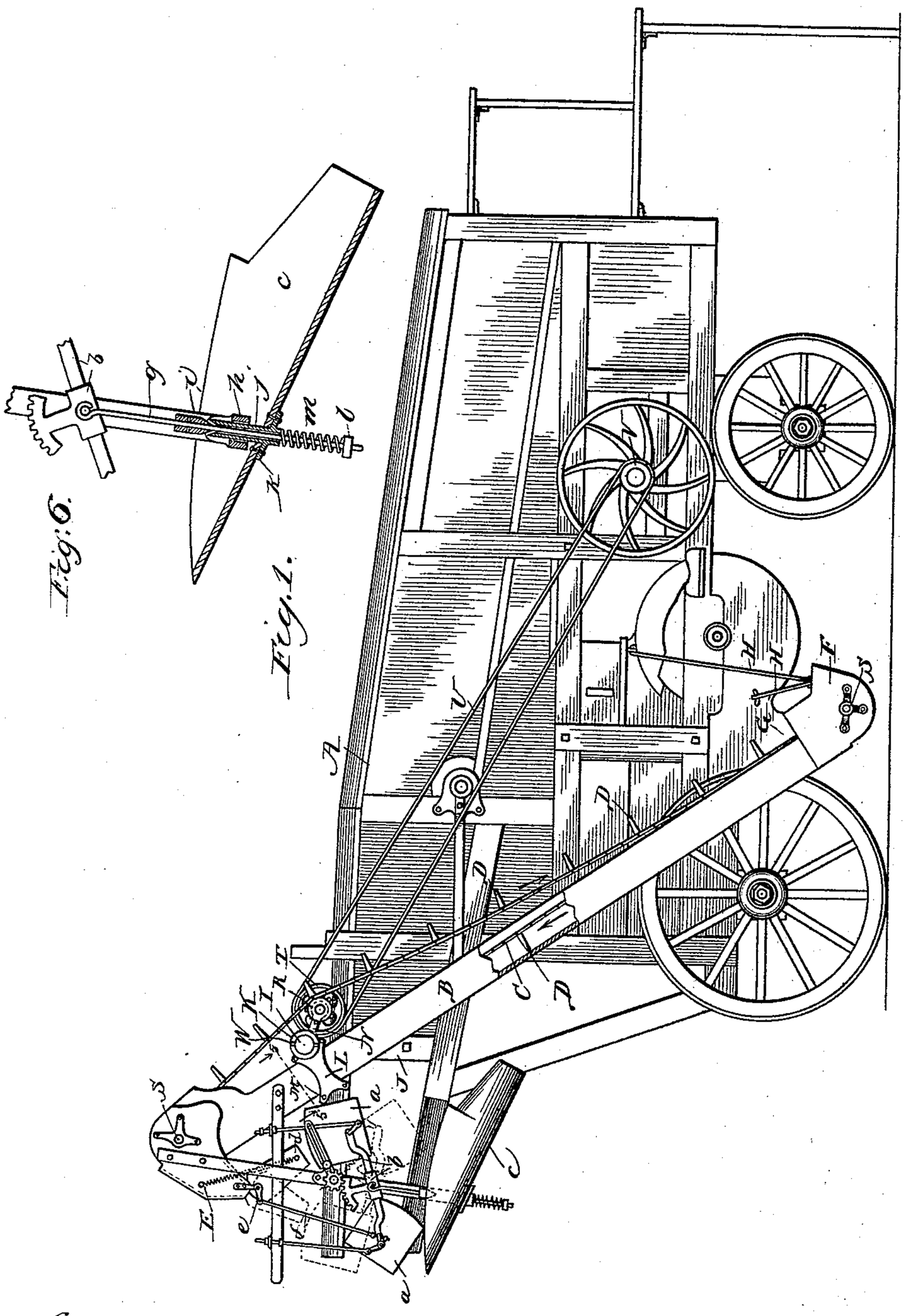
(No Model.) 2 Sheets—Sheet 1.

E. H. REYNOLDS.

GRAIN ELEVATING APPARATUS FOR THRASHING MACHINES.

No. 450,192. Patented Apr. 14, 1891.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

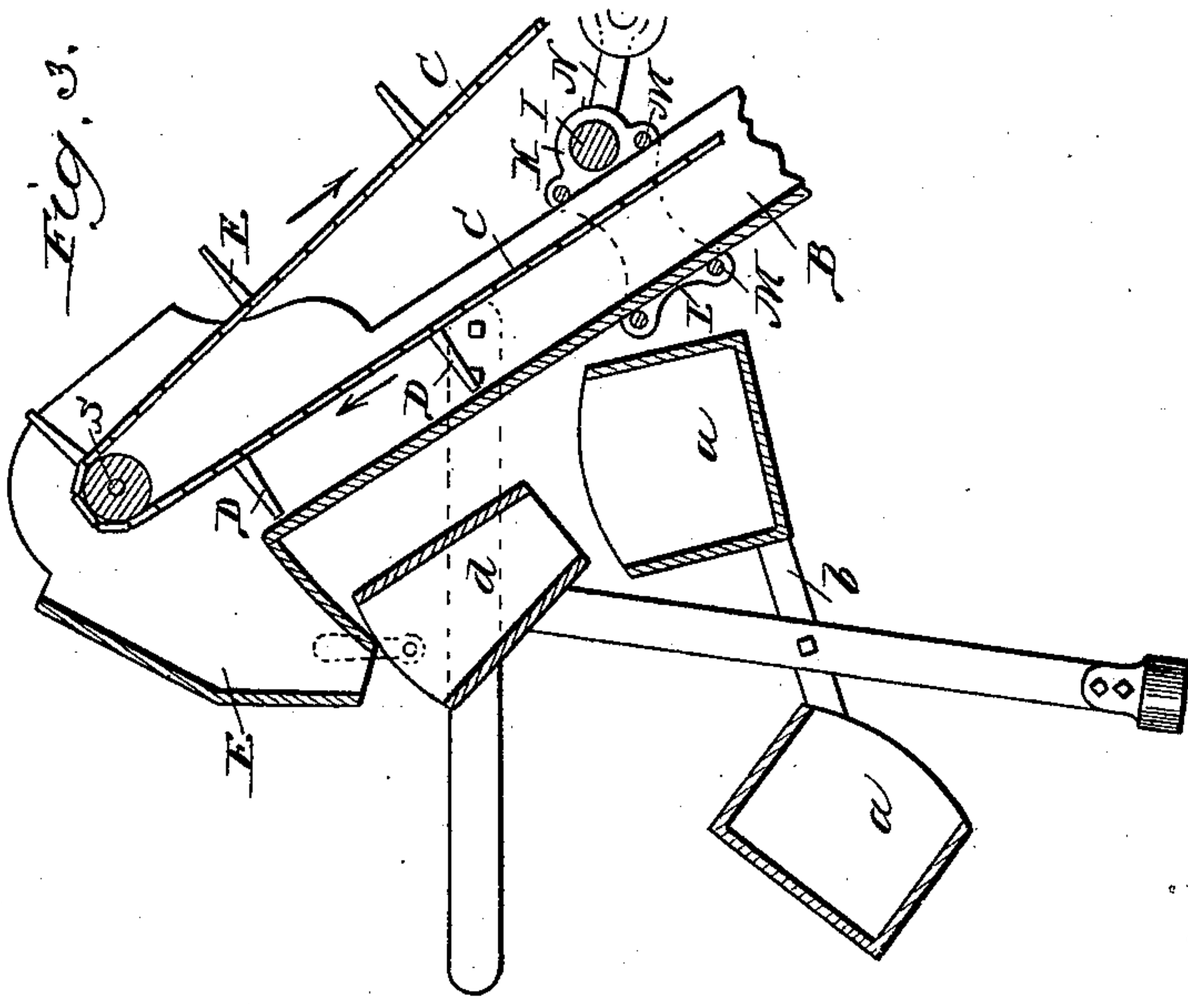


Fig. 4.

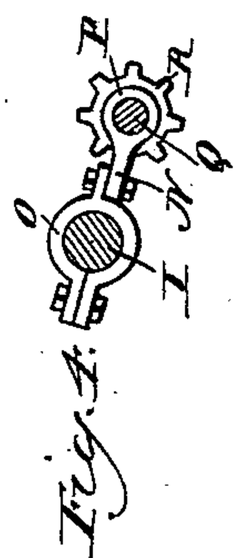


Fig. 2.

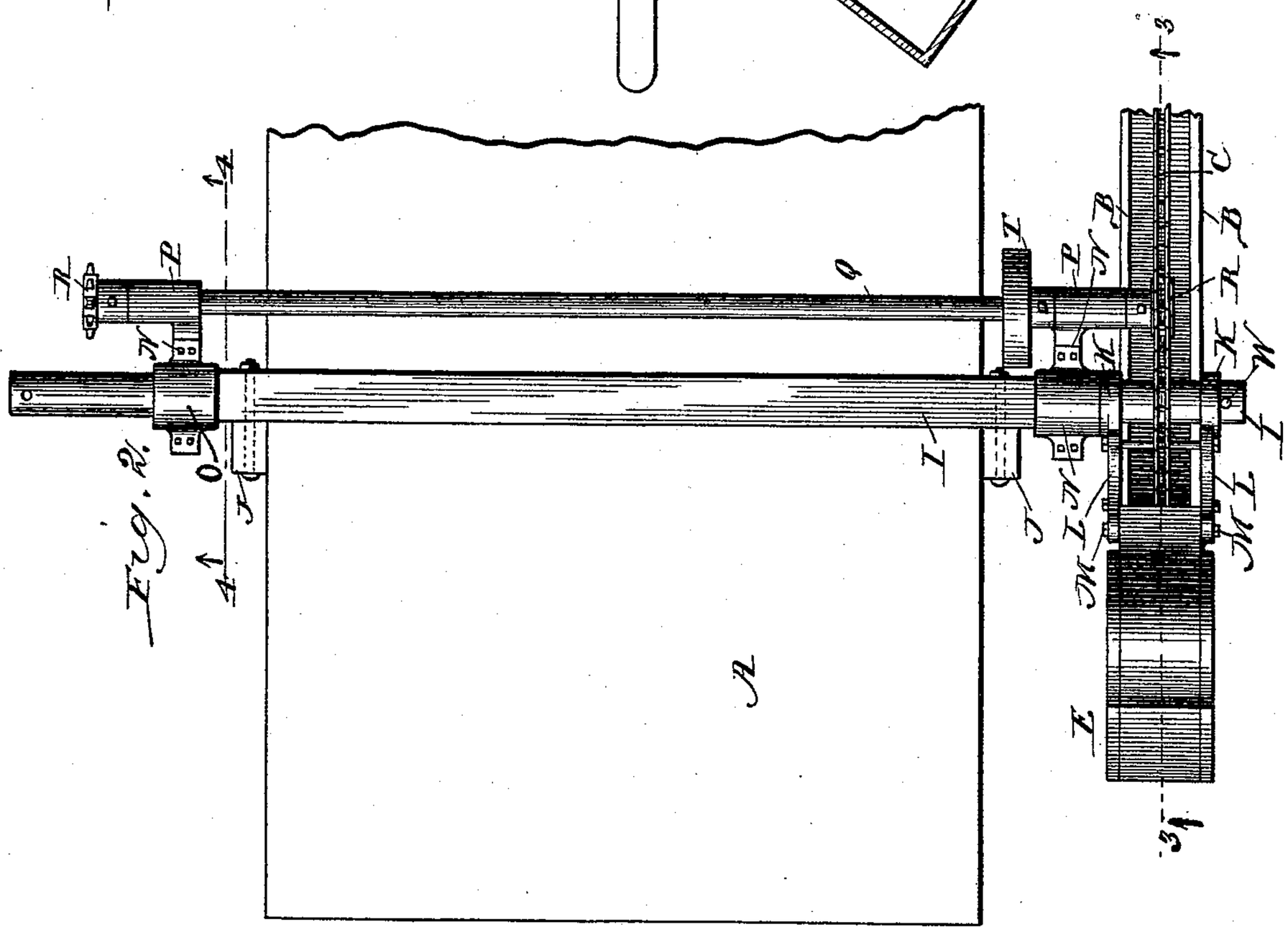
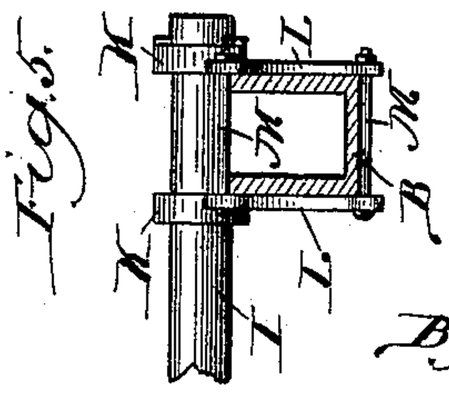


Fig. 5.



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UNITED STATES PATENT OFFICE.

EARL HOUSTIN REYNOLDS, OF PROPHETSTOWN, ILLINOIS.

GRAIN-ELEVATING APPARATUS FOR THRASHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 450,192, dated April 14, 1891.

Application filed June 25, 1889. Serial No. 315,549. (No model.)

To all whom it may concern:

Be it known that I, EARL HOUSTIN REYNOLDS, a citizen of the United States, residing at Prophetstown, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Grain-Elevating Apparatus for Thrashing-Machines, of which the following is a specification.

This invention relates to improvements in apparatus for elevating the grain as discharged from thrashing-machines for delivery into sacks, wagons, or other suitable receptacles, and has for its prime object to provide an apparatus for accomplishing this result adapted to be attached to and employed in connection with any form of thrashing-machine without alteration of the machine.

Another object is to have the apparatus of such a character that it may be used at either side of the thrashing-machine and readily shifted from one side to the other thereof without interfering with the driving mechanism therefor or the unshipping of any belt other than the conveyer.

Further objects are to have the driving mechanism of the conveyer supported in such manner that slack in either the driving-belt or conveyer may be readily taken up without alteration thereto or shifting of the elevator, and to combine with such an elevator, when provided with an automatically-dumping grain-measure, a delivery-spout automatically shifted by the dumping of the measures, so as to deliver the grain to the measures alternately during the continuous operation of the machine.

I attain these objects by the devices illustrated in the accompanying drawings, in which—

Figure 1 represents a conventional illustration of a thrashing-machine, showing elevating and measuring apparatus attached thereto embodying my invention; Fig. 2, a plan view of an end portion thereof, more clearly showing the driving and supporting mechanism for the elevator; Fig. 3, a detail section thereof on the line 3 3 of Fig. 2, looking in the direction indicated by the arrows; Fig. 4, a detail section on the line 4 4 of Fig. 2, looking in the direction indicated by the arrows; Fig. 5, a detail section on the line 5 5 of Fig. 1, looking in the direction indicated by the arrows; Fig. 6, a detail section through the adjustable chute.

Similar letters of reference indicate the same parts in the several figures of the drawings.

Referring by letter to the accompanying drawings, A indicates the body of the thrashing-machine, and B the elevating-casing, in which works the chain conveyer C, provided at intervals with flights D, which are designed to travel upwardly through the casing, as indicated by the arrows, carrying with them the grain which is discharged through a spout E at the upper end thereof, the said grain being received in a hopper F at the lower end of the casing, into which the grain is discharged from the permanent spout G of the thrashing-machine. This casing or elevator stands in an inclined position with relation to the thrasher, and is supported at its lower end by means of stay-rods H, attached at their ends, respectively, to the hopper F and a stationary portion of the thrashing-machine and at its upper end upon the projecting end of a fixed cross-bar I, secured to vertical posts J, projecting slightly above the top of the machine and an equal distance to each side thereof. This bar is rounded at the ends thereof beyond the posts J to receive journaling-eyes K, cast upon or otherwise rigidly secured to clamping-plates L, which are clamped upon each side of the casing by means of bolts M, passing through suitable eyes therein on the front and rear sides of the elevator-casing. By reason of this manner of supporting the elevator upon the machine it is rendered capable of attachment to machines varying materially in construction and dimensions, because these clamping-plates may be readily adjusted vertically upon the elevator, so as to engage the supporting-bar at whatever height it may be upon the machine, which bar is the only additional element to the machine required, and its attachment is more in the nature of an addition to than an alteration of the machine, for it may be attached in any manner so long as it extends across the top of the machine or any other point thereof in convenient position for supporting the elevator. Upon this bar, at each end thereof between the casing and the

supporting-post J or other point of attachment to the machine, is adjustably secured a bracket N by means of a removable cap O, bolted thereto and encompassing the bar in such manner that the radial position of the brackets may be altered at will. These brackets are provided at their outer ends with bearings P, in which is loosely journaled a cross-shaft Q, projecting beyond the machine at each side thereof, lying parallel with the supporting-bar, upon the ends of which are mounted sprocket-wheels R, designed to lie substantially in the center of the width of the elevator-casing, as more clearly shown in Fig. 2, when the latter is supported in position upon the cross-bar I, over either one of which, according to the side of the machine upon which the elevator is located, works the conveyer-belt C, which is driven thereby, the said belt working freely over idlers journaled at S in each end of the elevator. Power is communicated to this shaft by means of a belt-pulley T, mounted thereon, preferably between the bracket and the body of the machine, through the medium of a belt U, working over said pulley, and a corresponding pulley V, mounted upon a suitable drive-shaft of the machine proper, so that the driving of the cross-shaft Q is always down from one side of the machine regardless of the position of the elevator.

It will be observed by reference to Fig. 2 that the hub of the bracket N constitutes a stop for the elevator when slid upon the end of the supporting-bar, so as to bring the conveyer-chain thereof in exact alignment with the sprocket R, over which it is to work, without the exercise of any particular care in placing the same in position, and the elevator may be readily held in proper position by means of a pin W, passing through a perforation therein on the outside of the elevator. Thus it will be seen that whenever it is desired to shift the position of the elevator from one side of the machine to the other, it is only necessary to withdraw the pin W, unship the conveyer-belt from the drive-sprocket R, and slip the elevator off of the end of the supporting-bar, when it may be as readily attached to the opposite side of the machine by simply slipping the eyes K of the clamps L upon the opposite end of the supporting-bar and the conveyer-belt over the drive-sprocket at that side of the machine, the said shaft, as before described, always rotating in the same direction and being driven from the same side of the machine.

Should objectionable slack occur in either or both the drive-belt and conveyer-chain, it may be readily taken up by shifting the position of the bracket N, carrying the cross-shaft Q, upon the supporting-bar, the normal position of this bracket preferably being inclined slightly downward to more effectually accomplish this result.

In connection with an elevating apparatus such as herein shown and described, I prefer to employ alternately-dumping grain-measures *a*, supported upon a rocking frame *b*, into which the grain will be alternately delivered from the spout of the elevator for measuring before being finally dumped into an adjustable chute *c*, located below the measures, and by which the grain is directed into a wagon-body, sack, or any other suitable receptacle; but the construction and operation of these measures form no part of this invention, for they may be of any suitable character, the apparatus shown already forming the subject-matter for another separate application filed by me on the 14th day of May, A. D. 1888, Serial No. 273,873, and allowed November 17, 1888.

The grain is received from the elevator by the delivery-spout *d*, attached to the fixed or permanent spout E of the elevator, and automatically delivers the grain alternately to the measures by means of a crank-arm *e* on the pivot thereof, with which connects one end of a rod *f*, the opposite end of which is attached to the rocking frame *b*, supporting the measures in such manner that the spout will be automatically shifted from side to side, so as to always deliver the grain in the measure by the position for receiving the same. This delivery-spout is of course adapted for use in connection with and form of measuring apparatus in which the measures are alternately brought into operative position to receive the grain, and is merely shown in connection with the measuring apparatus described for the purpose of illustration.

The manner of supporting the adjustable chute is novel, so far as I am aware, and consists of a suspending-rod *g*, secured at its upper end to the shaft or pivot of the rocking frame *b* and projecting downwardly through a suitable guiding-eye *h* upon the frame supporting the measuring apparatus. Upon this rod is fixed a stop *i*, having a tapering or conical lower end, and immediately below the same is a sleeve *j*, having a tapering or conical socket in the upper end thereof receiving said stop, this sleeve being provided with an annular flange *k*, set obliquely thereto, upon which rests the chute *c*, also in an inclined position. Between the lower end of the sleeve and a nut *l*, screwed onto the lower end of the rod *g*, is confined a coil-spring *m*, the tension of which forces the sleeve up against the stop, and thus creates sufficient friction to hold the chute in any position to which it is swung, the suspending-rod acting as a pivot therefor. This entire measuring apparatus is secured to the elevator, and is, of course, movable therewith, operating upon one side of the machine as well as the other.

One of the important features of my invention is the facility with which the elevator may be attached to thrashing-machines of any construction, thereby making it necessary to manufacture and keep on hand only a single size of the apparatus, which, when accompanied by the supporting-bar, may be readily

attached to any machine by simply adjusting the clamping-plates on the elevator according to the height and position of the supporting-bar.

In conclusion I may state that the most important feature of my invention is the driving of the conveyer-belts between the ends thereof instead of at the ends, as has heretofore universally obtained, and this, too, whether the conveyer is detachably connected with the machine or the supporting-bar is dispensed with and other means employed for detachably or permanently supporting the conveyer, for this peculiar feature enables me to construct the machine at considerably less cost than is possible where the driving of the conveyer-belts is accomplished from either end thereof.

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

1. The combination, with a thrashing-machine, a drive-shaft journaled thereon, and a wheel mounted upon said shaft, of a conveyer supported upon the machine, engaging and driven by said wheel between the ends thereof, substantially as described.

2. The combination, with a thrashing-machine, a drive-shaft journaled thereon, and a wheel mounted upon said shaft, of a conveyer detachably supported upon said machine, engaging and driven by said wheel between the ends thereof, substantially as described.

3. The combination, with a thrashing-machine, of a conveyer detachably supported upon said machine, a drive-shaft projecting beyond the machine at each side thereof, and wheels mounted on each end of said shaft, over either of which the conveyer may work and thereby be driven between the ends thereof, substantially as described.

4. The combination, with a thrashing-machine, of a supporting-bar, a drive-shaft supported thereby, belt-wheels mounted on said shaft, an elevator having a conveyer-belt working over said wheels intermediate its ends by said wheels, and a detachable connection between said elevator and the supporting-bar, substantially as described.

5. The combination, with a thrashing-machine, of a supporting-bar secured to and projecting beyond the machine at each side thereof, a drive-shaft supported thereby, belt-wheels mounted on said shaft, an elevator having a conveyer-belt arranged to be driven by said wheels, and a detachable connection between said elevator and the supporting-bar, whereby the elevator may be attached to either end of said bar, and the conveyer-belt thereof driven from either side of the machine, substantially as described.

6. The combination, with a thrashing-machine, of a supporting-bar, a drive-shaft supported thereby, belt-wheels mounted thereon, an elevator having a conveyer-belt arranged to be driven by said wheels, and an adjustable detachable connection between said elevator and the supporting-bar, substantially as described.

7. The combination, with a thrashing-machine, of a supporting-bar, a drive-shaft adjustably supported and journaled thereby, a sprocket-wheel mounted on said shaft, and means for driving said shaft, an elevator, the conveyer-belt thereof arranged to work over and be driven by said sprocket-wheel, and a detachable connection between said elevator and the supporting-bar, substantially as described.

8. The combination, with a thrashing-machine, of a supporting-bar secured to and projecting beyond the machine at each side thereof, a drive-shaft supported thereby, a belt-pulley on said shaft, sprocket-wheels also mounted thereon at each end thereof, an elevator, the conveyer-belt thereof arranged to work over and be driven by said sprocket-wheel, and a detachable connection between said elevator and the supporting-bar, substantially as described.

9. The combination, with a thrashing-machine, of a supporting-bar secured to and projecting beyond the machine at each side thereof, brackets adjustably secured to the projecting ends of said bar, a cross-shaft journaled in said brackets, sprocket-wheels mounted on the ends of said shaft, an elevator, clamping-plates adjustably secured thereto, provided with eyes adapted to fit upon the ends of said bar, and a conveyer-belt for said elevator, arranged to work over and be driven by either of said sprocket-wheels, substantially as described.

10. The combination, with a thrashing-machine and the elevator and measurer thereof, of an adjustable discharge-spout, a suspending-rod supporting the same, a sleeve upon said rod, provided with an inclined annular flange, to which the spout is secured in an inclined position, and means for retaining said spout in any desired position with relation to the suspending-rod, substantially as described.

11. The combination, with a thrashing-machine and the elevator and measurer thereof, of an adjustable discharge-spout, a suspending-rod supporting the same, a sleeve upon said rod, provided with an inclined annular flange, to which the spout is secured in an inclined position, a stop on said rod above the sleeve, and a coil-spring sleeved upon said rod and confined between a nut thereon and the lower end of the sleeve, substantially as set forth.

EARL HOUSTIN REYNOLDS.

Witnesses:
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