No. 820,255. PATENTED MAY 8, 1906.

J. T. RAMSDEN.

BAND CUTTER AND FEEDER FOR THRESHING MACHINES.

APPLICATION FILED JULY 11, 1905.

3 SHEETS—SHEET 1.

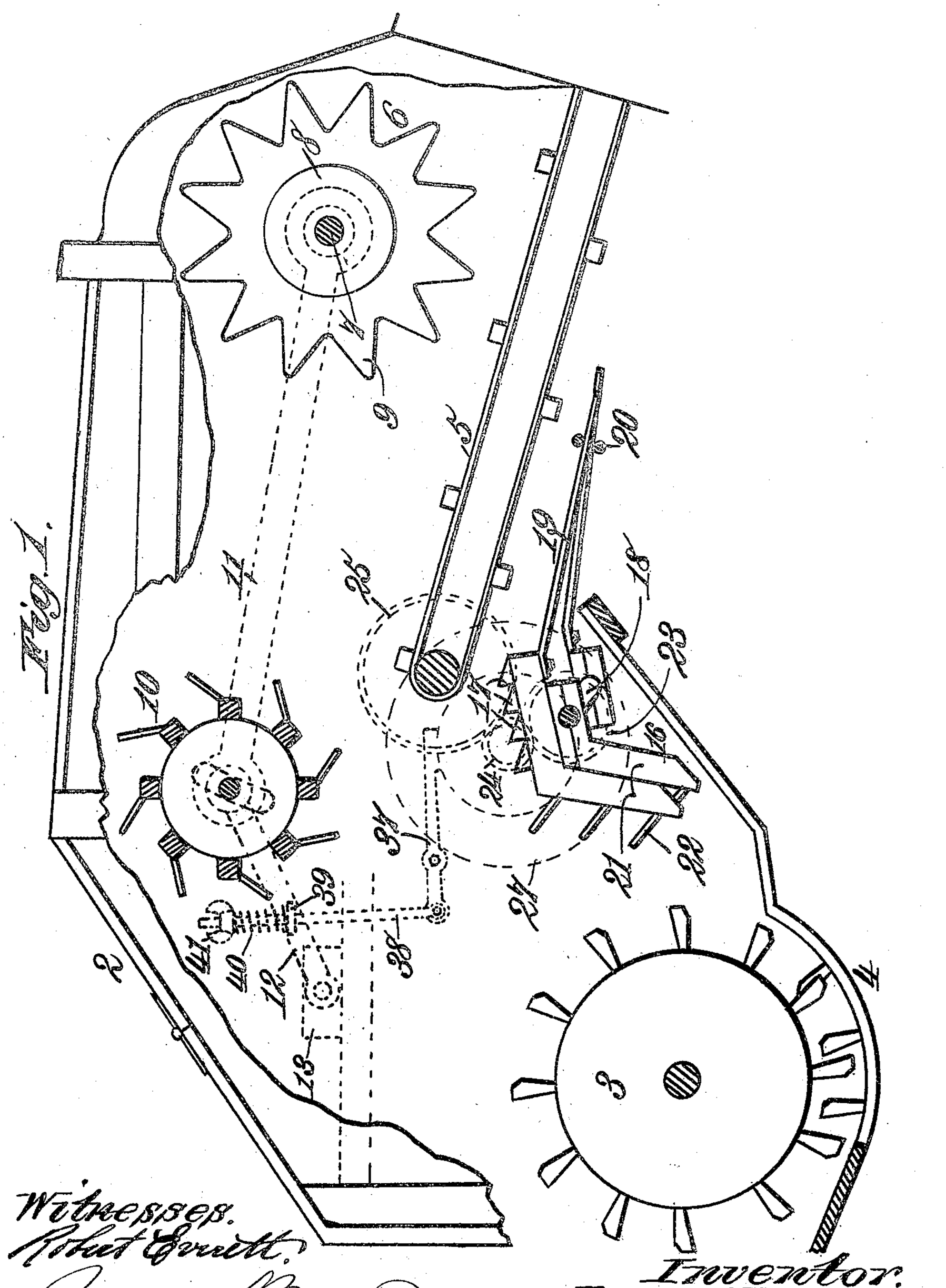

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Fig. 2.

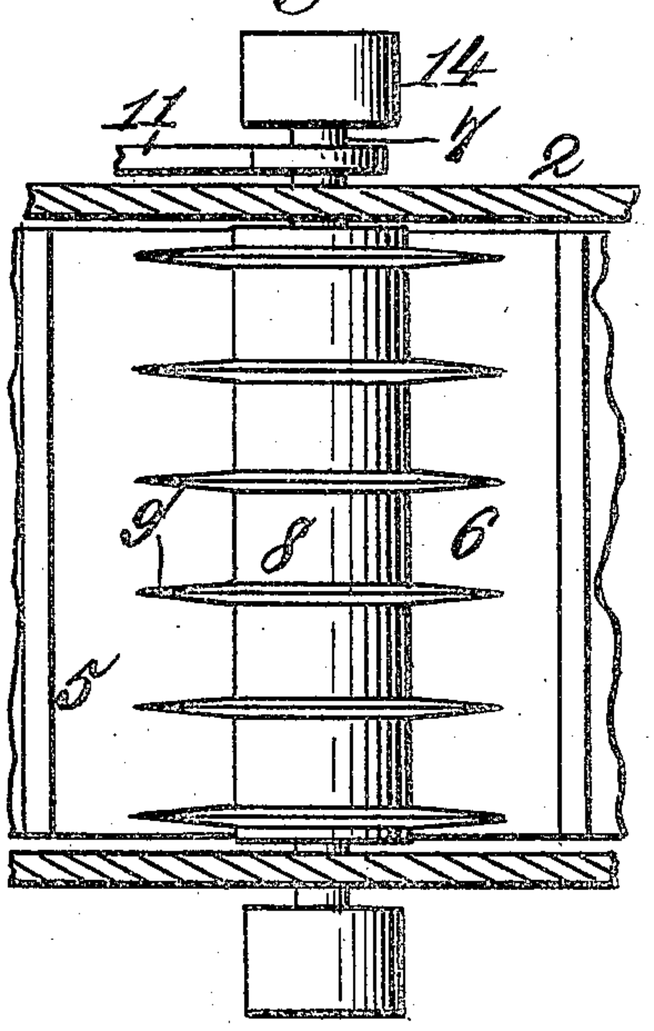


Fig. 3.

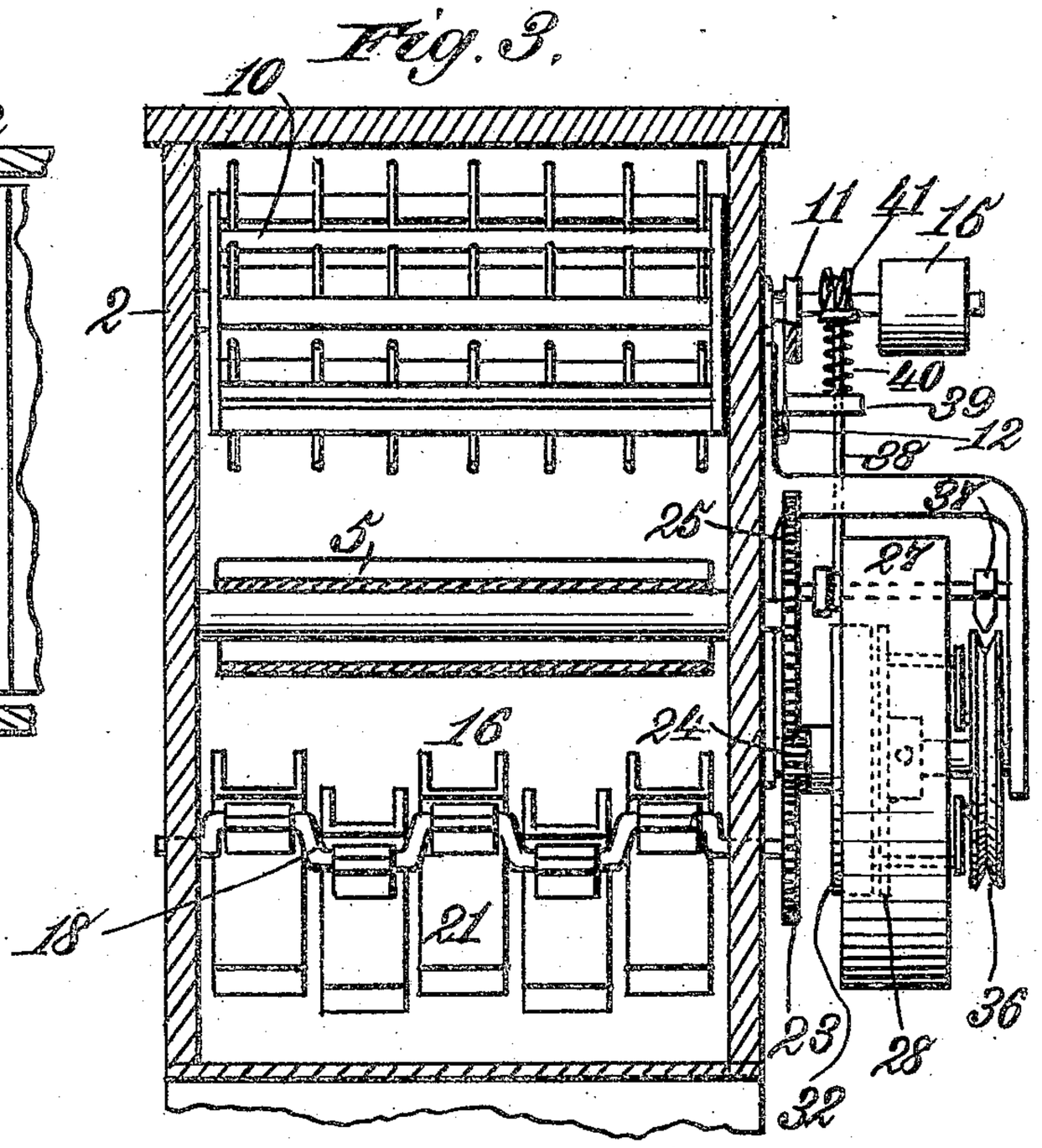


Fig. 4.

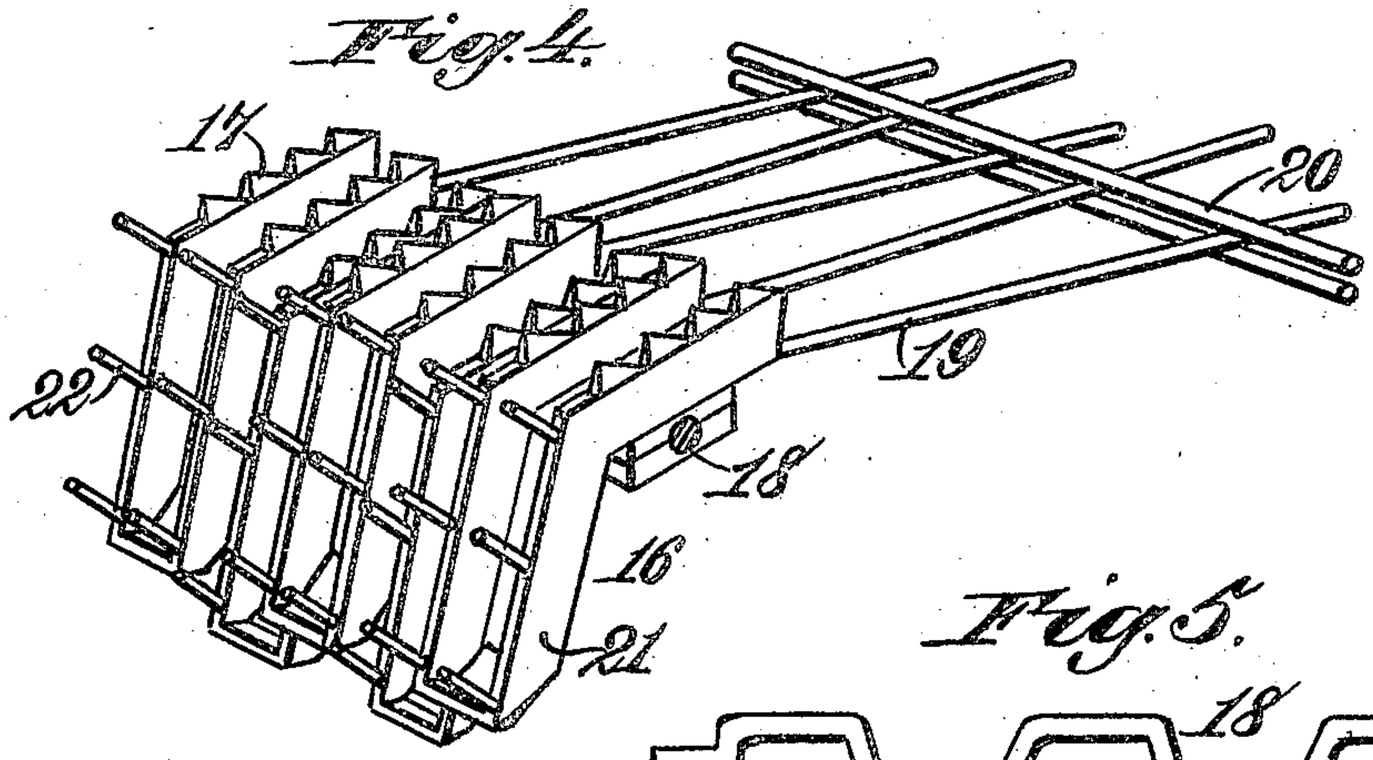
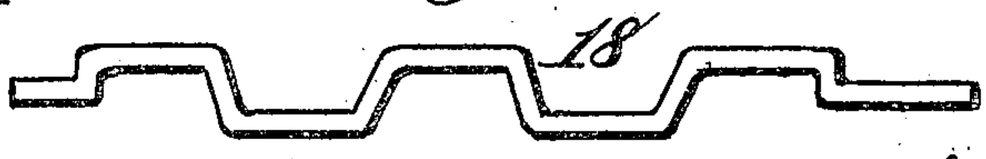


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

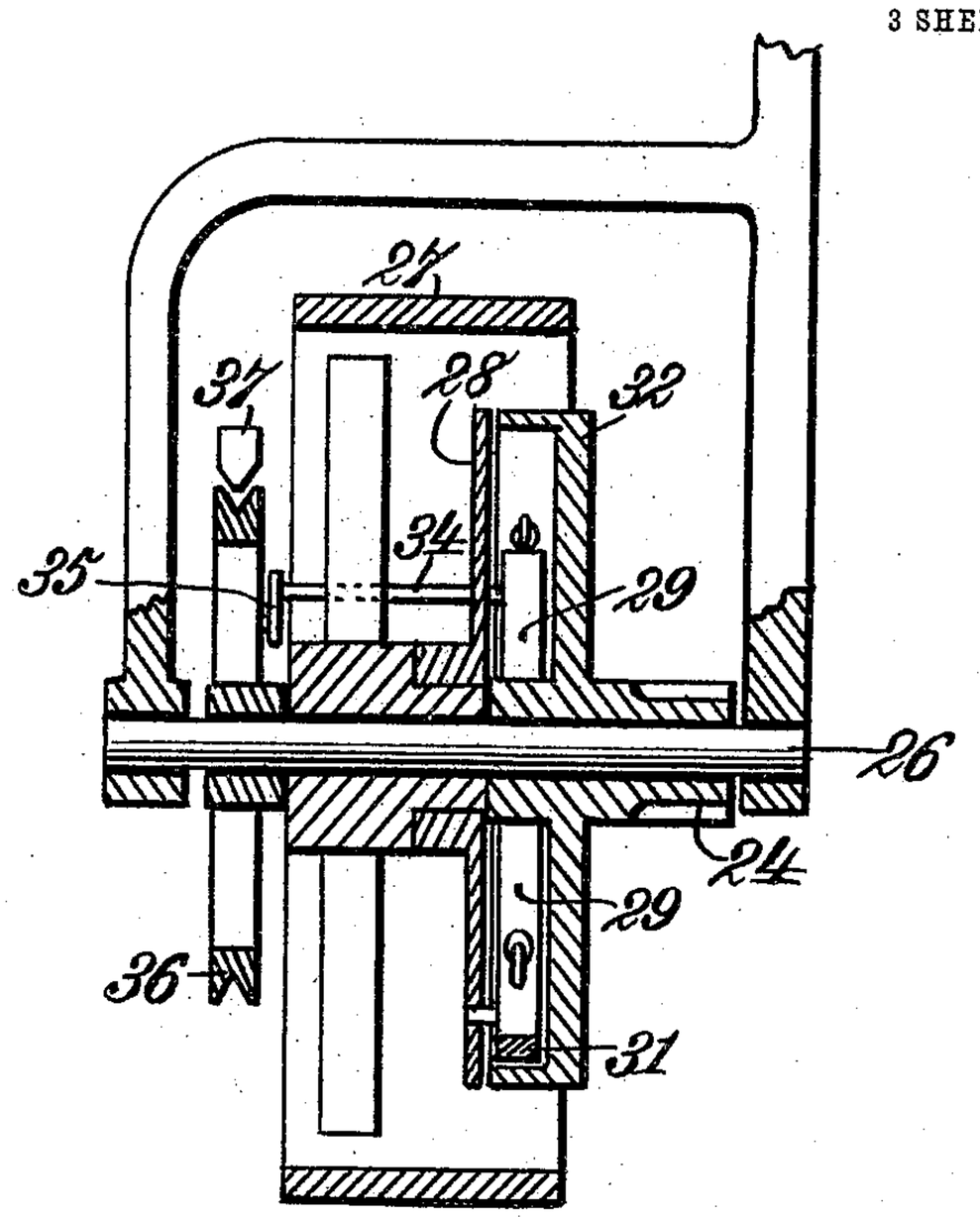
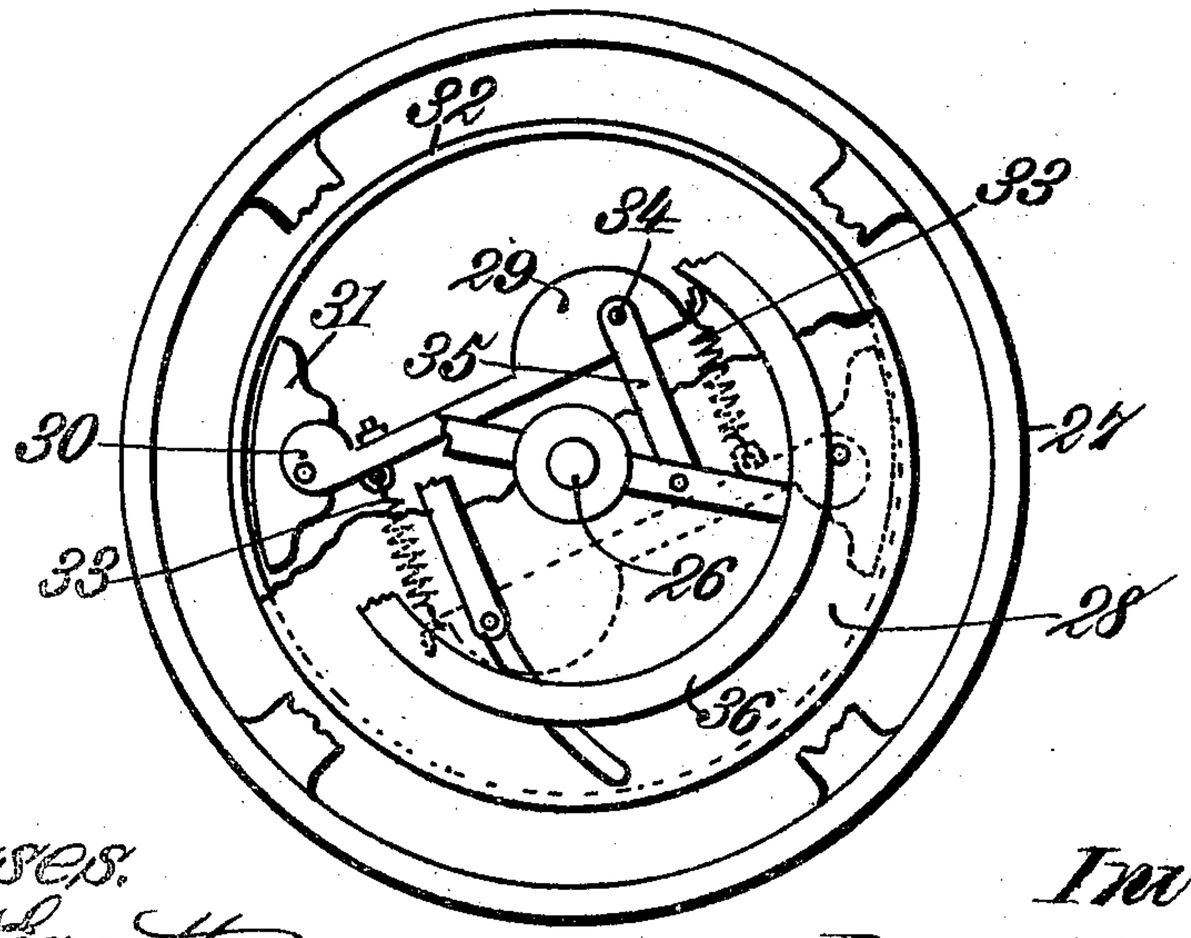


Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES T. RAMSDEN, OF LEEDS, IOWA, ASSIGNOR OF ONE-HALF TO JOHN C. GABEL, OF LEEDS, SIOUX CITY, IOWA.

BAND-CUTTER AND FEEDER FOR THRESHING-MACHINES.

No. 820,255. Specification of Letters Patent. Patented May 8, 1906.

Application filed July 11, 1905. Serial No. 269,216.

To all whom it may concern:

Be it known that I, JAMES T. RAMSDEN, a citizen of the United States, residing at Leeds, in the county of Woodbury and State of Iowa, have invented new and useful Improvements in Band-Cutters and Feeders for Threshing-Machines, of which the following is a specification.

This invention relates to band-cutters and feeders for threshing-machines.

One of the objects of the invention is to provide a band-cutter wherein the possibility of the grain being wound around the shaft thereof is prevented.

Another object is to provide means to insure a uniform and rapid feeding of bound and unbound grain, regardless of the condition thereof, whether tangled, wet, or otherwise.

A further object is to increase the effectiveness of the apparatus over those ordinarily in use.

The invention includes other objects and advantages which, with the foregoing, will be set forth at length in the following description, while the novelty of the invention will be embraced by the claims succeeding said description.

I have selected for convenience of illustration one simple adaptation of the invention, which will be fully disclosed in the description; but I do not limit myself to the showing thus made, for certain variations may be adopted within the scope of my claims.

Referring to the drawings, Figure 1 is a sectional side elevation of band-cutting and feeding mechanism involving my invention. Fig. 2 is a sectional top plan view of the carrier and band-cutter. Fig. 3 is a transverse sectional elevation, the section being taken just to the right of the beater represented in Fig. 1. Fig. 4 is a detail view in perspective of the feed-controlling pans and certain adjunctive devices. Fig. 5 is a detail in elevation of the crank-shaft for operating said pans. Fig. 6 is a detail of a clutch device, a manner of mounting the same, and certain coöperating parts. Fig. 7 is a face view of said clutch device.

Like characters refer to like parts throughout all the views.

The framework of the machine is denoted in a general way by 2, and it houses the threshing-cylinder 3 and the concave 4, both of the usual construction and mounted in any desirable way. (See Fig. 1.) The framing is represented as inclosing a carrier, as 5, shown as an endless belt slatted on its outside. In fact, the carrier is of a familiar construction, so that a detailed description thereof is deemed unnecessary.

Located above the carrier, at a suitable point in the length thereof, is the band-cutter, (designated in a general way by 6 and which in practice is driven at a high velocity in order to effectually cut the bands surrounding the bundles of grain fed forward by the upper run of the carrier 5.) The band-cutter shaft 7 rigidly carries in any desirable way the drum or cylinder 8, constituting the core for the band-cutter and on which are fitted for rotation therewith a desirable number of toothed disks 9, spaced ordinarily at equal and desired distances. The teeth of the disks serve to cut the bands of the bundles of grain as they pass below the band-cutter. The drum or core 8 is of large diameter in order to prevent winding of the grain around the shaft 7.

Located above and slightly forward of the delivery end of the rearwardly-inclined carrier 5 is the beater or distributing device, (designated in a general way by 10 and represented as a peripherally-toothed roll.) The beater or roll 10 is of the floating kind, it being capable of upward movement under the pressure of accumulation of grain and being automatically movable downward to its normal or distributing position. Pivotally united to the opposite ends of the shaft of the beater 10 are the arms 11, similarly united with the opposite ends of the shaft 7. The shaft 7, as is ordinarily the case, is supported by relatively fixed bearings upon the frame. Pivotally united with the opposite ends of the shafts of the beater 10 are arms 12, said arms being flexibly connected in any desirable way with the sliding boxes or bearings 13, supported for longitudinal movement upon the framework 2. From the construction described it will be evident that the beater or distributing-roll 10 is capable of free upward and downward movement. In case an excessive amount of grain is fed toward the threshing-cylinder 3 the excess will strike the floating or flexibly-supported beater or distributing-roll 10 and elevate the same, and during such elevation certain means is thrown

into action, as will hereinafter appear, for limiting or stopping the motion of the carrier 5 until the excess material is moved away by the action of the continuously-operative beater. The beater is continuously driven from the cutter 6, the shafts of the two parts having pulleys, as 14 and 15, arranged in practice to be connected up by a belt (not shown) whereby the beater can be driven from the band-cutter. When the beater is elevated upon the engagement therewith of an excessive amount of grain, it serves, as previously indicated, to arrest the motion of the carrier 5. During such period the beater will by its rotation feed away or positively remove the excess, whereby it will be permitted to fall, to again restore, through certain intermediate mechanisms hereinafter described, the parts to their normal conditions.

The feed-pans, of which there may be any desired number arranged for reciprocation alternately in opposite directions, are designated by 16, each being of channel form and having along the upper edges of their parallel side plates fish-backs or teeth, as 17. The feed-pans 16 are reciprocated by oppositely-disposed cranks on the shaft 18, supported by suitable bearings upon the framing of the machine. The action of the feed-pans, as will hereinafter appear, is controlled by the floating beater or distributing-roll 10, the motion of the feed-pans being stopped concurrently with that of the carrier 5 on the elevation of said beater. Fastened to the under side of each angularly-disposed feed-pan 16 is a rearwardly-extending rod 19. These rods 19 are arranged near their free ends for sliding motion between the parallel bars 20, arranged one above the other and suitably fixed to the side walls of the framework. The bars 20 in connection with the rods 19, serve to guide the reciprocatory feed-pans in proper paths. While certain of the feed-pans are feeding the grain, other feed-pans are passing free of the grain, so that the proper advance of the grain from the delivery end of the carrier or feeder 5 to the threshing mechanism comprising the cylinder 3 and the concave 4 is assured.

Each feed-pan 16 is provided with a depending portion or substantially vertical prolongation 21, shaped substantially similarly to the pan or body thereof and provided on its opposite walls with pins, as 22, of any desired number extending toward the cylinder. The extensions or prolongations 21 of the feed-pans are substantially vertically disposed and are situated adjacent to the cylinder 3, thereby providing a space in which the grain is received and momentarily held by the pins, so as to initially thresh the grain before the same reaches the cylinder.

Upon the outer end of the crank-shaft 18 is a gear 23, meshing with a gear 24, said gear 24 meshing in turn with a gear 25 upon the forward shaft of the carrier 5. The two gears 23 and 25 are rigidly united to their shafts in any desirable way. It will be apparent that on the rotation of the gear 24 the gears 23 and 25 will be simultaneously rotated, so as to impart a feeding movement to the carrier 5 and simultaneously the necessary movement to the feed-pins 16.

The primary gear 23 is loosely supported by a shaft 26, supported by a suitable yoke or bracket carried by the outer side of the frame. Said shaft 26 also loosely carries the pulley 27, adapted to be driven by a belt. (Not shown.) Rigidly connected with the pulley or band wheel 27 in any desirable way is the disk or wheel 28, which pivotally carries the weighted levers 29, provided near their fulcrums with cams 30, arranged to fit in seats or recesses formed in the shoes 31, adapted to engage the inner side of the rim of the friction-wheel 32, said friction-wheel being rigidly united in any desirable way with the gear 23. The weighted levers 29 are connected by coiled springs, as 33, the purpose of which is to move the cams 30 of the levers free of the shoes 31, whereby said shoes will be disengaged from the inner surface of the rim of the friction-wheel 32 under normal conditions or when the friction-clutch comprising the parts just described is at rest. When the pulley 27 is rotated at a predetermined speed, the weighted portions of the levers 29 will be thrown outward by centrifugal force, so as to cause the cams 30 of said levers to press the shoes 31 against the inner surface of the rim of the friction-wheel 32 to cause the rotation of said wheel, and thereby that of the gear 23. When the gear rotates, the carrier or feeder 5 and the pans 16 will be caused to accomplish the results hereinbefore described.

Arms, as 34, extend laterally from the weighted ends of the levers 29, and to their outer ends are jointed links, as 35. It should be stated that said arms extend through arcuate slots in the disk or wheel 28 and also between the spokes of the pulley 27. One end of each link 35 is pivotally connected to an arm 34, while the opposite ends thereof are connected in like manner to the peripherally-grooved brake-wheel 36 near the center thereof, which wheel runs loose on the shaft 26. It will be assumed that the pulley 27 is driven at a speed sufficient to cause the shoes 31, through the intermediate parts, to engage the friction-wheel 32 in order to drive the latter. It will be evident, therefore, that when the movement of the brake-wheel 36 is arrested the shoes 31 by a pull on the links 35 will be freed from the friction-wheel 32, thereby stopping the rotation of said friction-wheel, and consequently that of the gear 23 and feeding mechanism. When the brake-wheel 36 is freed, the parts will be returned to their primary positions, assuming, of

course, that the pulley is rotating at the requisite speed.

On the outside of the framing adjacent to the friction-clutch described is mounted a brake-lever 37, one end of which is adapted to engage the periphery of the brake-wheel 36, while an upwardly-extending rod 38 is pivoted to the other end of said lever. The rod extends through a perforation in the lateral lug 39 on the adjacent arm 12 and is surrounded above the lug by a coiled spring 40, the tension of which may be regulated by a thumb-screw 41 in threaded engagement with the upper end of said rod. It will be evident that when the arms 12 are elevated on the upward movement of the beater or distributing-roll 10 a like movement will be imparted to the rod 38 in order to cause the working portion of the brake-lever 37 to act against the brake-wheel 36 and arrest the motion of the latter. By adjusting the tension of the spring 40 the time of operation of the brake-lever can be regulated. It will be assumed that the pulley 27 is being driven at a speed sufficient to cause the shoes 31 to engage the friction-wheel 32. The result will be that the feeder or carrier 5 and feed-pans 16 are driven through the intermediate gearing. Grain will be now pitched onto the carrier 5, and the bands or ties thereof when they come opposite the disks 9 are cut in the manner hereinbefore described. The grain is then advanced toward the threshing-cylinder and concave by the carrier in connection with the feed-pans. Should there be an accumulation of grain at the delivery end of the carrier, the top portion thereof will come against the floating beater or distributing-roll 10, and as the grain masses up it will lift said beater, thereby, through the intermediate parts, lifting the rod 38 and setting the brake to arrest the motion of the carrier and feed-pans, as before described. When the accumulated material is moved away by the continuously-rotating beater, the latter will be permitted to drop, so as to impart a downward thrust, through the intermediate parts, to the brake-lever 37 to free the same from the wheel 36 and permit the parts to again operate.

I have termed the part 6 a "band-cutter." I use this term in a broad sense to include equivalent devices for effecting the separation of the bands from the bundles, whether said bands be cut or otherwise acted upon to release the grain.

Having thus described the invention, what I claim is—

1. In a device of the class described, the combination of a carrier, feed-pans located at the delivery end of the carrier and each consisting of two sections angularly disposed, one of the sections having teeth and the other vertically-separated projections, means for operating the feed-pans, a cylinder and a concave, the toothed portions of the feed-pans being adapted to supply grain to the cylinder and concave, and the projections thereon serving to retard the feed of the grain sufficiently to permit the cylinder to thresh out grain before the final action thereupon by the combined action of the cylinder and concave.

2. In a device of the class described the combination of a carrier, a band-cutter cooperative with the carrier, a beater located at the delivery end of the carrier and arranged to be elevated by and on the accumulation of grain at such end, arms pivotally supported by the shaft of the band-cutter and carrying said beater, other arms also supporting the beater, bearings for supporting said other arms and longitudinally movable to raise and lower the beater, and means operative by the beater for arresting the motion of the carrier on the elevation of the former.

3. In a device of the class described the combination of a carrier, a beater located at the delivery end of the carrier, pivotally-mounted arms for supporting the beater for upward and downward movement, other arms arranged for upward and downward movement with the beater, bearings for supporting said other arms, said bearings being mounted for longitudinal movement on the framework of the device, a rod, one of said second arms having a perforated lug, through the perforation of which said rod extends, a coiled spring surrounding the upper end of the rod, a thumb-screw engaging the rod and pressing against the spring to regulate the tension thereof, said rod being arranged for upward movement on the upward movement of the beater by and on the accumulation of grain at the delivery end of the carrier, and means actuated by said rod for arresting the motion of the carrier on the elevation of the beater.

4. A device of the class described involving a carrier, a beater located at the delivery end of the carrier and arranged to be elevated by and on the accumulation of grain at such end, a friction-clutch, a pulley coöperative with the friction-clutch, a driving device arranged to be actuated by the pulley through the intervention of the friction-clutch, means actuated by the driving device for moving the carrier, a brake-wheel coöperative with the friction-clutch, and means connected with the beater for stopping the motion of the brake-wheel on the elevation of the beater.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES T. RAMSDEN.

Witnesses:
JNO. C. GABEL,
A. B. THATCHER.