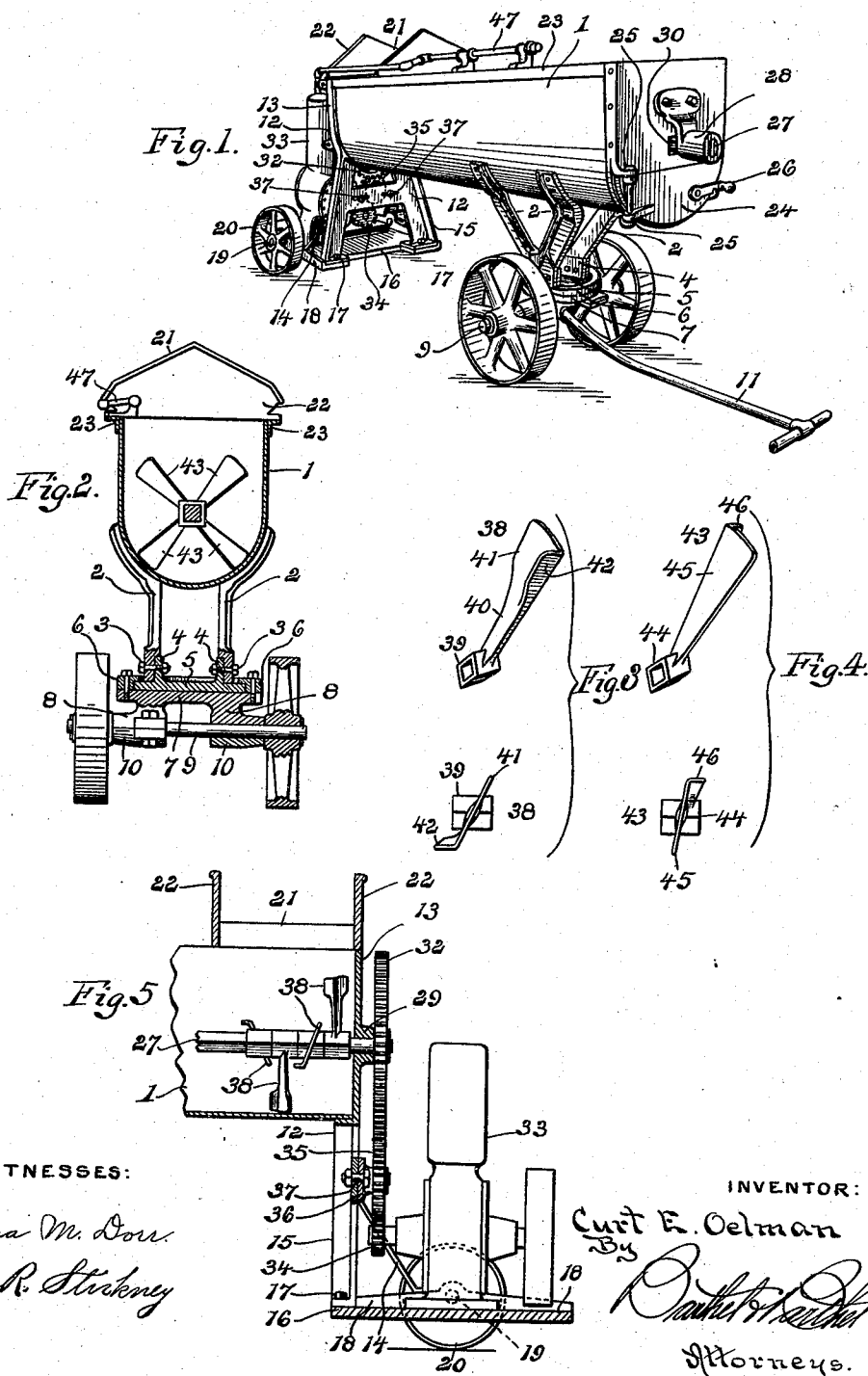


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PATENTED DEC. 10, 1907.

C. E. OELMAN.
MORTAR MIXER.

APPLICATION FILED JULY 10, 1907.



UNITED STATES PATENT OFFICE.

CURT E. OELMAN, OF DETROIT, MICHIGAN.

MORTAR-MIXER.

No. 873,455.

Specification of Letters Patent.

Patented Dec. 10, 1907.

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To all whom it may concern:

Be it known that I, CURT E. OELMAN, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Mortar-Mixers, of which the following is a specification, reference being had therein to the accompanying drawings.

In mixers of the portable type, especially where the motive power is self-contained, the space in which the mixing process is carried on is necessarily limited and there is also difficulty encountered in supporting the apparatus rigidly while running as the wheel base is restricted to keep it within the customary limits for ordinary road use.

This invention relates to a mixer of the type described wherein thorough and efficient commingling of the material used is obtained in a limited space, the parts being so disposed and engaged as to give stability and steadiness to the machine without affecting its portability.

The invention consists in the matters hereinafter described, and more particularly set forth in the appended claims.

In the drawings, Figure 1 is a view in perspective of a machine embodying the features of the invention. Fig. 2 is a transverse section through the forward end of the machine parts being in elevation. Fig. 3 are views in detail of a conveyer arm. Fig. 4 are views in detail of a mixing blade. Fig. 5 is a vertical central longitudinal section through the rear end of the machine.

Referring to the drawings, the body of the machine consists of a horizontal U-shaped trough 1 of sheet metal closed at both ends. Its forward discharge end is supported by a cradle consisting of oppositely disposed metal brackets 2 whose upper divergent arms are concave to correspond to the shell of the trough to which they are riveted, and whose lower, perpendicular parallel ends are severally secured by bolts 3 or the like, to parallel ribs 4 on the upper face of a horizontal disk 5. The latter is rotatably secured by an annular rabbeted flange 6 on a circular bolster plate 7 having depending bearing blocks 8 integrally formed thereon, in which a forward wheel axle 9 is rotatably secured by suitable caps 10 bolted or otherwise detachably secured thereon. A tongue 11 is suitably secured to the bolster plate. The rear or hopper end of the trough is mounted

on a ribbed and flanged metal drop frame 12 whose upper portion 13 is U-shaped to conform to and closely support the trough to which it is secured by rivets or bolts. The depending portion forms a pedestal 15 with divergent legs whose flanged ends rest on and are secured to a horizontal, rearwardly extending engine platform 16 by bolts 17 and angle braces 14.

The platform has integral, marginal flanges 18 in which alined axle studs 19 are secured for the rear wheels 20.

A hopper 21 whose flared sides 22 are each riveted or bolted to the angle iron 23 which forms the flange rim of the trough, permits material to be thrown into the body from either side, near the rear end thereof.

A segmental door 24 is hung on suitable hinges 25 to the front of the trough and is locked by a latch 26.

A shaft 27 is rotatably secured in alinement with the axis of curvature of the trough, by an overhanging bracket 28 bolted on the front end of the trough and by a bearing 29 on the rear end. The shaft is polygonal or squared between the bearings and may be withdrawn through a suitable aperture 30 in the front by removing the bearing bracket 28. The shaft extends through the rear bearing and a gear 32 is keyed or otherwise secured thereon.

An engine 33, of any approved type, is mounted on the platform 16, and its drive gear 34 is operatively connected to the shaft gear through an intermediate pinion 35, which is journaled on a stud carried by a slide block 36 secured by bolts engaging horizontal guide slots 37 in the pedestal 15 in the drop frame. This permits change and adjustment of the pinion for obtaining different speeds.

A number of conveyer arms 38 are secured on the shaft in helical order beneath the hopper. These arms each consist of a socket 39 adapted to slip onto the shaft, a short shank 40 and a blade 41 integral therewith, set obliquely to the axis, with the rear margin upturned to form a flange 42. These arms extend past the hopper and are of sufficient pitch to move material received therefrom quite rapidly toward the middle portion of the trough, with sufficient stirring and rotary motion to thoroughly mix the mass, which is usually in a dry state.

The remainder of the shaft beyond the hopper carries mixing blades 43. These each consist of a hollow socket 44, adapted to

engage the shaft, and a broad, segmental blade 45, set obliquely thereon, whose forward edge has a marginal flange 46, extending quite the length of the blade, while the segmental margin and end of the flange very closely approach and sweep the surface of the trough. These mixing blades have considerably less rake or pitch than the arms and do not advance the material so rapidly along the trough, but turn it over and over with a grinding, rubbing motion against the side of the trough, which insures smoothness and thorough mixture or blending of the ingredients.

A water pipe 47 connected to any available source of supply, is horizontally secured centrally over the middle portion of the trough and is adapted to spray the contents of the trough when first encountering the mixing blades.

One of the features of the invention is the arrangement of the conveyer flight, whereby the material, as received from the hopper, is carried quite rapidly along the trough, with sufficient rotary motion to thoroughly mix the mass, while dry, and then, while water is being added, is retarded and turned over and over, to thoroughly saturate it before it passes beyond the water supply, and to rub it smooth, so that any coarse particles are disintegrated and the resultant mixture is homogeneous. This action of the blades especially adapts the machine for mixing mortar and that is its principal purpose, as the mortar is thoroughly distributed uniformly throughout the mass.

Another feature is the distribution of the load on the wheels, so that the vibrations of the engine are communicated directly to the rear wheels at a point below the center of gravity of the machine, thereby diminishing the tendency to oscillations.

Another feature is the use of the broad horizontal bearing for the front wheels, whereby the usual king bolt is eliminated, and the lateral strain carried at the circumference of the bolster plate, thereby transmitting the load as directly as possible to the wheels.

What I claim as my invention is:—

1. A mixer comprising a horizontal U-shaped trough provided with a hopper delivering centrally into the trough from either side, near one end thereof, and at the other end with a discharge door, a wheeled bolster and cradle supporting the discharge end of the trough, a horizontally slotted drop-frame carrying the hopper end of the trough, having a wheeled platform, a mixer and conveyer in the trough, a motor on the platform, and a gear train connecting the conveyer and motor having an intermediate pinion, a bearing block on which the pinion is journaled, adjustably secured by bolts in slots of the drop frame.

2. A mixer comprising a horizontal U-

shaped trough, supported by bearing wheels, a hopper over one end, a discharge door at the other end, a water spray pipe discharging centrally over an intermediate portion of the trough, a conveyer and mixer consisting of a shaft journaled at each end in the trough, squared between its bearings, symmetrically disposed conveyer arms detachably secured on the portion of the shaft below the hopper, each consisting of a socket adapted to slide on the shaft, a shank and a segmental blade thereon oblique to the shaft provided with a marginal flange on its back edge, mixing blades symmetrically disposed on the remainder of the shaft, each consisting of a socket adapted to slip onto the shaft and a radial segmental blade thereon having less rake than the conveyer arm blade, provided with a marginal flange on its forward edge, a motor secured at the hopper end of the trough and a gear train operatively connecting the motor and shaft.

3. A mixer comprising a U-shaped sheet metal trough, a hopper on the rear end of the trough adapted to deliver centrally thereto from either side for a portion of its length, a discharge door in the forward end, a shaft bearing secured on the rear end of the trough, an overhanging bearing bracket secured on the front end of the trough, a shaft having a polygonal body extending through the front end, journaled in the bracket and in the rear end bearing, symmetrically disposed oblique flanged conveyer arms detachably secured on the portion of the shaft below and adjacent to the hopper, oblique mixing blades having less rake than the conveyer arms, detachably secured in regular order on the remainder of the shaft, a wheeled platform carrying an upright pedestaled frame supporting the rear end of the trough, a motor on the platform whose drive shaft is in parallel alignment with the conveyer shaft, a gear secured to the conveyer shaft outside the rear bearing, a gear secured to the motor drive shaft, an intermediate change pinion meshing with said gears, a stud block carrying said pinion, adjustably secured by bolts passing through horizontal slots in the pedestal, and a cradle supporting the forward end of the trough, swiveled horizontally on a bolster plate, and bearing wheels supporting the bolster.

4. In a mixer having a U-shaped trough supported on bearing wheels and provided with a hopper delivering into one end and a discharge door at the other, a shaft having a polygonal body journaled at either end on the trough ends in axial coincidence with the axis of curvature of the trough, conveyer arms symmetrically disposed in helical relation on the shaft below the hopper, each consisting of a hollow socket adapted to slip onto the shaft body, a shank integral therewith and a short, broad segmental blade in-

tegral with the shank, oblique to the axis of rotation, provided with a short marginal flange on its rear edge, turned toward the discharge door, and combined mixing and grinding blades detachably secured in symmetrical, helical relation along the remainder of the shaft body, each consisting of a hollow socket embracing the shaft, a segmental blade integrally joined thereto at an angle oblique to the axis of rotation, of less degree than the angle of the arms, and a marginal

flange on the forward edge of the blade lying in a plane parallel to the shaft axis, the segmental margin and adjacent end margin of the flange being adapted to closely approach and sweep the inner face of the trough.

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

CURT E. OELMAN.

Witnesses:

C. R. STICKNEY,
OTTO F. BARTHEL.