

F. E. KING.
MORTAR AND CONCRETE MIXER.
APPLICATION FILED MAY 13, 1910.

988,788.

Patented Apr. 4, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

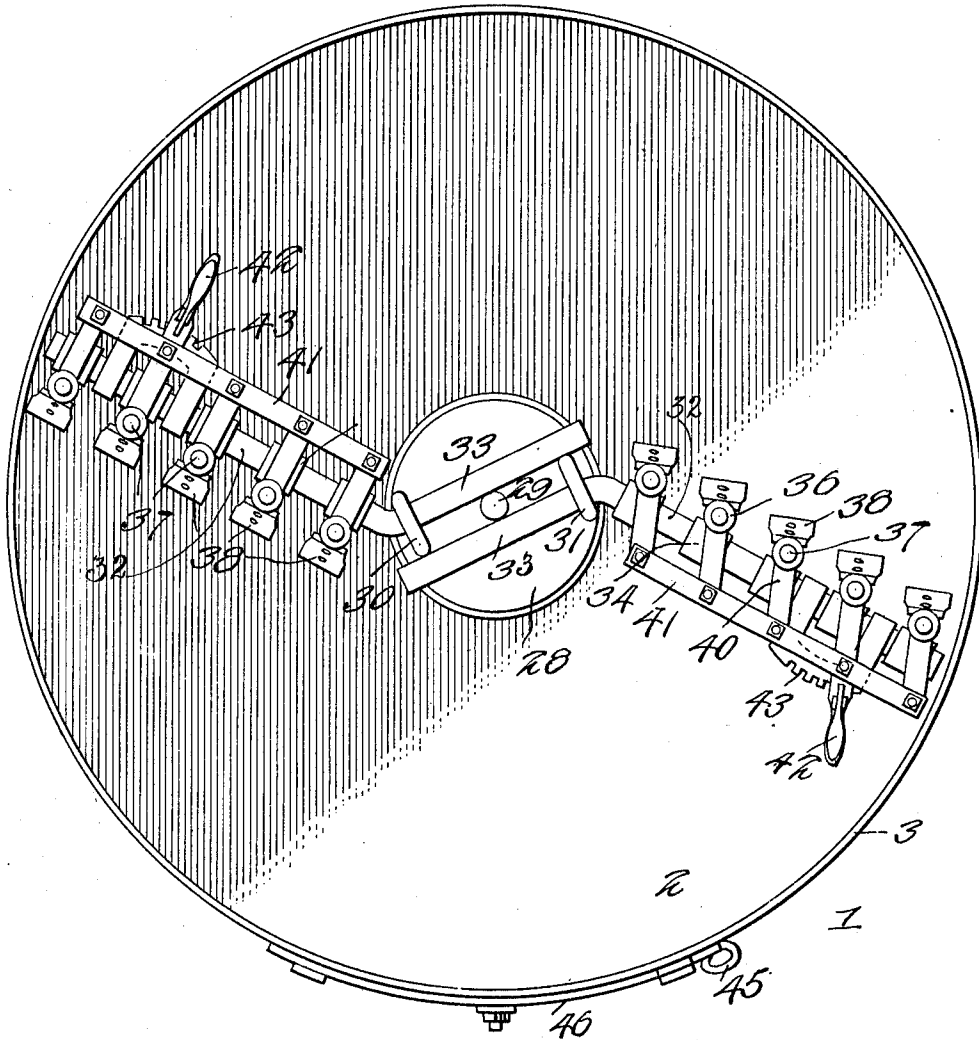
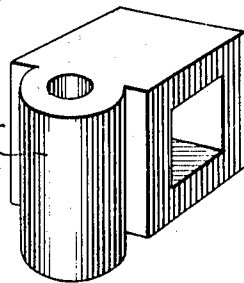


Fig. 4.

Witnesses

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Inventor

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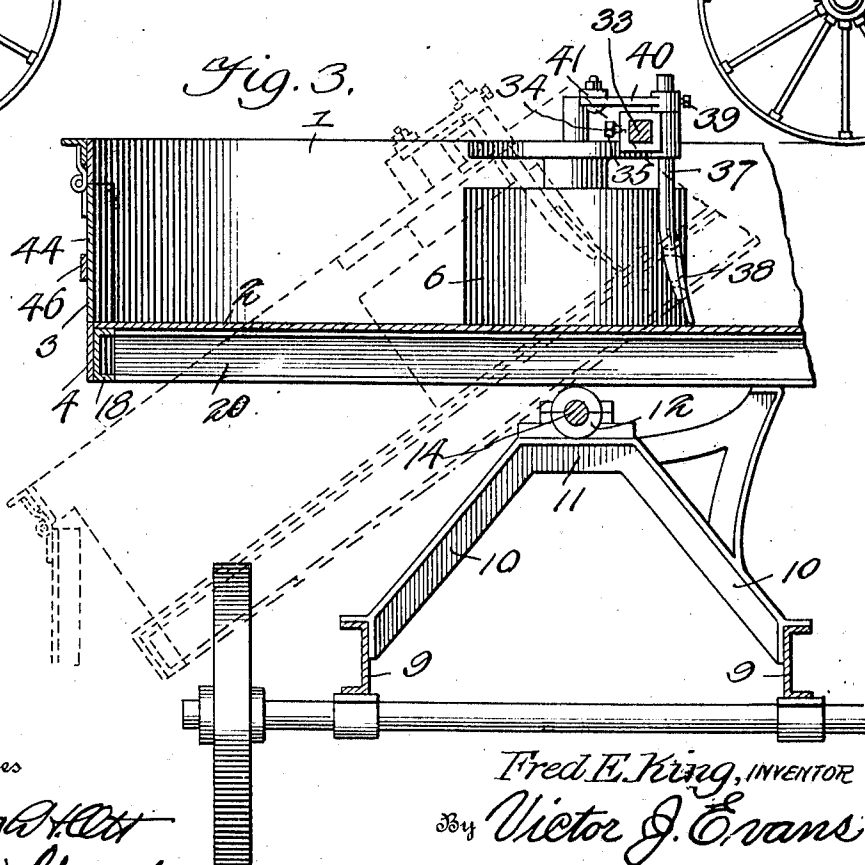
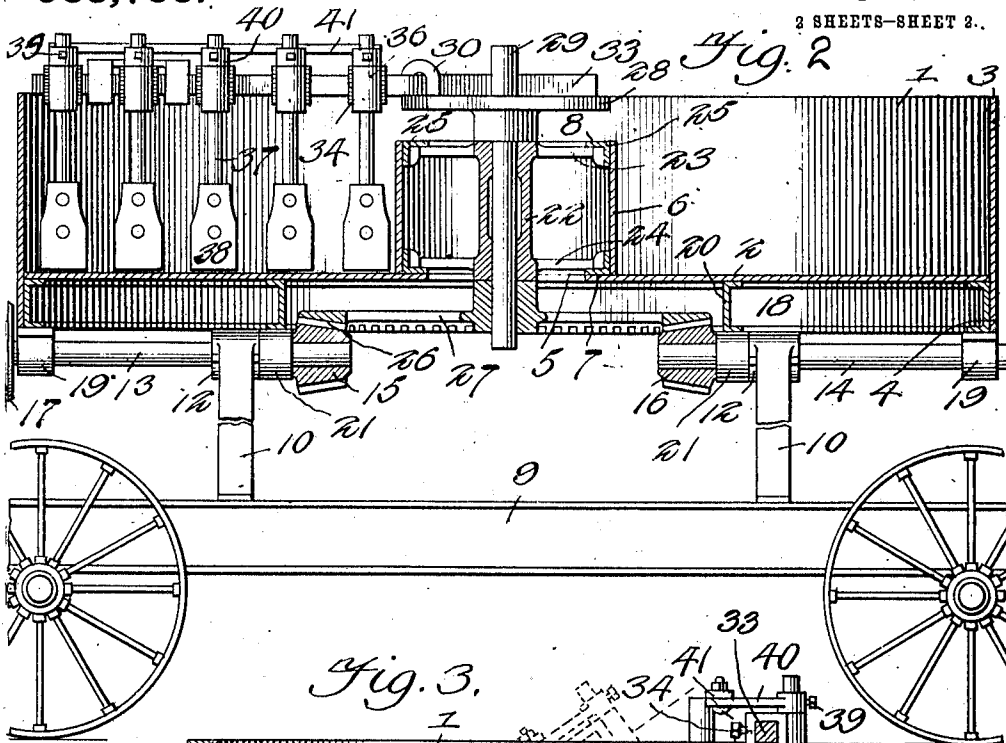
Attorney

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2 SHEETS-SHEET 2.



Witnesses

Hugh H. Alt
D. W. Gould,

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UNITED STATES PATENT OFFICE.

FRED E. KING, OF HANCOCK, MICHIGAN.

MORTAR AND CONCRETE MIXER.

988,788.

Specification of Letters Patent,

Patented Apr. 4, 1911.

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To all whom it may concern:

Be it known that I, FRED E. KING, a citizen of the United States, residing at Hancock, in the county of Houghton and State of Michigan, have invented new and useful Improvements in Mortar and Concrete Mixers, of which the following is a specification.

The invention relates to an improvement in mixing machines, designed primarily for use as a concrete and mortar mixer and constructed to permit the introduction therein of the different materials in their proper proportions and to thoroughly and effectively mix the same into a homogeneous mass.

The main object of the present invention is the provision of a mortar or concrete mixer including a material tank or receptacle in which are mounted for operation a series of mixing elements, as shovels or the like, the tank being arranged to permit its convenient movement to an inclined position and the mixing devices being constructed to continue the mixing operation in any and all positions of the tank, whereby an effective discharge from the tank is secured by the action of the mixing devices when the tank is in dumping position.

The invention in its preferred details of construction will be described in the following specification, reference being had to the accompanying drawings, in which:—

Figure 1 is a plan of the improved concrete mixer. Fig. 2 is a vertical sectional view thereof. Fig. 3 is a similar view, partly broken away, the line of section being at right angles to that of Fig. 2 and the tank being shown in dumping position in dotted outline. Fig. 4 is a perspective detail of the connection between the shovel and carrier.

Referring particularly to the drawings, the mortar and concrete mixer of the present invention, in its preferred details of construction, includes a tank 1 preferably of metal and comprising a bottom 2 and an annular or cylindrical side wall 3, the latter preferably extending some distance below the bottom, as at 4, for a purpose which will

presently appear. The tank bottom 2 is centrally formed with an opening 5 and secured upon the bottom and projecting thereabove is a guide cylinder 6. The cylinder 6 has a diameter exceeding that of the opening 5 and, being arranged concentric therewith, provides a flange 7 at the bottom of the cylinder and within the same, the upper edge of the cylinder being formed, or otherwise provided, with a similar intarned flange 8, as shown in Fig. 2.

The mixer is preferably, though not necessarily, supported upon a wheeled frame 9 from the longitudinal bars of which extend triangular supporting frames 10. The upper cross bars 11 of the supporting frames 10 are provided with bearings 12 to receive the inner ends of shafts 13 and 14, the former of which constitutes an operating shaft and the latter an idler shaft. The inner or proximate ends of the shafts 13 and 14 are provided with beveled gears 15 and 16 respectively and the outer end of the operating shaft 13 is provided with the usual drive pulley 17 to be operated from any suitable source of power. Secured to the bottom of the tank and abutting the projection 4 of the side wall is a U-shaped metallic reinforce 18, from which, at diametrically opposite points, depend guide bearings 19 to receive the respective ends of the shafts 13 and 14. Secured to the bottom of the tank on lines equidistant from the center are spaced parallel hangers 20, and the respective shafts 13 and 14 are provided immediately adjacent their gears 15 and 16 with boxes 21 depending from the hangers 20.

Arranged within the cylinder 6 and extending above and below the same is what I term a drive member 22, said member being preferably of sleeve-like construction provided with an upper and lower series of radiating arms 23 and 24 terminally secured to circular guide strips 25 bearing against the inner surface of the wall of the cylinder 6 and against the respective flanges 7 and 8. By this means the drive member is supported and guided in place, as will be obvious. An annular bevel rack 26 is secured

to a sleeve carried by the shaft 29 by a series of radiating arms 27, the teeth of which rack engage the bevel gears 15 and 16, whereby motion is imparted from the operating shaft to the drive member. The upper end of the cylinder 6 is provided with a disk head 28, and within the drive member is secured a shaft 29 which extends above the disk head. Secured upon the disk head at diametrically opposite points are staple-like clamps 30 and 31, which clamps are designed to receive and secure the shovel carriers. These carriers are of duplicate construction and preferably comprise metallic rods 32 preferably of angular shape in cross section, their inner terminals, at 33, being bent at an angle to the main length of the rod so that they may be passed through one of the clamps, past shaft 29 and past the edge of the opposing clamp. By this means the carriers are held in fixed relation to the drive member and operated thereby, all strain on the carriers incident to the mixing action of the shovels tending to force said members into contact with the shaft 29 and opposing staple clamp so as to prevent independent movement of the carriers, all as will be clearly apparent from Fig. 1 of the drawings.

That portion of the carrier projecting beyond the head of the drive member extends substantially radially of said head, and terminates at its outer end in slightly spaced relation from the inner surface of the wall 3 of the tank. On this portion of the carrier there is removably secured a number of mixing devices, which may be termed shovels. These mixing devices are secured to the carrier to permit their adjustment, as will appear, and for the purpose of so securing them I provide a collar 34 for each of the shovel members to be secured to the carrier, which collar is interiorly shaped to correspond to the sectional shape of the carrier and provided with a set screw 35 whereby it may be fixed with relation to the carrier. Pivottally mounted on the relatively forward wall of the collar is a bearing member 36, formed with a central bore to receive a stem 37 of a shovel or other mixing element 38. A set screw 39 secures the stem within the bearing to arrange the operative end of the shovel immediately adjacent the upper surface of the bottom of the tank. An arm 40 extends rearwardly from each bearing member, and said arms are connected at their rear ends by a bar 41, whereby all of the bearing members are connected for simultaneous adjustment. A handle 42, preferably having the usual dog and ratchet holding means 43, is connected to the bar 41 to permit the longitudinal movement or adjustment of the shovels to their path of movement at the will of the operator.

The tank is provided with a door 44 having an operating handle 45 and locking means 46 of the lever type whereby to permit the discharge of the material at pleasure.

A member 47 is secured on one side of the triangular supporting frames 10 to support the tank in its horizontal position or during the mixing operation of the shovels.

The parts being constructed and arranged as described, the various materials are introduced in the desired proportions into the tank and, upon the application of power, the shovels, adjusted at the desired angular relation to their path of movement, are caused to travel within the tank thoroughly mixing the contents. When the proper mixture is had the tank may be manually dumped by moving it into an inclined position illustrated in Fig. 3. In this operation the tank travels on the drive gears, so that the mixing shovels within the tank continue to operate, thus affording a quick delivery of the contents of the point of discharge, and a cleaning action which loosens all of the material which would in the ordinary type of mixer adhere to the sides and bottom of the tank.

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

1. A mixer including a frame, a tank mounted for swinging movement on the frame, shafts forming connection between the tank and frame, gears carried by said shaft, means for operating one of the shafts, a drive member mounted for movement with relation to the tank, a gear secured to the drive member and cooperating with the afore-mentioned gears, oppositely projecting carriers extending from the drive member, a series of shovels independently supported on each carrier, guide rollers mounted on the respective shafts, and tracks secured on the tank to cooperate with said rollers.

2. A mixer including a frame, a tank mounted for swinging movement on the frame, shafts forming connection between the tank and frame, gears carried by said shaft, means for operating one of the shafts, a drive member mounted for movement with relation to the tank, a gear secured to the drive member and cooperating with the gears, a series of shovels independently supported on each carrier, guide rollers mounted on the respective shafts, and means for simultaneously adjusting the shovels on each carrier.

3. A mixer including a tank mounted for movement into a position for dumping, shafts forming a connection between the tank and frame, gears carried by said shaft, a drive member mounted for movement with relation to the tank, a gear secured to the drive member and cooperating with the

gears on the shafts, a guide cylinder secured to the tank and concentric with said drive member, radiating arms carried by said drive member adapted to bear against the inner surface of said guide cylinder, oppositely projecting carriers extending from the drive member, a series of shovels independently supported on each carrier, and means

for simultaneously adjusting the shovels on each carrier. 10

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

FRED E. KING.

Witnesses:

W. F. HENDRICKSEN,
WILLIAM F. WEALTON.