

R. WELCKER.
CONCRETE MIXER.
APPLICATION FILED MAY 17, 1912.

1,279,804.

Patented Sept. 24, 1918.
3 SHEETS—SHEET 1.

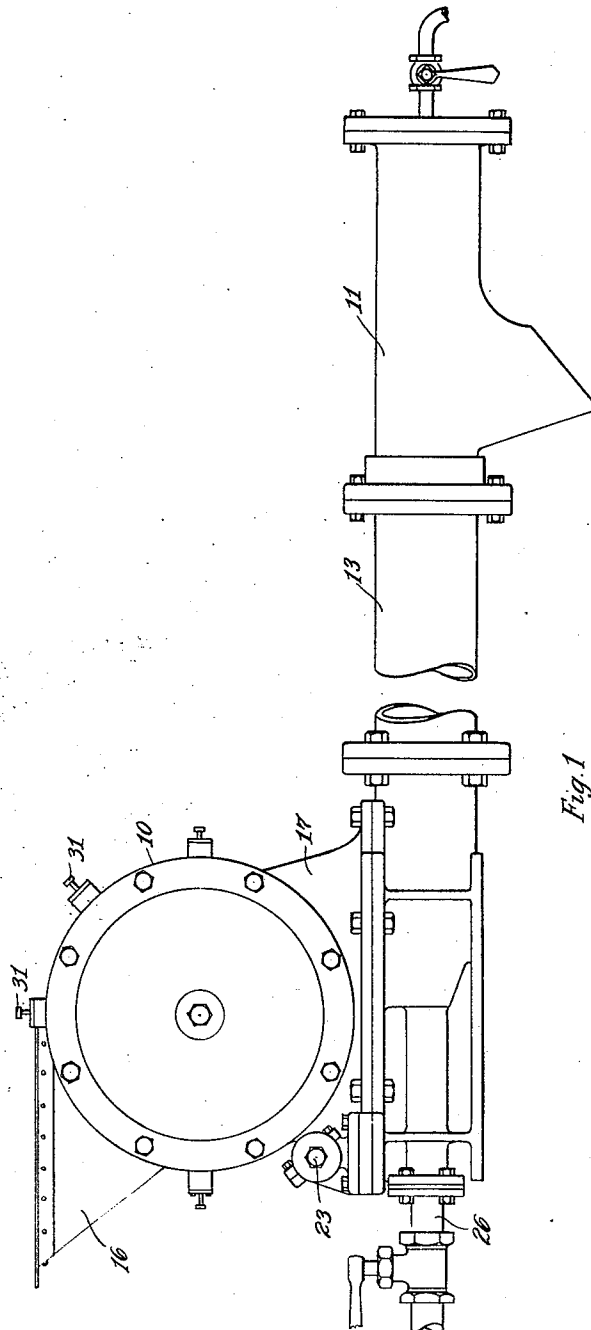


Fig. 1

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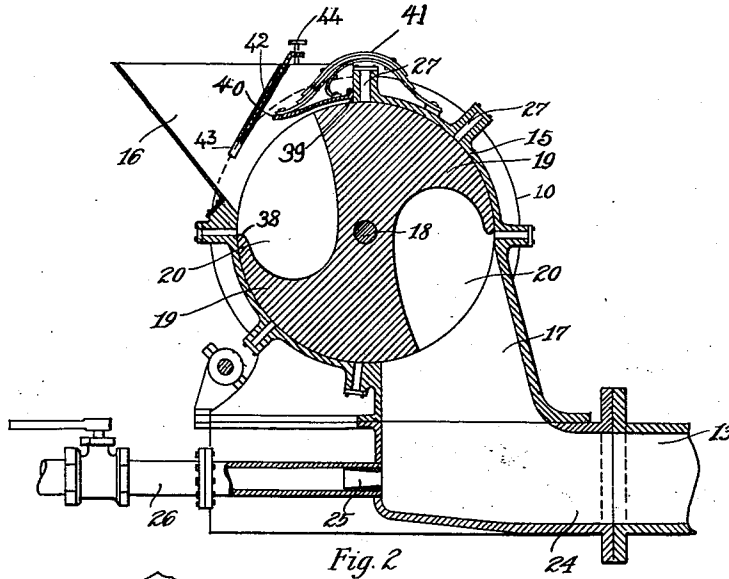


Fig. 2

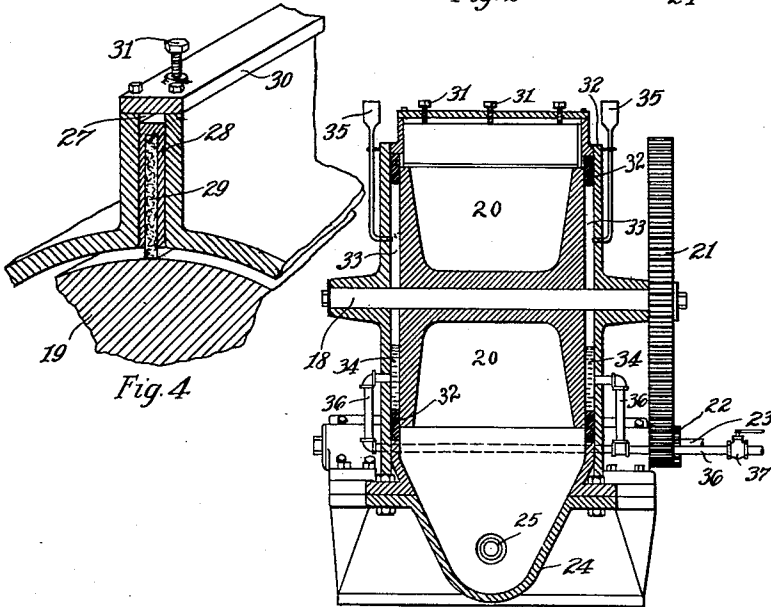


Fig. 3

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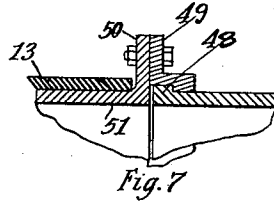
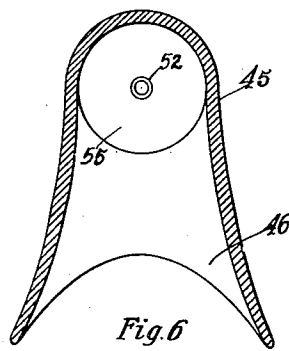
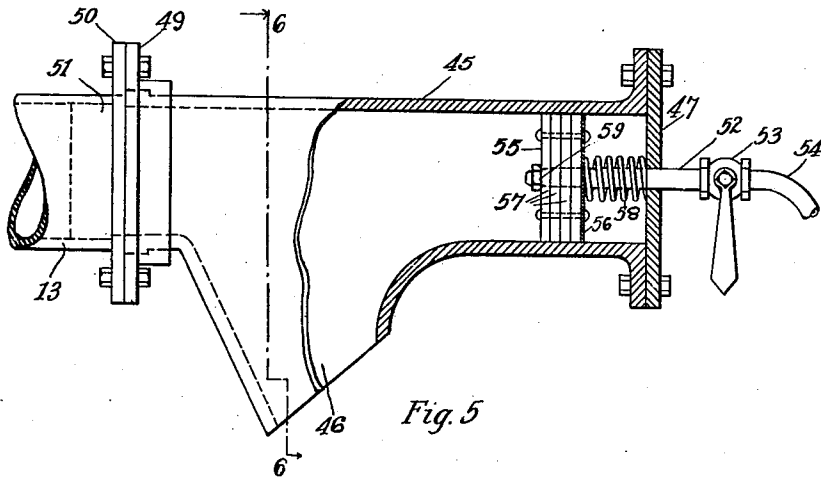
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RUDOLPH WELCKER, OF YONKERS, NEW YORK.

CONCRETE-MIXER.

1,279,804.

Specification of Letters Patent. Patented Sept. 24, 1918.

Application filed May 17, 1912. Serial No. 697,951.

To all whom it may concern:

Be it known that I, RUDOLPH WELCKER, a subject of the Queen of the Netherlands, residing at Bronx Manor, city of Yonkers, county of Westchester, State of New York, have invented a new and useful Concrete-Mixer; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to an apparatus and process for mixing, conveying and discharging concrete or like material, and has for its object to provide a durable, lightweight, easily handled, easily constructed apparatus which will receive the unmixed materials, mix and transport the same and discharge the mixed concrete easily at a convenient speed at any desired point.

In the accompanying drawing, which shows, by way of example, one of many possible embodiments of the invention, Figure 1 is an elevation of the complete apparatus; Fig. 2 shows a central transverse sectional view of the mixer; Fig. 3 is an axial vertical sectional view of the same; Fig. 4 shows a section of a detail of the mixer; Fig. 5 is a side elevation of the discharge nozzle, partly in vertical central section; Fig. 6 shows a transverse section taken on the line 6—6 of Fig. 5, and Fig. 7 is a sectional view of a detail of the nozzle.

The apparatus comprises a mixer 10 and a discharge nozzle 11 connected by a pipe or flexible hose 13.

Referring more particularly to Figs. 2 to 4, the mixer is shown comprising a cylindrical casing 15 provided with an inlet hopper 16 and a discharge extension 17, and in which is rotatably disposed, on the shaft 18, the rotor 19 provided with pockets 20.

The shaft 18 and rotor 19 are driven, in a clockwise direction as shown in Fig. 2, by gears 21 and 22 from the counter shaft 23 which may be driven by a pneumatic motor or other source of power.

Beneath the extension 17, and forming a continuation thereof, is secured the downwardly narrowing receiving part 24 which discharges into the hose 13.

A blast nozzle 25, fed by the valved pipe 26, is directed into the receiving part 24 substantially coaxial therewith. This nozzle directs a high pressure blast of air and carries with it, into the hose 13, the material

dropped into the receiving part by the pockets 20 as will be explained.

In practice, considerable air pressure is developed in the extension 17 and the receiving part 24, and to prevent leakage of air past the rotor 19, the casing 15 is provided with a series of radially disposed inwardly opening recesses 27 in each of which is adjustably disposed a housing 28, carrying a packing strip 29 which bears upon the curved face of the rotor.

Metal strips 30 placed over the outer part of the recesses 27 carry threaded holes in which are disposed set screws 31 bearing against the housing 28 and by which the housing and packing strips are adjusted.

Annular gaskets 32 at the end edges of the rotor hold the same a slight distance from the end walls of the casing forming spaces 33 in which oil, as indicated at 34 may be introduced by means of oil cups 35.

In order to force the oil between the gaskets and the ends of the rotor, and in order to prevent the forcing of the grout past the gaskets into the spaces 33, by the air pressure in the extension 17, compressed air is conducted into said spaces 33, through the pipes 36 controlled by the valves 37, from a suitable source of compressed air.

In order to prevent the catching of stones between the rear edges 38 of the pockets and opposite side of the inlet opening, when the material placed in the pockets is somewhat heaped up, a yielding blade 40 is provided, the same being held in place by the compound leaf-springs 41, secured at their bifurcated outer ends to the blade 40 and at their inner ends to the cylindrical casing.

The projecting stone, before it reaches the side 39 pushes up the blade against the action of the spring 41, which in tending to regain its normal position causes the blade to gradually force the stone into the pocket. The slide 42 movable in the grooves 43 and adjustable by the set-screw 44 controls the amount of material admitted to the pockets 20.

The material carried through the hose 13 is discharged from the discharge nozzle 11, shown in detail in Figs. 5 to 7. As shown this nozzle comprises a body portion 45 provided at the side with an oblique and flaring discharge opening 46, at the outer end with an end plate or head 47, and at the inner end with an annular enlargement 48 (Fig. 7) rotatably received by the shouldered and

flanged collar 49 secured to the flange 50 on the nipple 51, to which is secured the flexible hose 13. The end plate 47 is provided with a central opening through which is slidably passed the fluid supply pipe 52 provided with a valve-cock 53 and connected to the flexible tube 54.

To the inner end of the supply pipe 52 is fixedly secured the buffer 55, comprising a back plate 56 and thicknesses of suitable buffing material 57 all riveted, or otherwise suitably secured together and to the back plate. A coiled spring 58 is interposed on the supply pipe between buffer and the end plate 57 and yieldably holds the buffer in its normal position as shown. A nut 59 is secured on the supply pipe as a support for the buffer.

The apparatus may be operated under different conditions as follows:

(a) Water and dry mixed or unmixed concrete ingredients may be deposited in the hopper 16 from which they are carried by the pockets 20 and deposited into the receiving part 24, the inclined sides of which direct the material into the blast of air issuing from the blast nozzle 25. The action of the blast from the nozzle 25 causes the water and ingredients to mix at said blast and the concrete is moved by the blast into the hose 13 and forced along the same, by the air pressure generated in the receiving part, until the nozzle 11 is reached. An additional mixing action may also take place as the concrete is being carried along the hose 13.

When the concrete reaches the nozzle 11, it is met by a stream of suitable fluid issuing with high velocity from the supply pipe 52 which neutralizes the momentum of the concrete permitting the same to discharge with a conveniently low velocity through the discharge opening 46 from which it may easily be directed by moving the discharge nozzle bodily or by rotating it on its own axis by movement of the enlargement 48 in the collar 49. Large stones are stopped by the buffer 55 yielding under the action of the spring 58.

(b) If the place where the concrete is discharged from the hose 13, or the concrete discharged at said place, forms a suitable cushion for concrete being discharged with high velocity the nozzle 11 may be omitted or a plain nozzle may be substituted, in this case the fluid blast being unnecessary for neutralizing the momentum of the concrete stream. In this case the initial working of

the concrete may take place as in the preceding paragraph.

(c) Instead of mixing the concrete with water in the blast of the nozzle 25, or in the hose, the concrete may be mixed in any usual or desired manner before depositing it in the hopper 16, in which case the concrete is transported as described in paragraph (a) and is discharged as described in paragraph (a) or (b).

(d) If desired the dry mixed or unmixed concrete ingredients may be deposited in the hopper 16 without any water, these dry ingredients being carried by the blast from nozzle 25 into and through the hose 13 into the nozzle 11. Here the rapidly moving ingredients are met by the high velocity blast of fluid from the supply pipe 52, this fluid in this particular instance being water; the violent meeting of the water and the dry ingredients thoroughly mixes the same and at the same time neutralizes the momentum of the materials, and the resulting concrete is discharged, with little force, through the opening 46.

I claim:

1. In a mixer for concrete and like material, the combination of a casing having an inlet opening; a rotor mounted therein and provided with pockets in the sides of the rotor; a yieldable blade adapted for displacement at all of its edges and disposed at the edge of the opening and adapted to force stones and the like into the pockets; and springs on the outside of the casing and blade and connecting the blade to the casing.

2. In a mixer for concrete and like material, the combination of a cylindrical casing provided with an inlet hopper, an outlet extension, and a plurality of radially disposed inwardly opening recesses arranged between said hopper and extension; a rotor in the casing and provided with side pockets; a housing in each radial recess; a packing strip in each housing and bearing on the side of the rotor; and a plurality of set screws at the outer part of each recess and bearing against the housings.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

RUDOLPH WELCKER.

Witnesses:

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JOHN HERMANN HOVING.