No. 864,820. PATENTED SEPT. 3, 1907.

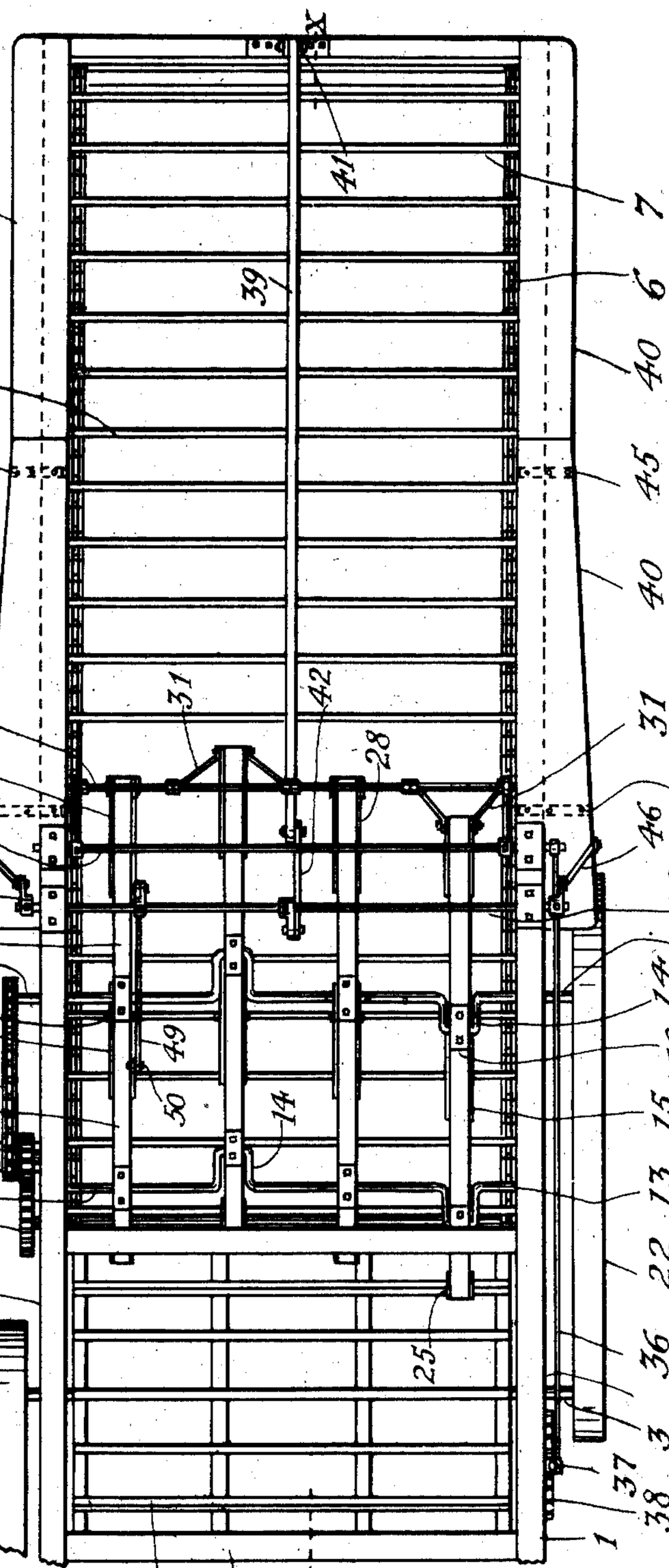
A. ZASTROW.

SELF FEEDER FOR THRESHING MACHINES.

APPLICATION FILED DEC. 26, 1903. RENEWED JAN. 26, 1907.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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3 SHEETS—SHEET 2.

Fig 2

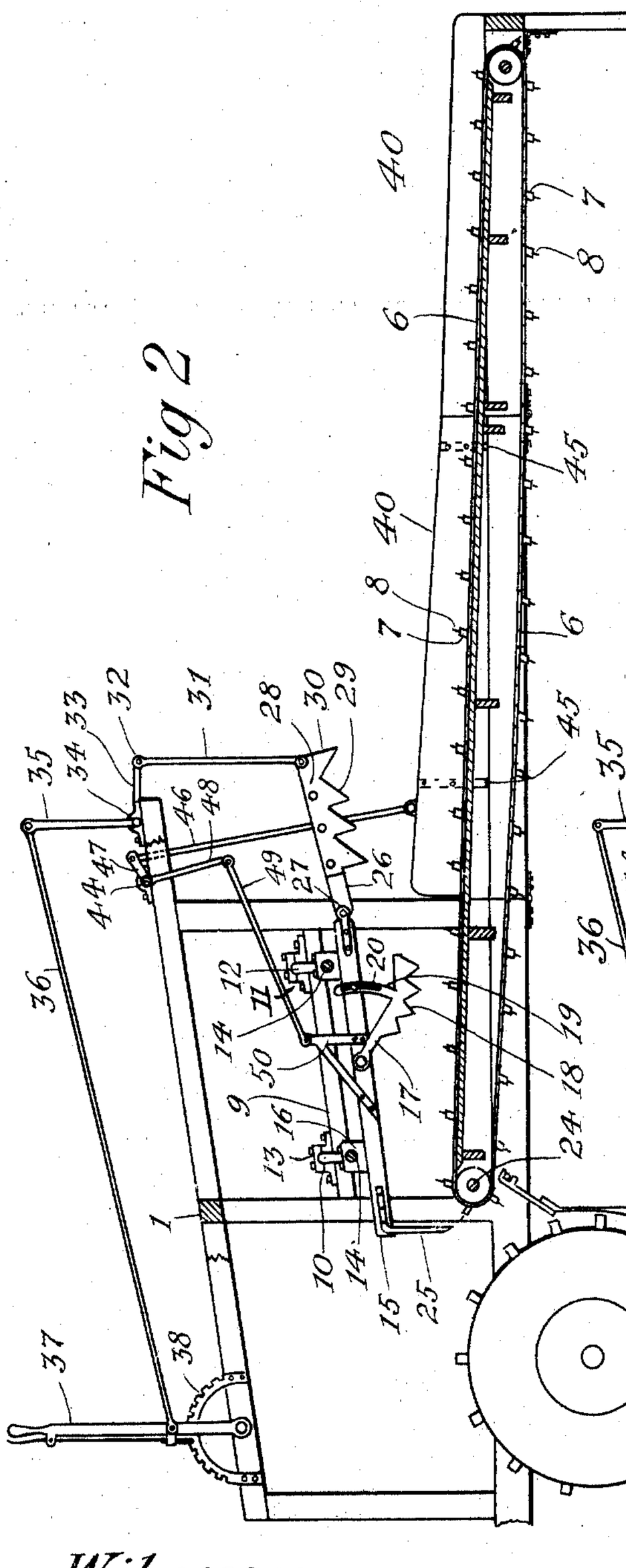

Fig 3

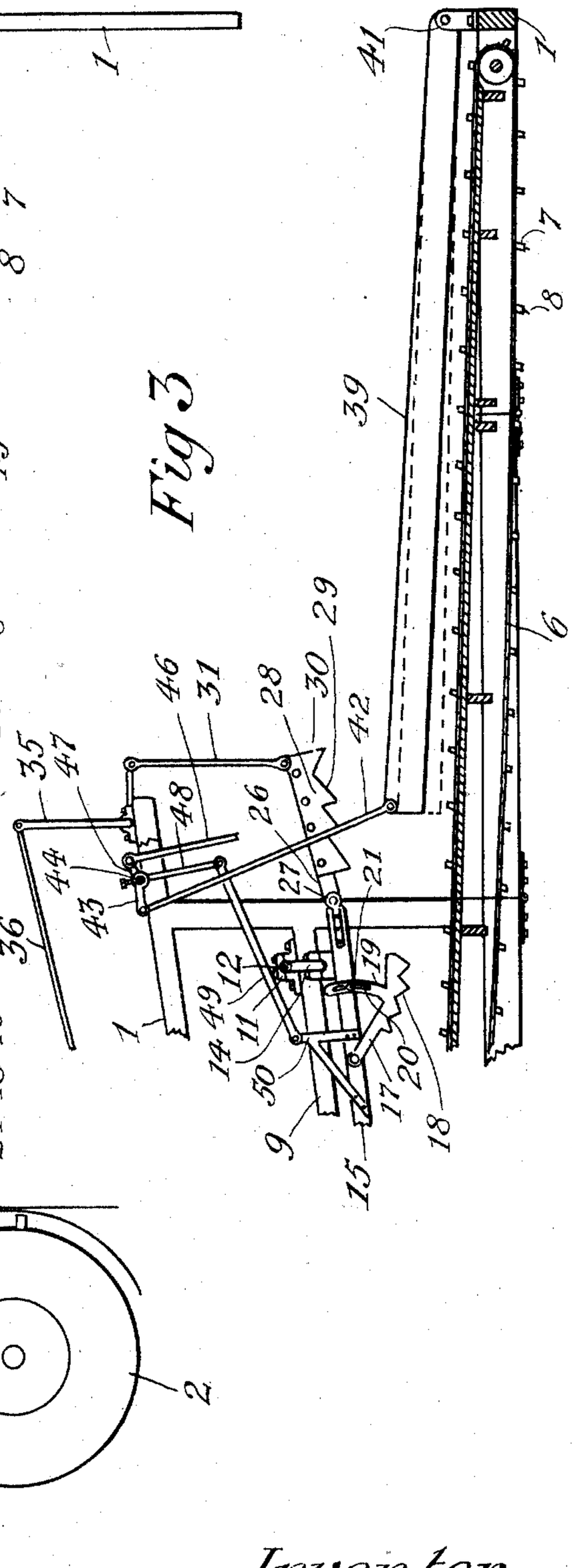

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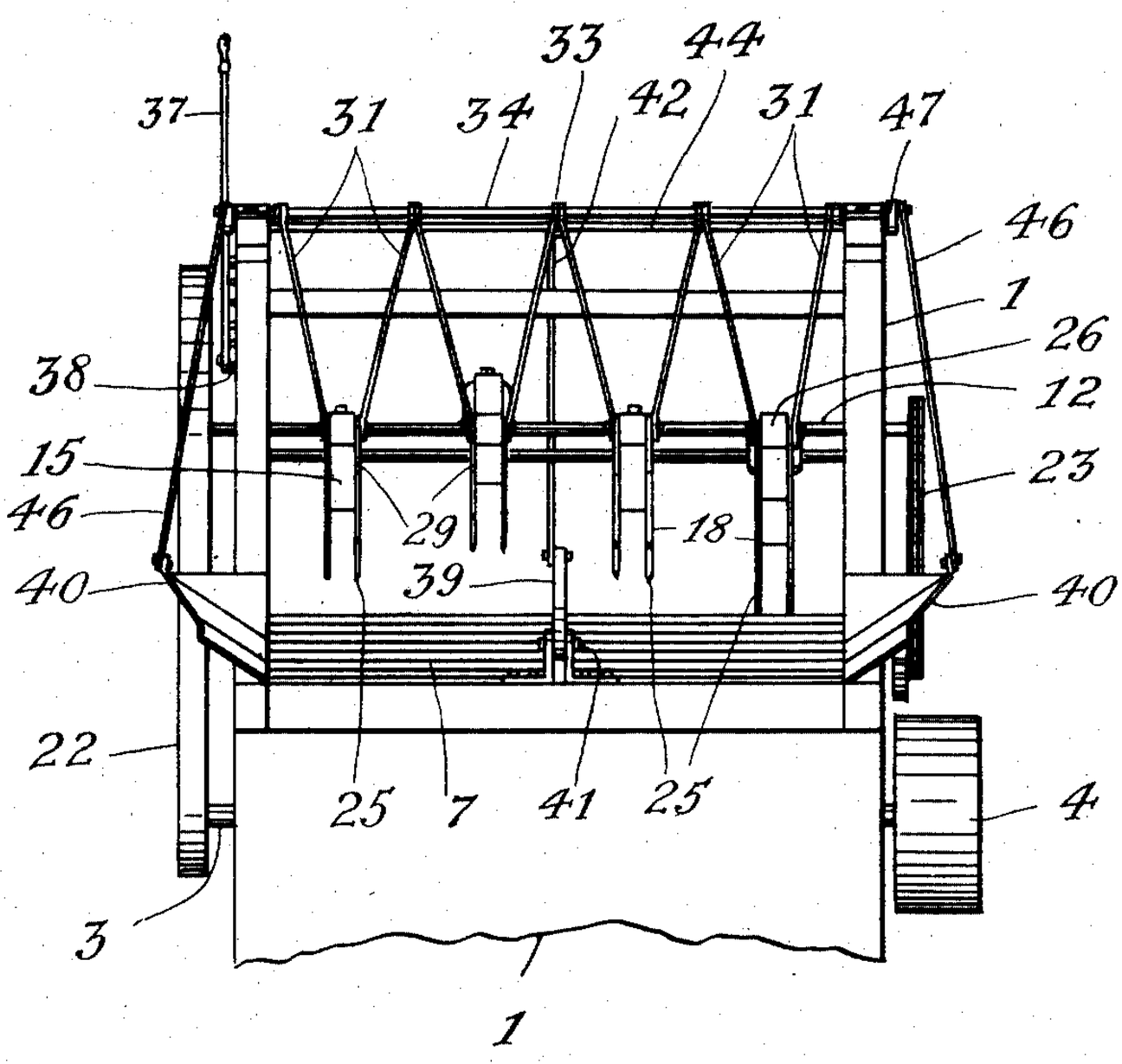
Fig. 4



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UNITED STATES PATENT OFFICE.

AUGUST ZASTROW, OF ABERDEEN, SOUTH DAKOTA.

SELF-FEEDER FOR THRESHING-MACHINES.

No. 864,820. Specification of Letters Patent. Patented Sept. 3, 1907.

Application filed December 26, 1903, Serial No. 186,527. Renewed January 26, 1907. Serial No. 354,314.

To all whom it may concern:

Be it known that I, AUGUST ZASTROW, a citizen of the United States, residing at Aberdeen, county of Brown, and State of South Dakota, have invented certain new and useful Improvements in Self-Feeders for Threshing-Machines, of which the following is a specification.

My invention relates to the devices employed for feeding bundles or loose grain to the cylinders of threshing-machines.

The main object of the invention is to regulate and control the feeding of material to the cylinder, so as to prevent clogging and increase the amount of grain threshed during a given period of operation of the machine.

More specifically stated, the objects are to improve the means for agitating and straightening the material on the feed-belt, and to provide improved devices for aiding the belt in feeding the material and for cutting the bundle bands, and to provide adjustable retarding devices for regulating the feeding of material to the cylinder.

My improvements are illustrated in the accompanying drawings, in which—

Figure 1 is a top view of the front portion of an ordinary threshing-machine, showing the feed-apron, the cylinder, and the devices of my improvement; Fig. 2 is a side elevation of the same, the casing of the machine being broken away; Fig. 3 is a longitudinal section of the same on the line *x*—*x* of Fig. 1; and Fig. 4 is an end elevation, viewed from the right of Fig. 1.

In the drawings the reference Fig. 1 designates portions of the frame of a threshing-machine; 2 the cylinder; 3 the cylinder shaft which is driven by means of a pulley 4 and belt 5; and 6 the feed-belt, operated in the usual way; all of which features may be of common or any suitable construction. It is preferable that the slats 7 of the feed-belt be provided with spikes or tines 8, of well-known form, for aiding in feeding the material.

To the upright members of the frame, above and in front of the cylinder, at opposite sides are secured frame pieces 9 to provide support for the feed devices of my improvement, and they are preferably set in inclined positions about as shown, that is, slanting downward from the front toward the cylinder, or rear of the machine. On these frame pieces are secured journal-boxes 10 and 11 in which the ends of two crank-shafts 12 and 13 have their bearings. In the construction illustrated four cranks 14 are by preference provided on each shaft, but a greater or less number may be employed, if desired. The cranks are so arranged that each crank is set at a right angle to the crank or cranks next to it on its own shaft, and so that those of the two shafts will occupy corresponding positions with reference to one another.

Bars 15 extending lengthwise of the machine are connected to the cranks of the two crank-shafts by suitable bearings 16, whereby the bars will be given movement in vertical and horizontal directions by the revolutions of the cranks. To these bars 15, about midway between the cranks which support them, are attached pairs of metal plates 17, a plate being attached to each side of each bar. The plates 17 trend downward and forward, preferably about as shown, and their lower portions extend forward in angular and preferably about horizontal direction, as shown. The lower edges of the plates are provided with suitable teeth or cutters 18, adapted to cut the bundle bands as well as to feed the grain toward the cylinder.

The plates 17 are rendered adjustable by pivoting their upper ends to the bars and connecting their lower portions by arms 19 to the bars, and providing the arms with curved slots 20 adapted to receive bolts 21 which pass through the bars 15. Such arrangement enables the feed-plates 17 to be adjusted toward or away from the apron 6.

The crank-shafts, 12 and 13, are rotated by means of a pulley on one end of the shaft 12 which is driven by a belt 22 from the cylinder shaft 3. The apron or conveyer 6 is driven by means of sprocket-wheels and chains 23 connecting the shaft 24 of its rear drum with the crank-shaft 12. The crank-shaft 13 is rotated by means of the bars 15. The rotation of the crank-shaft will obviously serve to revolve both ends of the bars 15 and the feed-plates 17 to the same extent.

The rear end of each bar 15 carries a pair of depending tines or knives 25, arranged to operate in their downward movement close to the slats of the conveyer to pick the grain off the conveyer and throw it on to the cylinder. If knives are used they will also serve to sever uncut bundle bands, if such are presented. The bars 15 are also utilized to operate the retarding devices. These retarders consist of arms 26 hinged, as at 27, to the forward ends of the bars 15, and provided with plates 28 having teeth 29, the inner edges of which are preferably nearly vertical and their outer edges inclined, except the forward or outer tooth which has a nearly vertical outer edge 30 adapted to present an obstruction to the inward movement of the grain and to push it toward the front when the retarder is moved in that direction, while the other teeth serve to pull the grain inward when moved in that direction. The outer ends of the retarder arms are suspended by hangers 31 from a transverse rod 32 which latter is supported by arms 33 extending forward from another transverse rod 34 that can be partially turned for the purpose of adjusting the positions of the arms 33; and the rod 34 may be so turned by means of an upwardly extended end portion 35 to which is connected at the side of the machine a rod 36 having its other end connected

to an adjusting lever 37 operating on a quadrant 38. The adjustment of this lever enables the retarders to be set at any desired distance from the feed-belt. It should be understood that the hangers 31 coöperate with the arms 26 and plates 28 in the operation of retarding the grain, for they, as well as the arms and plates, may engage the material during their oscillatory movements toward the front of the conveyer, as will be apparent from the construction shown in Fig. 4.

The center-board 39 and the side-boards 40 are given vibratory motion in vertical direction by the following means. The front end of the center-board 39 is hinged, as at 41, to the machine frame, and its inner end is suspended by a hanger 42 from an arm 43 on and near the middle of a rock-shaft 44. The side-boards 40, which may have rearward portions of any desired length hinged to the machine frame, as at 45, have their outer or free edges suspended by hangers 46 from arms 47 also on the rock-shaft 44. Rocking motion is imparted to this shaft from the bars 15 by means of an arm 48 attached to the shaft and a connecting-bar 49 pivotally connecting it to a stud 50 secured to one of the bars 15. By these means the center and side boards will obviously be vibrated in vertical direction by the rotary movements of the feed-bars 15, and such vibratory movements will tend to straighten the sheaves or stalks of grain on the apron and to keep them in the spaces between the center and side boards.

In use, bundles or stalks of grain may be thrown, either by hand or machinery, upon the conveyer in more than usual quantities, and with little regard to the capacity of the cylinder to thresh the grain, for the improved self-feeding devices, in conjunction with the retarders, when the parts are properly adjusted, will prevent clogging while insuring a feed movement of the material approximately equal to the ability of the cylinder to properly operate upon it. In operation, the vibrations of the side-boards will tend to prevent the sheaves from falling off and the vibrations of both the side and center boards, in coöperation with the movement of the apron, will tend to straighten the sheaves to positions lengthwise of the machine. The retarder movements will serve to prevent a too rapid movement of material to the action of the feeders and cutters, and the latter will serve to tear apart and feed the material to the cylinder in suitable condition and proper quantities for effective threshing.

As many of the mechanical devices described for effecting the operations required may be varied by a skilful constructor without changing the result or mode of operation, I do not wish to limit my claim to the exact form and arrangement of devices set forth.

What I claim and desire to secure by Letters-Patent, is—

1. In a threshing-machine self-feeder, the combination with the conveyer, of a movable center-board and side-boards having their inner edges hinged and their outer edges free, a rock-shaft provided with arms, and hangers connecting the arms to the center-board and the free edges of the side-boards for vibrating all of said boards in vertical direction, substantially as set forth.

2. In a threshing-machine self-feeder, the combination with the conveyer, of cutting and feeding device carriers, pairs of cranks to which said carriers are connected, means for rotating the crank-shafts, a movable center-board, and mechanism connected with said center-board and said carriers for vibrating it in vertical direction by the movements of said carriers, substantially as set forth.

3. In a threshing-machine self-feeder, the combination with the conveyer, of cutting and feeding device carriers, pairs of cranks to which said carriers are connected, means for rotating the crank-shafts, a movable center-board, and hinged side-boards, and mechanism connecting said center and side boards with said carriers for vibrating all of said boards in vertical direction by the movements of said carriers, substantially as set forth.

4. In a threshing-machine self-feeder, the combination with the conveyer, of a plurality of bars provided with cutting and feeding devices, retarding devices pivotally connected to said bars, pivotally connected hangers for suspending the outer portions of the retarders, crank-shafts to which said bars are connected, and means for rotating said crank-shafts to impart movement to said bars, substantially as set forth.

5. In a threshing-machine self-feeder, the combination with the conveyer, of a plurality of bars provided with cutting and feeding devices, retarders having their inner ends pivoted to said bars, adjustable hangers pivotally connected to the outer ends of the retarders, crank-shafts to which said bars are connected, and means for rotating said crank-shafts to impart movement to said bars, substantially as set forth.

6. In a threshing-machine self-feeder, the combination with the conveyer, of a center-board having its outer end hinged and its inner end free, a rock-shaft having an arm, a hanger connecting it to the free end of the center-board, and means for operating the rock-shaft, substantially as set forth.

7. In a threshing-machine self-feeder, the combination with the conveyer, of cutting and feeding devices, means for operating their carriers in vertical and horizontal direction, retarder carriers pivotally connected to the outer portions of said feed device carriers, and pivoted hangers connected to the outer portions of the retarder carriers, substantially as set forth.

8. In a threshing-machine self-feeder, the combination with the conveyer, of vertically vibrating side and center boards, a series of top-feed devices and means for operating them in vertical and horizontal direction, retarder carriers pivotally connected to the outer portions of said feed device carriers, and pivoted hangers connected to the outer portions of the retarder carriers, substantially as set forth.

9. In a threshing-machine self-feeder, the combination with the conveyer, of a series of cutting and feeding device carriers, a pair of crank-shafts having a corresponding series of cranks arranged at different angles to their shafts for operating said carriers in vertical and horizontal direction, retarder carriers pivotally connected to the outer portions of said feed device carriers, and pivoted hangers connected to the outer portions of the retarder carriers, substantially as set forth.

10. In a threshing-machine self-feeder, the combination with the conveyer, of cutting and feeding devices, means for operating their carriers in vertical and horizontal direction, means for adjusting them toward or away from the conveyer, retarder carriers pivotally connected to the outer portions of the feed device carriers, pivoted hangers connected to the outer portions of the retarder carriers, and means for adjusting said hangers toward or away from the conveyer, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 11th day of December, 1903.

AUGUST ZASTROW.

Witnesses:
L. W. CROFOOT,
ROSWELL BOTTUM.