

A. M. MONDAY.

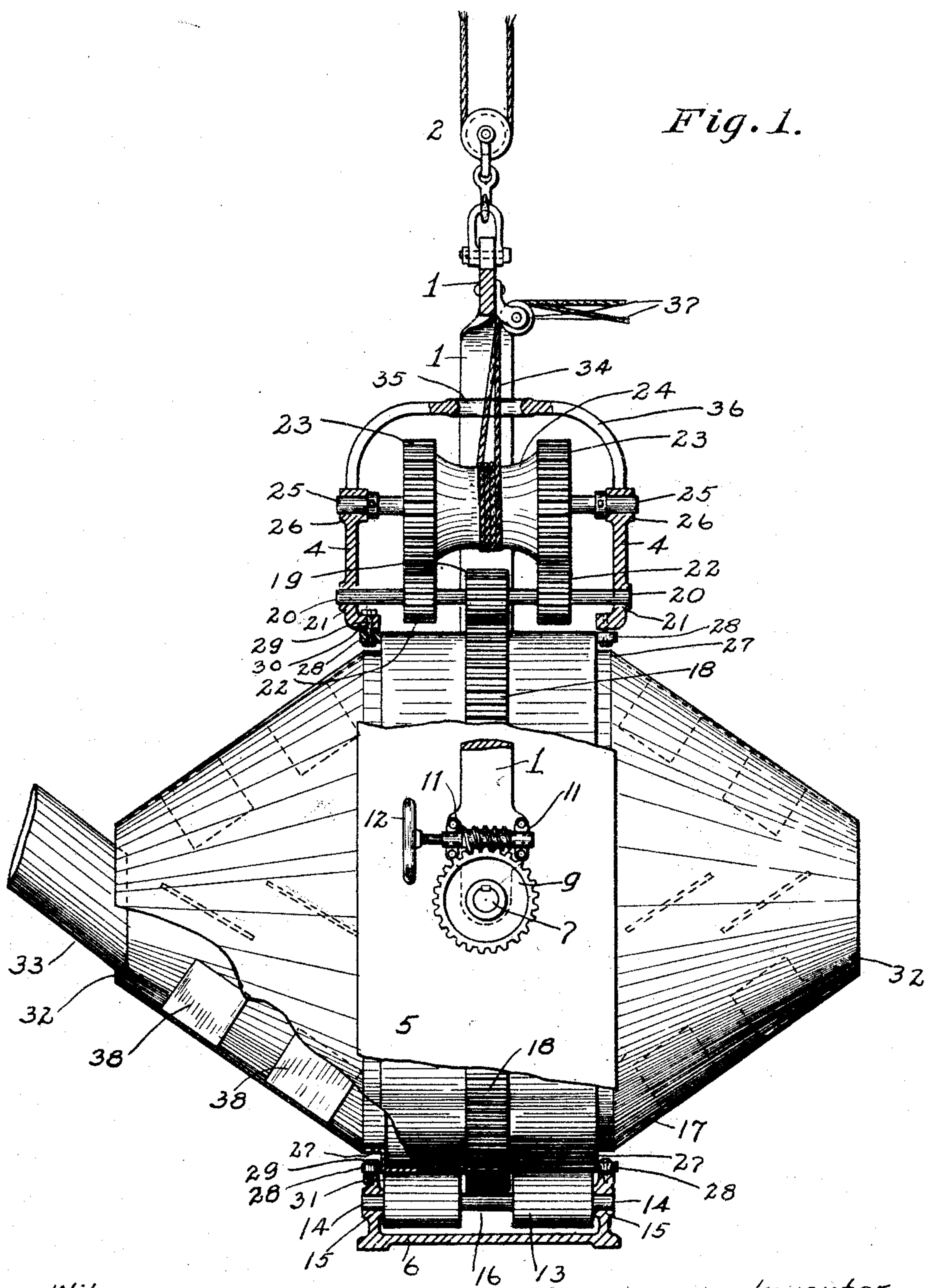
MIXER.

APPLICATION FILED AUG. 28, 1907.

906,908.

Patented Dec. 15, 1908.

3 SHEETS—SHEET 1.



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Carrie R. Ivy

Inventor,
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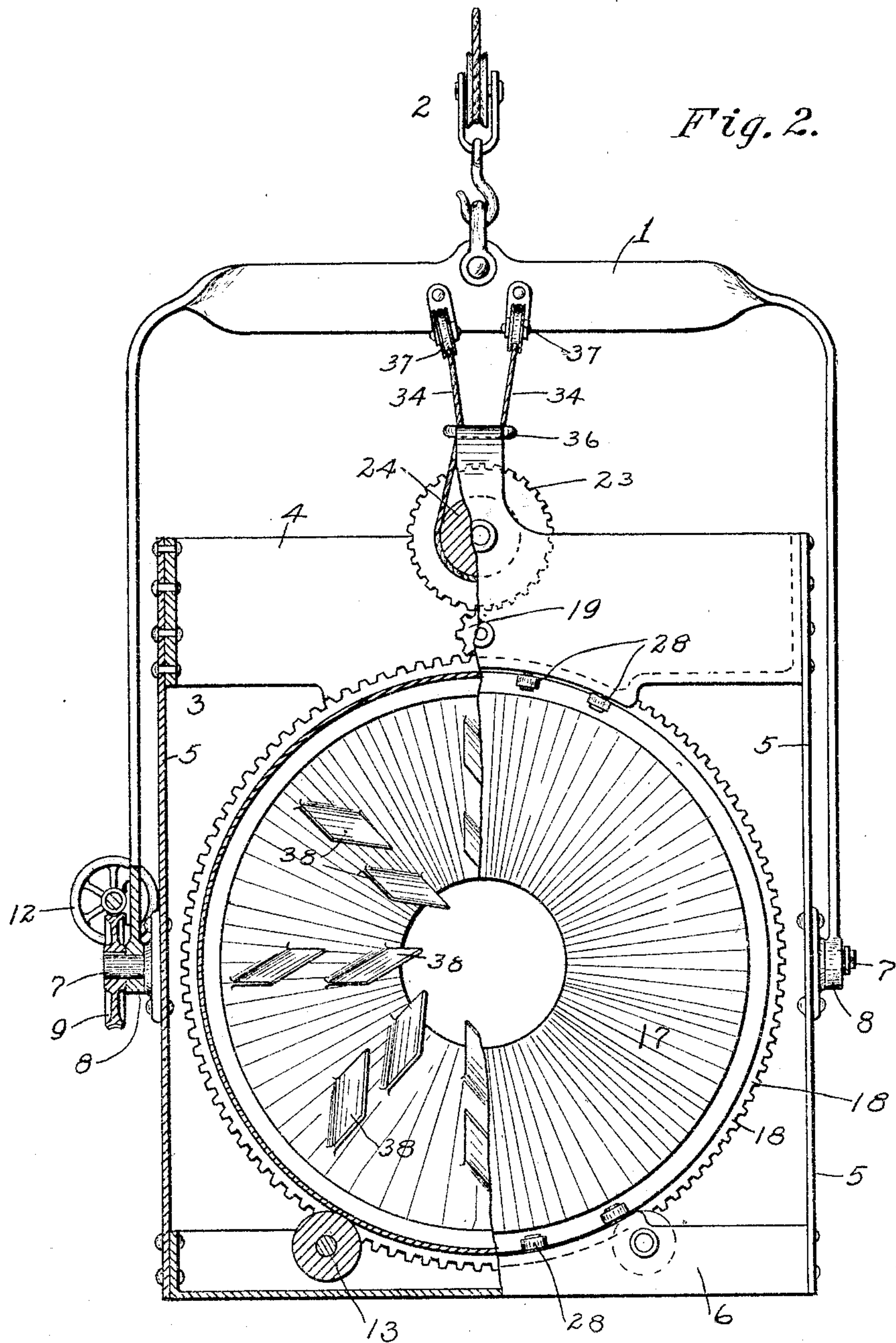
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3 SHEETS—SHEET 2.



Witnesses
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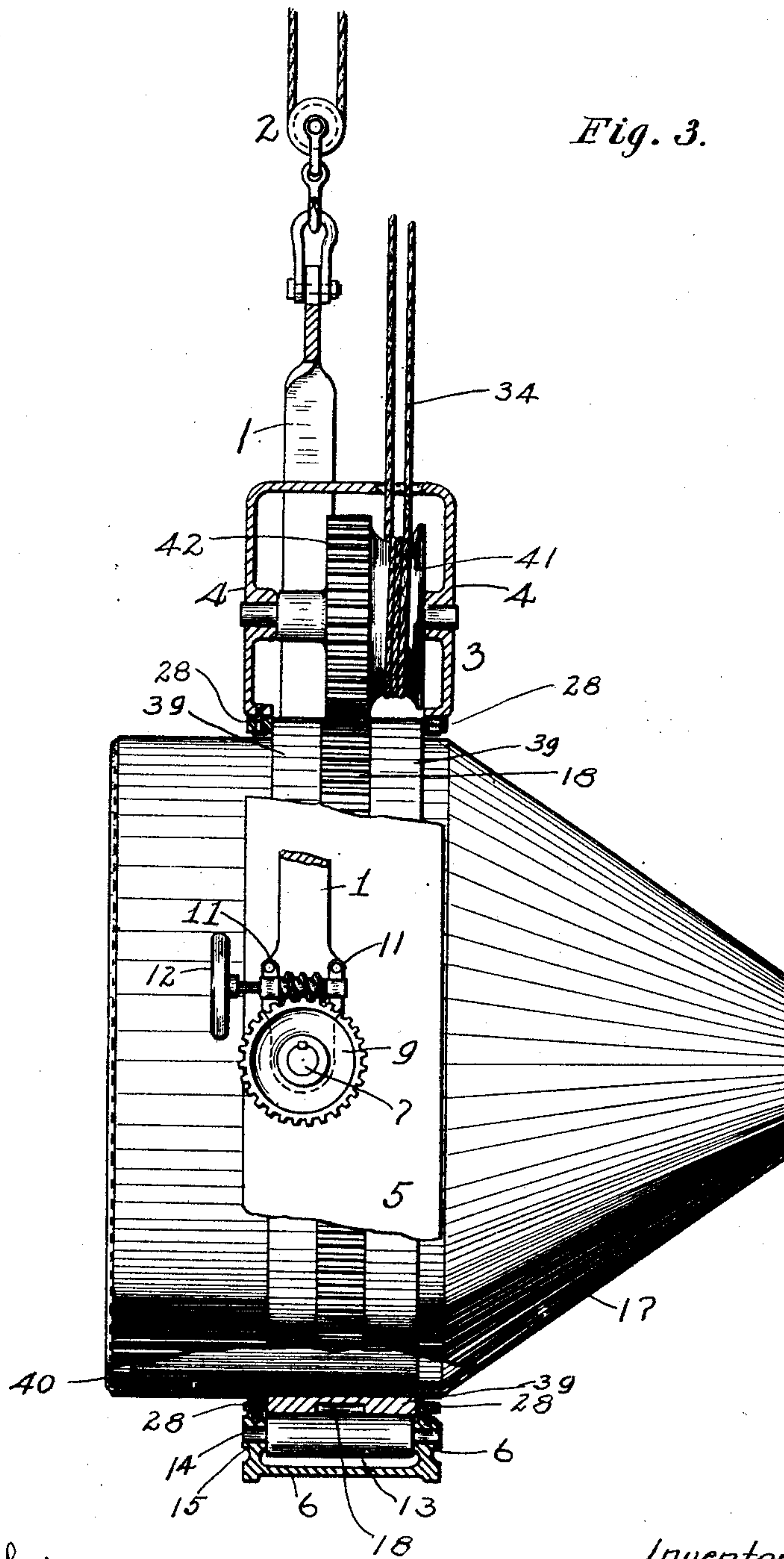
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ABNER M. MONDAY, OF KNOXVILLE, TENNESSEE.

MIXER.

No. 906,908.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed August 28, 1907. Serial No. 390,454.

To all whom it may concern:

Be it known that I, ABNER M. MONDAY, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Mixers, of which the following is a specification, reference being had to the accompanying drawing.

My improvement relates generally to machines for mixing various commodities and particularly to apparatus for mixing the ingredients for concrete and similar compounds.

The object of the invention is to produce a mixer which is adapted to be readily moved from place to place for receiving the ingredients preparatory to mixing, and which is adapted to be carried from the place at which the ingredients are received to places at which the mixture is to be discharged.

The nature of the apparatus is such as to permit the mixing of the material while the apparatus is at the point at which it receives the material or while the apparatus is in transit carrying the material to the place at which it is to be discharged.

In the accompanying drawings, Figure 1 is an elevation, partially in section, of an apparatus embodying my improvement; Fig. 2 is an elevation, also partially in section, of the same apparatus, the view being on a line perpendicular to the line of view in Fig. 1; Fig. 3 illustrates a modification of the apparatus, the view being similar to Fig. 1.

Referring to said drawings, 1 is a bail suspended from a tackle, 2, which is supported from a crane or derrick not shown. By means of said tackle and derrick or crane, said bail may be carried from place to place within the range of said derrick or crane. Any other lifting and carrying mechanism may, of course, be substituted for the ordinary crane or derrick.

Within the bail, 1, is supported a rectangular frame, 3, comprising two upper horizontal pieces, 4, two upright side pieces, 5, and a lower horizontal piece, 6. At each side of said frame is a journal, 7, extending through a bearing, 8, in the bail. One of said journals is extended through the adjacent bearing, 8, far enough to receive a worm gear wheel, 9, keyed to said journal. Above said worm gear wheel is a worm shaft engaging said worm gear wheel and resting in bearings, 11, and having at one end a hand wheel, 12. By turning said hand wheel, said worm shaft

and worm gear wheel are turned, and this causes the turning of the frame, 3, on the axial line of the journals, 7; and the various parts supported by said frame, as hereinafter described, partake of the same motion. Upon the lower frame piece, 6, are mounted rollers, 13, said rollers being horizontal and transverse to the frame, 3, and having journals, 14, resting in bearings, 15. Each of said rollers is preferably recessed at its middle, as shown at 16 in the drawings, to receive the annular gear to be described later. A receiver, 17, is located within the frame, 3, and rests upon the rollers, 13. Said receiver may be of any form adapting it to rotate within the frame, 3. In the form shown in Figs. 1 and 2 of the drawings, the middle portion of said receiver is cylindrical while the portion at each side of said cylindrical portion is in the form of a truncated cone, and each end of the receiver thus formed is open. Around said middle cylindrical portion of the receiver is an annular gear, 18, which extends into the recess, 16, in the rollers, 13. Above the receiver, a spur gear wheel, 19, meshes with said annular cog gear and is mounted upon a horizontal shaft, 20, resting in bearings, 21, in the upper frame pieces, 4. Upon said shaft at each side of said spur gear, 19, is a spur cog gear, 22, meshing with the cog gear teeth, 23, on the spool-form wheel, 24. Said wheel, 24, is mounted upon a shaft, 25, resting in bearings, 26, in said upper frame pieces, 4. It will be observed that the spur gear wheel, 19, and the rollers, 13, prevent the receiver from moving in said frame transversely to the receiver axis, and it will be observed that by rotating the spur gear, 19, the receiver may be rotated upon its axis within said frame. To prevent the movement of the receiver parallel to its axis, said receiver is provided with an annular shoulder, 27, at each side of the middle cylindrical portion of the receiver, and rollers, 28, mounted on axes radial to the receiver axis are made to bear against said shoulders. Journals, 29, for said rollers are secured to flanges, 30, on the upper frame pieces, 4, and flanges, 31, on the lower frame pieces, 6.

The material to be mixed is delivered into the receiver through either opening, 32, by any suitable means, as a spout, 33. The receiver is then rotated by applying power to the spool-form wheel, 24. In the form shown in the drawings, this is done by means of a rope or cable, 34, surrounding the middle

portion of said wheel frictionally and extending thence upward through a guide opening, 35, in the arch, 36 (supported by the upper pieces, 4), and thence over two guide rollers, 5 37, supported by the bail, 1, and thence to any suitable power mechanism (not shown) for drawing either end of said rope. Said power mechanism may be the same engine and accessories as are employed for operating 10 the tackle by which the bail, 1, is lifted and carried. As a substitute for the rope transmission just described, electricity, compressed air, or steam may be used for actuating the gears involved in the rotation of the 15 receiver. It will be observed that the receiver may be thus rotated upon its axis in either direction and at any desired speed and that such rotation may be carried on while the frame, 3, rests upon the ground or any 20 other relatively stationary body, and that such rotation may be carried on while the apparatus is being lifted by the tackle, 2, and moved through the air toward or to the place of discharge. Making the frame horizontal 25 at the base adapts it the better to rest upon the ground during charging and rotation and discharge of the material. From the inner face of the receiver, blades, 38, project at various angles and serve to more effectively distribute and intermingle the material to be 30 mixed.

In operation, the apparatus is swung or carried to the place at which the receiver is to take its charge of material. There the material is introduced through either opening, 32. 35 The receiver is then rotated as long as may be desired, either while the apparatus is in the same position or while it is being carried through the air to the place for discharging. 40 The material may be discharged without changing the location of the apparatus or the apparatus may be first carried to any desired point. For discharging, the hand wheel, 12, is turned in the proper direction to tilt the 45 frame, 3, and the receiver in the desired direction. After the discharge, said hand wheel is turned in the reverse direction until said frame and receiver are again in their normal positions. The worm shaft serves to 50 lock the worm wheel whenever said shaft ceases turning.

In Fig. 3, a flat annular band, 39, is located at each side of the annular gear, 18, and each such band is as thick as said gear, so that the 55 rollers, 13, need not have the recess, 16. And in said Fig. 3, the annular shoulders, 27, are omitted and the rollers, 28, made to bear against the outer side faces of said bands, 39. And in said Fig. 3, the left hand end of the 60 receiver is not in the form of a truncated cone. On the contrary, the cylinder forming the middle portion is extended leftward and terminates in an upright, closed wall, 40. In such modification, the center of gravity is 65 leftward of the middle of the axis of the re-

ceiver, and the axial line of the journals, 7, is correspondingly shifted leftward. And in said Fig. 3, the spur gear wheel, 19, and the spool-form wheel, 24, are merged into a single spool-form wheel, 41, having at one end 70 spur gear teeth, 42, meshing with the annular gear, 18, a rope, 34, being applied to said wheel, 40, as it is applied in Figs. 1 and 2 to the wheel, 24.

I claim as my invention: 75

1. In a machine of the nature described, a receiver having an end opening for the passage of material, a frame rotatably supporting said receiver, mechanism for imparting rotation to said receiver relative to said 80 frame, a bail in which said frame is journaled on an axis transverse to the axis of rotation of said receiver, and lifting mechanism engaging said bail.

2. In a machine of the nature described, a 85 receiver having an end opening for the passage of material, a frame rotatably supporting said receiver, mechanism for imparting rotation to said receiver relative to said frame, a bail in which said frame is journaled 90 on an axis transverse to the axis of rotation of said receiver, and lifting means applied to said bail independently of the mechanism for imparting rotation to said receiver.

3. In a machine of the nature described, a 95 receiver having an end opening for the passage of material, a frame in which said receiver is rotatably held, a bail in which said frame is journaled horizontally and transversely to the axis of said receiver, mechanism 100 located upon said frame for imparting rotation to said receiver relative to said frame, mechanism located upon said bail for turning said frame in said bail, and suspending mechanism engaging said bail. 105

4. In a machine of the nature described, a receiver having an end opening for the passage of material, a frame, rollers supported by said frame and supporting said receiver rotatably, a bail in which said frame is journaled horizontally and transversely to the 110 axis of said receiver, mechanism for imparting rotation to said receiver relative to said frame, and lifting mechanism engaging said bail. 115

5. In a machine of the nature described, a receiver having an end opening for the passage of material, a frame, rollers supported by said frame and supporting said receiver rotatably, a bail in which said frame is journaled horizontally and transversely to the 120 axis of said receiver, mechanism for imparting rotation to said receiver relative to said frame, mechanism for turning said frame in said bail, and suspending mechanism engaging said bail. 125

6. In a machine of the nature described, a receiver having an end opening for the passage of material, a frame in which said receiver is rotatably held, an annular gear sur- 130

rounding said receiver, a bail in which said frame is journaled horizontally and transversely to the axis of said receiver, gearing engaging said annular gear, mechanism for turning said frame in said bail, and suspending mechanism engaging said bail.

7. In a machine of the nature described, a frame having a base adapting the frame to stand upon the ground, a receiver rotatably held in said frame and having an end opening for the passage of material, a bail in which said frame is journaled horizontally and transversely to the axis of said receiver, mechanism for imparting rotation to said receiver relative to said frame, and suspending mechanism engaging said bail.

8. In a machine of the nature described, a receiver having an end opening for the passage of material, a frame in which said receiver is rotatably held, an annular cog gear surrounding said receiver, gearing mounted upon said frame and engaging with said annular gear, a bail in which said frame is jour-

naled horizontally and transversely to the axis of the receiver, a rope for driving said gearing, and a lifting rope applied to said bail independently of said driving rope.

9. In a machine of the nature described, a receiver having an end opening for the passage of material, a frame in which said receiver is rotatably held, a bail in which said frame is journaled horizontally and transversely to the axis of the receiver, driving mechanism for rotating said receiver on its axis, and mechanism independent of said driving mechanism for lifting and carrying said bail and the parts supported thereby.

In testimony whereof I have signed my name, in presence of two witnesses, this 24th day of August, in the year one thousand nine hundred and seven.

ABNER M. MONDAY.

Witnesses:

CYRUS KEHR,
CARRIE R. IVY.