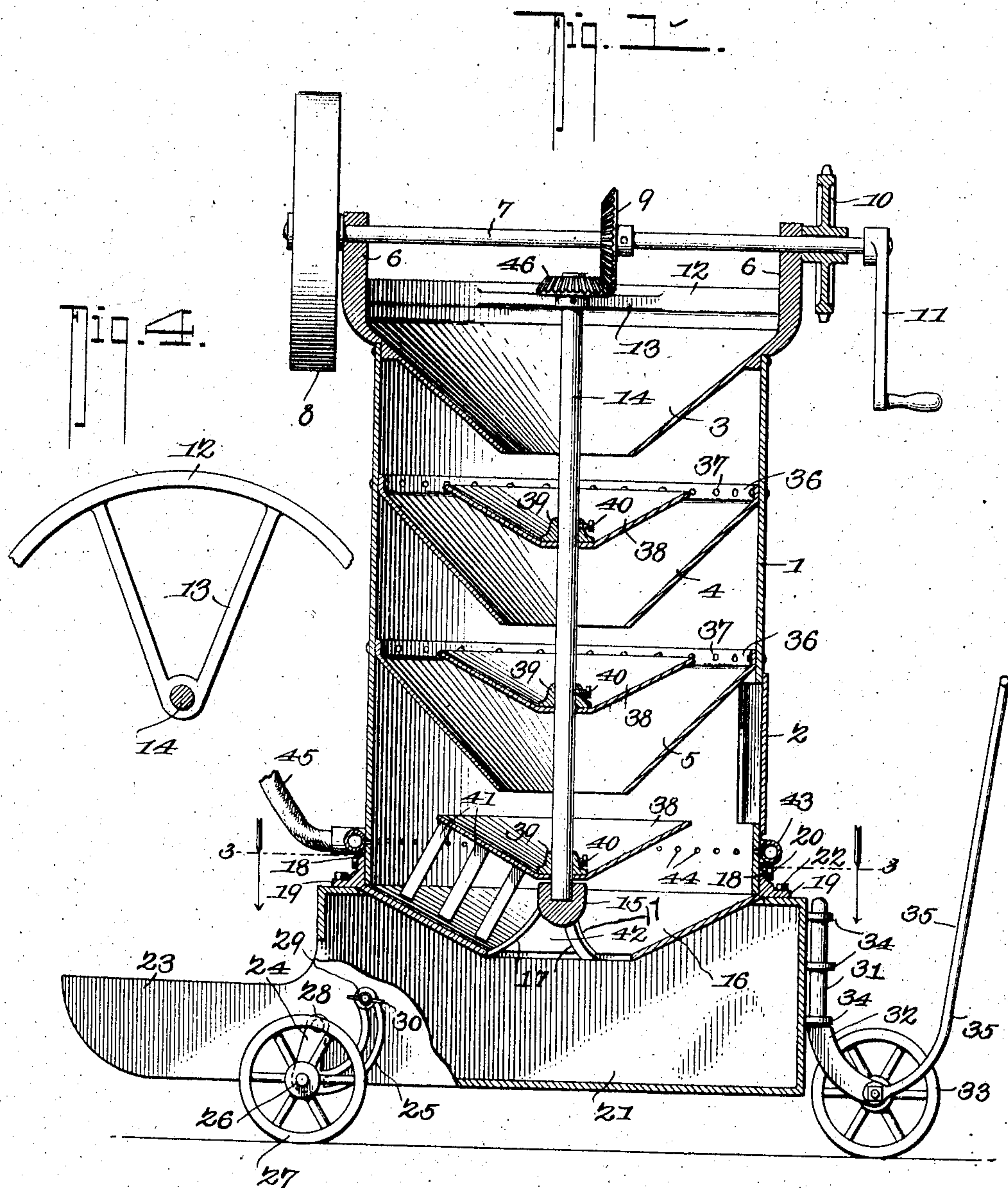


No. 833,790.

PATENTED OCT. 23, 1906.

W. MILES.
MIXING MACHINE.
APPLICATION FILED JUNE 30, 1905.

2 SHEETS—SHEET 1.



Witnesses:

E. J. Stewart
R. M. Elliott

William Miles,
Inventor,

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Attorneys.

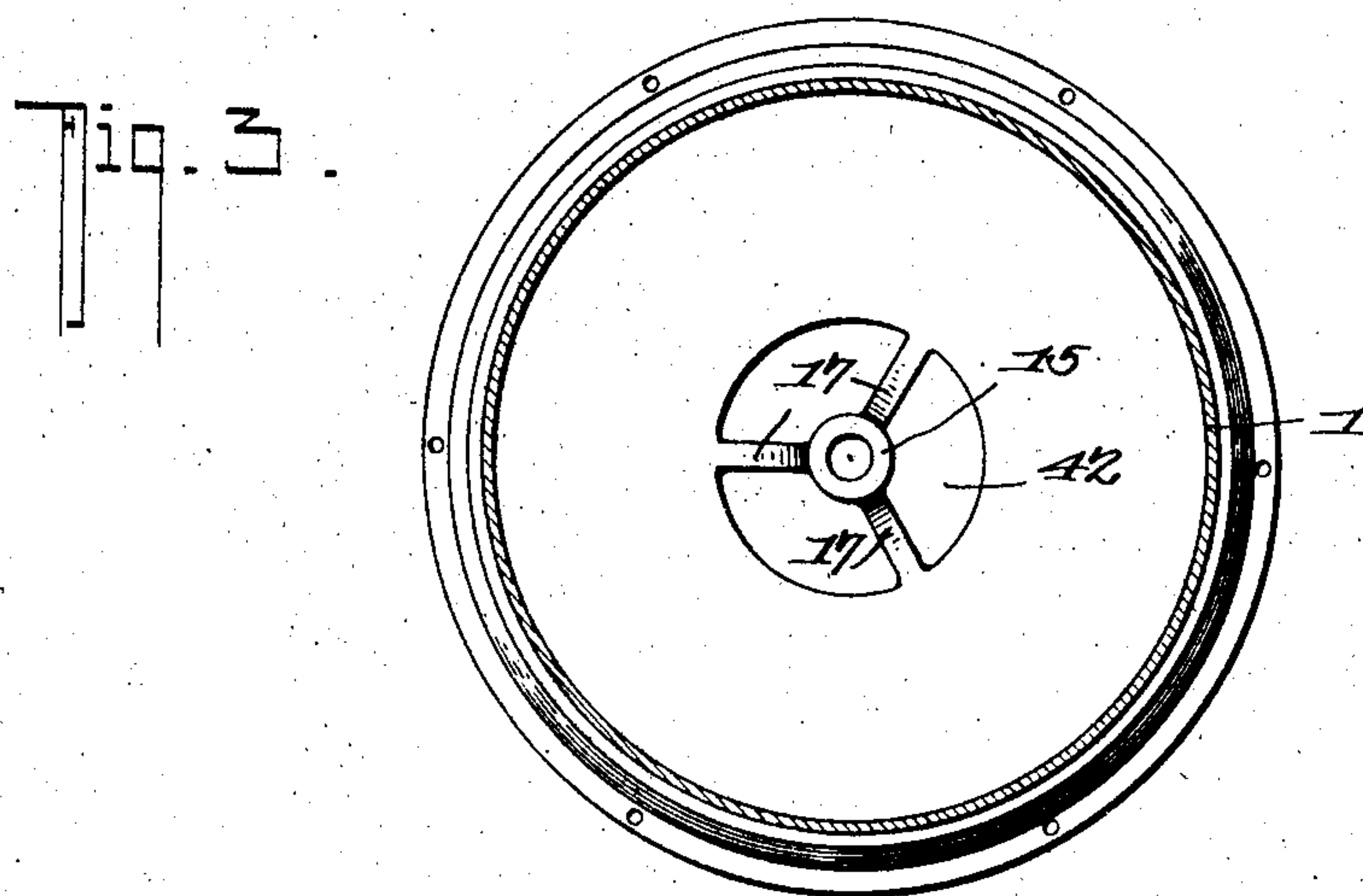
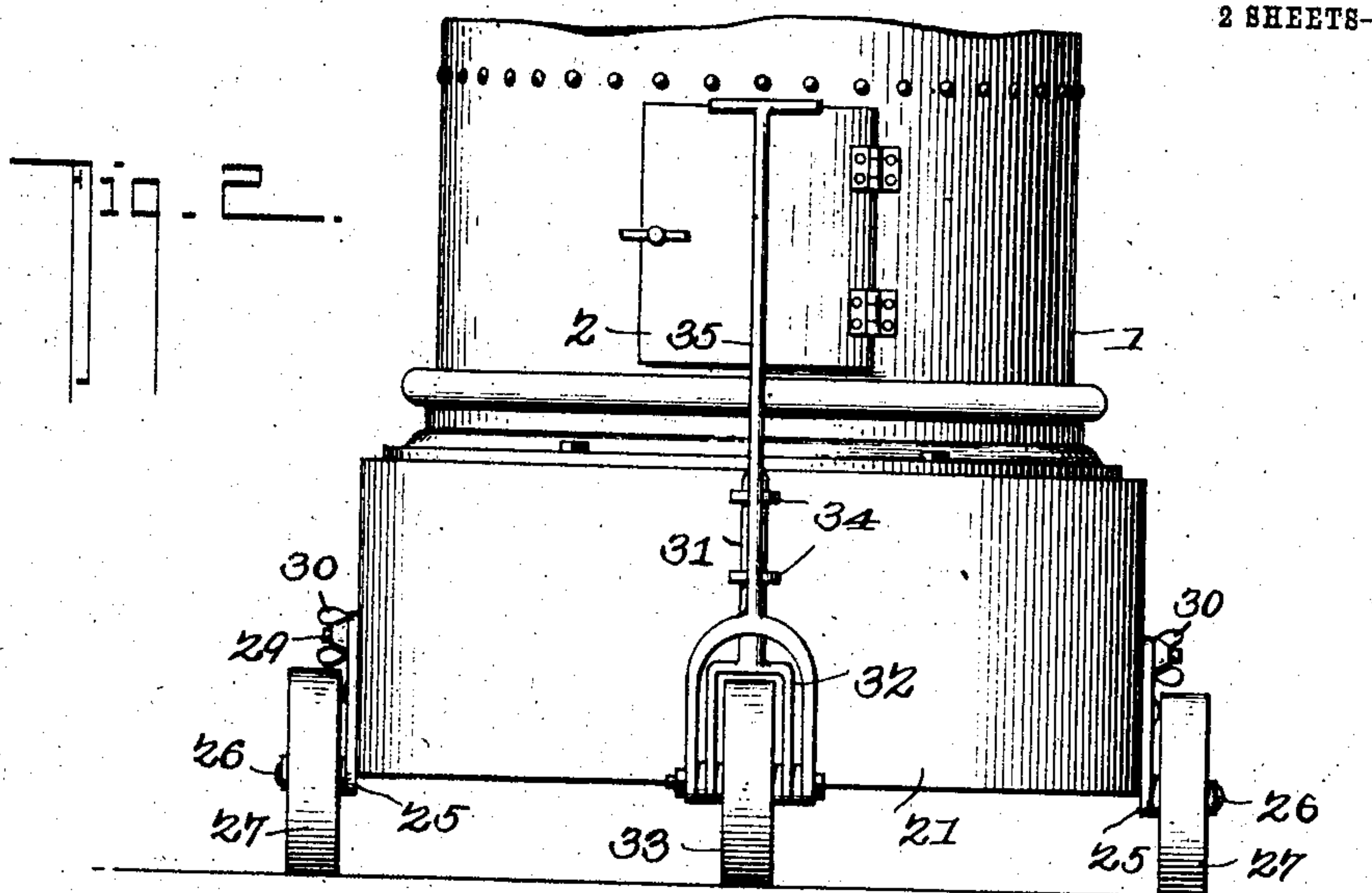
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UNITED STATES PATENT OFFICE.

WILLIAM MILES. OF JACKSON, MICHIGAN.

MIXING-MACHINE.

No. 833,790.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed June 30, 1905. Serial No. 267,845.

To all whom it may concern:

Be it known that I, WILLIAM MILES, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented a new and useful Mixing-Machine, of which the following is a specification.

This invention relates to mixing-machines such as are commonly employed in mixing of concrete.

The object of the invention is to provide a mixing-machine in which the mixing of materials will in a novel manner be positively secured with a minimum of labor and maximum of speed and in which hydration of the materials shall be effected in such manner as to cause the resulting product to be homogeneous throughout.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a mixing-machine, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, Figure 1 is a view in vertical longitudinal section through a machine constructed in accordance with the present invention. Fig. 2 is a view in front elevation of a portion of the apparatus. Fig. 3 is a horizontal section taken on the line 3-3, Fig. 1, and looking in the direction of the arrow thereon. Fig. 4 is a fragmentary detail view in plan of a portion of the machine.

Referring to the drawings, 1 designates the base or body of the apparatus, which is preferably cylindrical in shape and is provided near its lower end with a door 2. Arranged within the casing is a series of charging-hoppers 3, 4, and 5, which, as shown in Fig. 1, are hollow inverted truncated cones. The hopper 3, which will preferably be made of cast-iron, has combined with it two upstanding arms or projections 6, that form bearings for a drive-shaft 7, carrying at one end a drive-wheel 8, intermediate of its ends a bevel-pinion 9, and at its other end a sprocket-wheel 10 and a crank 11. The said hopper is further provided with an upstanding marginal flange 12, from one side of which projects a bracket 13, having formed in its outer end a bearing for one end of a vertical shaft 14, the other end of which works in a step-bearing 15

carried by the bottom 16 of the casing and being also inverted-truncated-cone shaped, the bearing being supported by a plurality of arms 17, which are preferably cast integral with the bottom and the bearing. Of course it will be understood that the bearing-arms may be made as separate elements and combined with the bottom, and as this will be apparent detailed illustration of such obvious modification is omitted. The bottom is provided with two marginal flanges 18 and 19, disposed at right angles to each other, the flange 18 being disposed in a vertical plane and forms a seat for the lower end of the casing, which is held combined therewith by bolts 20. The flange 19 rests upon the base of a receptacle 29 of the apparatus and is held combined therewith by bolts 22. The base 21 is a box-like structure and is provided at its forward end with a mouth 23, through which the material that falls into the base may be removed. The base has combined with it two cranks 24, one disposed on each side thereof adjacent to the mouth, and each crank carries a curved slotted arm 25 and an axle 26 for supporting wheels 27, the cranks being pivotally combined with the base in any preferred manner, as by bolts or rivets 28. The slots in the arms are engaged by bolts 29, which carry thumb-nuts 30 to lock the arms at any desired adjustment. The arms are provided for the purpose of permitting one end of the base to be lowered to the ground when the machine is in operation, thus to prevent movement, and when it is desired to transport the machine the cranks are moved to the position shown in Fig. 1 and by tightening the thumb-nuts the adjustment of the parts will remain fixed. The rear end of the base has combined with it a shaft 31, provided at its lower end with a fork 32, between which is journaled a wheel 33, the shaft being mounted for rotation in keepers 34, secured to the base. The fork has combined with it a handle 35, by which the apparatus may be drawn.

The charging-hoppers 4 and 5 are counterparts of each other and are provided with flanges 36, which are secured to the casing by bolts or rivets 37, thus to present a rigid structure and one that will successfully withstand the jars and vibrations to which the apparatus will be subjected in use.

Combined with the shaft 14 is a series of discharging-disks 38, three being shown in

this instance and being hollow inverted-cone-shaped structures having imperforate bottoms with which are combined lugs 39, carrying set-screws 40 to permit adjustment of the disks relatively to the hoppers. The lower hopper has combined with it a plurality of series of rakes or stirrers 41 (one series only being shown) to insure the removal of all material that drops to the bottom 16, whence it escapes through the central opening 42 therein into the base. Surrounding the exterior of the casing at a point adjacent to the base is a pipe 43, having perforations registering with perforations 44 in the walls of the casing, and connecting with the pipe is a hose 45, which leads to a suitable water-supply.

It will be noted by reference to Fig. 1 that the flare of the walls of the discharging-disks is more acute than those of the charging-hoppers, this being necessary in order to secure the proper operation of the machine.

In driving the apparatus either the crank 11 may be employed or a sprocket-chain driven from a suitable source of power may be combined with the sprocket-chain 10. Upon the shaft 7 being revolved the motion from the miter-gear 9 is transmitted to a similar gear 46, carried by the shaft 14, and this latter causes the discharging-disks rapidly to rotate and for the scrapers 41 to travel over the bottom and mix and dislodge the material thereon and discharge it into the base. The materials are fed first to the hopper 3, whence they pass to the upper one of the discharging-disks, and from this, owing to the centrifugal action, they are discharged and fall back through the second charging-hopper 4, thence to the next discharging-disk, thence to the charging-hopper 5, and thence to the bottom discharging-disk, whence they are discharged upon the bottom 10. As the materials are discharged from the bottom disk they pass through jets of water that issue through the openings 44, and thus become thoroughly hydrated, after which they fall to the bottom 15, are mixed by the stirrers, and are finally discharged in the manner described.

The operation of the machine is continuous and very rapid and will effect the mixing of

the materials in a manner that will be thorough and effective.

While the apparatus is defined as a mixing-machine adapted more particularly for mixing concrete, it is to be understood that its use is not to be limited to this function alone, as it may be employed in mixing any substance or substances—such as seeds, grain, flour, and the like—and still be within the scope of the invention.

Having thus described the invention, what is claimed is—

1. In a mixing-machine, a base constituting a receptacle, a casing supported by the base and having an inverted-cone-shaped bottom provided with an orifice discharging into the receptacle, a step-bearing supported by the bottom and arranged over the orifice, a plurality of charging-hoppers rigid with the casing, the upper one of which is provided with upstanding and lateral bearings, a drive-shaft mounted in the upstanding bearings, a vertical shaft engaging the step-bearing and the lateral bearing, intermeshing miter-gears carried by the two shafts, and discharging-disks carried by the vertical shaft.

2. In a mixing-machine, a base constituting a receptacle, a casing supported by the base and having an inverted-cone-shaped bottom provided with an orifice discharging into the receptacle, a step-bearing supported by the bottom and arranged over the orifice, a plurality of charging-hoppers rigid with the casing, the upper one of which is provided with upstanding and lateral bearings, a drive shaft mounted in the upstanding bearings, a vertical shaft engaging the step-bearing and the lateral bearing, intermeshing miter-gears carried by the two shafts, discharging-disks carried by the vertical shaft, and a water-supply pipe surrounding the lower portion of the casing and having orifices registering with similar orifices in the casing.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM MILES.

Witnesses:

WILLIAM J. STILES,
GOTTLÖB FRED BUECHLER.