

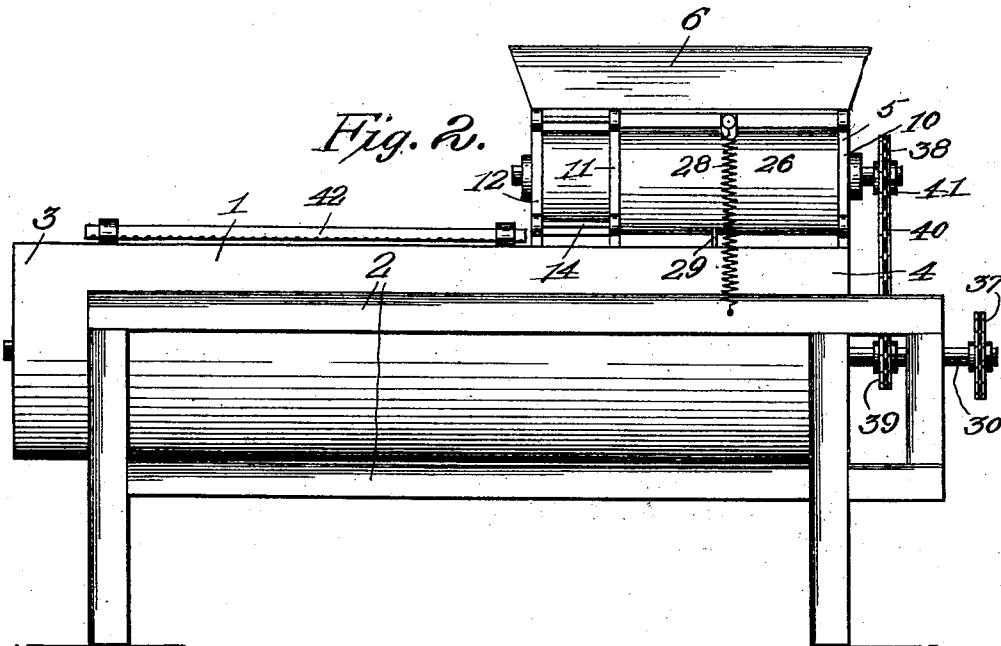
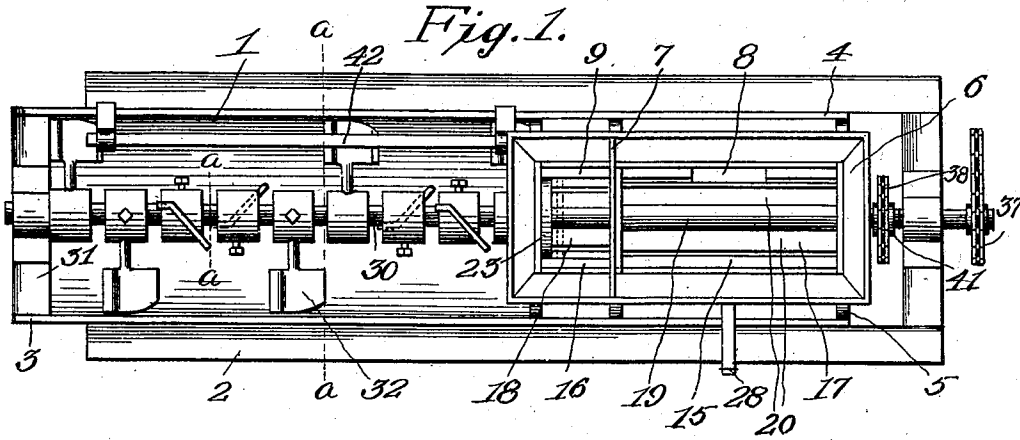
O. P. RABER & I. GROGG.
FEED REGULATOR FOR CONCRETE MIXERS.

APPLICATION FILED JUNE 30, 1908. RENEWED MAY 24, 1910.

980,834.

Patented Jan. 3, 1911.

2 SHEETS-SHEET 1.



Witnesses

James F. Brown
M. D. Skinner.

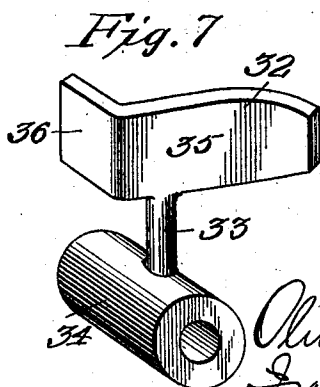
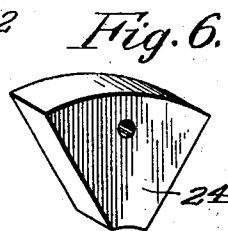
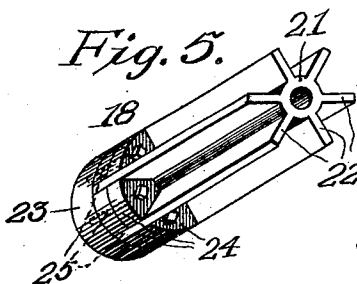
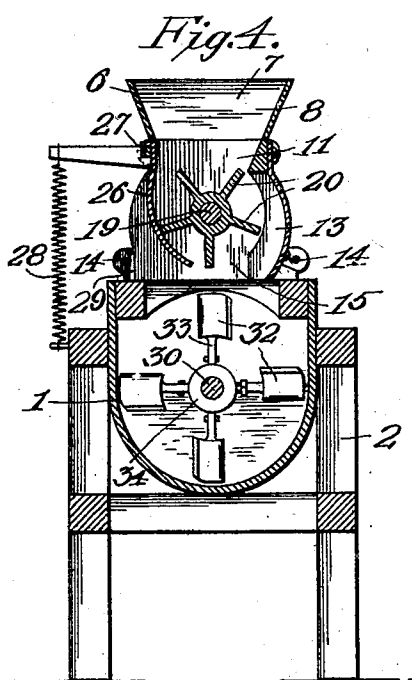
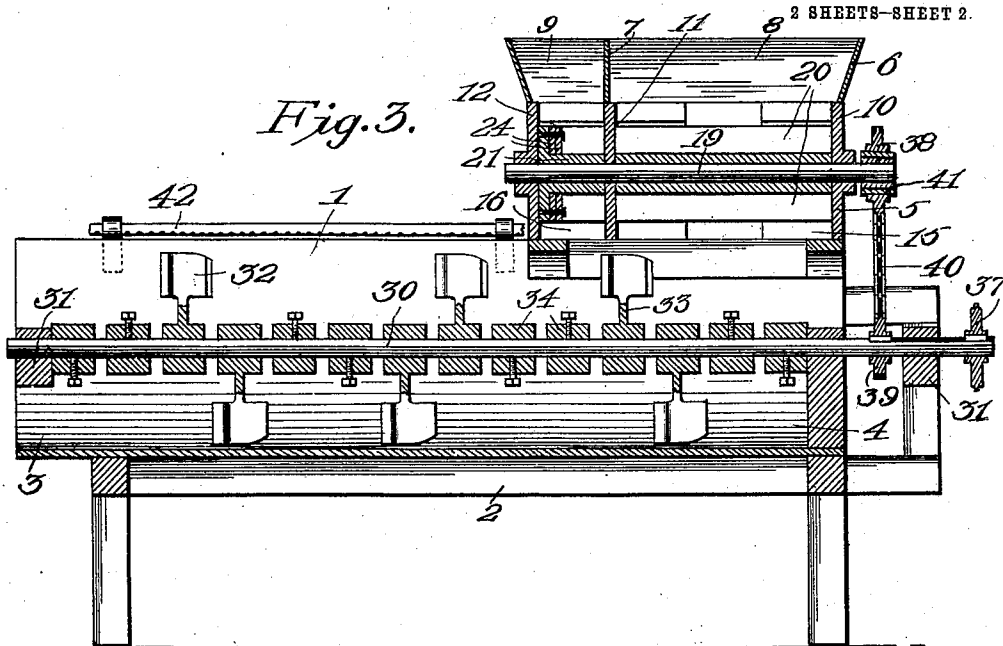
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 M. E. Skinner.

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 Oliver P. Raber
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UNITED STATES PATENT OFFICE.

OLIVER P. RABER, OF KENDALLVILLE, AND ISAAC GROGG, OF AUBURN, INDIANA.

FEED-REGULATOR FOR CONCRETE-MIXERS.

980,834.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed June 30, 1908, Serial No. 441,097. Renewed May 24, 1910. Serial No. 563,154.

To all whom it may concern:

Be it known that we, OLIVER P. RABER and ISAAC GROGG, citizens of the United States, residing, respectively, at Kendallville and Auburn, in the counties of Noble and De-

5 kalb and State of Indiana, have invented certain new and useful Improvements in Feed-Regulators for Concrete-Mixers, of which the following is a specification, reference being had to the accompanying draw-

10 ings.

This invention relates to improvements in feed regulators for concrete mixers and analogous machines.

15 One object of the invention is to provide an improved feeding device for the mixer by means of which the relative proportions of two or more materials such as cement and sand or gravel that are being mixed, may

20 be maintained throughout the entire operation of the machine and by means of which the relative proportions of such materials may be readily varied.

Another object of the invention is to provide an improved feeding device for a mixer which will not become clogged and damaged

25 by large pieces of stone or other material.

With the above and other objects in view, the invention consists of the novel features of construction and the combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

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Figure 1 is a top plan view of the improved concrete mixer; Fig. 2 is a side elevation; Fig. 3 is a vertical longitudinal section; Fig. 4 is a vertical transverse section; Fig. 5 is a detail view of the rotary feeder for the cement showing the manner in which

35 its compartments or pockets may be varied in size; Fig. 6 is a detail view of one of the filler plates; and Fig. 7 is a perspective view of one of the mixing and feeding blades.

In the drawings 1 denotes the body of the improved concrete mixer which is preferably of semi-cylindrical shape and disposed horizontally in a rectangular supporting frame

40 2. The frame 2 is preferably constructed of wood, as illustrated, while the body 1 is made of heavy sheet metal and the latter is also preferably of greater length than the frame so that its open end 3 projects beyond the frame and serves as a discharge or outlet for the mixed concrete or other material.

45 The opposite end 4 of the body 1 is closed and arranged above said end is an improved

proportional feeding device consisting of a substantially cylindrical casing 5 arranged upon transverse beams or supports between the sides of the body 1 and carrying a hop-

60 per 6. The latter may be divided by one or more partitions 7 into compartments for several materials which are to be mixed, but, as illustrated, there is but one partition which divides said hopper into a large com-

65 partment 8 for sand and gravel and a small compartment 9 for cement, the embodiment of the invention illustrated being especially adapted for mixing the usual concrete plastic material. The casing 5 of the propor-

70 tioning box is preferably constructed of three cast metal plates 10, 11, 12 and cast side plates 13, the said parts being united by tie bolts 14 so as to form two compart-

75 ments 15, 16, the former of which is arranged beneath the sand and gravel hopper 8 and the latter beneath the cement hopper 9. The side plates 13 are substantially semi-circular in shape and their upper and lower

80 ends are spaced apart so that the compartments 15, 16 have their upper ends in communication with the hoppers 8, 9 and their lower ends arranged over the body 1 of the mixer.

17, 18 denote two feeding and proportion-

85 ing wheels arranged in the compartments 15, 16 of the proportioning box 5 and fixed to a longitudinal shaft 19 journaled in suitable bearings in the end plates 10, 12 and the intermediate or partition plate 11. The wheel 17 comprises a hub fixed to the shaft by a set screw or other suitable means and provided with radiating blades 20, preferably five in number, while the wheel 18 has a hub 21 similarly secured to the shaft 19

90 and provided with radiating blades 22. Six of the latter are preferably provided and they are united at one end by a circular plate or head 23. The blades of the two wheels are of such size as to permit the

95 wheels to rotate freely in the compartments 15, 16 but at the same time prevent the materials in the hoppers 8, 9 from dropping down into the mixing body 1 when the shaft 19 remains quiet. It will be understood

100 that any number of blades may be provided upon either of the wheels so as to form between them pockets of any desired size but when the machine is to be used for mixing ordinary concrete plastic material the wheels

105 are preferably constructed as illustrated and the compartment 15 for the sand and gravel

110

is made of greater size than the compartment 16 for the cement. In order to vary the relative proportions of the two materials that are to be mixed the size of the
 5 pockets or compartments of the wheel 18 is varied by means of filler plates or blocks 24. The latter, as clearly shown in Figs. 4 and 5, are shaped to fit between the blades 22 of said wheel and against its end or head 23 to
 10 which latter they may be secured by bolts 25 or any other suitable removable fastenings.

In order to prevent stones from getting between the blades 20 of the wheel 17 and
 15 the side wall of the compartment 15, one side wall 26 of said compartment is pivotally mounted, as shown at 27, so that it swings from its top in an outward direction. This swinging side or safety gate 26 is provided at the center of its pivoted or hinged
 20 top with an outwardly projecting arm 27 adapted to be drawn downwardly by a coil spring 28 which latter has one end attached to said arm and its other end to the frame 2.
 25 This spring tends to throw the safety gate 26 inwardly against the wheel 7 but at the same time permit said gate or side to yield when an unusually large stone or rock enters the pockets of said wheel. The outward movement of said gate or side 26 may
 30 be limited by a stop 29.

30 denotes a shaft arranged longitudinally and concentrically in the mixer body 1 and journaled in suitable bearings upon
 35 the cross beams 31 in said body. A plurality of mixing and feeding blades 32 are secured upon said shaft, each of said blades consisting of a shank 33 provided at one end with a hub 34 which is secured to the
 40 shaft by a set screw or the like and provided at its other end with a blade proper consisting of long and short straight portions 35, 36 which are disposed at an obtuse angle with respect to each other and
 45 each of which is of substantially rectangular shape. The blades are so arranged upon the shaft that their long portions or arms 35 are disposed nearest to the feeding end of the body and are turned toward said end
 50 while their short blades 36 are turned toward the opposite or outlet end of the body and are disposed transversely at an angle. The blades are also so spaced apart that the end of the arm or portion 36 of each blade
 55 will lie in the transverse plane of the end of the arm or portion 35 of the next succeeding blade, as indicated in Fig. 1 in which the dotted line *a-a* indicates a transverse plane with the ends of two adjacent blades
 60 projecting into said plane. It will be seen that by shaping and arranging the blades in this manner they will effectively mix the material and convey it through the body, their peculiar shape causing the material to
 65 be hurled against the sides of the body and

effectively mixed as it is slowly moved longitudinally.

In order to operate the shafts 30 and 19, a driving sprocket 37 is preferably provided upon the outer end of the shaft 30. This
 70 sprocket wheel may be connected by a sprocket chain to any suitable source of power. A sprocket wheel 39 is also provided upon the shaft 30 and is connected by
 75 a sprocket chain 40 to a sprocket wheel 39 so that when the mixer shaft is rotated its movement will be imparted to the shaft of the feeding and proportioning wheels. The sprocket wheel 38 is preferably fixed to a
 80 sleeve 41 which is frictionally secured to the shaft 19 in any desired manner so that it will slip and prevent the gearing or other parts of the machine from breaking in the event of a stone or large piece of material getting
 85 in between the blades of the feeding and proportioning wheels and the sides of the proportioning box or casing.

42 denotes a perforated water discharge pipe for spraying water upon the material
 90 in the body or trough 1.

The operation of the invention is as follows: By means of the filler plates or blocks 24 the size of the feeding and proportioning wheel 18 may be varied with respect to that
 95 of the wheel 17 so that the proper relative quantities of cement and sand or gravel will be supplied to the mixer. The cement is then placed in the hopper 9 while the sand, gravel, crushed stone or the like is placed in
 100 the hopper 8. Power is then applied to the sprocket 37 so that the mixer shaft 30 will be rotated and its motion imparted to the shaft 19 of the feeding and proportioning device. As the shaft 19 rotates the pockets
 105 of its wheels 17, 18 will pass under the hoppers 8, 9 and become filled with the materials in the latter, which materials will be dumped from said pockets into the upper or inner end of the mixer body and will be
 110 thoroughly mixed and moved longitudinally through said body by the blades or paddles 32. The swinging side or safety gate 26 of the sand or gravel compartment of the feeding and proportioning box will yield to prevent
 115 breakage of any of the parts and should a very large stone enter between the blades of said wheel and the sides of the casing or box the slip sleeve 41 will permit the sprocket 38 to rotate without turning the
 120 shaft 19 and thereby effectively preventing the breakage of any of the parts of the feed device.

While the present embodiment of the invention is in the form of a mixer especially
 125 adapted for mixing cement and sand or the like in making concrete, it will be understood that it may be embodied in machines for mixing other materials. It will be further understood that various changes in the form, proportion and minor details of construction
 130

may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention what is claimed is:

5 A feed regulator for a concrete mixing machine comprising a supporting frame, a cylindrical casing consisting of oppositely disposed curved side plates, and intermediate
10 and end plates, the last mentioned plates being formed with central bearing openings, and with outwardly projecting apertured lugs arranged at the upper and lower edges of said plates, said plates being adapted to
15 receive the curved side plates between them, and the intermediate plate forming the partition to divide the casing into two compartments, a rotatable shaft in the bearing openings of said end and intermediate plates,
20 rotary feeding and proportioning wheels arranged on the shaft in said compartments and having blades to form pockets, a longi-

tudinal pivot arranged in certain of the upper ears of said plates, one of said curved side plates being fixed to said pivot and de- 25 pending therefrom to swing outwardly and upwardly, a horizontal arm projecting radially from said pivot, a coil spring having its lower end fixed to said frame, and its upper end fixed to said arm, whereby the
30 swinging side plate will be yieldably held in contact with said wheels, connecting rods arranged in the remaining apertured ears of said plates to unite the parts of the casing, a hopper above said casing, and means for 35 driving said shaft.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

OLIVER P. RABER.
ISAAC GROGG.

Witnesses:

HARRY D. BODENHAFFER,
ELIJAH P. LASH.