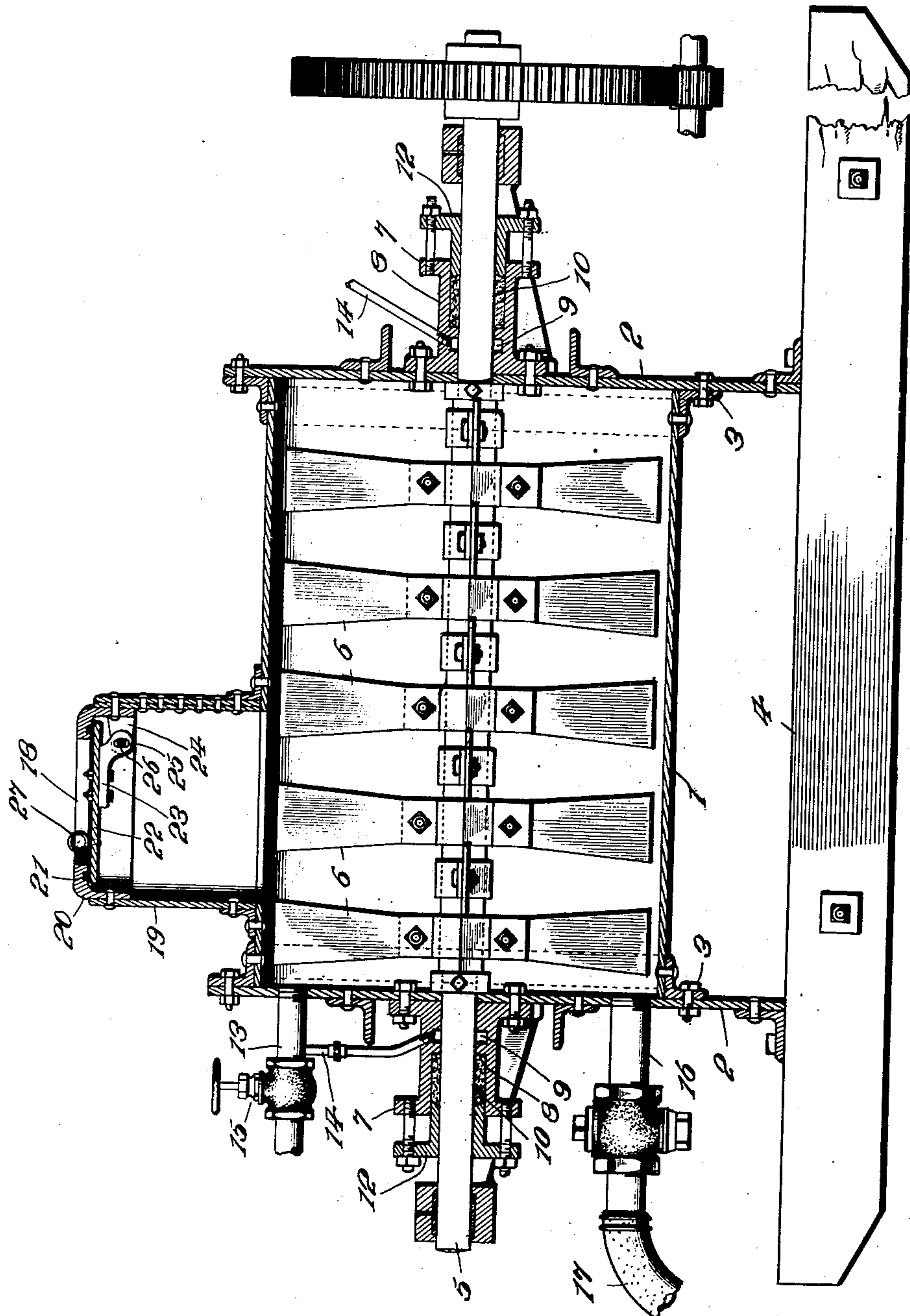


958,421.

W. MOLLVRID.
GROUT MIXER.
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Patented May 17, 1910.



Witnesses

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GROUT-MIXER.

958,421.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM McILVRID, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Grout-Mixers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates a new and efficient grout mixer, having special reference to means for effecting the thorough intermingling of the ingredients and so ejecting the grout after the mixing is completed that it may be applied directly from the mixer to the work for which it is intended, without an intermediate handling. Broadly stated these purposes are accomplished by the employment of motive fluid under pressure, and the invention further comprehends appropriate features of construction related to the association of the motive fluid with the mechanism.

In the accompanying drawing the figure shows in vertical longitudinal section a grout mixer embodying my invention.

Referring to the drawing 1 designates the cylinder shown horizontally disposed and rigidly supported between vertical end plates 2 and secured thereto as at 3, the plates being mounted upon a skid 4.

5 designates a rotary shaft extending through the cylinder and carrying paddles or blades 6 and having a band or gear wheel at one end. On the outer face of each end plate 2 is a stuffing box 7 for the shaft. These stuffing boxes are shown with their box or sleeve portions 8 bolted to the plates and formed with internal annular recesses or chambers 9 at points intermediate the cylinder and the receptacles 10 for the hemp or other soft packing, the receptacles, as usual in stuffing boxes, being formed by the sleeves and the followers 12, and the latter holding the packing in place.

A pipe 13 is tapped into the cylinder preferably near the top of one end thereof and passages 14 establish communication between this pipe and the annular recesses 9 in the stuffing boxes 7. The pipe 13 is provided with a valve 15.

16 designates an outlet pipe shown leading from the cylinder near the bottom of the head through which pipe 13 is introduced,

the outlet pipe having a hose or flexible tubing 17 coupled to its outer end.

The cylinder is provided with a charging opening 18 shown at the top of a dome mounted upon the cylinder and forming a hopper 19. This opening is formed in an angle plate 20 having its vertical portion secured to the sides of the hopper and having an annular groove in the inner face of its horizontal portion in which groove is seated a rubber gasket 21. The opening is controlled by a door 22 having a depending portion 23 hinged to a bracket 24 secured to the side of the hopper 19, the bracket having a vertical slot 25 in which the pintle 26 of the hinge is movable. The door is provided with a handle 27, hopper 19 being of such depth that the door may be swung inward without interfering with the action of the blades.

The operation of the machine described is as follows:—The materials, usually consisting of cement, finely crushed stone, sand and water, are introduced into the cylinder through opening 18, the door 22 being opened downwardly by gravity. The rotation of the shaft is begun to start the agitation and mixture of the materials by the blades. After this has continued a moment, or it may be immediately after introducing the materials, the door 22 is closed and motive fluid, preferably compressed air at about 80 pounds pressure, is admitted to the cylinder through pipe 13; the outlet pipe 16 is opened and the hose 17 held to the work to which the grout is to be applied. The pressure of the air within the cylinder holds the door 22 to its seat, the rubber gasket 21 effectively sealing the opening. The slot 25 in the bracket 24 to which the door is hinged permits the pintle 26 to move vertically or tangentially to the curve described by the door in its swinging movement. This insures the door being evenly seated by the pressure of the air. The air enters through pipe 13 in the form of a strong blast directed toward the opposite end of the cylinder, from which it returns to pipe 16 which is the only outlet. In this travel the blast encounters the materials simultaneously with the stirring of the beaters and their combined actions immediately effect a thorough mingling of the materials by the violence of the agitation. So quickly is this accomplished that the admission of the air need not

be delayed once the materials have been introduced and as the outlet is always open while air is being admitted the finished grout is available at once. On account of the nature of the materials their agitation in the manner described occasions wear which the construction of the machine is designed to withstand. The machine illustrated would be impracticable if only the ordinary form of stuffing boxes were employed as the air pressure would force the sand and small particles of stone into the space between the shaft and its bearings and soon wear them out. To avoid this I have provided the annular recesses or chambers 9 in the stuffing boxes. When the air is admitted through pipe 13 it passes through passages 14 to these recesses and forms practically an air stuffing or packing, equalizing any portion of the air which might tend to pass out of the cylinder around the shaft, and preventing the small particles entering the bearing and preserving the soft packing from injury.

The advantages of my invention are apparent. The readiness with which the finished grout is made and applied without requiring, as a separate step, its removal from the cylinder by hand or otherwise, and the effective mechanism employed have rendered the machine available for use in the building of sea walls, foundations, etc., since the grout is expelled with such force that it may be thrown in a stream to some distance from the operator.

I claim as my invention:—

1. In a mixing machine, a receptacle for the materials, a rotary shaft extending therethrough, blades on said shaft, a pipe conducting motive fluid under pressure to said receptacle, a packing box having a chamber surrounding said shaft without said receptacle, and a passage establishing communication between said pipe and said chamber.

2. In a mixing machine, a receptacle for the materials, a rotary shaft extending therethrough, blades on said shaft, a pipe conducting motive fluid under pressure to said receptacle, a sleeve surrounding said shaft without said receptacle, an internal annular recess being formed in said sleeve, and means for establishing communication between said pipe and said recess.

3. In a mixing machine, a receptacle for the materials, a rotary shaft extending therethrough, blades on said shaft, a stuffing box on said shaft without said receptacle and containing soft packing, an internal annular recess being formed in said box intermediate said soft packing and said receptacle, a pipe designed to conduct motive fluid under pressure to said receptacle, and a passage establishing communication between said pipe and said recess.

4. In a grout mixer, the combination with

the casing having a rotary shaft extending therethrough, blades on said shaft, means for rotating said shaft, a dome on said casing having a charging opening, and an inwardly swinging door mounted in said dome and controlling said opening, of a pipe entering said casing and adapted to convey a charge of compressed air into said casing to co-act with said blades in effecting the mixing of materials and to hold said door to its seat, and an outlet pipe adapted to convey the mixed material from said casing under the pressure of the air blast.

5. In a grout mixer, the combination with the casing having a rotary shaft extending therethrough, blades on said shaft, means for rotating said shaft, a dome on said casing having a charging opening, an inwardly swinging door mounted in said dome for controlling said opening, and means permitting said door to move tangentially to the curve described in its swinging movement, of a pipe entering said casing and adapted to convey a charge of compressed air into said casing to co-act with said blades in effecting the mixing of materials and to lift said door and hold it elevated against its seat, and an outlet pipe adapted to convey the mixed materials from said casing under the pressure of the air blast.

6. In a mixing machine, a receptacle for the materials, a hopper having a charging opening, an inwardly-swinging door located wholly within the hopper and designed to be normally held seated over said charging opening by internal pressure, rotary blades within said receptacle, means for supplying a fluid under pressure to said receptacle, and means for conveying the mixture away from the latter.

7. In a grout mixer, the combination with the casing having a charging opening and an outlet, a rotary shaft extending therethrough, said casing having a packing sleeve secured to the outer face of one of its ends through which sleeve said shaft extends, said sleeve having a recess surrounding said shaft, blades on said shaft within said casing, and means for rotating said shaft, of a pipe entering said casing and adapted to convey a charge of compressed air into said casing, and a tubular connection between said pipe and said recess, for the purpose stated.

8. In a grout mixer, the combination with the casing having a charging opening and an outlet, a rotary shaft extending therethrough, said casing having a packing sleeve secured to the outer face of one of its ends through which sleeve said shaft extends, said sleeve having a packing receptacle, soft packing therein, and a gland for compressing said packing, said sleeve also having a recess surrounding said shaft, blades on said shaft within said casing, and means for

rotating said shaft, of a pipe entering said casing and adapted to convey a charge of compressed air into said casing, and a tubular connection between said pipe and said recess, for the purpose stated.

9. In a grout mixer, the combination with the mixer casing having a charging opening, of means for mixing materials in said casing, means for conducting air under pressure into said casing, means for sealing said charging opening held seated by said air pressure within the casing, and means for ejecting the mixed materials from said casing by the pressure of the air.

10. In a grout mixer, the combination with the mixer casing having a charging opening, of an inwardly swinging door controlling said opening, means for mixing materials in said casing, a pipe entering said casing and adapted to convey a charge of compressed air into said casing to hold said door to its seat, and an outlet pipe leading from said casing through which the mixed

materials are ejected by the pressure of the air.

11. In a grout mixer, the combination with the mixer casing having a charging opening, of an inwardly swinging door controlling said opening, means permitting said door to move tangentially to the curve described in its swinging movement, means for mixing materials in said casing, a pipe entering said casing and adapted to convey a charge of compressed air into said casing to force said door against its seat, and an outlet pipe leading from said casing through which the mixed materials are ejected by the pressure of the air.

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

WILLIAM McILVRID.

Witnesses:

GRAFTON L. MCGILL,
ALICE LIND.