

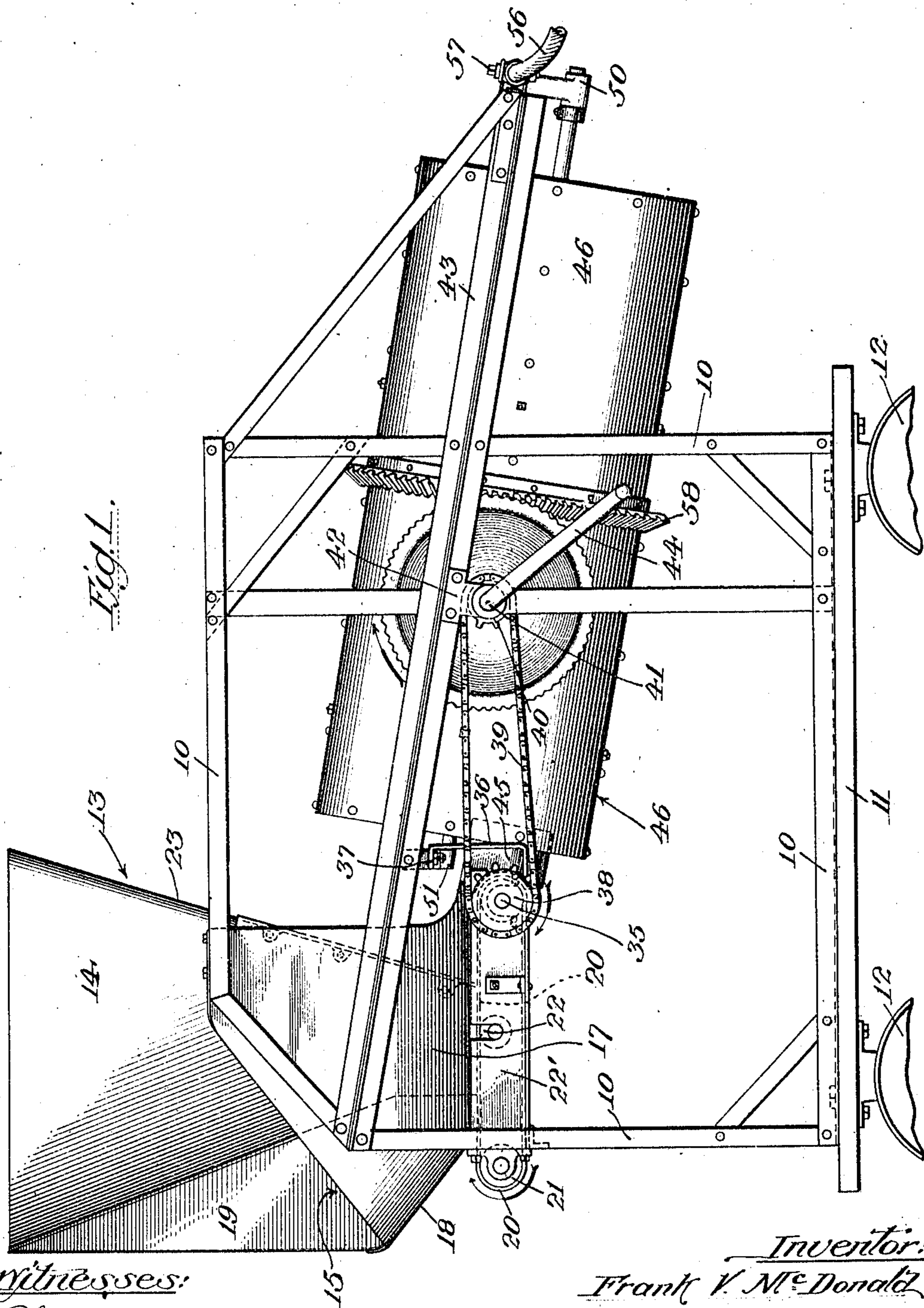
F. V. McDONALD.
FEED REGULATOR FOR CONCRETE MIXERS.

APPLICATION FILED OCT. 29, 1907.

Patented Dec. 13, 1910.

3 SHEETS—SHEET 1.

978,320.



Witnesses:

Letter & Alter.

Ernest C. Burkhead

By

Inventor:

Frank V. Mc Donald

Hazard & Strause

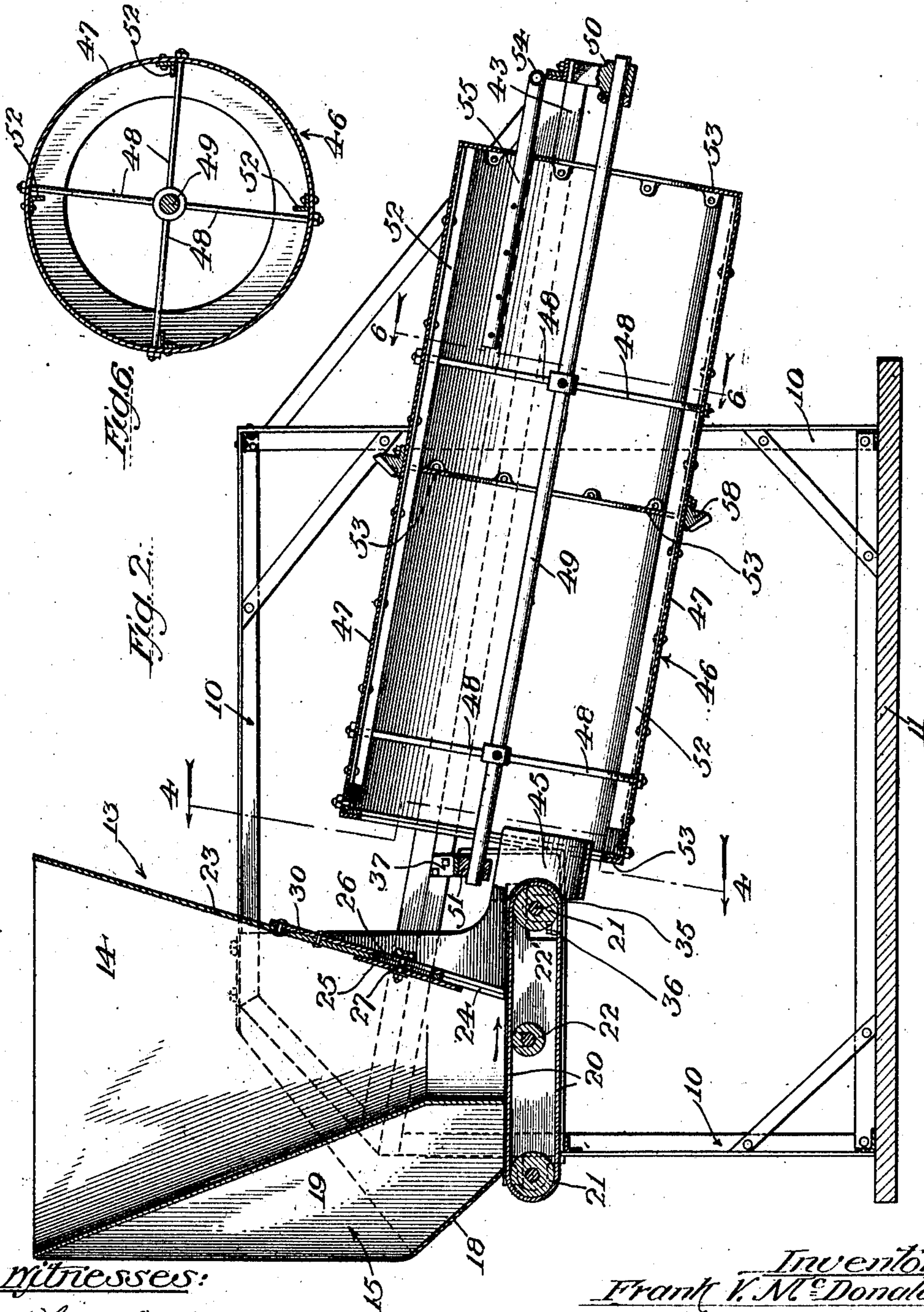
Attorneys—

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3 SHEETS—SHEET 2.



Witnesses:

Leila S. Allen
James C. Bucklew

Inventor:
Frank V. McDonald

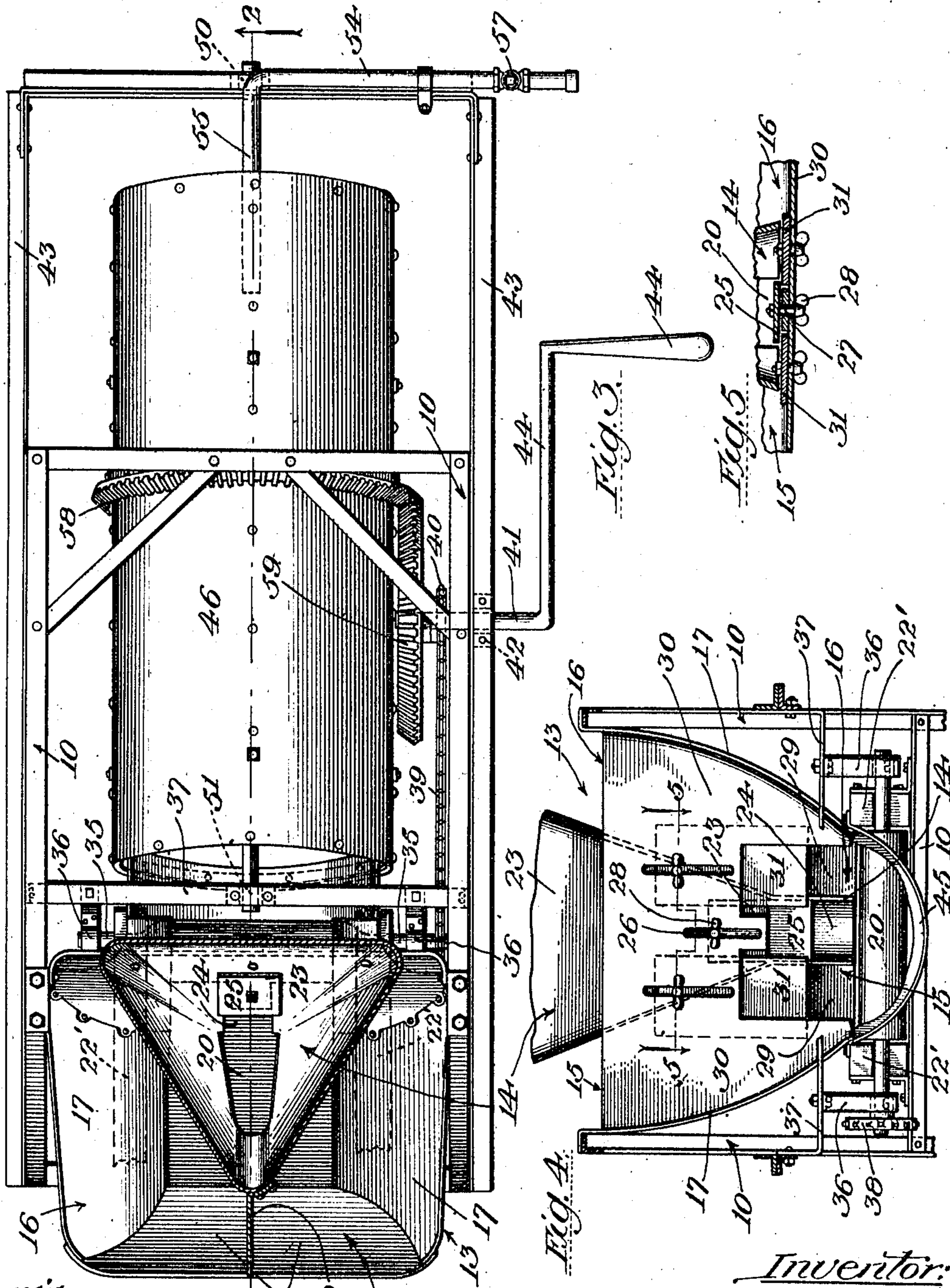
By *Hazard & Starnes*
Attorneys

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3 SHEETS—SHEET 3.



Witnesses:
 Lute S. Allen
 J. M. G. G. G.

Inventor:
 Frank V. McDonald,
 By Hazard & Strauss
 Attorneys.

UNITED STATES PATENT OFFICE.

FRANK V. McDONALD, OF LOS ANGELES, CALIFORNIA.

FEED-REGULATOR FOR CONCRETE-MIXERS.

978,320.

Specification of Letters Patent.

Patented Dec. 13, 1916.

Application filed October 29, 1907. Serial No. 399,754.

To all whom it may concern:

Be it known that I, FRANK V. McDONALD, a citizen of the United States, residing at Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Feed-Regulators for Concrete-Mixers, of which the following is a specification.

My invention relates to a feed regulator for concrete mixing machines, and it is the object of my invention to provide a simple and inexpensive mechanism that will efficiently and effectually regulate the feed of a concrete mixing machine so that the ingredients of which the finished concrete is composed will be fed continuously and accurately thereto.

Figure 1,—is a side elevation of my improved mixer. Fig. 2,—is a longitudinal section of the same taken on line 2—2 of Fig. 3. Fig. 3,—is a plan view of the same. Fig. 4,—is a cross section taken on line 4—4 of Fig. 2. Fig. 5,—is a horizontal section taken on line 5—5 of Fig. 4. Fig. 6,—is a cross section of the mixing drum taken on line 6—6 of Fig. 2.

Referring to the drawings 10 designates a suitable frame upon which the mechanism of my mixer is mounted and which is substantially rectangular in form, being constructed of angle irons with flat iron braces as shown. This frame is illustrated mounted on a base 11 which is shown in Fig. 1 as being supported by wheels 12. This arrangement may or may not be used according as the device is wished to be made portable or stationary.

In the upper part of the frame and at one end thereof is mounted a composite hopper 13 which is divided into three different compartments adapted to hold cement, gravel and sand, respectively. The whole hopper is constructed of sheet metal and comprises a central cement hopper 14 which is triangular in plan as shown in Fig. 3. On each side and in front of hopper 14 are hoppers 15 and 16 for gravel and sand respectively, the left hand end of the frame being designated the front. Hopper 14 is larger at the top than at the bottom and is of sufficient height to

hold a suitably large quantity of cement, it being designed that the cement hopper is not to be filled except at comparatively long intervals. The sand and gravel hoppers are constructed as shown in Fig. 1 with a downwardly sloping opening so that sand and gravel may be thrown into them from the front and sides of the machine, these hoppers being designed to be filled continuously as the mixing of the concrete proceeds and therefore to hold only a small amount of the material. Hoppers 15 and 16 are provided with inwardly sloping curved sides 17 as shown in Fig. 4 and with front walls 18 which slope at a considerable angle as shown in Figs. 1 and 2. The two hoppers are divided from each other by cement hopper 14 and by a partition 19 which extends from the front wall 18 of the sand and gravel hoppers to hopper 14 and thus completes the division between the two hoppers.

All three hoppers are bottomless and a belt 20 mounted on rollers 21 and supported by a third roller 22 is adapted to be moved in the direction indicated by the arrows closely under the bottom of the side walls of the hoppers. Each of the hoppers is provided with a gate in its front wall adapted to allow the passage out of the hoppers of the materials therein in relative amounts which are regulated by the height to which the gates are raised. Front wall 23 of hopper 14 is provided with an opening 24 which extends upwardly from the bottom of the wall a suitable distance. A vertically movable gate 25 is adapted to close this opening and to regulate the amount of material passing therethrough by its position in partially closing the same. The front wall of the hopper is provided with a slot 26 in which a bolt 27 secured to gate 25 is adapted to move vertically. Bolt 27 is provided with a thumb nut 28 by means of which the gate may be set in any desired position so as to open aperture 24 by any desired amount.

Front wall 30 of hoppers 15 and 16 is provided with a large aperture 29 as shown in Fig. 4 which extends on both sides of aperture 24 in front wall 23 of hopper 14. The lower end of hopper 14 divides aperture 29

into two parts one of which communicates with hopper 15 and the other with hopper 16. Each of these openings is provided with a gate 31 which is similar in construction to gate 25 for hopper 14. As shown in Fig. 2 front wall 23 of hopper 14 is placed directly behind front wall 30 of hoppers 13 and 16 so that gates 31 are out of line with gate 25 by the thickness of the front wall of hopper 14 as shown in Fig. 5. Gate 25 is made of sufficient width to overlap gate 31 on both its sides and thereby forms tight joints with the same.

By means of the above described mechanism it will be seen that I am enabled to feed any desired amount of material from the individual hoppers onto belt 20 by regulating the amount by which the gates of those hoppers are opened. To carry the material out of the hoppers belt 20 is moved in the direction indicated by the arrows in Fig. 2 by the rotation of rollers 21 over which the belt passes. The central part of belt 20 is supported by roller 22 which is journaled on blocks 22' which are mounted on frame 10. Rear drum 21 is mounted on a shaft 35 which is journaled in bearings 36 mounted on a cross frame 37 which is secured to frame 10. Shaft 35 carries a sprocket wheel 38 on one end which engages with a sprocket chain 39 passing over a sprocket wheel 40 mounted on operating shaft 41 of the machine. Shaft 41 is mounted in bearing 42 secured to a longitudinal rectangular frame 43 which forms a part of main frame of the machine. By the rotation of crank 44 which is secured to shaft 41 belt 20 may be moved in the direction indicated to feed the contents of the hoppers into a short chute 45 supported from blocks 22' directly below and behind the discharge point of belt 20 where it passes over roller 21. Chute 45 leads downwardly from the discharge point of belt 20 and discharges the material thrown onto it into a mixing drum 46 which is revolutely mounted on frame 43 and cross frame 37. The construction of the mixing drum is shown particularly in Figs. 2 and 6 and consists of a cylindrical casing 47 supported by arms 48 which connect the casing with the central longitudinal shaft 49 journaled in bearings 50 and 51 mounted on frames 43 and 37, respectively. The inside of casing 47 is provided with a plurality of longitudinally extending angle irons 52 which prevent the material in the drum from remaining at the bottom of the same carrying it partly up the sides of the drum so that it may become thoroughly mixed in falling back toward the bottom. Casing 47 is provided on each end and in its center with an inwardly extending flange 53, the flanges in the center and on the lower end being wider than the one on the upper end so that the material is kept from passing immediately through the drum be-

fore it has been agitated sufficiently to insure a thorough mixture thereof. After a sufficient amount of material has been accumulated in the lower end of the mixing drum the mixture begins to fall from the drum into any convenient receptacle which is placed below the lower end of the same.

Mounted on the lower end of frame 43 is a water supply pipe 54 which is bent at right angles to extend into the lower end of the drum as at 55. The end of portion 55 is perforated to allow the water which is supplied through a hose 56 to be distributed over the material which is being mixed in the lower end of the drum and thus to wet the same sufficiently for the particular use for which the concrete is intended. The amount of water fed through pipe 54 is adapted to be regulated by valve 57 on the pipe so that the wetness of the finished concrete mixture may be regulated as desired. Around drum 46 and near its center a beveled gear 58 is provided which is adapted to mesh with a large beveled gear 59 mounted on operating shaft 41. Thus it will be seen that when crank 44 is turned to operate the feeding apparatus the drum is also rotated to mix the materials which are fed into it.

From the foregoing description it will be observed that I have provided a concrete mixer which may be operated continuously to mix concrete of any desired proportions of ingredients. The amount of material which is supplied to the mixing drum may be accurately controlled by means of the adjustable gates while the quantity of water which is used to wet the mixture may also be controlled to produce the exact wetness desired in the finished mixture.

On account of the peculiar construction and arrangement of the sand and gravel hoppers it will be seen that they may be conveniently filled, as the mixing operation proceeds, from piles of sand and gravel which have been previously dumped upon the ground and that the machine may be moved from time to time to be kept in proximity to the sand and gravel piles as the same are utilized.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

In a device of the class described, the combination of a frame, a feed belt mounted in said frame, a multiple hopper mounted above said feed belt, said hopper comprising a substantially rectangular container, a substantially triangular container mounted within said rectangular container, a partition wall extending from said rectangular container to one wall of said triangular container in such manner as to divide the rectangular container into two separate compartments, the triangular container and each compartment of the rectangular con-

tainer being provided with outlet openings
which are arranged in such manner as to
discharge the contents of each container
upon a separate zone of said feed belt and a
controlling gate for each of said discharge
openings.

In witness that I claim the foregoing I

have hereunto subscribed my name this 21st
day of October, 1907.

FRANK V. McDONALD.

Witnesses:

TRIMBLE BARKELEW,
OLLIE PALMER.