(No Model.)

R. S. GABBEY.

GRAIN ELEVATING ATTACHMENT FOR THRASHING MACHINES.

No. 413,045. Patented Oct. 15, 1889.

Fig. 1.

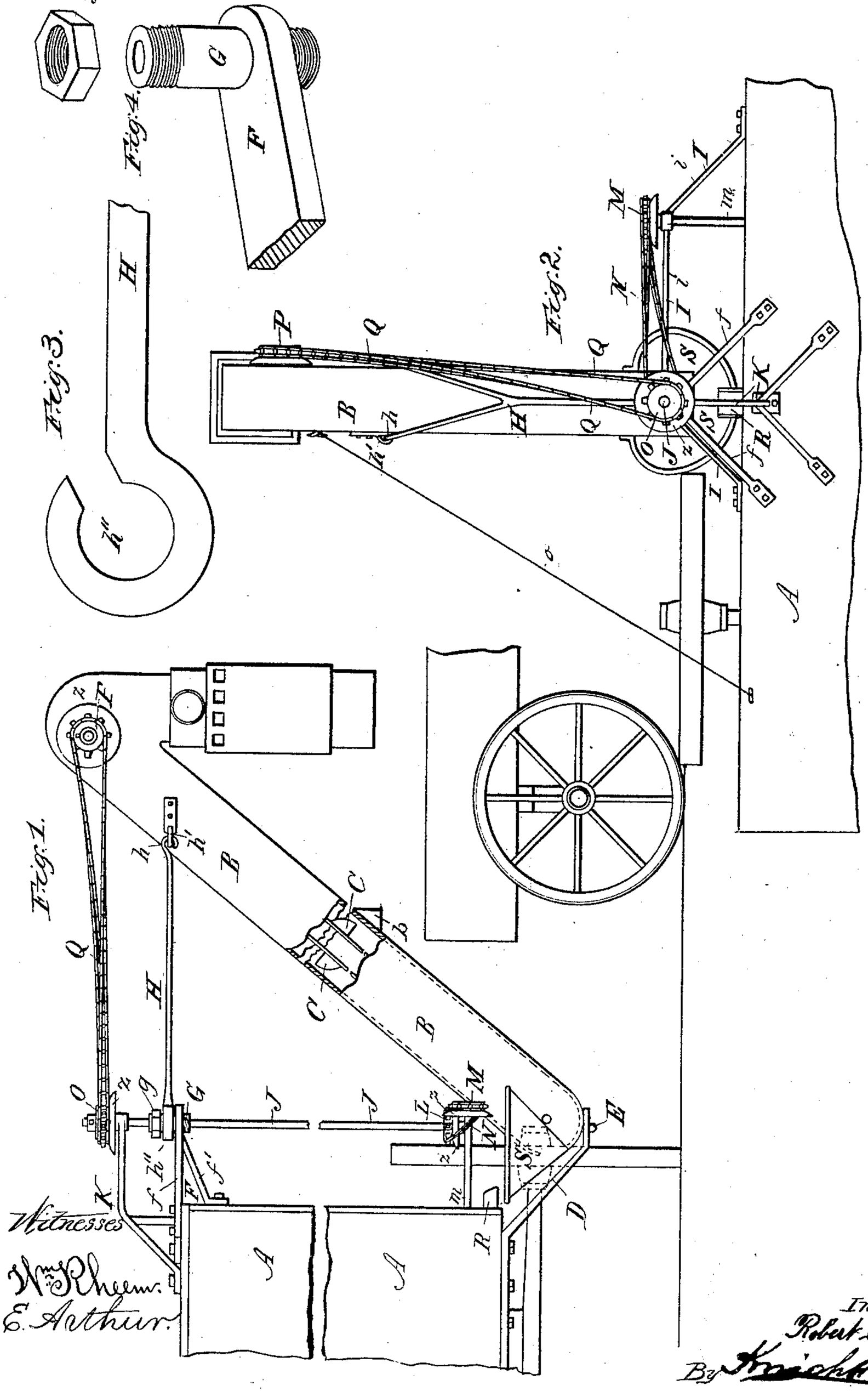

Fig. 2.

Fig. 3.

Fig. 4.

Witnesses
Wm. Rheem.
E. Arthur.

Inventor.
Robert S. Gabbey
By Knight Bros Atty.

UNITED STATES PATENT OFFICE.

ROBERT S. GABBEY, OF ROSSVILLE, KANSAS.

GRAIN-ELEVATING ATTACHMENT FOR THRASHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 413,045, dated October 15, 1889.

Application filed December 14, 1888. Serial No. 293,592. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. GABBEY, a citizen of the United States, residing at Rossville, in the county of Shawnee and State of Kansas, have invented certain new and useful Improvements in Grain-Elevating Attachments for Thrashing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is a side elevation of the improved attachment and an outline of so much of the box or body of a thrashing-machine as is necessary to illustrate its connection therewith. Fig. 2 is a plan view of the same. Fig. 3 is a plan view of the anchor end of the guy. Fig. 4 is a view showing in detail a part hereinafter called a "support" and its accessories.

The present invention relates to a device which is designed to be attached to the side of a thrashing-machine for the purpose of receiving the grain as it falls from said machine and elevating it and delivering it into a wagon, sack, or other receptacle.

The invention consists in certain features of novelty, which are hereinafter particularly pointed out in the claims, being first fully described with reference to the accompanying drawings, in which—

A represents the casing or box of a thrashing-machine, which may be of any construction, and B the casing of the conveyer, within which casing is the conveyer proper C, which preferably consists of an endless belt having cups or buckets of usual construction secured thereto, said belt being passed around a pair of rollers or pulleys—one idle and the other driven—situated within the casing B at its lower and upper ends, respectively; but my invention in its broadest sense is not limited to the construction of the parts B and C, which together constitute the conveyer F; or there may be substituted any other form of conveyer or other device for accomplishing the same result—*i. e.*, elevating the grain.

D represents a stout arm or bracket projecting outward from the side of the thrasher-casing for a sufficient distance and supporting the conveyer, said bracket being perforated at a distance of ten inches from the plane of the side of the thrasher-casing for the reception of a stud E, which projects downward from the under side of the casing B and constitutes the pivot about which the conveyer turns. One of these brackets D is situated upon each side of the machine, both being formed of a single bar of iron or steel, which passes beneath and is firmly secured to the bottom of the thrasher-casing, its ends being bent downward and outward, so that its extremities are horizontal and about twelve inches from the ground.

F is a tri-arm bracket secured to the side of the thrasher-casing A, near the top thereof and projecting outward therefrom, its outer end being perforated (at a distance of ten inches from the side of the thrasher-casing) for the reception of a sleeve G, which is about one and one-half inch in external diameter and has an axial perforation three-fourths of an inch in diameter. This sleeve is firmly fixed to the bracket F, and has upon its upper end external screw-threads, onto which may be turned a nut *g*, for the purpose hereinafter set forth.

H is a guy constructed of iron or steel rod stout enough to resist strains of both tension and compression. Its outer end is bifurcated, and a hook *h* is formed at the extremity of each of its branches for engaging eyes *h'*, fixed to opposite sides of the casing B near its upper end. The inner or anchor end of this guy is formed with an open eye *h''*, (or hook,) whose interior is just sufficient in diameter to fit snugly around the sleeve G, the latter constituting the immediate support for the former. This sleeve G has another office (hereinafter described) besides that of supporting the guy H; but as this is its principal office it will hereinafter be called a "support." After slipping the eye *h''* over this support the nut *g* is turned down, constituting a lock or keeper, which effectually prevents accidental displacement of the anchor end of the guy.

The mechanism thus far described supports the elevator in its position at the side of the thrasher and enables it to be moved about its pivot in a horizontal direction to any position with relation to the side of the thrasher

within the range of its permitted movement—nearly one hundred and eighty degrees—that is to say, for traveling from place to place it may be placed in a position parallel with the side of the thrasher, as close thereto as the various belts, pulleys, gearings, &c., usually found on the side of a thrasher will permit—while for working it may be moved from its traveling position through any number of degrees within its permitted movement and stopped with its delivery end over this wagon or that wagon, or moved from one wagon or other receptacle when filled to another empty wagon or receptacle.

The support G is directly in line with the pivot E, and consequently the axis of motion of the guy H is coincident with the axis of motion of the lower end of casing B. The result is that all the parts that turn about those two points (assuming that the thrasher is level and the pivot E vertical, as they should be) will move in a purely horizontal plane. Among the advantages resulting from this arrangement may be mentioned that the conveyer will not gravitate from place to place. As a consequence, it offers no greater resistance to movement in one direction than the other, and its delivery end may therefore be swung in either direction with great facility from one receptacle to another. It also has advantages which will be apparent after the mechanism for transmitting motion to the conveyer-belt has been described.

The bracket F is given the form shown in order that it may be constructed of minimum weight and still have adequate strength to resist the strain put upon it from any of the positions to which the elevator may be swung. The horizontal arms *f f*, straddled in the manner shown, will yield less by the strain which is put upon them when the elevator is close to the side of the thrasher than would a single straight arm projecting at right angles from the side of the thrasher. The downwardly-inclined arm *f'* supports the weight of the parts and prevents the outer end of the bracket from sagging.

I is a bracket similar to the bracket F, but having its front horizontal arm *i* prolonged in the manner hereinafter described. It is secured to the side of the thrasher at a lower level than the bracket F, and forms at once the journal-bearing and step for the shouldered lower end of a vertical shaft J, which passes through the hollow support G, and above it has its upper end additionally stayed by a third bracket K, fixed to the top of the thrasher-casing. In order that more important parts may appear with greater clearness, this bracket I is omitted from Fig. 1.

I desire to have it understood that, so far as the principal features of my invention are concerned, it is entirely immaterial which one of the several shafts of the thrashing-machine the mechanism for driving the conveyer-belt is connected with. In the machine shown in the drawings it is connected with the fan-shaft *m*, said shaft being for the purpose made to project from the side of the thrasher for a distance of about twelve inches. This shaft is usually situated about twenty-six inches from the ground, and the vertical shaft J of the elevator is placed about twenty-four inches in a horizontal direction from it, the position of said shaft J being determined by the position of the pivot E of the elevator, while the position of the latter is determined by the position of the spout R, through which the grain escapes from the thrasher, as will appear more fully hereinafter. To the outer end of this shaft *m* is secured a sprocket-wheel M, (which is, as are all of the sprocket-wheels employed, about four inches in diameter, exclusive of the teeth,) and to the lower end of shaft J is secured a sprocket-wheel L. These two wheels are connected by an endless sprocket-chain N, run half crossed, and are so situated that the traction side of each lies directly in the plane of the other. With this arrangement of the wheels the traction side of the sprocket-chain passes in a direct line from the periphery of one to the periphery of the other, and lies entirely within the planes of both. In order to brace the shaft *m* and prevent its lateral deflection, the horizontal arm *i* of the bracket I is extended parallel to the side of the thrasher forward for a distance of about twenty-four inches, and then bent inward at an angle of, say, forty-five degrees, its extremity being bolted to the side of the thrasher. At or near the angle thus formed it is formed or provided with a box or sleeve which embraces the shaft *m*.

Another shaft of the thrasher, to which the driving mechanism of the elevator might with equal satisfaction be connected, is the "beater-shaft," which runs at about the proper speed, is about four and one-half feet above the ground and about the same distance from shaft J. Still another available shaft is the drive-shaft of the straw-carrier, which is about four feet from the ground and six or seven from the shaft J. What shaft is employed matters little so long as it is so situated that the wheels L and M may be placed in the described positions with relation to each other, or at least substantially so.

O is a sprocket-wheel secured to shaft J near its upper end, and P a sprocket-wheel, secured outside of the casing B to the shaft of the driven roller, over which the conveyer-belt passes. Q is a half-crossed sprocket-chain, which embraces the wheels O and P, and transmits motion from the former to the latter. The wheel P is so situated that the traction (or lower) side of its periphery is in the plane of the wheel O, while said wheel O is situated so that its traction side is in a plane a little inside of the plane of said wheel P. This because the wheel O is only four inches in diameter, its axis is situated in the central plane of the conveyer-casing, and said casing is more than four inches from side to side,

which throws the wheel P more than two inches from its central plane. With the parts constructed as shown, these are the conditions while the machine is at rest; but while working, the pull of the sprocket-chain N on the wheel P causes the wheels O and P to assume, as near as necessary for practical purposes, the same relations to each other as the wheels L and M bear to each other—*i. e.*, the traction side of the periphery of each wheel falls in the plane of the other wheel. This because of a slight slack or play in the connections, or a springing of the parts, which permits the conveyer to be canted very slightly by the pull. If the connections be made perfectly tight and sufficiently stout to resist, without springing, the pull of the chain, the same result may be accomplished in a number of ways which will readily suggest themselves to those skilled in the art. One way is to increase the diameter of wheel O and use a wheel at P of such diameter as will transmit the desired speed to the conveyer. Another way is to shift the position of the shaft of wheel P in a horizontal direction until the plane of said wheel touches the periphery of wheel O. Wheels O and P being some eight feet apart, the change in the position of said shaft sufficient to accomplish the result would not be sufficient to materially affect the position of the conveyer-belt.

The axis of the wheel O, and also of the wheel L, is coincident with the axis of motion (or support G and pivot E) of the elevator, and hence the distance between the wheels O and P will remain the same whatever may be the position of the elevator with respect to the side of the thrasher. Assuming that the wheel O is four inches in diameter and situated with its axis coincident with that of the elevator, the pull will be two inches to one side of the elevator's axis, and, consequently, tends to turn the elevator upon its pivot in that direction. To prevent its being turned by this inequality in the pull, or by the wind blowing against it, I secure to the body of the thrasher or other fixed object one end of a cord *o*, the other end of which is secured to the elevator-casing by a spring clamp, cleat, or other device which will permit of its ready attachment and detachment. This inequality in the pull, though very slight, has the above-mentioned tendency, and also a tendency to cant or tilt the elevator-casing over toward one side. To obviate this latter, and also to prevent the upper end of the conveyer from being pulled toward the side of the thrasher in the event of a choke-up or other hitch in the working of the conveyer, are the objects in constructing the guy H of stout rods of iron or steel. In the construction shown the sleeve G forms not only the immediate support for the guy H, but it forms also a support or bearing for sustaining the shaft J against lateral movement.

The eye of the guy H is provided on its side next the shank with an opening three-fourths of an inch wide—just sufficient to admit shaft J—which enables the guy to be put in place or removed without disturbing other parts.

The delivery-spout R is usually situated immediately in front of the rear wheel. S is a hopper secured to the lower end of the casing B for catching the grain as it falls from the spout R and conducting it to the belt, to which it gains access through an opening in the casing B. This hopper is open at top, is of such diameter and is so constructed with relation to the pivotal point of the casing B and discharge end of spout R that it will always be beneath the said spout R while the casing B is in working position. In the drawings the hopper is shown with its upper edge concentric with the pivot E, but geometrical precision in this respect is not essential.

The brackets D, F, and I, shafts J and *m*, and wheels L, M, and O are duplicated upon opposite sides of the thrashing-machine, and the elevator, when the parts are constructed as shown and described, may be transferred with great facility from one side to the other. A triangular block *b* is secured to the under side of the conveyer-casing at such height from the ground that a man may place his shoulder under it, and thus have a good purchase for lifting when the conveyer is to be transferred from one side of the machine to the other.

In order to guide the slack side of the chain to its seat on the periphery of the sprocket-wheel when the chain employed is very short, and in order to prevent the chain from dropping off of horizontal sprocket-wheels while not in motion, the wheel is provided with a flange *z*, which projects an inch or more (according to the size of the wheel) beyond the teeth, that side of the flange which lies next the teeth being convex. These flanges are not called into operation at all times, unless the wheels are very close together and the chain consequently short, but are put on in all cases principally as safeguards. With a chain constructed as described, each link as it comes to its seat on the sprocket-wheel will throw the succeeding link into position ready to take its seat at the proper moment.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, with the thrashing-machine casing, a conveyer pivoted at its lower end, the shaft J, means for driving said shaft, and connections between said shaft and the conveyer-belt, of the hollow support G, through which said shaft passes, and the guy H, secured at one end to the casing of said conveyer and having at the other the open eye for admitting said shaft and slipping over said support, as set forth.

2. The combination, with the thrashing-machine casing, of a conveyer pivoted at its lower end, the shaft J, means for driving said

shaft, connections between said shaft and the conveyer-belt, the hollow support G, through which said shaft passes, the guy H, having at one end an open eye for admitting said shaft and receiving said support, and the nut *g*, adapted to be turned onto said support and constituting a keeper, substantially as set forth.

3. The combination, with the thrashing-machine casing and the conveyer, of the bracket D, to which said conveyer is pivoted, the bracket F, having hollow support G, the guy H, secured at one end to the casing of said conveyer and at the other engaging said support, the bracket I, the shaft J, stepped onto said bracket and passing through the hollow support G, means for driving said shaft J, the wheel O, fixed to said shaft, and connections between said wheel O and the conveyer-belt, the axis of the shaft J being coincident with the axis of the pivot of the conveyer, substantially as set forth.

4. The combination, with the thrashing-machine casing and the wheel M, secured to one of the thrashing-machine shafts, of the pivoted conveyer, the wheel P, situated at the top thereof, the wheel O, the belt Q, embracing wheels O and P, the shaft J, to which wheel O is secured, the wheel L, also secured to said shaft, and the belt N, embracing wheels L and M, substantially as set forth.

5. In an elevating attachment for thrashing-machines, the combination, with the thrashing-machine casing and the pivoted conveyer, of the sprocket-wheel P, situated at the top of the conveyer and having a flange projecting radially from the side next to the conveyer, the shaft J, means for connecting said shaft with one of the shafts of the thrashing-machine, the sprocket-wheel O, secured to said shaft and having a flange on the under side thereof, and twisted belt Q, embracing the wheels O and P, said wheels being situated in intersecting planes, substantially as set forth.

6. In a grain-elevating attachment, the combination, with the thrasher-casing and pivoted conveyer, of the vertical shaft J, situated with its axis coincident with the pivot of the conveyer, the sprocket-wheel L on the lower part of said shaft, the sprocket-wheel M on a shaft of the thrasher, said wheels being situated in intersecting planes and each with its traction side in the plane of the other, the half-crossed drive-chain N, embracing said wheels, the sprocket-wheel O, secured to the upper part of said shaft, the sprocket-wheel P, secured to the conveyer-shaft, said wheels being situated in intersecting planes, substantially as described, and the drive-chain embracing said wheels, as and for the purpose set forth.

7. The combination of the casing of the thrasher, the spout R, and the brackets D and F, situated in the vertical plane of said spout, the former below and the latter above it, the conveyer pivoted at its lower end to bracket D, and having the hopper S extending beyond the end of the spout R, the shaft J, journaled in bracket F, with its axis coincident with the pivot of the conveyer, the guy H, connected at one end to the conveyer and at the other having an eye through which said shaft J passes, the sprocket-wheel L on the lower part of said shaft, means for imparting to said wheel motion from one of the shafts of the thrasher, the sprocket-wheel O on the upper part of said shaft, the sprocket-wheel P on the conveyer-shaft, and the drive-chain Q, embracing said wheels, substantially as set forth.

ROBERT S. GABBEY.

Witnesses:
C. A. SMITH,
N. G. MCPHERSON.