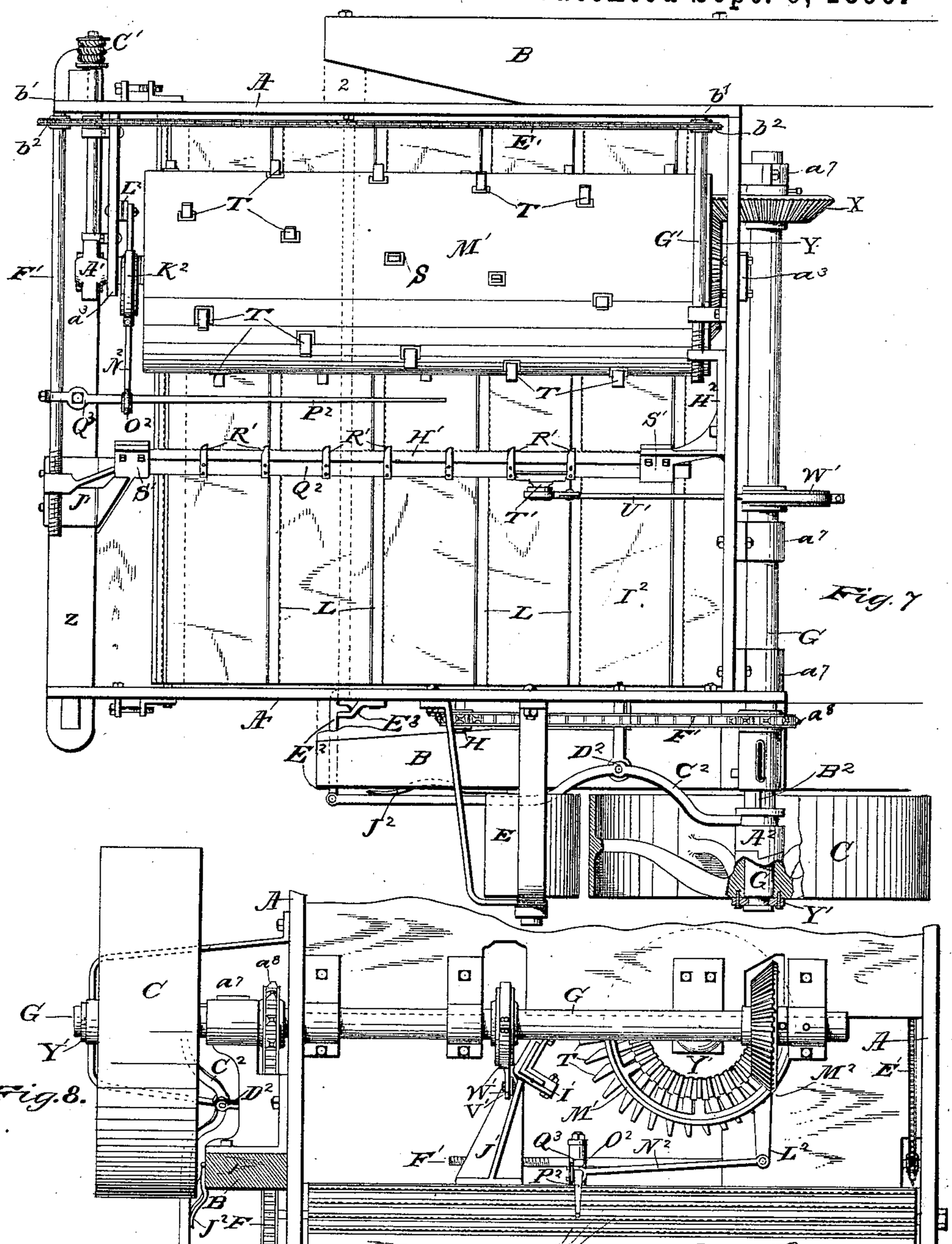

Fig. 7

Fig. 8.

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INVENTOR

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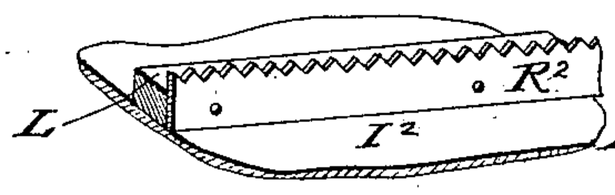

Fig. 9.

UNITED STATES PATENT OFFICE.

ELLIS H. MORRIS, OF CANTON, OHIO.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 435,942, dated September 9, 1890.

Application filed December 26, 1889. Serial No. 335,088. (No model.)

To all whom it may concern:

Be it known that I, ELLIS H. MORRIS, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Band-Cutters and Feeders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in band-cutters and feeders for thrashing-machines.

The object is to provide means for cutting the bands placed about sheaves of grain to distribute the grain evenly over an endless apron or carrier, by which the grain may be fed to the thrashing-cylinder evenly.

My invention also relates to improved means for regulating the supply of grain to the thrashing-cylinder without changing or interfering with the motion of the thrashing-machine.

With these ends in view my invention consists in certain features of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

Figure 1 of the accompanying drawings is a right-hand side elevation illustrating my invention as applied to a thrashing-machine, having a part of the side-board removed to show interior detail. Fig. 2 is a front elevation looking into the front end of the machine. Fig. 3 is an elevation of the right-hand side of the machine, partly sectional, showing interior details. Fig. 4 is a perspective of a fragment of the band-cutting mechanism enlarged; Fig. 5, a view in cross-section of the feeding-cylinder and side view of the spikes. Fig. 6 is a longitudinal vertical sectional view of the feed-cylinder; Fig. 7, a plan view showing the location of the several parts. Fig. 8 is a front end elevation showing the driving mechanism; and Fig. 9 is a fragment of the carrying-apron, showing the cross-cleat and metal-toothed rake.

As my invention is applicable alike to many of the thrashing-machines now in use, I will proceed with the description, referring only to the thrasher parts as conjunctional thereto.

A represents the body portion of the machine as shown in several of the figures of the drawings. It is quadrilateral in form and is constructed of side and end portions, as A and *z*, and frame in such form and of such strength as to form a support for the machinery belonging thereto. The said frame is secured to and is supported on the arms B of the thrasher in front of the thrashing-cylinder.

At the bottom portion of the body A are rollers R and R^a, the former supported in a suitable bearing in a swinging frame Q′, the latter in adjustable bearings O. About said rollers is placed an endless conveyer apron or feeder K, having on each side thereof sprocket-chains. The lower chain after engaging the lower side of sprocket-wheel J passes upwardly and over the roller M. The said carrier is further provided with cross-slats L, to each of which is secured a metal plate R^2, having its upper edge serrated, as shown in Fig. 9. Over said carrier is placed a feed-cylinder M′, preferably constructed of sheet metal, secured to cast-metal heads *a a′*, the latter having cast integral therewith an eccentric portion H, having about its periphery an annular groove a^2, and the former having cast integral therewith a bevel-wheel Y. The cylinder is supported on and rotates about a cranked shaft U, the heads *a* and *a′* being supported on the journal portions V and W. The cylinder is further provided with apertures S, through which the teeth are projected, said teeth having an eye portion d^4, (see Fig. 5,) that embraces the central portion of the cranked shaft U. The apertures S may be placed in alignment with the body of the cylinder or spirally about it, as shown in Fig. 3. The shaft U is supported in suitable bearings a^3 in the frame of the body A, and on the front end portion of said shaft is secured a segment A′ of a worm-wheel, which is engaged by a worm B′, secured to a shaft a^5. (See Fig. 2.) Said shaft is supported in journals a^6 and projects outside of the body of the machine, and on the end thereof is secured a pulley C′, having coiled about it a rope D′, the free ends of which are placed in convenient reach of the operator and marked "fast" and "slow." The object of said rope is to rotate the worm B′, and by its engagement with the segment A′ rotate the shaft U to throw the eccentric middle portion inwardly, as shown in Fig. 2, by which the teeth will be thrown out a greater

distance into the straw to feed more rapidly, or turned back to draw the teeth in and thereby check the flow of straw and grain to the carriers below and the thrashing-cylinder. By drawing on the fast end of the rope D′ the shaft and teeth will be placed in position, as shown in Fig. 2, and by drawing on the end marked "slow," the pulley C′ will be rotated, and by it the shaft a^5 and worm B′, engaging the segment A′, will turn the segment outwardly and upwardly and the middle or eccentric portion of the shaft U downwardly and outwardly, thereby drawing the teeth back into the cylinder to prevent them from entering into and feeding down the straw. It will be noticed that this cylinder is placed on a line at right angles to the thrashing-cylinder and in line with the movement of the carrier.

It will be noticed that the movement of the ropes referred to will rotate the sprocket-wheel b^3 on the worm-shaft a^5 to move the band-cutter to and from the cylinder, as will be hereinafter more fully explained.

To drive the cylinder M′, a shaft G is placed across the rear portion of the body of the machine, supported and rotated in journal-boxes a^7, on the left-hand end of which is placed a bevel gear-wheel X, the teeth of which engage the teeth of the bevel-wheel Y on the cylinder-head, and on said shaft is secured an eccentric W′, and outside of the body A a sprocket-wheel a^8. The said wheel has a chain engagement with a similar wheel H, by which power is communicated to the sprocket-wheel J to drive the carrier K. On the right-hand end portion of said shaft G is loosely mounted a band-wheel or pulley C, which engages the main driving-belt D of the thrashing-machine as it passes from the pulley z' on thrashing-cylinder shaft forward under and about the pulley C and up and over the idler E, as shown in Fig. 1.

The pulley C is held in place on the shaft by a removable plate Y′, forming an inwardly-projected collar to engage an annular groove at the end of the shaft, and to engage the said pulley with the said shaft a clutch is provided on the inner end portion of the hub of said pulley, and on the shaft a clutch-sleeve A^2, secured from rotation on said shaft by a feather B^2 in the usual way, said sleeve having at its inner end an annular collar, in which are placed the prongs of the shipping-lever C^2. The said lever is pivoted to a supporting-bracket D^2, the front end being extended forward a little distance and secured by a link E^2 to a hook E^3 on the side of the body A, by which means the clutch on the sleeve A^2 is held in engagement with a similar clutch on the inner end of the hub of the driving-pulley C. A spring J^2 is provided, the energy of which is exerted against the free end of the lever C^2 to hold the clutch A^2 from engagement with the clutch on the hub of the pulley C when the link E^2 is released from the hook E^3.

The knife H′, provided to sever the bands by which the grain is bound into sheaves, is constructed of a single blade of steel having a serrated cutting-edge, as shown in Fig. 4, the ends of the blade being secured in the brackets H^2 and J′.

A finger-bar Q^2, formed of angle-iron, as shown in Fig. 4, is provided, having fingers R′ secured thereto to embrace and project beyond the knife H′. The said bar is placed in slides S′ in the brackets J′ and H^2. A wrist-pin T′ is secured to said bar, to which one end of a connecting-rod U′ is secured by a journal-box of spherical form, the other end of said rod being provided with a yoke or strap to embrace the eccentric W′, thus providing means for reciprocating the finger-bar Q^2, and fingers by which the cords or bands about the sheaves of grain are drawn over the edge of the cutter H′ and severed. The brackets H^2 and J′ have a sliding connection with the supporting-frame to provide for a movement of the knife H^2 to and from the cylinder M′ to open or close the throat or space between the cylinder and the knife, which movement is effected by means of the screws F′ and G′, turned into the lugs b^2 on the brackets J′ and H^2, the heads of said screws journaled in the body or frame A at b', and on said ends is mounted sprocket-wheels b^2, and on the worm-wheel shaft a^5 is mounted a similar wheel b^3 to correspond with the wheels b^2. A sprocket-chain E′ is placed about said wheels, as shown in Fig. 3, and by drawing on said chain, the screws F′ and G′ and the worm B′ will be rotated to simultaneously move the band-cutter to and from the cylinder M′ and the teeth T out of or into the said cylinder to increase or decrease the means for supplying grain to the thrasher or to stop the supply entirely without in any way interfering with the movements of the thrasher. To distribute the straw over the apron K, a vibrating finger P^2 is provided, as shown, pivotally secured to a pedestal Q^3, and is vibrated by a connecting-rod N^2, one end of which is pivotally secured to the finger P^2, and the other end is pivotally secured to a swinging bar L^2, as shown in Fig. 8, said swinging bar having a pivoted connection with a part of the frame, as shown at M^2, Fig. 2, the swinging bar being shown by dotted lines, the upper end of said bar having a link-connection with the eccentric K^2 on the cylinder-head H. As the cylinder M′ is rotated the eccentric will sway the bar L^2, which by its connections therewith will vibrate the finger P^2 over the carrier K to spread or distribute the straw. As shown in Fig. 3, the rear portion of the carrier-supporting frame is pivoted about a sleeve projected inwardly from the journal-box of the shaft supporting the sprocket-wheel J, and may be dropped down, as shown, to provide access to the thrashing-cylinder and concave.

In the hopper L′ (shown in Fig. 2) there is provided a yielding breast-plate N′, extending the length of the feeder, and hinged at the upper side of the top of the body, as

shown at O′. The lower side portion is supported on springs P′, the object of which is to provide a yielding pressure plate or board by which the sheaves are held against the cylinder.

In operation, when the thrashing-machine is put in operation the driving-belt D will rotate the driving-pulley C in the direction shown by the arrow, the bevel-wheel X, engaging a similar wheel Y on the cylinder M′, will rotate said cylinder inwardly, and the sheaves of grain thrown into the hopper L′ (shown in Fig. 2) will be drawn by the teeth down against the fingers of the band-cutter, which are reciprocated by the eccentric W′. After the band is cut the straw will fall onto the carrier K, which is driven by the sprocket-chain placed about the sprocket-wheels a^8 and H on the cross-shaft G and the shaft carrying the sprocket-wheels J, respectively, and to distribute the straw on the carrier the finger P^2 is vibrated by the eccentric K^2, as before stated. To regulate the supply of grain to the thrasher, a pull on the rope D′, marked "fast," will rotate the worm B′ to project the teeth T and rotate the screws F′ and G′ to increase the space between the cylinder and the band-cutter, and thereby increase the supply of grain to the carrier and thrasher, and a pull on the rope marked "slow" will reverse the operation by closing the space between the band-cutter and the cylinder M′, and drawing in the teeth, as hereinbefore stated, to check the supply of straw or grain; or the feeder may be stopped entirely by releasing the link E^2, thereby disengaging the clutch A^2 from the hub of the wheel C by the use of the lever C^2.

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

1. The combination, with a thrashing-cylinder, of a carrier K, a feed-cylinder M′, having teeth T supported above and over said carrier and rotating transversely thereto, a knife H′, and a reciprocating finger-bar Q^2, having fingers R′ to sever the bands, substantially as described, and for the purpose set forth.

2. The combination, with a thrashing-cylinder, of a feed-cylinder placed in front of and at right angles to said thrashing-cylinder and having teeth the projecting portion of which may be varied at will during the operation of feeding grain to be thrashed, substantially as described, and for the purpose set forth.

3. The combination, with a thrashing-cylinder and a feeding-cylinder placed at right angles thereto and having rotary adjustable teeth, of a knife and finger-bar to cut the band, and a carrier to carry the grain to the thrashing-cylinder, substantially as described, and for the purpose set forth.

4. In combination, the cylinder M′, provided with perforations, the cranked shaft about which the cylinder revolves, teeth mounted on the cranked shaft and projected through the perforations, a band-cutter, and means for adjusting the band-cutter toward and away from the cylinder, substantially as set forth.

5. In combination, the cylinder provided with perforations, the cranked shaft about which the cylinder revolves, teeth mounted on the cranked shaft and projected through the perforations, a band-cutter, and means for simultaneously adjusting the shaft and the band-cutter, substantially as set forth.

6. In combination, the carrier, the feed-cylinder and band-cutter arranged transversely to the movement of the carrier, and a vibrating spreading-finger the free end of which has a sweeping movement back and forth across the face of the carrier transversely to its movement, substantially as set forth.

7. In combination with the cylinder M′, supported on and rotating about a shaft having a portion eccentric to said cylinder, teeth journaled about said eccentric portion, the free end projected through the wall of said cylinder, a worm-wheel mounted on said shaft, a worm to engage said wheel to rotate said shaft for the purpose of adjusting the eccentric portion thereof in said cylinder, a band-cutter secured in movable bearings, and a connection between the movable bearings and said worm, for the purpose set forth.

8. The combination, with the cylinder M′, of the stationary band-cutter knife H′, the reciprocating finger-bar, screw-shafts F′ and G′, worm-wheel A′, worm B′, shaft a^5, pulley C′, and ropes D′, by which said parts may be adjusted and held in desired adjustment, substantially as described, and for the purpose set forth.

9. In a band-cutter and feeder, the combination, with the carrier, the feeding mechanism located over the carrier, and the thrashing-cylinder at the rear of the carrier, of a carrier-frame having its rear portion pivoted about the carrier-actuating shaft and adapted to fold down with respect to the frame of the machine, substantially as described, and for the purpose set forth.

10. The combination, with a feed-hopper and band-cutter and feed-cylinder, the latter provided with feed-teeth adjustable across the throat, of a yielding breast-plate whereby the throat leading from the hopper to the feed-cylinder may automatically enlarge and contract, substantially as described, and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 21st day of December, A. D. 1889.

ELLIS H. MORRIS.

Witnesses:
W. K. MILLER,
CHAS. R. MILLER.