

June 2, 1925.

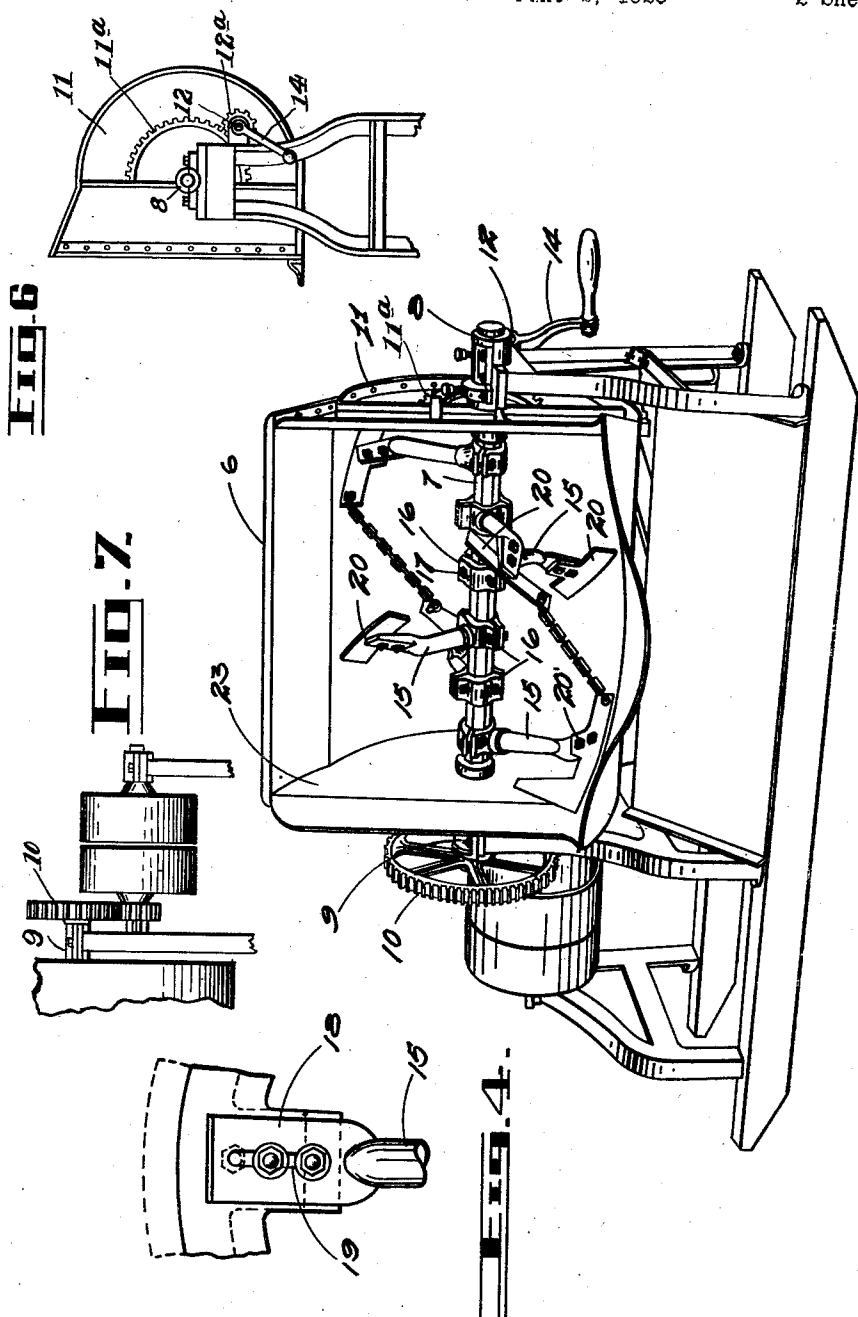
1,540,547

J. C. DODGE

MIXING MACHINE

Filed June 2, 1923

2 Sheets-Sheet 1



INVENTOR
JOHN C. DODGE
BY *William S. Fowler*
ATTORNEY

June 2, 1925.

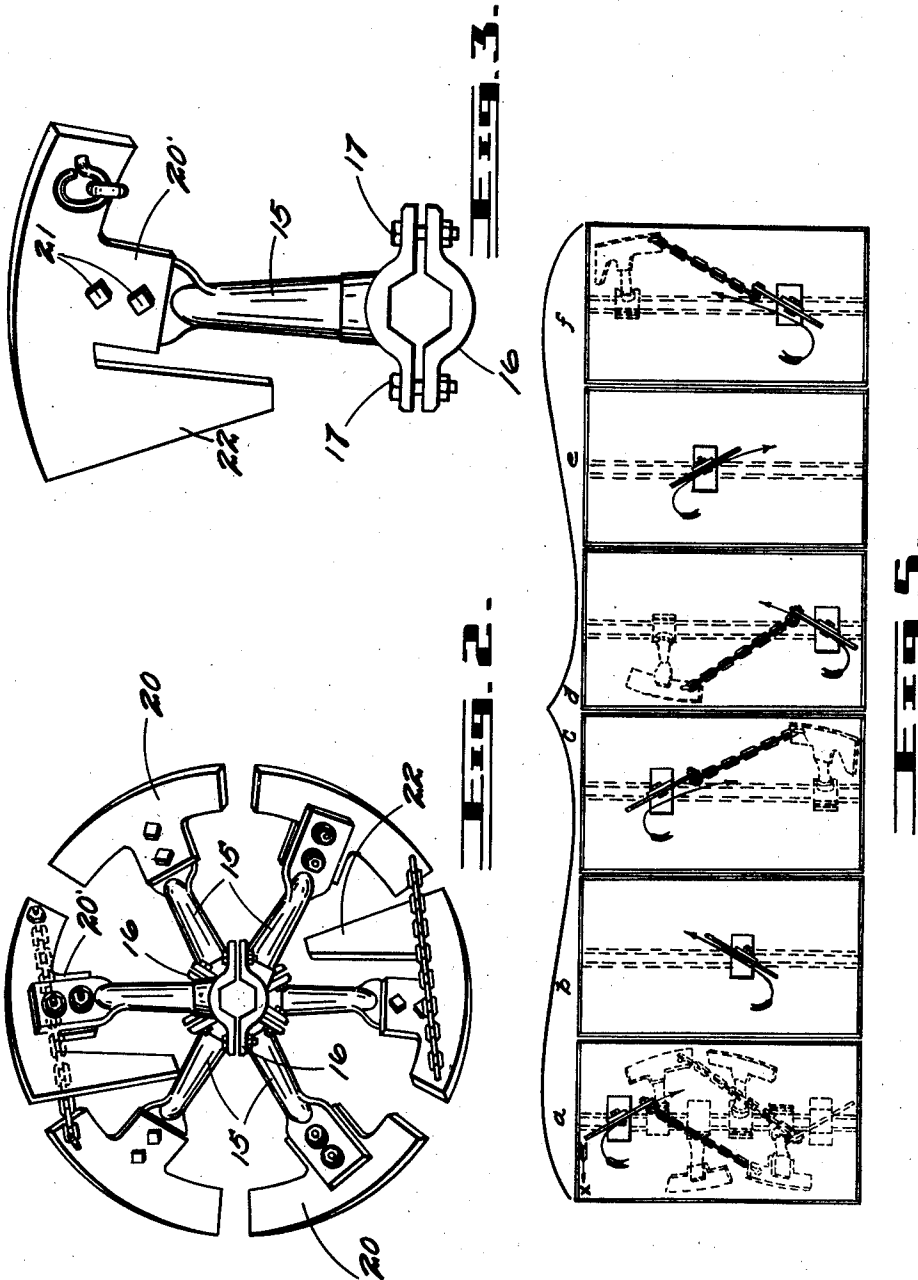
1,540,547

J. C. DODGE

MIXING MACHINE

Filed June 2, 1923

2 Sheets-Sheet 2



INVENTOR
JOHN C. DODGE.
BY *William S. Fowler*
ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN C. DOIDGE, OF LONDON, ONTARIO, CANADA, ASSIGNOR TO LONDON CONCRETE MACHINERY CO., LTD., OF LONDON, ONTARIO, CANADA.

MIXING MACHINE.

Application filed June 2, 1923. Serial No. 643,106.

To all whom it may concern:

Be it known that I, JOHN C. DOIDGE, a citizen of Dominion of Canada, and resident of London, in the county of Middlesex and Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Mixing Machines, of which the following is a specification.

This invention relates to improvements in mixing machines especially adapted for mixing concrete, but it may be used for mixing dough, paint or other substances where the different ingredients require thorough mixing for the purpose for which they are designed.

The invention consists in the novel construction, combination and arrangement of co-operating elements as hereinafter more specifically set forth, claimed and shown in the accompanying drawings forming a part of the present application, in which:

Fig. 1 is a perspective view of one preferred embodiment of my invention in the form of a concrete mixer of a six blade type.

Fig. 2 is an end view.

Fig. 3 is an enlarged detail of one of the end blades.

Fig. 4 is a fragmentary enlarged detail view showing the adjustable connection between the blade and the supporting arm, and

Fig. 5 is a diagrammatical view looking upwardly showing the relative positions of the respective blades as they would rotate over the bottom of the mixing vessel.

Figure 6 is a detail in elevation of the right hand end of Fig. 1.

Figure 7 is a detail elevation of the left hand end of Fig. 1.

Referring more in detail to the drawings, in which similar reference characters designate corresponding parts throughout the several views. The construction as shown in Fig. 1 of the drawings shows my construction as used in the framework and operating means of a common design of concrete mixing machines. As my invention does not pertain to the framework, it will be appreciated that any desirable supporting means may be used in co-operation with the mixing vessel. The mixing vessel will be supported on the framework and con-

sists of a mixing chamber 6 through which passes longitudinally an axle or shaft 7, which shaft is supported at its opposite ends in journal blocks 8 and 9 at the upper end of the frame standards. One end of this shaft is suitably geared as at 10 so as to receive a rotary motion. The mixing chamber 6 is semi-cylindrical in its lower portion. Around one end 11 I provide a geared segment 11^a integral therewith, into which meshes a small gear 12^a carried by the shaft 12, on the outer end of which shaft is the turning handle 14. I do not wish to claim any particular way of turning the mixing chamber 6 so as to discharge the ingredients after being properly mixed. The tilting or turning of this mixing chamber in the manner hereinbefore described has been used by many manufacturers of mixing machinery, and therefore, I do not wish to limit myself to any particular way of turning or tilting the mixing chamber, as any desirable way may be used.

Mounted on the shaft or axle 7 are the supporting arms 15, the inner end of which is configured to fit the angular shape of the axle or shaft 7. 16 is a clamp adapted to co-operate with the inner end of the arm 15 so that this inner end may be securely connected to the shaft 7 by means of the tightening bolts 17. The outer end of each arm 15 is flattened as at 18 and is provided with a longitudinal slot 19. 20 indicates blades provided with bolt openings to receive the bolts 21, which bolts extend through the slot 19 and before being tightened, are adjusted relatively in the slot 19 so as to have the outer edge of the respective blades 20 extending the desired distance. The outer blades 20' are provided with an outer inwardly extending flange or side portion 22 which is adapted to be positioned near the ends 23 and will act as a scraper during each revolution to disengage any of the ingredients in the mixing chamber 6 which might stick to the ends 23.

In the drawings I have illustrated six blades 20 in their relative position but I do not wish to limit myself to a construction having six blades, as it will be found advantageous to manufacture mixers having less than six blades and in some cases more

than six blades. The number of blades will depend entirely upon the work for which the mixer is designed for use.

From the drawings it will be apparent that the blades are angularly positioned relative to the longitudinal position of the axle 7 and that each blade is positioned at an opposite angle to that of the blade next to it. If four blades are to be used as the mixing unit, a square shaft or axle 7 may be used. If six blades are used as the mixing unit, a hexagonal shaft or axle may be used, so that in this way the end of the respective supporting arms 15 with their clamp 16 can be securely positioned thereon.

Certain of the blades may have chains connecting one of their ends to one of the succeeding blades. In the drawings I have illustrated these chains being connected between the inner side of the outer blades 20' and the inner side of the preceding blade in rotation. The latter mentioned blade is positioned at a considerable distance away from the former blade and has a number of blades positioned on the shaft intermediate it and the former or outer blade 20'.

Referring to Fig. 5, which is a diagrammatical series of views showing the position of the different blades as they rotate past the bottom of the mixing chamber 6. These views are drawn as if looking upwardly from the bottom of the mixing chamber 6 towards the respective blades as they pass thereover. In these different views, the blades are in rotation in the direction of the arrow X. In the view Fig. 5^a, I have shown one of the end blades 20' with its chain connected to its inner end, which chain is angularly disposed towards this end blade 20'. During the rotation of the mixing unit, this chain will be drawn through the ingredients moving towards the end blade 20' so that in this way it will cut through the different materials forming the ingredients in the mixing chamber and will also assist in carrying the ingredients from the preceding blade towards this end blade 20'. In the views Figs. 5^b, 5^c, 5^d, and 5^e, the different blades are illustrated in their position as they succeed each other on the rotation of the mixing unit. In the different views, I have used arrows to indicate the movement of the ingredients in front of the respective blades as they rotate past the bottom of the mixing chamber 6. From the direction of these arrows, it will be seen that the angular position in which I place the blades will cause each blade to direct the ingredients through which it is passing towards the succeeding blade and at the same time it will be noted that the ingredients will move in an alternative direction from end to end of the mixing chamber 6. This indirect end-to-end movement of the ingredients will cause a thorough mixing of

the material and will not cause the rolling-up of the material to either ends, as has been found in other constructions where an end-to-end movement of the material has been used.

When the mixing chamber 6 is tilted or turned in the position as indicated in Fig. 1 to discharge the ingredients therefrom, it will be found that on rotation of the mixing unit that the respective blades with their chain connections will clear the ingredients therefrom.

While the preferred embodiment of the invention has been disclosed, it is to be understood that minor changes may be resorted to within the scope of what is claimed without departing from the spirit of the invention.

What I claim as new is:

1. A mixing machine consisting of a mixing chamber, a shaft extending through and supporting said mixing chamber on a suitable frame, radially supported mixing means extending from said shaft, chains joining non-adjacent members of said mixing means and means for guiding the material in said mixing chamber towards said chains, said mixing means including radial shanks and arcuate members on said shanks arranged concentrically of said shafts.

2. A mixing machine consisting of a mixing chamber, a shaft extending through and supporting said mixing chamber on a suitable frame, blades radially supported from said shaft in series from the opposite end portions of said mixing chamber and adapted to move the material in reverse directions, and means connecting non-adjacent blades, the blades radiating from said shaft in such relationship that each successive blade in rotation is one of the opposite series, the respective blades forming each series overlapping each other in their direction of travel and the inner blade of one series overlapping the inner blade of the other series in its travel during the rotation of said blades.

3. A mixing machine consisting of a mixing chamber, a shaft extending through and supporting said mixing chamber on a suitable frame, blades radially supported from said shaft, said blades being angularly disposed relative to the longitudinal direction of said shaft so that each blade will direct the material through which it passes towards the flat side of the next succeeding blade in rotation, and means connecting non-adjacent blades, said chamber having a semi-cylindrical portion, one side of said semi-cylindrical portion having a downwardly grooved discharge lip and said blade adapted to move the material in said chamber towards said discharge lip when said mixing chamber is tilted.

4. A mixing machine embodying a mixing chamber, a shaft extending through said chamber, radial arms on said shaft, angularly-disposed blades on said arms, and flexible means joining non-adjacent blades, 10
5 flexible means joining non-adjacent blades. said blades being arcuate in form and arranged concentrically of the shaft.
5. A mixing machine comprising a mixing chamber, a shaft extended through said

In testimony whereof, I affix my signature.

JOHN C. DOIDGE.