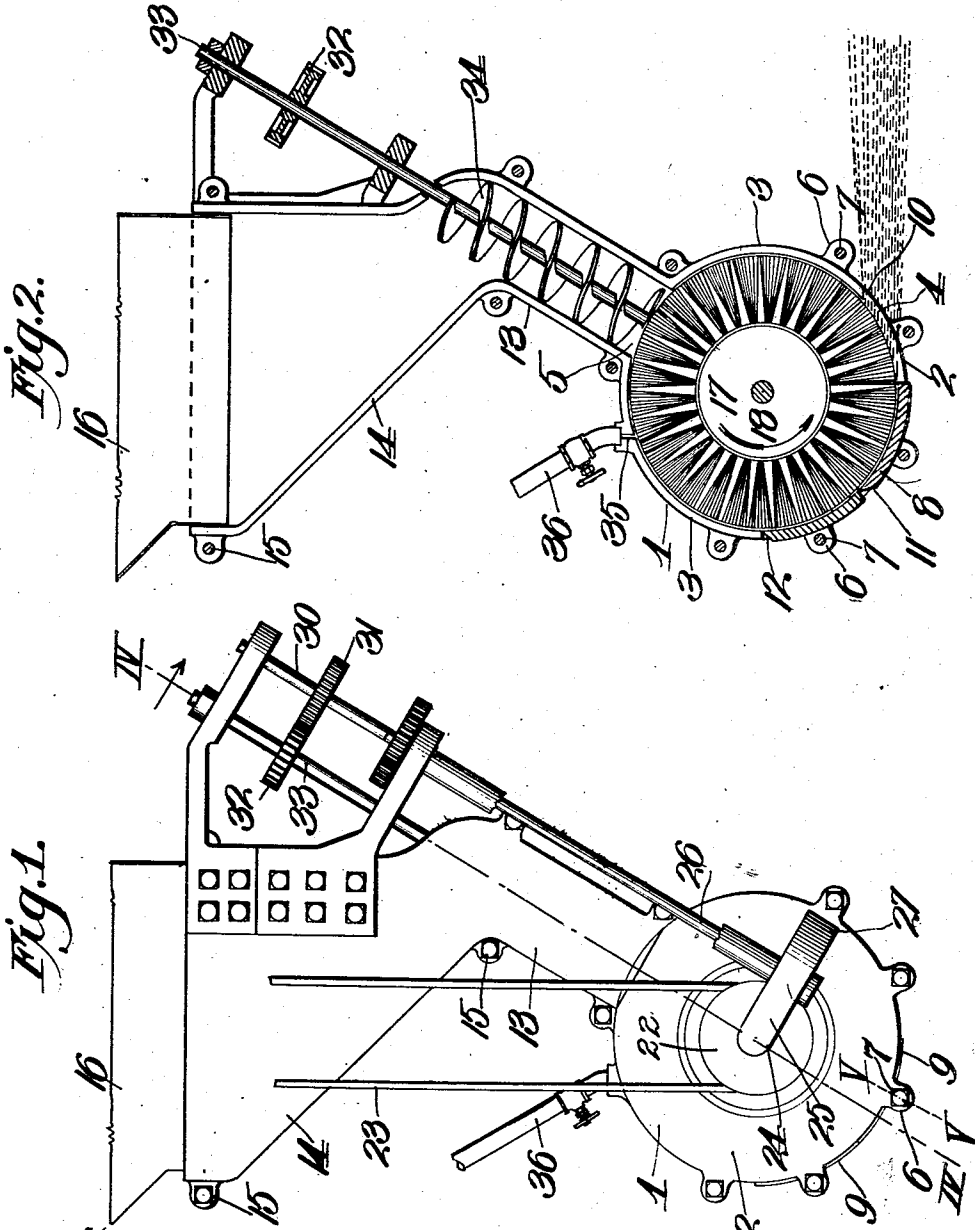


A. G. HIGGINS.
CONCRETE APPARATUS.
APPLICATION FILED AUG. 14, 1911.

1,065,365.

Patented June 24, 1913.

2 SHEETS—SHEET 1.



Witnesses
Frank R. Glou
Margaret A. O'Donnell

Inventor
A. G. Higgins
By George J. Hoops Atty.

A. G. HIGGINS.
CONCRETE APPARATUS.
APPLICATION FILED AUG. 14, 1911.

1,065,365.

Patented June 24, 1913.

2 SHEETS-SHEET 2.

Fig. 4.

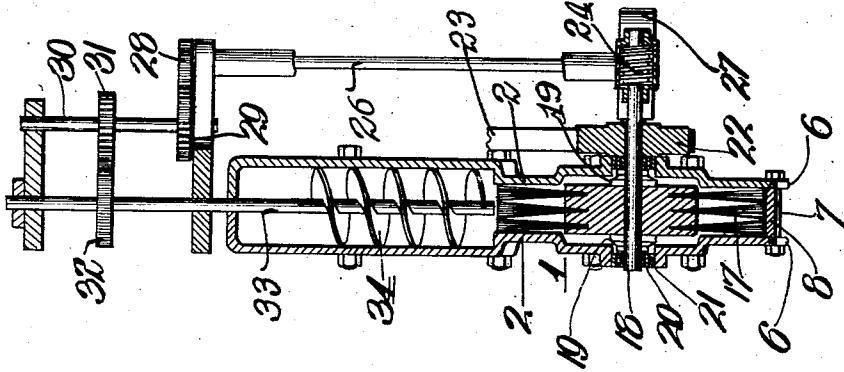


Fig. 5.

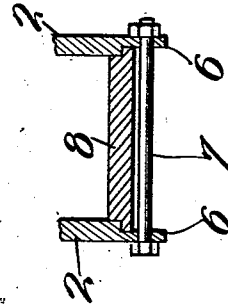
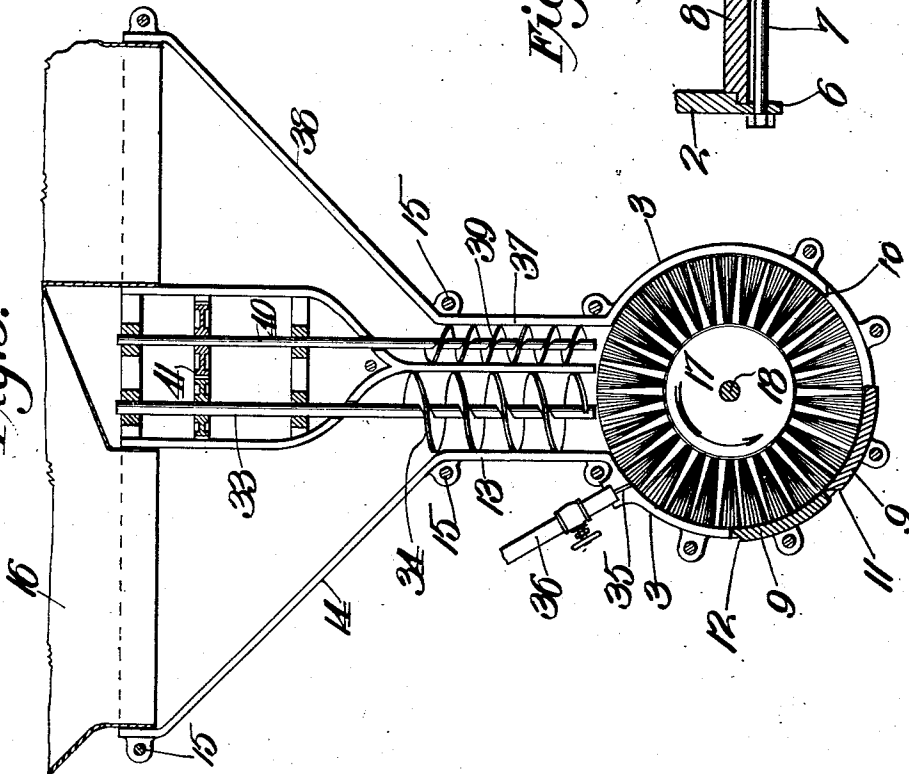


Fig. 3.



Witnesses
Margaret A. O'Connell
Frank R. Gon

Inventor
A.G. Higgins
By George F. Hooper Atty.

UNITED STATES PATENT OFFICE.

ALBERT G. HIGGINS, OF KANSAS CITY, MISSOURI.

CONCRETE APPARATUS.

1,065,365.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed August 14, 1911. Serial No. 644,058.

To all whom it may concern:

Be it known that I, ALBERT G. HIGGINS, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Concrete Apparatus, of which the following is a specification.

This invention relates to concrete apparatus of that class whereby concrete is applied to an object by projecting it against the same with considerable force, and has for its object to produce means for both mixing and depositing concrete under centrifugal force or for subserving either of said functions, it being understood that the term concrete is employed in its generic sense, that is, is intended to embrace any plastic mixture which will adhere to the object on which it is deposited and harden as it dries.

With this general object in view the invention consists of certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawings, in which:—

Figure 1, is a side view of a concrete mixing and applying machine embodying my invention. Fig. 2, is a central vertical section of the same. Fig. 3, is a similar section of a modified form of construction. Fig. 4, is an irregular section taken on the line IV—IV of Fig. 1. Fig. 5, is an enlarged section taken on the line V—V of Fig. 1.

In the said drawings where like reference characters identify corresponding parts, 1 is a circular casing consisting of two disks 2 spaced apart, and provided peripherally with inwardly-projecting flanges 3 spaced apart to form an interposed opening 4 and a second or feed opening 5. Around the periphery of the disks are suitable outwardly-projecting ears 6 connected by cross bolts 7 whereby the disks are secured in rigid relation with the inner edges of their flanges clamped tightly together.

To vary the size of discharge opening 4 and to permit the discharge to occur through said opening at different points so that the plastic material may be discharged in the desired direction, filling plates 8 are fitted adjustably between the disks in said opening 4, and said plates are provided with outwardly-projecting flanges 9 to fit against the peripheries of the disks so that they can not

slip inward from their proper position, as said plates are curved to correspond with the curvature of the flanges 3 and their inner surfaces must be disposed in the circular plane of the inner surfaces of said flanges, as shown clearly in Figs. 2 and 3, it being understood that these plates are longitudinally adjustable and are clamped rigidly at the desired point of adjustment by the adjacent bolts 7, as the sides of the casing will yield sufficiently to effect such clamping of the plates between the sides or disks of the casing, and in this connection it is to be understood that the end of the flange 3 to the right of plates 8 and the left-hand ends of said plates are beveled as shown at 10, 11 and 12 respectively, for a purpose which hereinafter appears.

13 is a cylindrical conveyer casing communicating at its lower or discharge end with feed opening 5 and 14 is a hopper for supplying properly mixed and proportioned sand and cement to the upper end of the conveyer casing. Preferably the casing 13 and hopper 14 will be cast integral with each other and the casing, that is to say, will consist of halves, each half being formed integrally with one-half of the casing, and will be bolted together as at 15. If desired a supplying hopper 16 will be arranged as shown to discharge into hopper 14.

Arranged within and substantially filling the casing is a circular brush 17 having steel or other stiff bristles, and said brush is secured rigidly upon a shaft 18 by clamping collars 19, and the shaft is preferably journaled in ball-bearings 20 secured in openings 21 in the disks or sides of the casing. Mounted on one end of the shaft adjacent to the casing is a belt wheel 22 engaged by a drive belt 23 which is adapted to revolve the brush in the direction indicated by the arrows. At one end of the shaft is formed a worm thread 24 meshing with a worm wheel 25 secured on the lower end of a shaft 26, and said worm thread and worm wheel are preferably inclosed by a housing 27. The shaft 26 is suitably journaled and is provided at its upper end with a gear wheel 28 meshing with a gear wheel 29 on the lower end of a second suitably journaled shaft 30, and said shaft is provided with a gear wheel 31 meshing with a gear wheel 32 on the upper portion of the shaft 33 of a spiral conveyer 34 arranged in the conveyer casing 13 for feeding at a

predetermined speed and at predetermined quantity, mixed sand and cement through said feed opening 5 and against the periphery of the brush.

5 In advance of the feed opening 5 the casing is provided peripherally with one or more water inlets 35 supplied by a valve-controlled pipe 36, the arrangement being such that a fixed quantity of water shall
10 enter the casing through the inlet opening or openings 35, that is to say, just sufficient water to effect the crystallization of the cement.

In Fig. 3 I show a modification in which
15 the conveyer casing 13 and hopper 14 are duplicated on a smaller scale by preference, the duplicate parts being numbered 37 and 38, and arranged in the casing 37 is a reversely turned spiral conveyer 39 with its
20 shaft 40 geared to shaft 33 at 41 so that the conveyers shall be simultaneously operated, the smaller conveyer 38 preferably supplying cement and the hopper 14 sand to the brush at adjacent points. By this construction it is unnecessary to mix the sand and
25 cement, provided the feed mechanisms are so proportioned as to supply sand and cement in proper proportions to the brush.

In the practical operation of the machine
30 the sand and cement either separated or mixed, is fed to the periphery of the brush and carried around therewith within the casing, the proper quantity of water being supplied to produce a plastic mixture which
35 will crystallize very shortly after it is discharged from the casing, the discharge taking place tangentially as indicated in Fig. 2, (by broken lines) between the foremost plate 8 and the beveled end of the flange 3
40 in advance of said plate. If it is desired to discharge the material at right angles to the direction indicated in Fig. 2, the plates 8 are adjusted so as to close the part of the opening 4 which is uncovered in Fig. 2, and
45 expose that part of said opening shown as closed by the rearmost plate 8 in Fig. 2. If it is desired to discharge the material between the plates they are adjusted in opposite directions so as to leave unclosed
50 space between them.

It is frequently desirable to discharge material in different directions and for this reason the adjustable plates are provided, as such adjustment can be effected with

much less trouble and in less time than it 55 would be possible to adjust the machine as a whole.

In the operation the machine may be moved along the length of the object against which the material is plastered under the 60 force developed by the rapid rotation of the wheel, or the object may be moved.

I claim:

1. The combination of a casing having a discharge opening and a feed opening and 65 a rotary brush arranged within the casing and adapted to receive concrete material on its periphery from said feed opening and discharge it through said discharge opening, a driven conveyer for forcing concrete 70 material into the casing and against the periphery of said driven brush through said feed opening, and means for supplying water to the casing at the periphery of said brush to wet the concrete material thereon. 75

2. The combination of a casing having a discharge opening and a feed opening, a rotary brush arranged within the casing and adapted to receive concrete material on its periphery from said feed opening and 80 discharge it from said discharge opening, a pair of driven conveyers, one for forcing sand and the other for forcing cement through said feed opening against the periphery of said rotary brush, and means for 85 supplying water to the casing at the periphery of said brush to wet the sand and cement upon the latter.

3. The combination of a circular casing having a feed opening and a discharge opening, a conveyer casing communicating with the feed opening, a hopper to supply material to said conveyer casing, a valve-controlled pipe for supplying water to the casing through the circumferential wall at a 95 point in advance of the feed opening thereof, a spiral conveyer in the conveyer casing, a circular brush fitting snugly in the casing, means to revolve said brush, and means for transmitting power from the shaft of the 100 brush to the said spiral conveyer.

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

ALBERT G. HIGGINS.

Witnesses:

FRANK R. GLORE,
G. Y. THORPE.