H. MISCAMPBELL.

MIXING MACHINE.

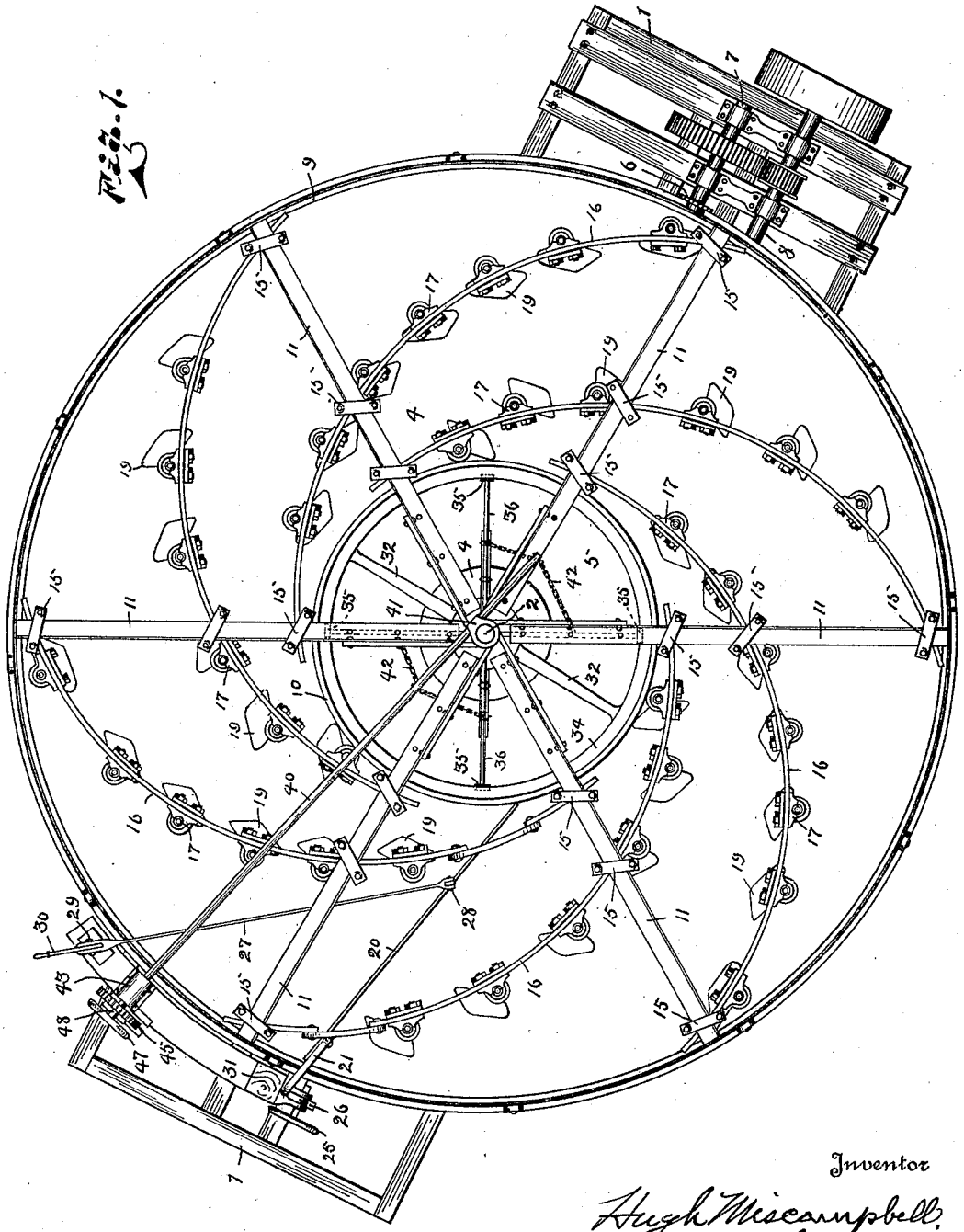
APPLICATION FILED MAR. 26, 1921.

1,398,238.

Patented Nov. 29, 1921.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor

Hugh Miscampbell,

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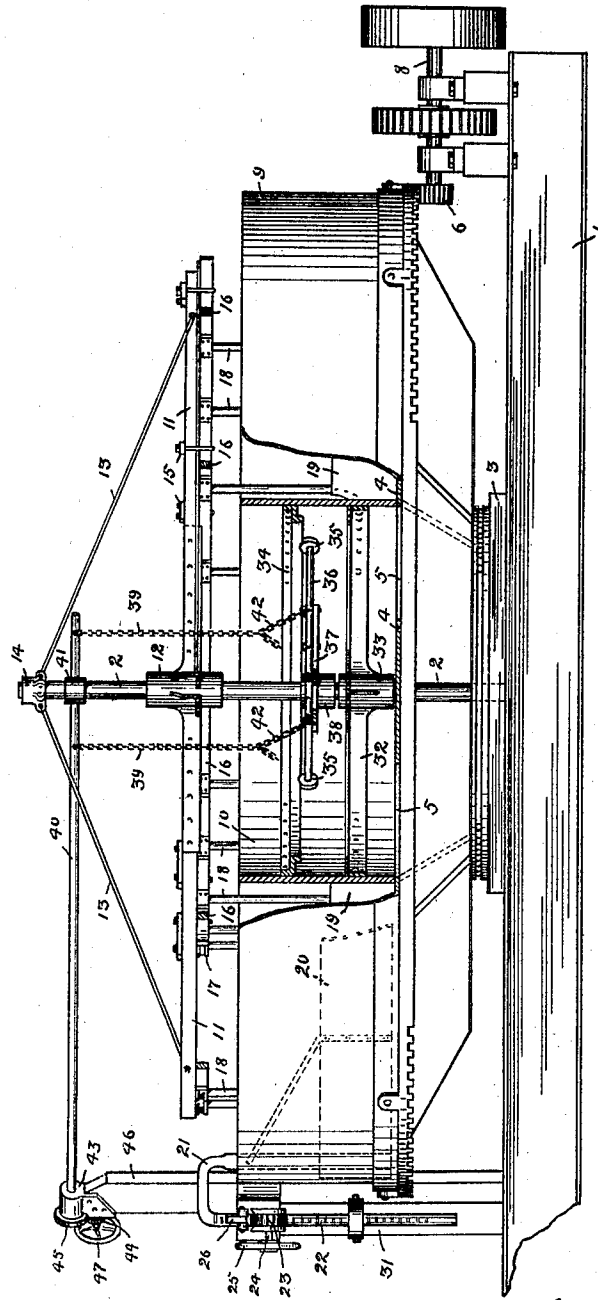


Fig. 2.

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# UNITED STATES PATENT OFFICE.

HUGH MISCAMPBELL, OF DULUTH, MINNESOTA.

## MIXING-MACHINE.

1,398,238. Specification of Letters Patent. Patented Nov. 29, 1921.

Application filed March 26, 1921. Serial No. 455,876.

*To all whom it may concern:*

Be it known that I, HUGH MISCAMPBELL, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Mixing-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in mixing machines and has special reference to that class of machine disclosed in my United States Patent No. 646,544 of April 3rd, 1905, which are used for mixing concrete or stirring and mixing lime in the process of hydrating same.

The principal object of my present invention is to produce a more practical and efficient machine of this type than heretofore known and one that will more evenly and quickly produce the desired results when used in the process of hydrating lime, wherein it is known that when certain classes of lime are being operated upon the handling of same must be done as quickly as possible.

Other objects and advantages of the novel construction of my present invention will appear in the further description thereof.

Referring to the accompanying drawings in which like reference characters indicate like parts:

Figure 1 is a top plan view of one of the improved mixers; and

Fig. 2 is a side elevation of same showing a portion near the center thereof broken away and in section.

As in the former invention above referred to the mixer is mounted upon a suitable fabricated structure or base indicated at 1, a pivotal shaft 2 extending upwardly from the center thereof and surrounded by a turntable 3 in which balls or other suitable anti-friction means is installed and upon which the circular rotatable platform of the mixer rests, it being composed of a suitable fabricated structure, the floor of which is indicated at 4. About the circumferential edge of the platform 4 and depending therefrom is an annular geared rack which meshes with a pinion 6 on the shaft 7, the latter being driven by a suitable spur gear connection with the shaft 8 which furnishes the power for the device.

Above the floor 4 and about its circumferential edge extends the annular wall 9 and within which upon the floor is dumped or fed in any desired manner the material to be mixed.

Around the shaft 2 and concentric with the wall 9 is a like wall or cylindrical portion 10 which normally rests upon the floor 4 just outside of the annular opening 5 within said floor. This cylinder or drum 10 is made vertically movable for the purpose of permitting the discharge of the contents of the mixer through the opening 5 as the mixer is being revolved, the mechanism for operating said drum being described later.

Spaced above the uppermost edge of the container and the drum thus described and attached rigidly to the shaft 2, is a fabricated metal spider, the arms 11 of which extend radially from the supporting hub 12 outwardly over the mixing receptacle and the outermost edges of these arms are supported, in addition to their inherent strength, by suitable guy rods 13 leading to a holding cap 14 mounted upon the uppermost end of the shaft 2. Beneath these arms 11 are fastened as by bolts and clips indicated at 15, spirally disposed plow supporting beams or bars 16, they being uniformly spaced about the drum 10. To these beams 16 are fastened as by clamps indicated at 17 depending plow supporting rods or stanchions 18, each of which carry upon their lowermost ends a plow 19. The stanchions 18 are spaced substantially equidistance apart longitudinally the beam and on every alternate beam the plows are set to engage the material being acted upon and turn it over in the opposite direction to those on the next succeeding beam, the bottom of the plows 10 occurring as closely as possible to the floor 4 of the rotative portion of the mixer without producing objectional frictional contact therewith, and, as is obvious, the plows are at all times held stationary and maintain their respective position in relation to the floor of the receptacle. There are an even number of beams 16, but on those which carry the plows that turn the material being mixed inwardly I prefer to have a larger number of plows preferably one more than on the beams which turn the material outwardly, this being for the purpose of compensating for the centrifugal action of the rotating mass being turned, which arrangement has proven very satisfactory in actual practice.

At 20 is illustrated a baffle or discharge board which is tangentially disposed in respect to the drum 10 and is supported externally of the rotative member of the mixer by a suitable upwardly extending arched post 21, said post being of inverted general U-shape the outer portion 22 of which is cogged forming a vertically disposed leg into which the pinion 23 on the shaft 24 is mounted, said shaft being actuated by the hand wheel 25, and any desired elevation of the baffle 20 is maintained by a suitable dog 26 mounted in such a manner as to be readily engageable within the toothed portion of the post. By this means the baffle 20 is normally held in its uppermost position out of contact with the material being mixed, but when it is desired to discharge the contents after being properly mixed, the baffle may be quickly lowered and by its relative position cause all of the material as it is carried about in the rotating receptacle to be directed toward the drum 10, and, when the latter is raised for such purpose, it is evident that by practically a single rotation of the mixer all of the contents thereof will be discharged underneath the drum 10 through the annular opening 5, from whence it falls from adjacent the center of the mixer into any form of conveyer or other receptacle not shown. A brace and adjusting rod is shown at 27, one end of which is connected as at 28 to the baffle 20, the outer end being connected as at 29 to the hand lever 30, this construction permitting of convenient swinging of the free end of the baffle 20 to regulate the discharge of the material before described, and which is simply for the purpose of added convenience in regulating the discharge. The other portion of the baffle supporting post 21 is mounted upon the stationary post 31 forming a portion of the supporting structure of the mixer.

The drum 10 is vertically adjustable by means of a support described as follows:

The wheel like spider 32, having a central hub portion 33, is slidably mounted upon the shaft 2 just above the floor 4 of the mixer and at its outer circumferential edge is securely attached to the walls of the drum 10 forming a pivotally and vertically slidable support for said drum. Spaced above this support 32 and similarly fastened to the inside of the drum 10 is a Z-shaped annular bar 34 the lower inwardly projecting edge of which rides upon the four sheave like wheels 35 carried upon the extreme outer ends of the shaft 36 of the non rotatable spider structure indicated at 37, which has a hub portion 38 vertically slidably mounted upon the shaft 2 and by which structure the drum 10 is permitted to readily travel with the rotative portion of the mixer while the spider 37 remains in non rotative position, but adjustable vertically. This latter is accomplished by the two depending chains 39, the upper ends of which are attached to a horizontally disposed shaft 40 one upon either side of the shaft 2 the former shaft being carried in a suitable fixed offset bracket 41 fixed to the shaft 2. The lower end of each chain 39 is provided with a bridle indicated at 42 one branch of each extending to one of the shafts 36 so that when the shaft 40 is rotated and the chains 39 wound up thereupon the bridles 42 will lift equally upon all sides of the spider 37 and raise the rotating drum 10, the latter being permitted to continue such motion by traveling upon the sheave like wheels 35.

The outer end of the shaft 40 is mounted in a suitable journal box 43 mounted upon the upper end of the fixed post 46 which is a part of the stationary support of the mixer. Beyond the journal 43 and upon the shaft 40 is fixed a suitable gear wheel 45 which meshes with a smaller gear 44 carried on a stub shaft 48 just below the shaft 40 and by which said latter shaft is rotated the stub shaft 48 being operated by a suitable hand wheel 47.

From the foregoing it is evident that material carried about upon the rotating portion of the mixer and engaging the plows will be turned over in alternate opposite directions at least 6 different times during one rotation of the machine, such rapid mixing action being found essential to the successful handling of certain classes of material and by further rotation of the machine any desired repetition of the mixing action accomplished.

Having thus described my invention what I claim and desire to secure by Letters Patent, is:

1. The combination with a rotative mixer of the class described comprising a rotative receptacle having a centrally disposed concentric drum therein, of a plurality of radially disposed arms extending outwardly from the axis of said drum, spirally disposed plow supporting beams carried by said radially disposed arms, spaced plow stanchions fixed to said beams and depending therefrom, and plows fixed to the lower ends of said stanchions, those upon the stanchions supported by one beam being set to act in the opposite direction to those carried by the next adjacent beams, substantially as and for the purpose described.

2. In a mixer of the class described the combination with a rotative receptacle supported upon a vertically disposed axis, having an annular discharge opening through the bottom of said receptacle adjacent the axis thereof, a manually adjustable drum about said discharge opening and normally preventing material within the receptacle from being discharged through the opening,

and means for intermittently raising and lowering the drum, of plow supporting arms above the drum disposed radially therefrom outwardly over the receptacle, spirally disposed plow supporting beams carried by said radially disposed arms, and a plurality of plows spaced longitudinally of and depending from said beams into the receptacle, the plows upon each being positioned so as to turn the material in the receptacle in the opposite direction to the plows on the two next adjacent beams.

3. A rotative mixer of the class described comprising in combination a rotative receptacle having a centrally disposed concentric drum therein, a plurality of radially disposed arms extending outwardly from the axis of said drum, spirally disposed plow supporting beams carried by said radially disposed arms, spaced plow stanchions fixed to said beams and depending therefrom, and plows fixed to the lower ends of said stanchions.

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

HUGH MISCAMPBELL.

Witnesses:
S. C. BRONSON,
S. GEO. STEVENS.