

No. 754,850.

PATENTED MAR. 15, 1904.

A. W. COLLIS.
THRESHING MACHINE.
APPLICATION FILED SEPT. 12, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

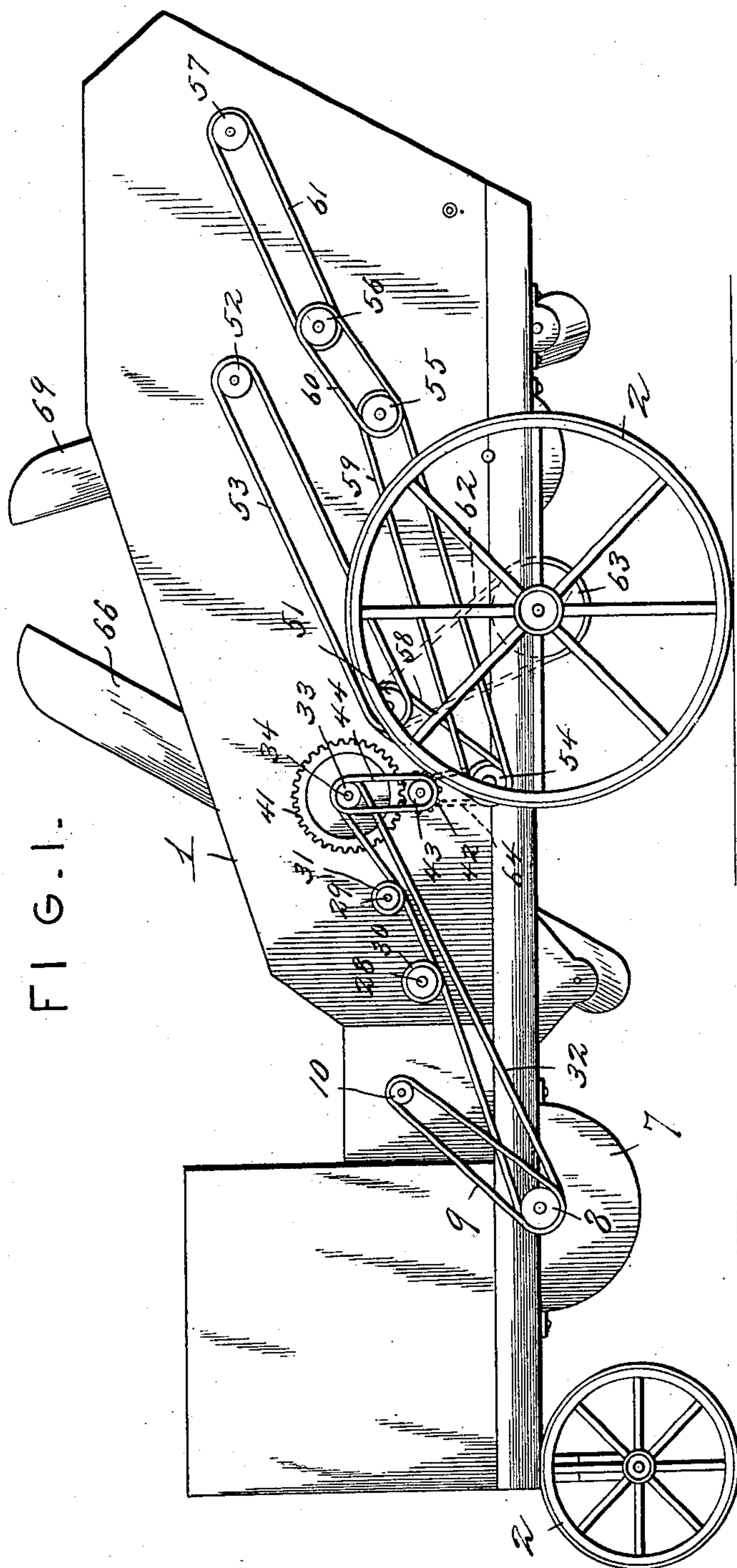


FIG. 1.

Inventor

Witnesses

Harry L. Amer.
Hubert D. Lawson

By

Austin W. Collis.

Victor J. Evans Attorney

No. 754,850.

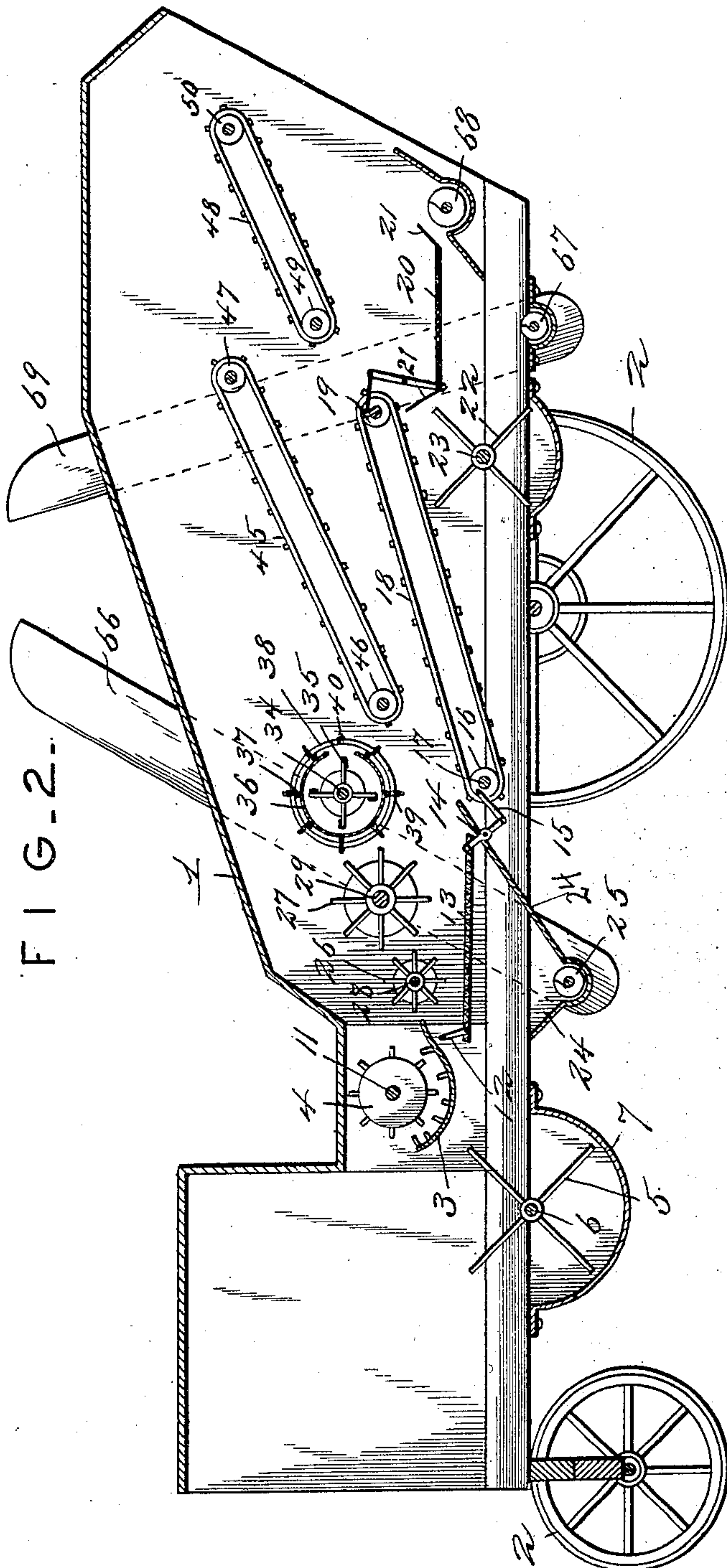
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3 SHEETS—SHEET 2.



Inventor

Witnesses

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By

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Victor J. Evans Attorney

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3 SHEETS—SHEET 3.

FIG. 3.

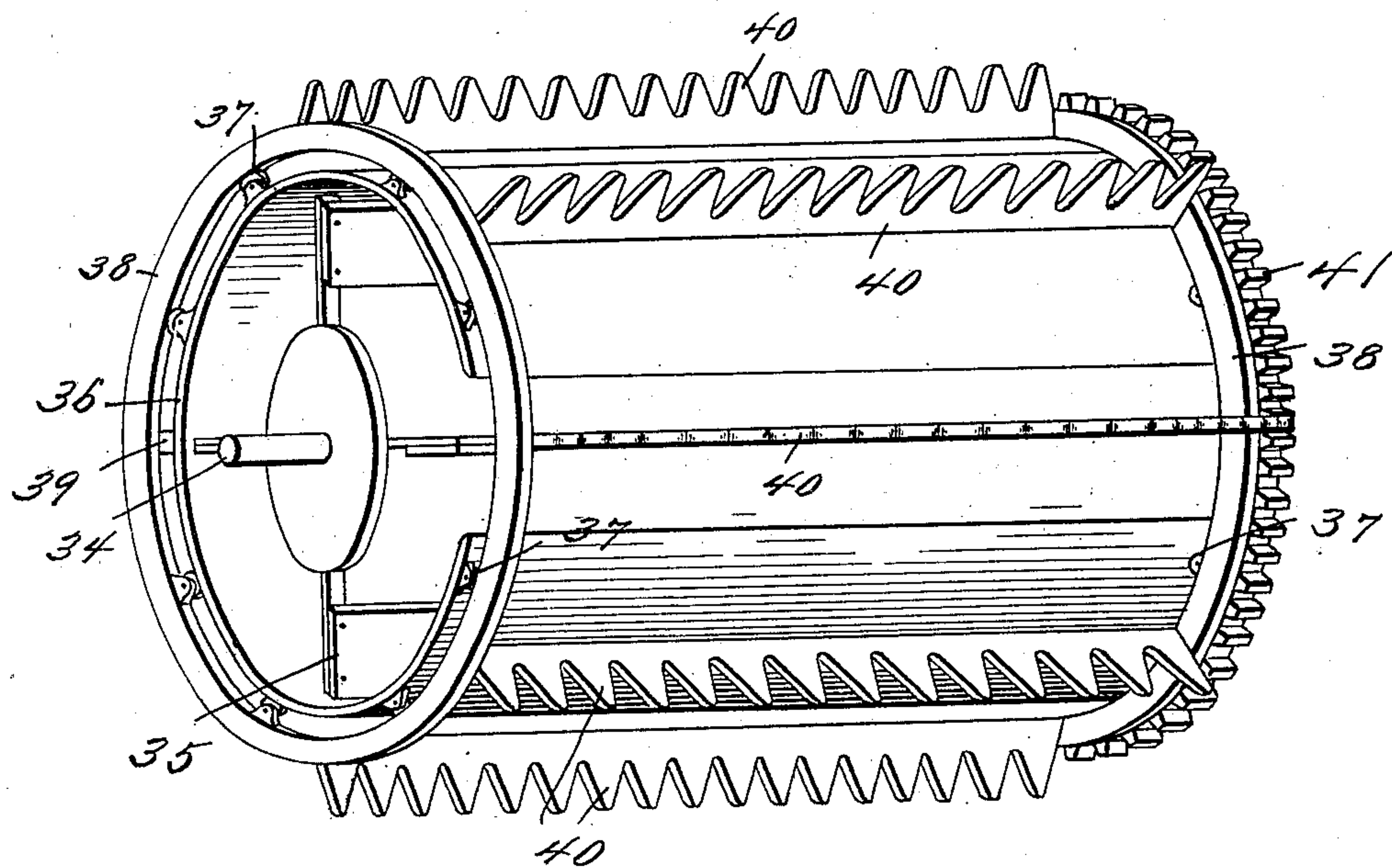
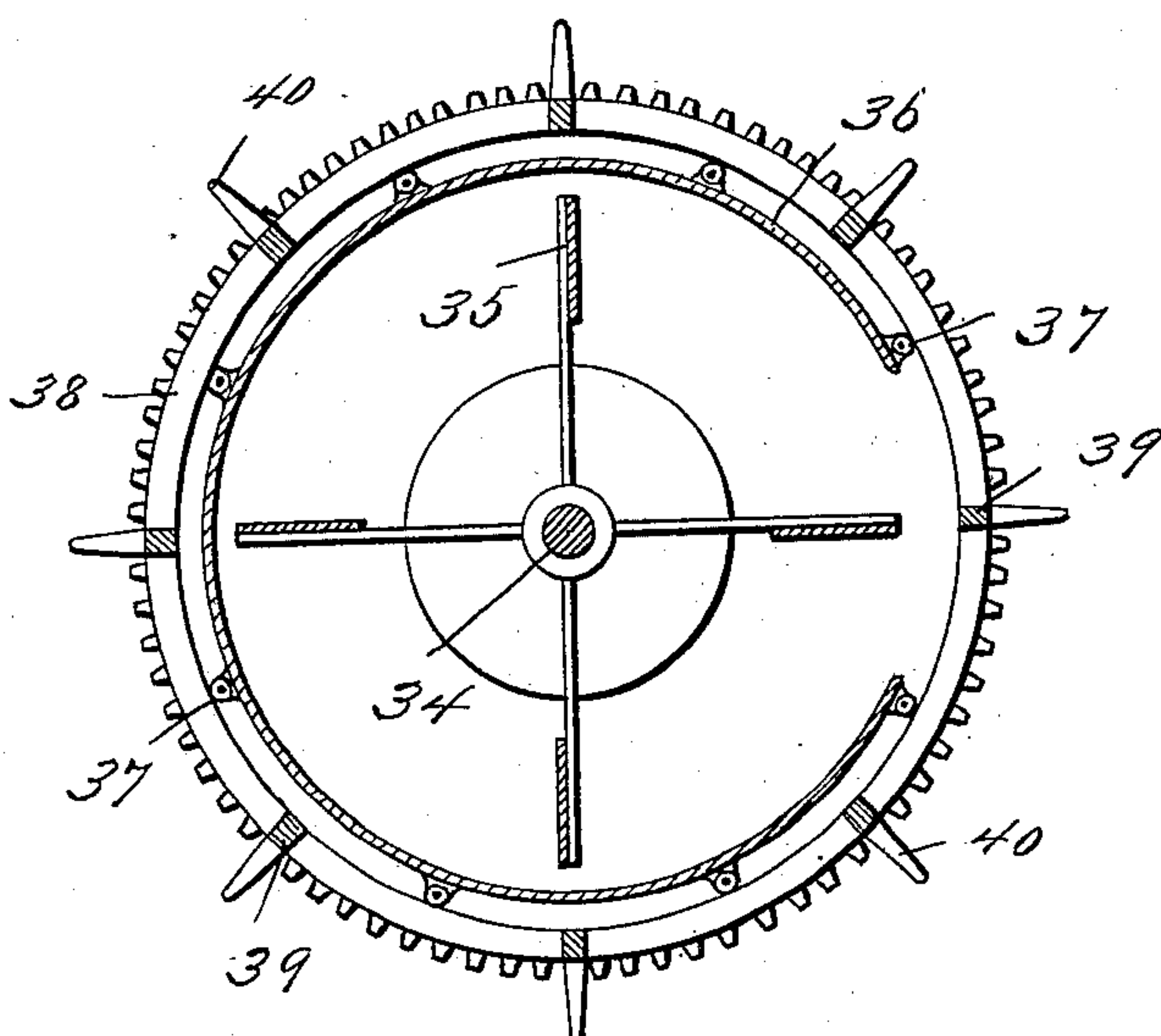


FIG. 4.



Inventor

Austin W. Collis.

Witnesses

Harry L. Amer.
Hubert Lawson

ವಿಶ್ವ

Victor J. Evans
Attorney

Attorney

UNITED STATES PATENT OFFICE.

AUSTIN W. COLLIS, OF BRENTWOOD, CALIFORNIA.

THRESHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 754,850, dated March 15, 1904.

Application filed September 12, 1903. Serial No. 172,971. (No model.)

To all whom it may concern:

Be it known that I, AUSTIN W. COLLIS, a citizen of the United States, residing at Brentwood, in the county of Contra Costa and State of California, have invented new and useful Improvements in Threshing-Machines, of which the following is a specification.

My invention relates to new and useful improvements in grain threshers and separators; and its object is to provide a simple and compact machine of this character which will thoroughly separate all grain from the straw fed thereto.

Another object is to provide a novel arrangement of reels and fans for tearing and separating it from the grain.

With the above and other objects in view the invention consists in the novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a longitudinal section therethrough. Fig. 3 is an enlarged perspective view of the combined reel and blower, and Fig. 4 is an enlarged section through the parts illustrated in Fig. 3.

Referring to the figures by numerals of reference, 1 is the casing of the threshing-machine, which is mounted upon suitable traction-wheels 2 and is provided at a point near the front end thereof with a toothed concave 3, above which is arranged a threshing-cylinder 4. A fan 5 is arranged on a shaft 6 in front of and below the concave 3, and the casing 7 of this fan extends, preferably, below the casing 1, as shown. A pulley 8 is secured to the shaft 6, and a belt 9 serves to transmit rotary motion therefrom to a pulley 10 on the shaft 11 of cylinder 4. Hangers 12 are pivotally mounted within the casing 1 below the concave 3 and serve to support a reciprocating grate 13, the rear end of which is supported by centrally-fulcrumed levers 14. These levers are connected by means of pitmen 15 with pulleys 16, arranged on a shaft 17, which carries a grain-drag 18. This grain-drag is inclined, as shown, and is supported at its upper end upon a roller 19, which overhangs a

reciprocating grate 20, supported by means of hangers 21. A fan 22 is mounted on a shaft 23, journaled within the casing 1 below the upper end of the drag 18, and this fan is adapted to direct an air-blast between said drag and the grate 20 and out through the rear end of the casing 1. Inclined grain-boards 24 are located below the grate 13 and serve to direct the grain falling thereon from said grate to an auger 25, which extends transversely of the machine and is adapted to be rotated by any suitable mechanism provided therefor. Above the shaft 25 are located straw-reels 26 and 27, respectively, which are arranged on their shafts 28 and 29. The reel 27 is larger than the reel 26 and rotates faster, and the shafts 28 and 29 have pulleys 30 and 31 thereon, whereby motion is imparted thereto from a belt 32, mounted on pulley 8 and also on a pulley 33, secured to a shaft 34. This last-mentioned shaft has a fan 35 secured to it, and arranged on the cylindrical fan-casing 36 are rollers 37, which form bearings for parallel rings 38, connected by cross-rods 39. Arranged between and fastened to these rings at desired intervals are a parallel series of teeth 40. A toothed ring 41 is also connected to the rods 39 and rotates therewith. This ring is located inside the casing 1 and meshes with a small gear 42, which rotates with a pulley 43 outside, upon which is mounted a belt 44 for transmitting motion to said pulley from the pulley 33. The three reels 26, 27, and 40 are preferably arranged with their shaft in an inclined plane, and a straw-carrier 45 is mounted on rolls 46 and 47 and extends from the rear reel upward to a point above the reciprocating grate 20, and a second straw-carrier 48 is located below and in rear of the carrier 45 and is mounted on rolls 49 and 50. Pulleys 51 and 52 are connected to the rolls 46 and 47, respectively, and have a belt 53 mounted thereon, and the rolls 16, 19, 49, and 50 have pulleys 54, 55, 56, and 57 connected thereto, respectively. A belt 58 serves to transmit motion from the pulley 51 to pulley 54, and another belt 59 transmits rotary motion from pulley 54 to the pulley 55. Belts 60 and 61 are employed for transmitting motion from the last-mentioned pulley 55 to the pulleys 56 and 57. A chain 62, mounted

on a sprocket 63, connected to one of the traction-wheels 2, may be employed for transmitting motion from said wheel to the pulleys, carriers, and drag. A chain 64 may also be employed for transmitting motion from the roller 54 to the gear 42.

The operation of the machine is as follows: The straw is fed to the cylinder and concave in any suitable manner and is there thrown outward upon the reel 26. This in turn tosses it to the reel 27, from which it is passed to the teeth 40 of the third reel. During this operation the grain will be separated from the straw and will fall by gravity upon the reciprocating plate 13, which will shake it upon the grain-boards 24, from which it will be conveyed by the auger 25 to a suitable elevator 66, arranged at one side of the machine. The fan 5 will throw a blast of air below the reels and will carry the chaff and straw upward upon the carrier 45, and any grain which may inadvertently fall beyond the grain-boards 24 will be deposited upon the drag 18 and carried upward until discharged from the upper end thereof. The blast of air created by the fan 22 will blow the chaff from the material dropping from the drag, so that only the heavy grain will fall on the grate 20. The light particles will be blown outward from the end of the machine. The material discharged from the upper end of the carrier is acted upon in the same manner, with the exception that the straw is deposited on the carrier 48 and conveyed thereby to the end of the machine and discharged. It will be seen that the blast of air created by the fan 35 within the inner reel will blow the light chaff and straw upward on the carrier 45, so as to prevent it falling upon the grain-boards 24. The air-blast from the fan 5 will assist the reels 26, 27, and 40 in keeping the straw above them and preventing it from falling upon the grate 13. It will be seen by providing an arrangement of belts and gears as shown that the three reels will travel at different speeds, the larger one rotating faster than the smaller one. The pulley 33 of the fan 35 in rotating will transmit motion through the belt 34 to the pulley of gear 42, and this gear will rotate the toothed ring 41, to which the reel is attached. It will be seen that the machine is very compact in construction, and by providing the novel arrangement of fans, reels, and carriers practically all of the grain is saved without the necessity of increasing the size of the machine, owing to the mechanism employed. In Figs. 1 and 2 I have shown additional augers 67 and 68, which may be rotated in any desired manner and which are adapted to convey laterally from the casing the grain deposited by the grate 20. An elevator 69 is preferably employed at one side of the machine for conveying the grain deposited therein by the augers. The grain may be sacked in any suitable

manner when discharged from the elevators 65 66 and 69.

While I have designated the parts 26, 29, and 40 as, "reel-carriers" it will be understood that I do not restrict these devices to such use, for the reason that by arranging the same so as to cause the teeth or blades thereof to work between and past one another the same can be used for shredding straw in view of the fact that they all rotate at different speeds.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my invention.

Having thus described the invention, what is claimed as new is—

1. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a reciprocating grate below and adjacent the concave, a grain-drag, means operated by the drag for reciprocating the grate, and an inclined series of reel-carriers above the grate and adjacent the concave.

2. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a reciprocating grate below and adjacent the concave, a grain-drag, means operated by the drag for reciprocating the grate, mechanism below the grate for discharging grain laterally from the machine, an inclined series of reel-carriers above the grate and adjacent the concave, and a rotary fan inclosed by and operated in unison with one of the shredders.

3. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a reciprocating grate below and adjacent the concave, a grain-drag, means operated by the drag for reciprocating the grate, an inclined grain-board below the grate, and means upon the board for discharging material laterally from the machine.

4. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a fan below and adjacent the concave, a reciprocating grate adapted to receive material from the concave, means below the grate for discharging material laterally from the machine, a grain-drag, mechanism operated thereby for reciprocating the grate, an inclined series of reel-carriers above the grate, straw-carriers above the drag, and a fan below the drag and carriers.

5. In a machine of the character described, the combination with a threshing-cylinder, and a concave adjacent thereto; of a fan below and adjacent the concave, a reciprocating grate below and adjacent the concave, an endless

apron, means operated thereby for reciprocating the grate, an inclined series of reel-carriers above the grate, a fan in alinement with said carriers, a casing partly inclosing the fan, 5 rollers journaled upon the casing, rings revolvably mounted upon the rollers, a series of teeth connecting the rings, means for transmitting rotary motion from the fan to the rings and teeth, straw-carriers above the apron, and 10 a fan below the apron and carriers.

6. In a machine of the character described, a reel-carrier comprising a shaft, a fan thereon,

a casing partly inclosing the fan, rollers permanently secured upon the casing, rings revolvably mounted upon the rollers, series of teeth 15 connecting the rings and extending longitudinally of the casing, and means for transmitting rotary motion from the shaft to the rings.

In testimony whereof I affix my signature in presence of two witnesses.

AUSTIN W. COLLIS.

Witnesses:

FRED W. WELCH,
KATIE V. DONALD.