Jan. 2, 1923.

1,440,391

J. M. KANE.

SELF FEEDER FOR THRASHING MACHINES.

FILED JULY 30, 1921.

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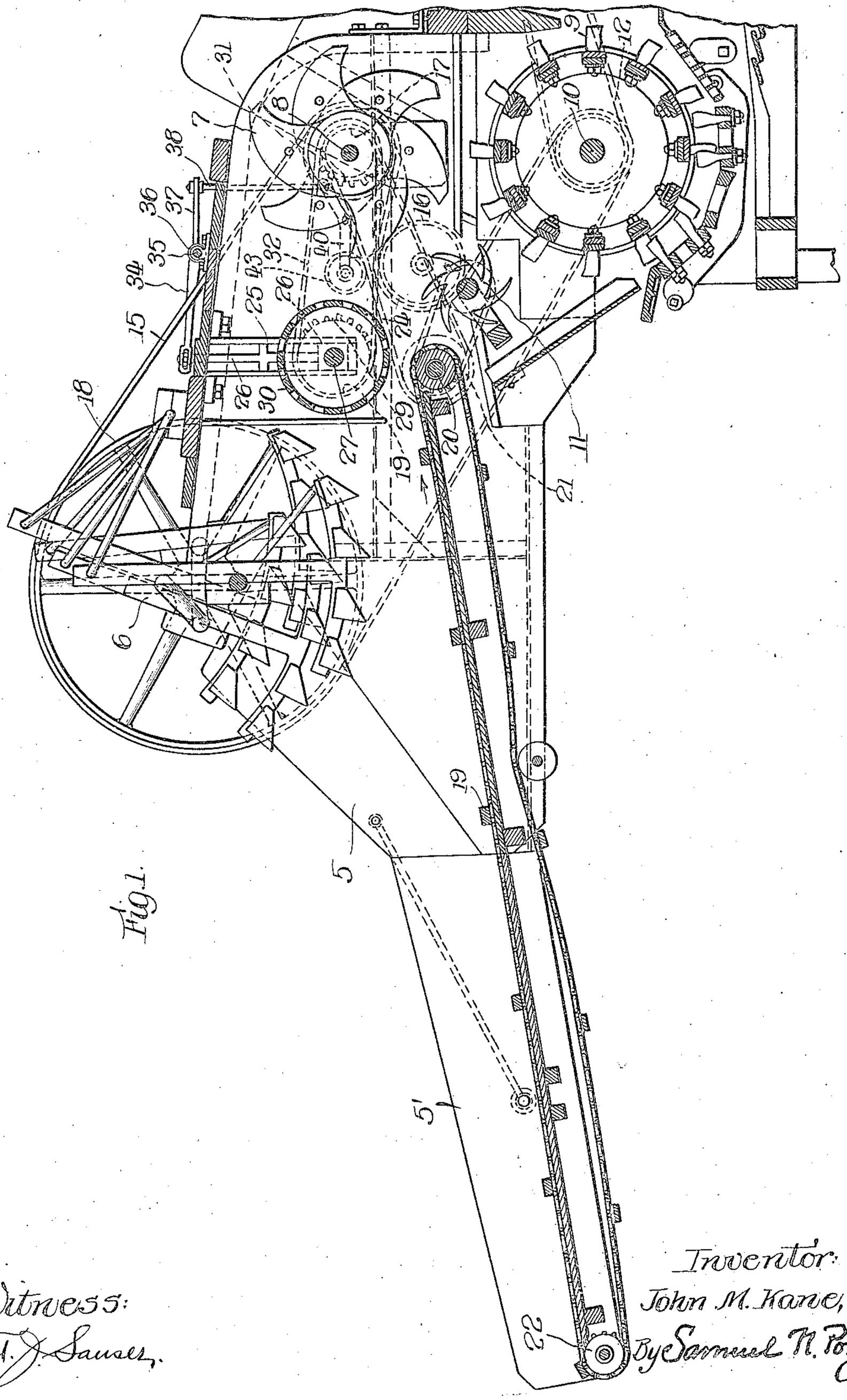

Fig. 1.

Witness:
A. J. Sauer.

Inventor:
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Atty.

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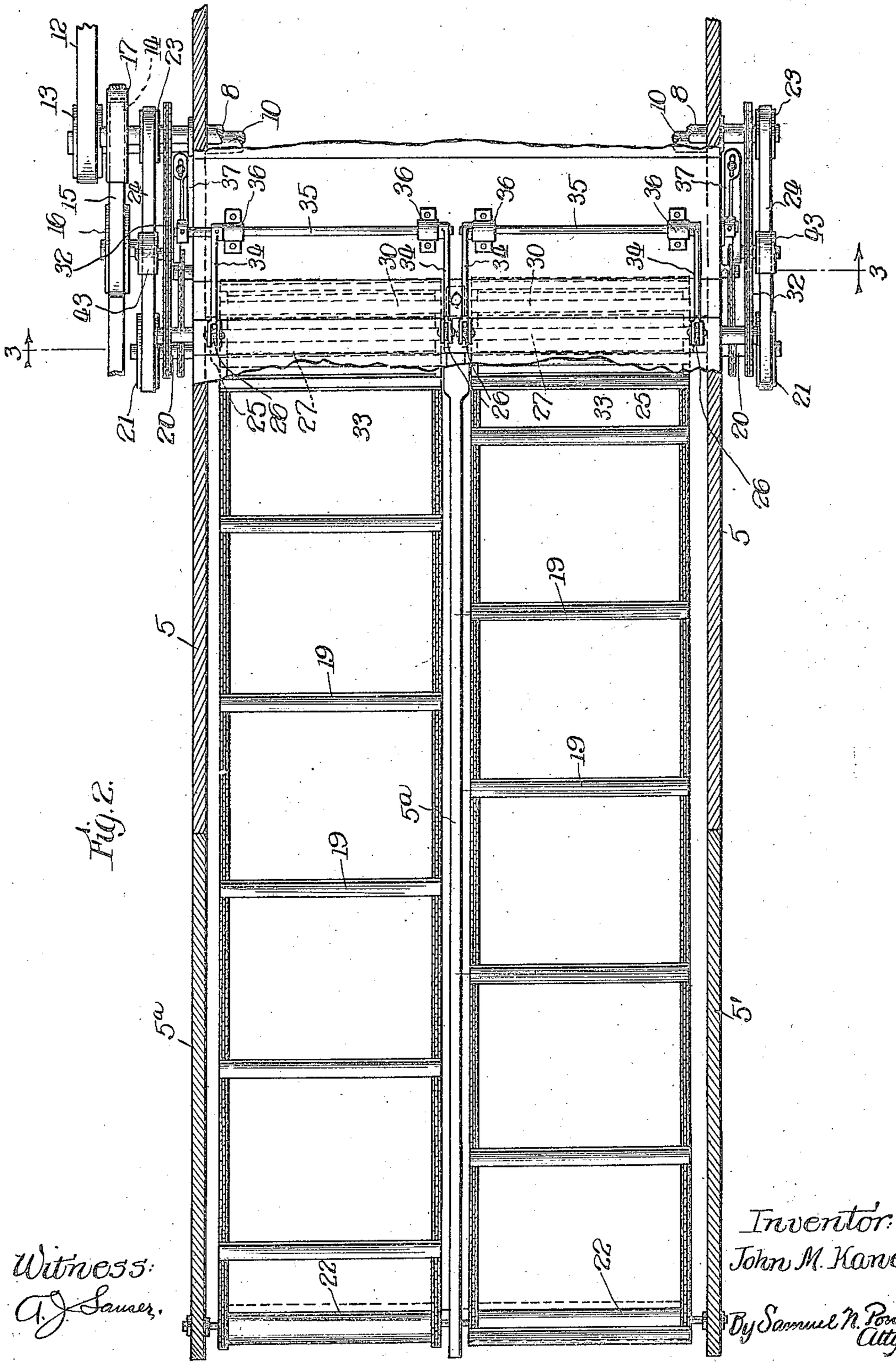

Fig. 2.

Witness:
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Fig. 3.

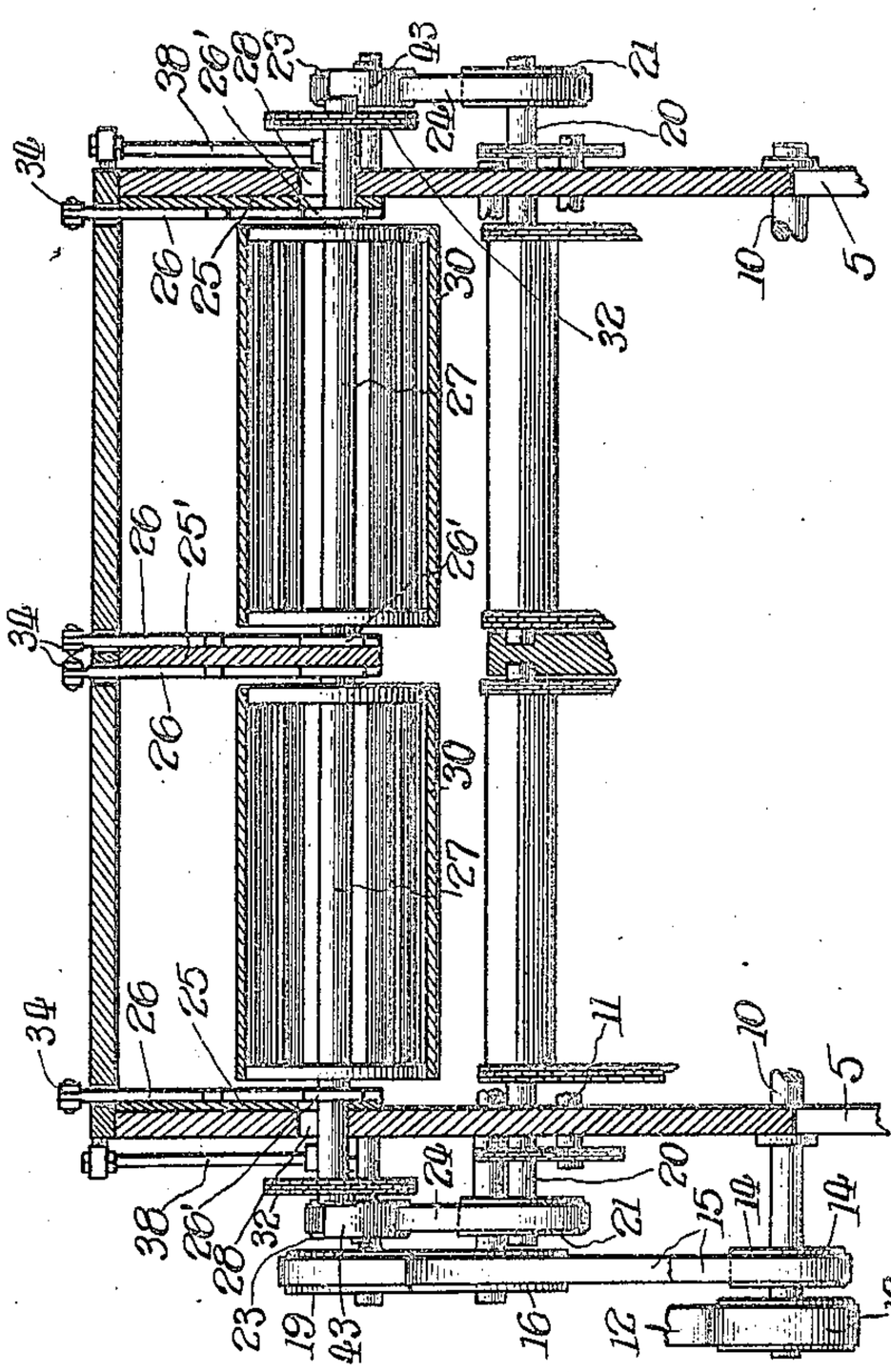
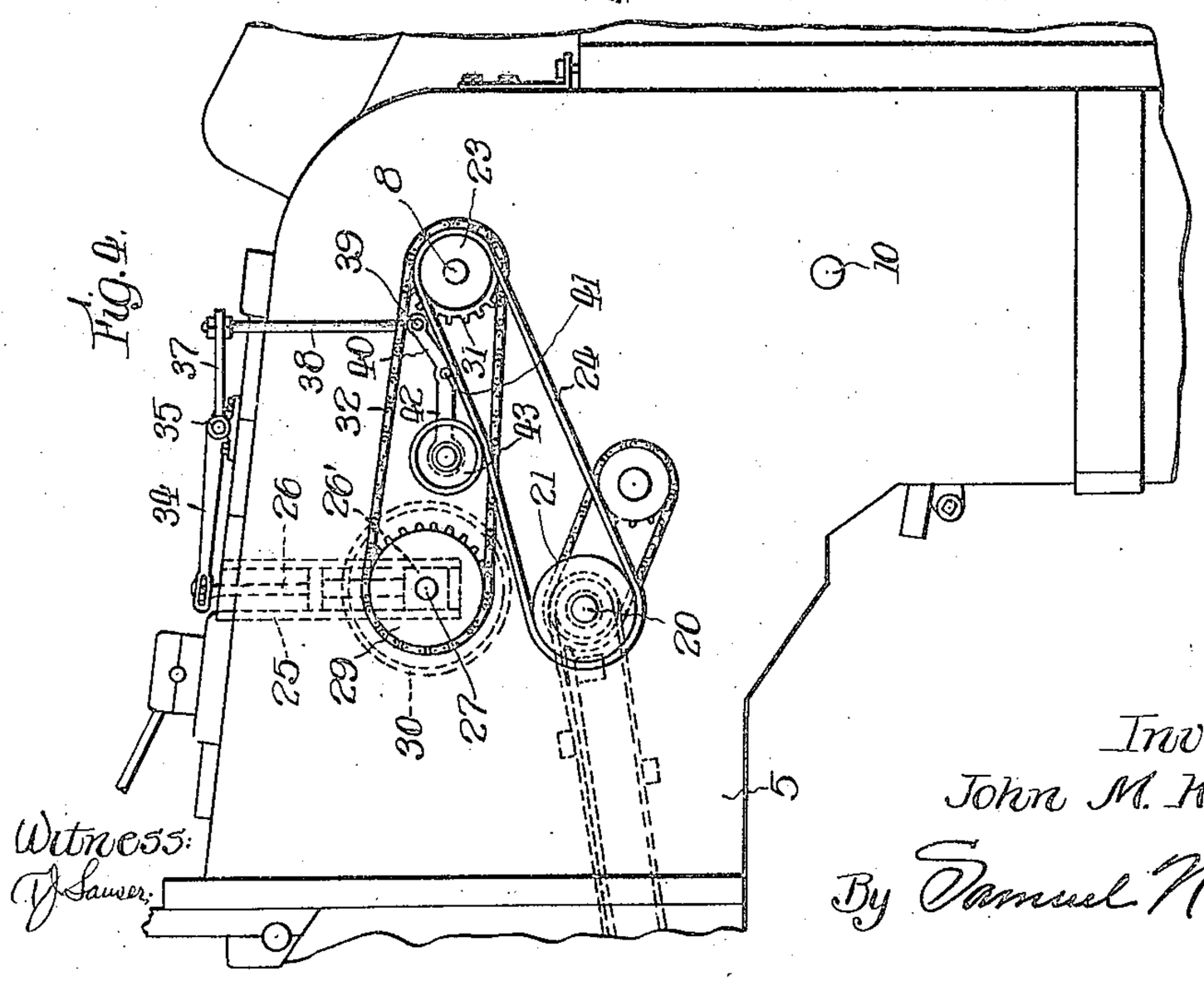


Fig. 4.



Witness:
D. Sawer.

Inventor:
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Patented Jan. 2, 1923. 1,440,391

UNITED STATES PATENT OFFICE.

JOHN M. KANE, OF KANKAKEE, ILLINOIS.

SELF-FEEDER FOR THRASHING MACHINES.

Application filed July 30, 1921. Serial No. 488,555.

To all whom it may concern:

Be it known that I, JOHN M. KANE, a citizen of the United States, residing at Kankakee, in the county of Kankakee and State of Illinois, have invented certain new and useful Improvements in Self-Feeders for Thrashing Machines, of which the following is a specification.

This invention relates to improvements in thrashing or grain separating machines, and has reference more particularly to an improvement in the self-feeders of such machines. The main object of the invention is to provide a device applicable to self-feeders by which the grain shall be caused to travel in an even flow from the feeder to the thrashing cylinder, with the possibility of straw slugging or choking down the cylinder substantially entirely eliminated. Another object of the invention is to provide a device of the character stated which may readily be applied to known and existing types of self-feeders, and shall be simple in construction, inexpensive to manufacture, and efficient and reliable in action.

In carrying out my invention, instead of employing a single bundle carrier of the full width of the carrier trough, I make this carrier in two equal or twin halves running side by side on opposite sides of the divide board and independently driven. In association with said bundle carrier, I employ a float cylinder placed directly behind the band cutter and above the inner end of the bundle carrier and in front of the thrashing cylinder, which float cylinder is made in two halves rotatably and independently mounted in bearings capable of a vertical sliding movement, so that the float cylinders can rise or climb upon a bunch of grain that would be large enough to interfere with the regular speed of the thresher cylinder; and each of said float cylinders, on its rising movement due to a choking or slugging of the straw, is caused, through suitable mechanism, to throw out of gear the bundle carrier with which it cooperates, such bundle carrier thus remaining idle until the bunch of grain is gradually worked down to a size that will accommodate the capacity of the thrashing cylinder. By making the bundle carrier and the float cylinder in two independent halves, it is possible for either side of the feeder to work on independently of the other. If one side is overloaded, the bundle carrier on this side is stopped, and the overload worked down before starting again; while the other side continues in operation, thus keeping grain in the thrashing cylinder and avoiding waste of time and grain by the thresher running empty.

My invention, its novel structural features, mode of operation and advantages will be readily understood by persons skilled in the art from the following detailed description, taken in connection with the accompanying drawings, in which I have illustrated my invention applied to a well known modern type of thrashing or grain separating machine, and in which:—

Fig. 1 is a longitudinal vertical section through the feeder of a thrashing machine with my improvement applied thereto;

Fig. 2 is a view, partly in horizontal section and partly in top plan of the same with parts omitted for the sake of clearness;

Fig. 3 is a vertical transverse section substantially on the line 3—3 of Fig. 2; and

Fig. 4 is a fragmentary side elevation showing the automatic mechanism for controlling the drive of the bundle carrier from the vertical movements of the float cylinder.

Referring to the drawings, and first briefly describing the well-known parts of the self-feeder with which the device of my invention cooperates, 5 designates the usual carrier trough and 5′ the usual hinged extension thereof, in which parts the bundle carrier is mounted to travel, 6 designates as an entirety the band cutter mechanism, 7 designates the rear knives mounted on a transverse shaft 8, 9 designates the thresher cylinder mounted on shaft 10, and 11 designates the retarder. Power is applied through a drive belt 12 to a pulley 13 fast on the shaft 10 of the thresher cylinder. On said shaft 10 is a pulley 14, which, by means of a belt 15 cooperating with an idler pulley 16 drives a pulley 17 fast on the rear knife shaft 8 and a pulley 18 fast on the shaft of the band cutter. The above described parts are or may be all as usual in thrashing machines of this type.

Turning now to a description of those features wherein my present invention more particularly resides, the bundle carrier, instead of being made as a single endless belt occupying the full width of the carrier trough and its hinged extension, is made in twin halves 19, as clearly shown in Fig. 2, each belt at its inner end being driven from

a shaft 20 which is journaled in one side wall of the casing and in the divide-board 5ª and carries a pulley 21 by which it is driven. Each bundle carrier 19 at its lower end is mounted on a roller 22. Fast on the rear knife shaft 8, on each side of the feeder is a pulley 23 which, through a belt 24, drives the pulley 21 of the bundle-carrier.

Mounted on the inner surface of each side wall directly above the lower end of the bundle-carrier is a channel guide 25, and depending from the top wall of the casing (Fig. 3) is a central double channel guide 25′. In these guides are slidably mounted the lower squared ends 26′ of hanger bars 26, and journaled in said lower ends 26′ is a shaft 27 that extends through a vertical slot 28 in the side wall and carries a sprocket wheel 29 (Fig. 4). Fast on the shaft 27 is a float cylinder 30 which is mounted with capacity for bodily rising and falling movement limited by the height of the slot 28. Fast on the shaft 8 is a sprocket wheel 31 which is drivingly connected to the sprocket 29 by a sprocket chain 32.

The upper ends of the hanger-bars 26 extend through the top wall of the casing and are pivoted to crank arms 34 secured to a shaft 35 that is journaled in bearings 36 on said top wall and carries on its outer end, as clearly shown in Fig. 4, a rearwardly extending arm 37. This arm is articulated to a depending link 38, the lower end of which is pivotally connected at 39 to one arm 40 of a bell crank lever pivoted to the side wall at 41. The other arm 42 of said lever carries a pulley 43 that normally, under the weight of the float cylinder 30, acts as a belt tightener to the drive belt 24 of the bundle carrier.

In operation, as the bundles of grain travel upwardly on the bundle-carriers 19 and are delivered thence to the thresher cylinder, if the delivery is too rapid on either side and the straw chokes or slugs at the thresher cylinder and piles up in rear of the latter, the float cylinder on the side on which this choking occurs, will be forced upwardly. This, through the described connections, raises the belt tightener pulley 43, and allows the drive belt 24 to slip, thereby interrupting the travel of the bundle-carrier on that side of the feeder. The other side of the feeder during this time will usually be in normal operation, and will continue in such normal operation until the excess straw is gradually worked down, permitting the float cylinder to again descend and thereby throw back into gear its cooperating bundle-carrier.

From the foregoing it will be seen that the device of my invention provides a simple remedy for the slugging and choking of the straw that sometimes occurs in thrashing machines and that usually occurs on one side or the other of the feeder, causing an arrest of the feed on that side until the normal conditions have been reestablished, and without at all interrupting the continuous normal operation of the feeder on the other side. Manifestly, this eliminates the waste of time and grain heretofore caused by allowing the entire separator to run empty until the choked condition of the feeder has been remedied.

Manifestly, the details of structure and arrangement as herein shown and described may be considerably varied by those skilled in the art without involving any departure from the principle of the invention or sacrificing any of the advantages thereof. Hence, I reserve all such variations and modifications as fall within the spirit and purview of the appended claims.

I claim:

1. In a feeder mechanism for thrashing machines, the combination of a carrier trough, a pair of bundle carriers independently mounted side by side in said carrier trough, a drive shaft, independent power transmissions between said drive shaft and said bundle carriers, respectively, a thrashing cylinder, and means actuated by an overload of straw upon either bundle carrier for rendering idle the power transmission of said bundle carrier.

2. In a feeder mechanism for thrashing machines, the combination of a carrier trough, a pair of bundle carriers independently mounted side by side in said carrier trough, a drive shaft, independent power transmissions between said drive shaft and said bundle carriers, respectively, a thrashing cylinder, a pair of float cylinders rotatably mounted above the inner ends of said bundle carriers respectively, said float cylinders being movable bodily away from the bundle carriers with which they respectively cooperate, and means actuated by each of said float cylinders when bodily moved for rendering idle the power transmission of its co-operating bundle carrier.

3. In a feeder mechanism for thrashing machines, the combination of a carrier trough, a pair of bundle carriers independently mounted side by side in said carrier trough, a power shaft, independent power transmissions between said drive shaft and said bundle carriers respectively, a thrashing cylinder, a pair of float cylinders journaled side by side above the inner ends of said bundle carriers and independently movable bodily in a vertical direction, and means actuated by each of said float cylinders on its rising movement for rendering idle the power transmission of its co-operating bundle carrier.

4. In a feeder mechanism for thrashing machines, the combination of a carrier trough, a pair of endless bundle carriers in-

dependently mounted side by side in said carrier trough, a drive shaft, independent belt and pulley driving mechanisms from said drive shaft to said bundle carriers respectively, independent belt tightening pulleys co-operating with the bundle carrier drive belts respectively, a thrashing cylinder, and means actuated by an overload of straw between either bundle carrier and the thrashing cylinder operating to retract the belt tightening pulley of said bundle carrier and thereby check the travel of the latter.

5. In a feeder mechanism for thrashing machines, the combination of a carrier trough, a pair of endless bundle carriers independently mounted side by side in said carrier trough, a drive shaft, independent belt and pulley driving mechanisms from said drive shaft to said bundle carriers respectively, independent belt tightening pulleys co-operating with the bundle carrier drive belts respectively, a thrashing cylinder, a pair of float cylinders journaled side by side above the inner ends of said bundle carriers and movable bodily in a vertical direction, and means actuated by each of said cylinders on its rising movement operating to retract the belt tightening pulley of its co-operating bundle carrier from the drive belt of the latter.

6. In a feeder mechanism for thrashing machines, the combination of a carrier trough, a pair of endless bundle carriers independently mounted side by side in said carrier trough, a drive shaft, independent belt and pulley driving mechanisms from said drive shaft to said bundle carriers respectively, independent belt tightening pulleys co-operating with the bundle carrier drive belts respectively, a thrashing cylinder, a pair of float cylinders journaled side by side above the inner ends of said bundle carriers and movable bodily in a vertical direction and lever and link connections between said float cylinders and said belt tightening pulleys through which each float cylinder on its rising movement operates to retract the belt tightening pulley of its co-operating bundle carrier from the drive belt of the latter.

7. In a feeder mechanism for thrashing machines, the combination of a bundle carrier, a driving mechanism therefor, a thrashing cylinder, a float cylinder disposed above the inner end of said bundle carrier, a shaft on which said float cylinder is mounted, vertical guides located opposite the ends of said cylinder respectively, hanger bars slidably engaged with said guides and supporting said shaft, and means actuated by said hanger bars on the rising movement of said float cylinder, serving to render idle the driving mechanism of said bundle carrier.

JOHN M. KANE.