

No. 639,838.

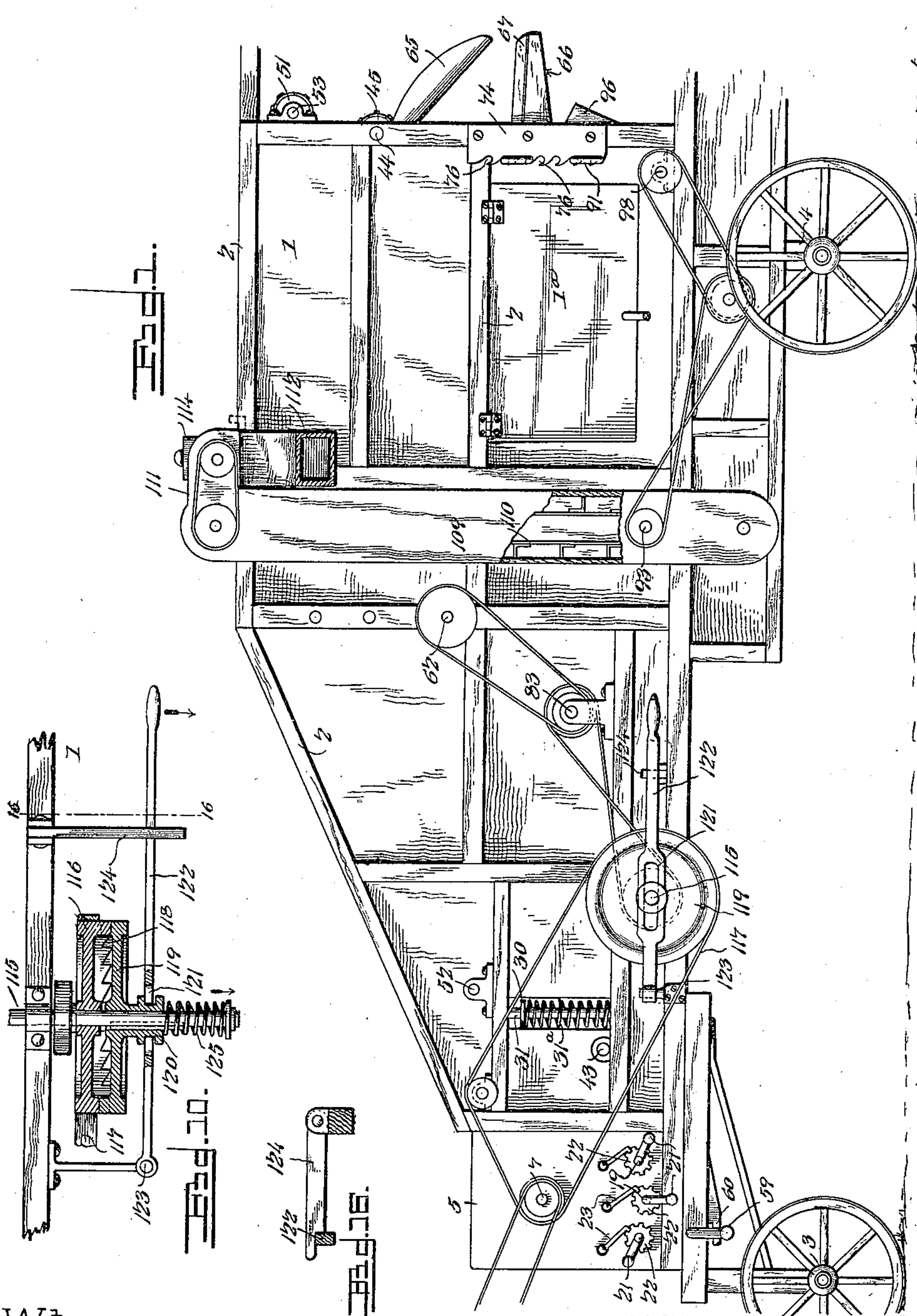
Patented Dec. 26, 1899.

W. C. WILKA.  
THRESHING MACHINE.

(Application filed Apr. 28, 1899.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES

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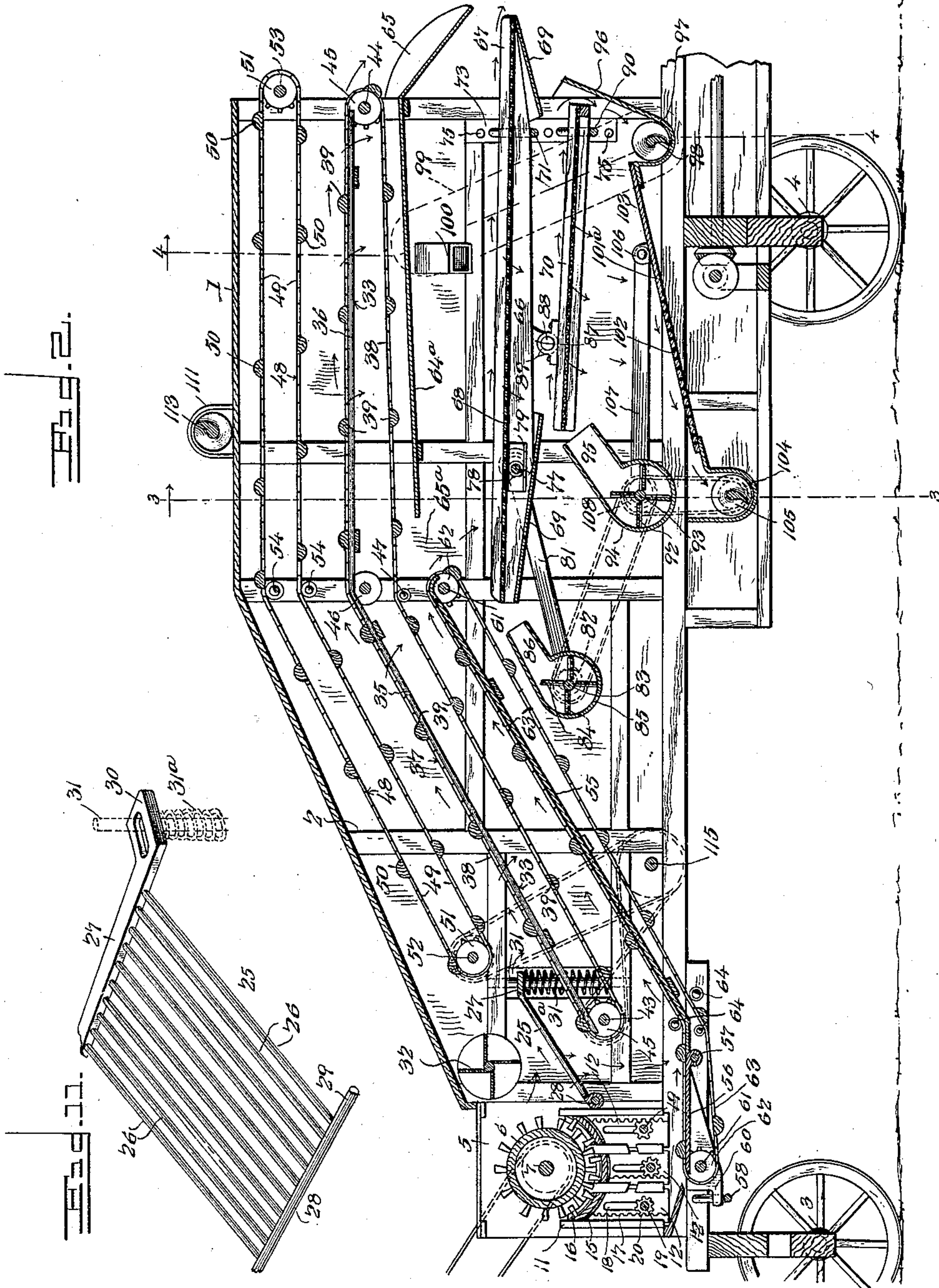
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4 Sheets—Sheet 2.



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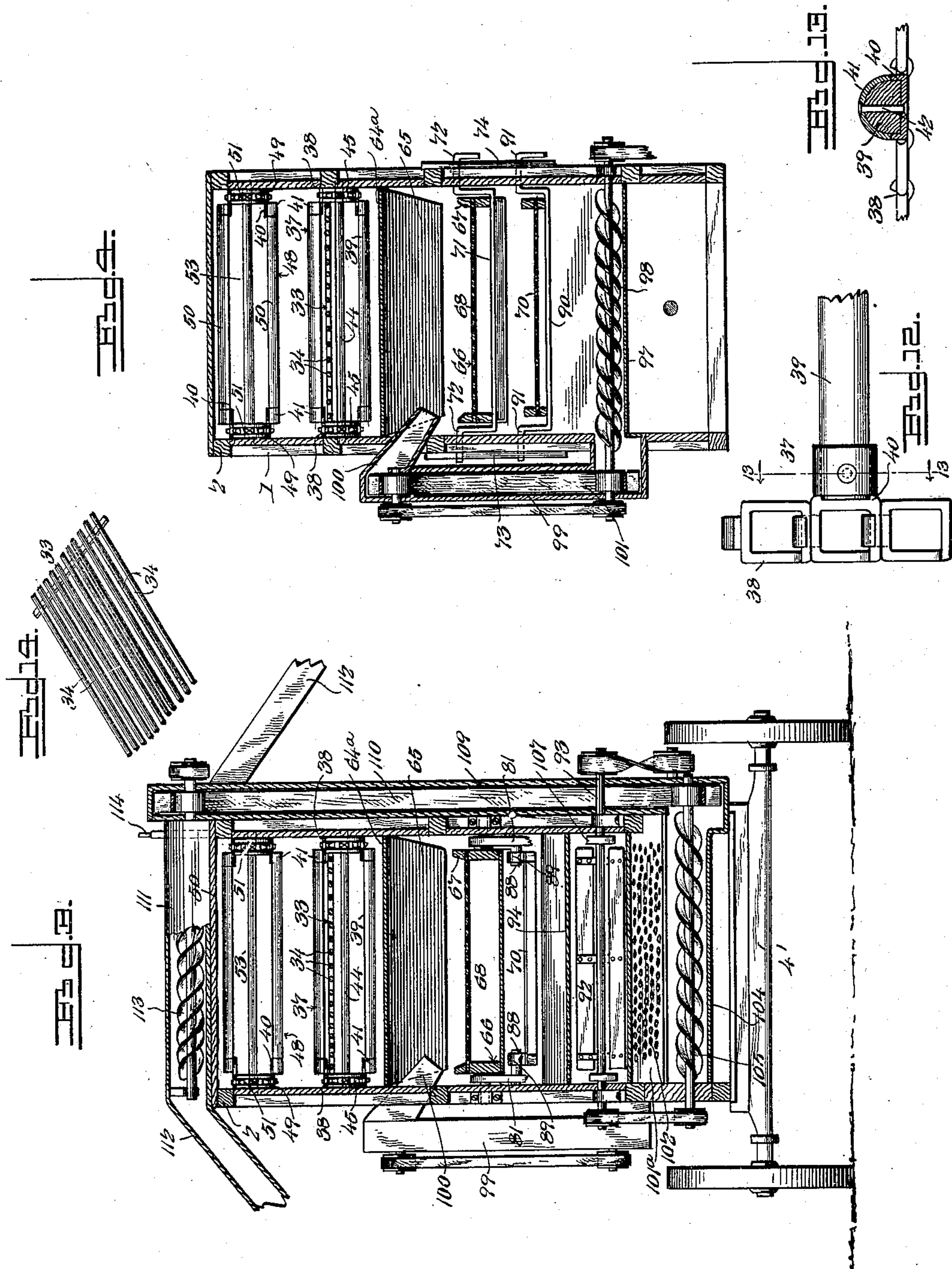
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(Application filed Apr. 28, 1899.)

(No Model.)

**4 Sheets—Sheet 3.**



## WITNESSES

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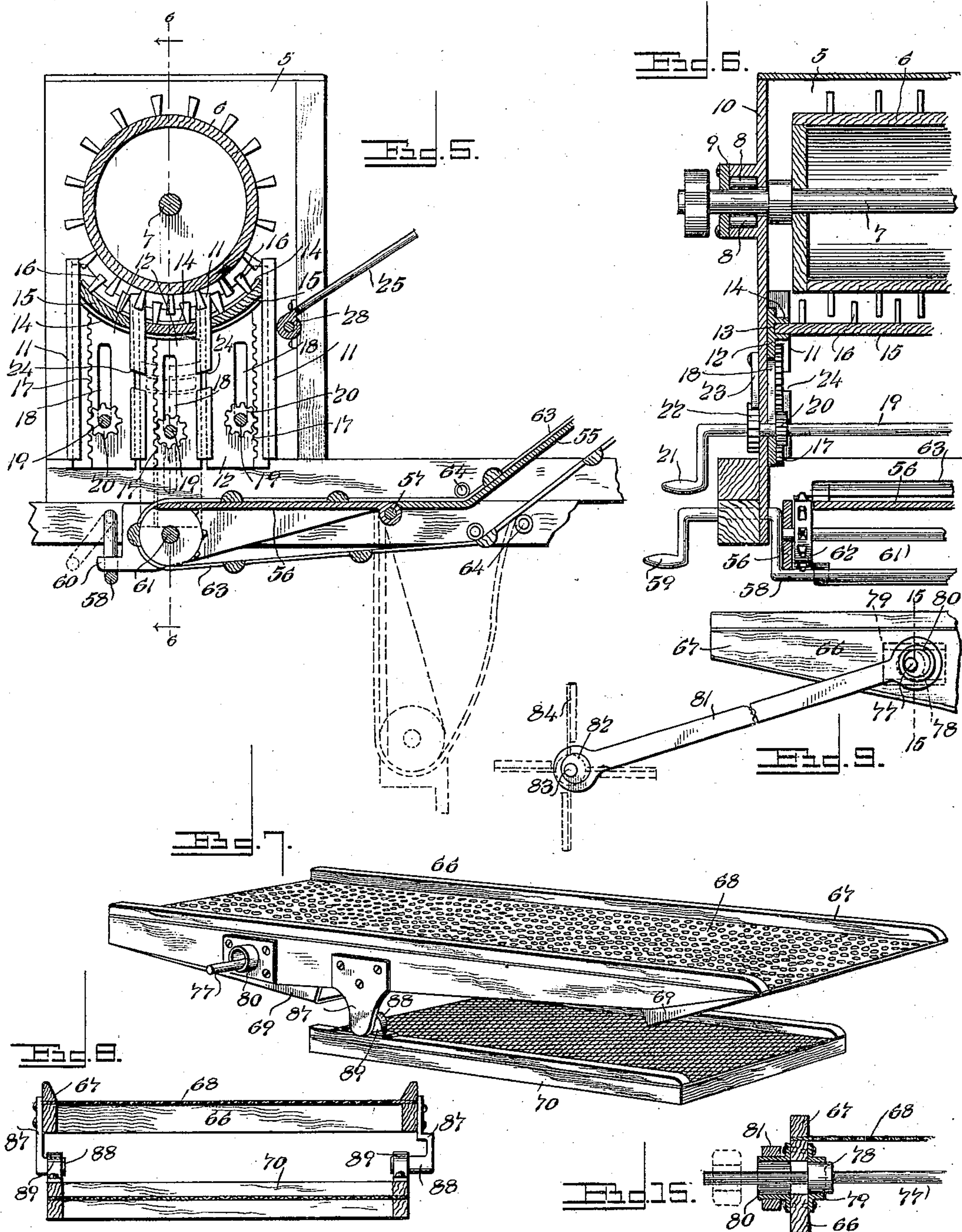
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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM C. WILKA, OF ROCK RAPIDS, IOWA.

## THRESHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 639,838, dated December 26, 1899.

Application filed April 28, 1899. Serial No. 714,889. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. WILKA, a citizen of the United States, residing at Rock Rapids, in the county of Lyon and State of Iowa, have invented a new and useful Threshing-Machine, of which the following is a specification.

This invention relates to threshing-machines; and it has for its object to effect certain improvements in machines of this character to insure the more thorough separation of the grain from the straw and the proper cleaning of the grain before it is delivered exterior to the machine.

In carrying out this general object the invention contemplates novel means for supporting and adjusting the concave-bars, whereby the machine may be readily adapted for threshing wheat, flax, timothy, or other seed without the use of blank concave-bars, such as are commonly resorted to for this purpose.

The invention also contemplates novel and efficient means for transferring the straw from the cylinder and its concave to the delivery end of the machine, where it is dropped onto the stacker, while at the same time providing for the thorough agitation of the straw to loosen up and separate therefrom the particles of grain.

The invention also provides novel means for collecting the grain and delivering the same to cleaning mechanism, which insures the thorough separation of the chaff and tailings from the grain and the delivery of the latter in a thoroughly-cleaned condition.

With these and 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.

While the essential features of the invention are necessarily susceptible to modification without departing from the spirit or scope of the invention, still the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of the threshing-machine constructed in accordance with the present invention. Fig. 2 is a vertical longi-

tudinal sectional view thereof. Fig. 3 is a vertical transverse sectional view on the line 3 3 of Fig. 2. Fig. 4 is a similar view on the line 4 4 of Fig. 2. Fig. 5 is an enlarged detail sectional view of the cylinder-boxing, showing more plainly the mounting of the supporting-plates for the concave-bars and the manner of manipulating the hinged front section of the grain-floor. Fig. 6 is a vertical detail sectional view on the line 6 6 of Fig. 5. Fig. 7 is a detail in perspective of the reciprocatory grain-conveyer riddle and the cleaning-sieve suspended therefrom. Fig. 8 is a transverse sectional view of the construction illustrated in Fig. 7, showing more plainly the detachable hinge connection between the cleaning-sieve and said conveyer-riddle. Fig. 9 is an enlarged detail elevation showing one of the pitman connections for reciprocating the conveyer-riddle. Fig. 10 is a detail sectional view of the clutch device for throwing the machine in and out of gear. Fig. 11 is a detail in perspective of the yielding inclined straw-rack arranged contiguous to the cylinder and its concave. Fig. 12 is a detail plan view of a portion of the endless straw-carrier. Fig. 13 is a detail sectional view on the line 13 13 of Fig. 12. Fig. 14 is a detail perspective of a section of the stationary straw-platform, showing more plainly the slatted formation thereof. Fig. 15 is a detail cross-sectional view on the line 15 15 of Fig. 9. Fig. 16 is a detail sectional view on the line 16 16 of Fig. 10.

Referring to the accompanying drawings, the numeral 1 designates the casing of the machine, constructed in the usual manner and consisting of imperforate panels or boards fitted to the skeleton framework 2, which is fitted on the front and rear wheel axles 3 and 4, respectively, and said casing is provided contiguous to its rear end with a suitable side door 1<sup>a</sup>, which permits of ready access to the interior of the casing to facilitate the adjustment and cleaning of the sieves or chaffer. The casing 1 is open throughout its entire length, as is usual in threshing-machines, and is provided at the front end thereof with a cylinder-boxing 5, in which is mounted to rotate the threshing-cylinder 6, of ordinary construction.



In the present invention it is the purpose to have all parts of the machine run as freely as possible with a minimum amount of friction, so the extremities of the cylinder-shaft 5 7 are preferably mounted in roller or ball bearings 8, housed within a bearing-box 9, offset from the exterior sides of the boxing-walls 10.

Below the plane of the threshing-cylinder 6 the cylinder-boxing walls 10 are provided at their inner sides with a plurality of vertically-disposed guide-strips 11, arranged in parallel relation and forming therebetween slideways to receive the vertically-adjustable supporting-plates 12 for the concave-bars. The vertically-adjustable supporting-plates 12 have their side edges slidably engaged with the guide-strips 11, so as to be held for sliding movement at the inner sides of the boxing-walls 10, and said supporting-plates 12 are provided at their upper ends and transversely thereof with curved holding-grooves 13, formed between inwardly-projecting parallel flanges 14 and adapted to detachably receive 5 therein the ends of the concave-bars 15.

The sliding supporting-plates 12 for the concave-bars 15 are arranged in pairs respectively at opposite sides of the cylinder-boxing, so that each pair of such plates will support a single concave-bar, and in the practical construction of the machine three concave-bars are employed, each of which is provided with two parallel rows of concave spikes or teeth 16, thereby making six rows of concave 5 spikes or teeth in the entire concave, although in operating in certain kinds of grain all of these teeth are not brought into play. The plates 12 of each pair are provided with vertical racks 17 and at one side of the plane of said racks with vertical longitudinally-disposed slots 18, which receive the transverse adjusting-shaft 19, journaled in opposite sides or walls of the cylinder-boxing and carrying adjusting-pinions 20, meshing with the racks 5 17 to provide for the simultaneous vertical adjustment of the pair of supporting-plates. The transverse adjusting-shaft 19 for each pair of the supporting-plates 18 is provided at one end, exterior to the machine, with a crank-handle 21, and also has fitted thereon a ratchet-disk 22, adapted to be engaged by a locking-dog 23, pivotally mounted on the outside of the cylinder-boxing.

By reason of the construction described it 5 will be obvious that by turning one of the adjusting-shafts 19 the supporting-plates 12 associated therewith may be raised or lowered to provide for the desired adjustment of the concave-bar carried thereby. In threshing 10 wheat it is only necessary to use four rows of concave spikes or teeth, thereby necessitating having only two concave-bars in action, so that the third concave-bar may be lowered sufficiently to carry its teeth out of 5 the zone of action. In threshing flax, timothy, or other seed all of the concave spikes or teeth are required, hence necessitating the

adjustment of all of the concave-bars to a position within the arc of the same circle, as plainly illustrated in Fig. 5 of the drawings. 70

As already explained, the holding-grooves 13 of the supporting-plates 12 of each pair are designed to detachably receive the ends of the concave-bar carried thereby, and to provide means for readily removing and re- 75 placing any one of the concave-bars from beneath the machine the central pair of guide-strips 11 at each side of the cylinder-boxing are interrupted by the transverse clearance-grooves 24. By reference to Fig. 5 of the 80 drawings it will be obvious that when a pair of the supporting-plates 12 are lowered to bring the holding-grooves 13 thereof in circular alinement with the clearance-grooves 24 the concave-bar 15 carried thereby may 85 be readily slid out of the holding-grooves 13 and through the clearance-grooves 24 and then removed from the under side of the machine when the front section of the grain-floor is lowered out of the way in a man- 90 ner hereinafter more fully explained. The same manipulation of parts occurs when the concave-bar is placed within the holding-grooves of a pair of the supporting-plates.

The usual threshing action takes place be- 95 tween the threshing-cylinder itself and its concave composed of the individual concave-bars 15, and the straw is tossed from the threshing-cylinder onto an inclined straw-rack 25, arranged within the front end por- 100 tion of the machine-casing at one side of and contiguous to the threshing-cylinder. The said inclined straw-rack 25 is a slatted structure, essentially consisting of a plurality of spaced parallel slats 26, extending longitudi- 105 nally thereof, and transverse upper and lower bars 27 and 28, connecting the ends of said slats. The slats 26 of the inclined straw-rack 25 are arranged sufficiently close together to prevent the straw falling therebetween, while 110 at the same time permitting of the ready escape of the grain to the grain-floor and grain-carrying apron, to be hereinafter described. The inclined straw-rack 25 is inclined up- 115 wardly toward the rear end of the machine-casing, and the lower transverse bar 28 thereof is provided with pintle extensions 29 at its ends, which are loosely journaled in the sides of the machine-casing to provide a hinge-support for the lower front end of the rack, 120 thereby leaving the upper rear end of the rack free to swing in a vertical direction. To provide for properly guiding and supporting the upper movable end of the inclined straw-rack 25, the upper transverse bar 27 125 thereof is provided at its ends with slotted ears 30, which loosely receive the stationary guide-rods 31, fitted in the framework of the machine-casing, at opposite sides thereof, and beneath the slotted ears 30 of the straw-rack 130 are arranged the supporting-springs 31<sup>a</sup>, which provide for the yielding support of the upper end of the rack.

Associated with the hinged spring-support-



ed straw-rack 25 is a revolving winged beater 32, mounted transversely of the machine-casing contiguous to the threshing-cylinder and directly above the straw-rack, said beater 5 being rapidly rotated to provide for beating the straw down upon the yielding rack and forcing the same over the upper end of the latter, and at this point it will be observed that by reason of the yielding support for 10 the upper end of the straw-rack the said rack will readily yield downward under undue pressure from heavy bundles or bunching, and thereby relieve the beater and prevent the choking of the machine or the unbelting 15 of any of the pulleys.

The straw which is forced over the yielding rack 25 drops from the upper end thereof onto the lower front end portion of the stationary perforate straw-platform 33. The 20 stationary straw-platform 33 is a slatted structure consisting of a plurality of regularly-spaced parallel slats or bars 34, which are spaced sufficiently close together to prevent the straw from passing therethrough, 25 while at the same time affording a free escape for the grain which is separated from the straw. The said stationary perforate straw-platform 33 extends from a point below the front straw-rack 25 to the extreme rear end 30 of the machine-casing, and said platform is provided with a front inclined section 35 and an upper rear horizontal section 36. The front inclined section 35 of the straw-platform leads from a point beneath the rack 25 35 to an intermediate point of the machine-casing, above the horizontal center thereof, while the upper rear horizontal section 36 of the straw-platform extends from the upper end of the front section 35 out to the rear end of 40 the casing, as plainly illustrated in Fig. 2 of the drawings.

To provide for carrying the straw over the platform 33 and out of the rear end of the machine-casing, an endless straw-carrier 45 is employed, the upper horizontal run of which carrier travels directly upon the upper side of the platform, and thereby serves to forcibly carry the straw from the casing. The said endless straw-carrier 37 essentially consists of a pair of opposite parallel sprocket-chains 38 and a plurality of regularly-spaced transversely-arranged convexed slats 39, connecting the opposite chains. In the present invention the opposite parallel sprocket-chains 55 38 of the carrier 37 have certain links thereof provided at their inner edges with offstanding lateral socket-plates 40, which receive the ends of the slats 39, and associated with the socket-plates 40 are separate arched metallic 60 caps 41, covering the ends of the slats, fitting in the socket-plates and held in place by the rivets 42, which pass through said caps 41, the ends of the slats, and the socket-plates 40, thereby providing a very secure and substantial connection between the ends of the slats 65 and the sprocket-chains 30, carrying the same.

The endless straw-carrier 37 maintains a

substantial parallelism to the straw-platform 33 throughout the entire length of the latter, and to provide for driving and supporting 70 the said carrier transverse front and rear carrier-shafts 43 and 44 are arranged, respectively, at the front and rear ends of the straw-platform 33, and each of said carrier-shafts 75 has mounted thereon a pair of sprocket or chain wheels 45, over which pass opposite chains 38 of the carrier. At a point centrally between the front and rear shafts 43 and 44, which carry the sprocket-chains, are arranged 80 upper and lower idler-wheels 46 and 47, which respectively support the upper and lower runs of the endless carrier to maintain its parallelism to the straw-platform, with which it is associated.

Coöperating with the endless straw-carrier 85 37, working over the slatted straw-platform, is an endless straw-agitating apron 48. The said endless straw-agitating apron 48 extends longitudinally of the machine-casing above the plane of the straw-platform and is of the 90 same construction as the said endless straw-carrier, the same having the opposite parallel sprocket-chains 49 and the series of transverse convexed slats 50, connecting said chains at intervals. The opposite parallel chains 49 95 of the straw-agitating apron 48 pass over the sprocket-wheels 51, mounted, respectively, on the oppositely-arranged front and rear apron-shafts 52 and 53, which are mounted transversely respectively within the front portion 100 of the casing and at the extreme rear end thereof, as plainly shown in Fig. 2 of the drawings. At a point intermediate the said front and rear apron-shafts 52 and 53 the upper and lower runs of the apron 48 are supported 105 by vertically-alined idlers 54, which provide for holding the straw-agitating apron on the straw-carrier in substantial parallelism and to leave therebetween a space through which the straw is carried. 110

The contiguous runs or portions of the endless straw-carrier 37 and the straw-agitating apron 48 travel in the same direction to insure the delivery of the straw out of the machine-casing, and by means of suitable belt- 115 ing the upper straw-agitating apron 48 is caused to travel much faster than the endless straw-carrier, thereby serving to stir up, check, and roll over the straw, thus loosening the entire mass of straw and working out 120 therefrom the particles of grain. In this connection it will be observed that the convex shape of the transverse slats assists materially in rolling over the straw, so as to present every portion thereof to the agitating influ- 125 ence of the fast-traveling apron 48.

The grain which is worked out of the straw within the front portion of the machine-casing falls upon an inclined imperforate grain-floor 55. The imperforate inclined grain-floor 55 130 is arranged approximately parallel with the front inclined portion 35 of the straw-platform in a plane below the latter and extends from the front end of the machine to an interme-



diate point. At its front lower end the said grain-floor 55 is provided with a horizontal section 56, hinged at its inner edge, as at 57, to the main portion of the floor, and which when in its normally-elevated or in horizontal position is disposed below a portion of the concave, so as to receive thereon such grain as falls through the cylinder-boxing and over the straw as it is tossed upon the inclined yielding rack 25. The front lower hinged section 56 of the grain-floor 55 is suspended in its elevated horizontal position by means of a swinging supporting-bail 58 of an approximate U shape. The swinging supporting-bail 58 is provided with journal portions mounted in the opposite sides of the framework, and at one end the said bail is formed with a crank-handle 59, which permits the operator to readily swing the bail into and out of engagement with the front arm extensions 60, projected from the front end of the hinged floor-sections 56. As shown in Fig. 2 of the drawings, the front arm extensions 60 of the hinged floor-section 56 rest within the supporting-bail 58, thereby serving to support the hinged floor-section in an operative position; but by swinging the bail 58 from beneath the arm extension 60 the floor-section is permitted to drop to a vertical position, as indicated in dotted lines in Fig. 5 of the drawings, and thereby give access to the concave-bars when it is desired to remove or replace the same in the manner previously explained.

The front lower hinged section 56 of the grain-floor has mounted in the side portions thereof the front transverse apron-shaft 61, which is arranged in opposite relation to the rear apron-shaft 62, mounted transversely of the machine-casing at the upper rear end of the grain-floor 55. The upper and lower apron-shafts 60 and 61 have mounted thereon the sprocket-wheels 62, which receive the opposite parallel sprocket-chains of an endless grain-carrying apron 63. The grain-carrying apron 63 is similar in construction to the carrier 37 and the apron 48, so a further description thereof at this point seems unnecessary, and it is to be noted that suitable idlers 64 are associated with the separate sprocket-chains of the apron 63 to provide for holding the rows thereof in proper working relation to the grain-floor 55, whereby the slats of the apron 63 will carry the grain upon the floor 55 to the upper end of the latter, over which it is delivered into the cleaning device to be presently described.

The grain which is separated from the straw upon the upper horizontal portion 36 of the straw-platform falls upon the stationary horizontal grain-board 64<sup>a</sup>, mounted within the casing beneath said upper horizontal section of the platform, and at its rear end the said grain-board 64 has projected downwardly therefrom an inclined straw-chute 65, which receives the straw from the rear discharging end of the casing and directs the same onto the stacking apparatus, which is

usually associated with the threshing-machine. The said horizontal grain-board 64 is slightly inclined, and the inner end thereof terminates short of the upper end of the inclined grain-floor 55, whereby all of the grain which is separated from the straw may be directed from the grain-space 65<sup>a</sup> onto the inner portion of the reciprocatory grain-conveyer riddle 66. It is to be observed that the said horizontal grain-board 64<sup>a</sup> is arranged in proximal relation to the lower run of the endless straw-carrier, so that this portion of the straw-carrier will serve as the grain-apron to work the grain over the board 64<sup>a</sup>.

The grain-conveyer riddle 66 is hung for movement within the rear end portion of the casing below the plane of the rear grain-board 64<sup>a</sup>, and said riddle essentially consists of an approximately rectangular frame 67, having fitted therein a separating-screen 68 of suitable mesh, which screen extends the entire length and width of the frame in order to present a maximum separating-surface to the grain. In addition to the separating-screen 68 the conveyer-riddle 66 is further provided at the opposite ends thereof with the inclined imperforate deflecting-aprons 69, which are arranged beneath the inner and outer end portions of the separating-screen 68 and serve to catch the grain passing through these portions of the screen and deflect the same upon the upper side of the cleaning-sieve 70, which is supported beneath the riddle in the manner hereinafter described.

The outer end portion of the reciprocatory grain-conveyer riddle 66 rests within a vertically-adjustable swinging U-shaped hanging bail 71, arranged transversely of the casing, at the extreme rear end thereof, and provided with angled terminal supporting-arms 72, which loosely and adjustably engage with the oppositely-arranged side hanging plates 73 and 74, respectively arranged at opposite sides of the framework of the casing. The said side hanger-plates 73 and 74 are disposed in vertical planes, and the plate 73 is provided with a longitudinal series of perforations 75, while the opposite hanger-plate 74 is provided at one edge with a longitudinal series of notches 76, with which one of the terminal supporting-arms 72 of the hanging bail may be readily engaged, and also disengaged therefrom when it is desired to adjust the inclination of the conveyer-riddle 66. By reason of swinging the hanging bail 71 between the perforated and notched plates 73 and 74 it will be understood that when it is desired to change or adjust the inclination of the conveyer-riddle it is simply necessary to disengage one of the terminal supporting-arms 72 from the notched plate 74, so that the opposite terminal supporting-arm can be withdrawn from the perforation of the perforated plate 73 and inserted in another perforation above or below the one from which it was withdrawn, after which the bail is engaged with the proper notch of the plate 74.



This provides simple and efficient means for changing the inclination or angle of the conveyer-riddle, while at the same time permitting the outer end portion of the riddle to have a free swinging reciprocatory movement.

The inner end portion of the reciprocatory grain-conveyer riddle 66 is supported to reciprocate over the stationary supporting-rod 77, arranged horizontally and transversely, and rigidly fastened at its ends to opposite sides of the machine-casing. The said stationary transverse supporting-rod 77 has mounted thereon within the plane of the riddle 67 the bearing-rollers 78, which work within the oblong flanged guides 79, fitted to opposite inner sides of the riddle-frame 67, and cooperating with said rollers provide a roller-bearing, upon which the conveyer-riddle may freely reciprocate. The opposite end portions of the stationary transverse supporting-rods 77 project through the exterior offset enlarged tubular trunnions 80, fitted to and projected from the outer sides of the riddle-frame 67 and of a materially greater diameter than the supporting-rod 77 to accommodate the reciprocation of the riddle over the said rod. The oppositely-located offset tubular trunnions 80 of the riddle-frame have loosely fitted thereon one end of the operating-pitmen 81, the other ends of which pitmen are fitted to the eccentrics 82, mounted on the transverse fan-shaft 83, arranged transversely of the casing, within the central portion thereof, and journaled in suitable bearings at the sides of the framework. The said fan-shaft 83 has mounted thereon a rotary blast-fan 84, revolving within the cylinder fan-casing 85, having a tangentially-disposed blast-spout 86 arranged at an inclination to provide for directing a blast of air toward and over the inner end portion of the riddle, whereby the primary separation of the chaff from the grain will occur as the latter falls through the grain-space 65<sup>a</sup> onto the inner end portion of the grain-conveyer, and at this point it will be observed that by reason of the pitmen-and-eccentric connections with the fan-shaft 83 a reciprocatory movement will be imparted to the conveyer-riddle to effect the proper separation of the grain from the chaff and other foreign matter, while the grain passes through the screen 68 of the riddle and onto the cleaning-sieve 70 therebelow.

To provide for the suspension of the inner end portion of the cleaning-sieve 70 from the conveyer-riddle, the riddle-frame 67 has attached to the opposite sides thereof and at an intermediate point the pendent supporting-brackets 87, provided below the plane of the riddle-frame with inwardly-projecting journals 88, respectively, of different lengths, as plainly illustrated in Fig. 8 of the drawings.

The inwardly-projecting journals 88 of the supporting-brackets 87 loosely receive thereon the collars 89, fitted to and projecting above the opposite sides of the framework of

the cleaning-sieve 70. By reason of the different lengths of the projecting journals 88 it will be obvious that by moving the cleaning-sieve in a lateral direction the same may be readily fitted to and disconnected from the said journals. This is important, as the said cleaning-sieve 70 is interchangeable with others of different mesh, according to the character of the grain being threshed and cleaned.

While the inner end portion of the cleaning-sieve 70 is suspended from the conveyer-riddle, said sieve is capable of independent adjustment through the medium of the U-shaped vertically-adjustable hanging bail 90, which is similar in construction to the hanging bail 71 for the riddle and is also provided with terminal supporting-arms 91, loosely and adjustably engaged with the side hanging plates 73 and 74, previously referred to. By adjusting the hanging bail 90, within which the rear end portion of the sieve 70 rests, it will be obvious that the inclination of this sieve will be adjusted to suit the requirement of the work irrespective of the inclination of the conveyer-riddle 66. Associated with the cleaning-sieve 70 is a second blast-fan 92, mounted on the transverse fan-shaft 93 and arranged to rotate within the cylindrical horizontal fan-casing 94, provided with a tangential blast-spout 95, disposed at an inclination and arranged contiguous to the inner end of the cleaning-sieve 70 to provide for directing the blast of air in an upward direction through the inner end portion of the sieve 70 and the conveyer-riddle thereabove, thereby providing means for completely removing the chaff from the grain.

In the practical use of the machine the cleaning-sieve 70 is disposed at an inclination, whereby the tailings and grain which do not pass therethrough work over the lower rear end of the sieve and are directed by the chute 96 into the tailings-trough 97, arranged transversely of the machine-casing at the extreme rear end thereof. The tailings-trough accommodates for rotation therein an auger or screw conveyer 98, which provides for working the tailings out of the trough and into the lower end of the inclined elevator-casing 99, supported exterior of the machine-casing at one side thereof and having its lower end in communication with one end of the said tailings-trough 97. At its upper end the said elevator-casing 99 is provided with a laterally-inclined delivery-spout 100, which projects inwardly through one side of the machine-casing directly above the plane of the riddle 66 to provide for delivering the tailings thereon for recleaning without carrying the tailings back to the feeding end of the machine, as is customary in the ordinary types of threshing-machines. The said elevator-casing 99 accommodates therein an endless-belt elevator of any approved construction.

The grain which works through the cleaning-sieve 70 falls upon the inclined reciprocatory screening-shoe 101<sup>a</sup>. The said in-



clined reciprocatory screening-shoe 101<sup>a</sup> is provided with separate perforate and imperforate portions 102 and 103, respectively, and the upper end thereof overlaps and works upon one edge of the tailings-trough 97 to prevent the escape of the grain at this point, while the lower inner edge of the shoe 101<sup>a</sup> extends over one edge of the transverse grain-trough 104, which accommodates for rotation therein the grain auger or screw conveyer 105. The said inclined screening-shoe 101<sup>a</sup> has pivotally connected thereto, as at 106, one end of the operating-pitmen 107, the other ends of which pitmen are fitted to eccentrics 108, mounted upon the opposite end portions of the second fan-shaft 93, whereby the said fan-shaft will provide means for imparting a reciprocatory movement to the said shoe 101<sup>a</sup>.

The transverse grain-trough 104 preferably opens at one end into the lower end of an elevator-casing 109, arranged at one side of the machine and extending from the top to the bottom thereof. The said elevator-casing accommodates for movement therein the longitudinally-arranged endless belt or other equivalent elevator 110, which provides means for elevating the grain from the discharging end of the grain-trough 104 to one end of the transverse distributing-box 111, arranged transversely of the machine-casing on the top deck thereof, as plainly illustrated in Fig. 3 of the drawings. The distributing-box 111 is provided at its opposite ends with the off-standing inclined delivery-spouts 112, either of which may be brought into use for delivering the grain into a wagon at either side of the machine. The transverse distributing-box also accommodates for movement therein an auger or screw conveyer 113, which provides for carrying the grain from the elevator to the spout 112 at the opposite side of the machine; but should it be desired to discharge the grain through the spout 112 contiguous or next to the elevator-casing 109 a cut-off valve 114 is brought into use. This cut-off valve is slidably fitted in one end of the distributing-box 111 directly adjacent to one end of the auger or screw conveyer 113, and when closed prevents the grain from passing into that portion of the distributing-box within which the said auger or conveyer works. To insure this operation, it may be necessary to change the direction of rotation of the conveyer 113, which could be readily accomplished by crossing the belt connection with the shaft of said conveyer.

To provide for transmitting motion to the various working parts of the machine, ordinary belts and pulleys are utilized, so it seems unnecessary to particularly describe each of the belt connections, as the same are plainly shown in the drawings, the only requirement being that the belts provide for imparting motion to the different parts in the proper direction and at the required rate of speed; but in carrying out the present invention motion is imparted to all of the belting for the

interior parts of the machine from a single drive-shaft 115, which is journaled transversely of the machine-frame and has mounted on one end portion a loose pulley 116, which receives its motion from the belt 117, driven from a pulley on the threshing-cylinder shaft. The said loose pulley is provided at one side with the clutch-face 117, which is adapted to be engaged by the complementary clutch-face 118 of a clutch-disk 119, feathered on one end portion of the shaft 115 and provided with an annularly-grooved collar 120. The annularly-grooved collar 120 loosely receives the slotted portion 121 of the clutch-lever 122, which is pivotally supported at one end, as at 123, on the framework of the machine. The handle portion of the clutch-lever 122 is adapted to be engaged by a shouldered latch-arm 124, which is pivoted at its inner end to the adjacent framework of the machine-casing and which when lowered onto the clutch-lever, so that the shoulder thereof engages at one side of such lever, the clutch-disk 119 will be held locked out of engagement with the loose pulley 116, and thereby keep the machine out of gear until it is again desired to operate the same. When the latch-arm 124 is disengaged from the lever 122, the clutch-disk is thrown into operative engagement with the loose pulley and maintained in such engagement by means of the clutch-spring 125, mounted on one extremity of the shaft 115 and bearing against the collar 120 of the clutch-disk, as plainly shown in Fig. 10 of the drawings.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described machine will be readily apparent to those skilled in the art without further description, and it will be understood that changes in the form, proportion, size, and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a threshing-machine, the combination of the cylinder-boxing provided at the inner sides thereof with a plurality of spaced guide-strips forming therebetween slideways, the central pair of such strips at each side of the boxing being interrupted by transverse clearance-grooves, supporting-plates working in the slideways formed between said strips, and provided at their inner sides with transversely-arranged grooves adapted to be brought into alignment with said clearance-grooves, a toothed concave bar for each pair of supporting-plates having the ends thereof detachably engaged in the holding-grooves of said plates, and independent adjusting means for each pair of the plates, substantially as set forth.

2. In a threshing-machine, the cylinder-box-



ing provided at the inner sides thereof with a plurality of guide-strips forming therebetween slideways, supporting-plates working in said slideways, and provided at their upper ends and transversely thereof with holding-grooves, said supporting-plates being further provided with vertical racks, a toothed concave bar for each pair of supporting-plates having its ends detachably engage in the holding-grooves of said plates, and an adjusting-shaft for each pair of supporting-plates, said adjusting-shaft carrying pinions meshing with the racks of said plates, substantially as set forth.

3. In a threshing-machine, the combination with the cylinder, of the cylinder-boxing provided at the sides thereof with a plurality of slideways, and below the plane of the cylinder with clearance-grooves communicating with the several slideways, a plurality of supports working in the slideways, a toothed concave bar detachably fitted to each pair of supports, and an independent adjusting device for each pair of supports, said adjusting device having means for causing the concave bar carried by the supports to be brought to a position where it may be moved through a clearance-groove and out of engagement with its supports, substantially as set forth.

4. In a threshing-machine, the combination with the casing, the cylinder, and the straw-handling devices, of an inclined slatted straw-rack arranged at one side of the cylinder and provided with upper and lower transverse bars, the lower of said bars having pintle extensions journaled in the casing, and the upper of said bars being provided at its ends with slotted ears, stationary guide-rods fitted to the machine-casing and loosely receiving said slotted ears, springs arranged on the guide-rods beneath the ears, and a rotary beater located above the rack, substantially as set forth.

5. In a threshing-machine, the combination with the casing and the threshing mechanism, of a stationary straw-platform consisting of a plurality of parallel spaced slats or bars, said platform extending substantially the full length of the casing and having a front inclined section and an upper rear horizontal section, both of said sections directly adjoining and forming continuations of each other, a single endless straw-carrier having its upper run following and working over said platform, and a single straw-agitating apron arranged above the platform and conforming to the angularity of the runs of the straw-carrier, said straw-carrier and agitating-apron being substantially coextensive in length, substantially as set forth.

6. In a threshing-machine, the combination with the casing and the threshing mechanism, of a stationary perforate straw-platform extending longitudinally within a casing, and having a front inclined section, and an upper rear horizontal section, a single endless straw-carrier having its upper run following and working over said platform, a single straw-agitating apron arranged above the platform, and conforming to the angularity of the runs of the straw-carrier, said straw-carrier and agitating-apron being substantially coextensive in length, and traveling at different rates of speed, substantially as set forth.

7. In a threshing-machine, the combination with the casing, and the straw and grain separating devices therein, of a reciprocating riddle mounted within the rear portion of the casing, a swinging vertically-adjustable support for the rear end portion of the riddle, a stationary support loosely engaging with the inner end portion of the riddle, a cleaning-sieve having a detachable hinge connection at one end with the lower side of the riddle at a point intermediate the ends of the latter, a swinging vertically-adjustable support for the outer end portion of the hinged sieve, and means for reciprocating the inner end portion of the riddle upon its stationary support.

8. In a threshing-machine, the combination with the casing, and straw and grain separating devices therein, of a reciprocating riddle provided with guides and tubular trunnions, a transverse stationary supporting-rod carrying bearing-rollers cooperating with said guides, said rod also extending through the trunnions, a swinging support for the outer end portion of the riddle, and pitmen connections with said trunnions, substantially as set forth.

9. In a threshing-machine, the combination with the casing, and the straw and grain separating devices therein, of a riddle provided at opposite inner sides thereof with oblong flanged guides, and upon its outer sides with offset enlarged tubular trunnions, a transverse stationary supporting-rod extending through said trunnions and carrying bearing-rollers working in said flanged guides, and suitably-operated pitmen engaging with said trunnions, and a swinging support for the outer end portion of the riddle, substantially as set forth.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM C. WILKA.

Witnesses:

E. L. PARTCH,  
B. L. RICHARDS.