L. W. CARGILL.

CONCRETE MIXING MACHINE.

APPLICATION FILED FEB. 11, 1910.

970,419. **Patented Sept. 13, 1910.**

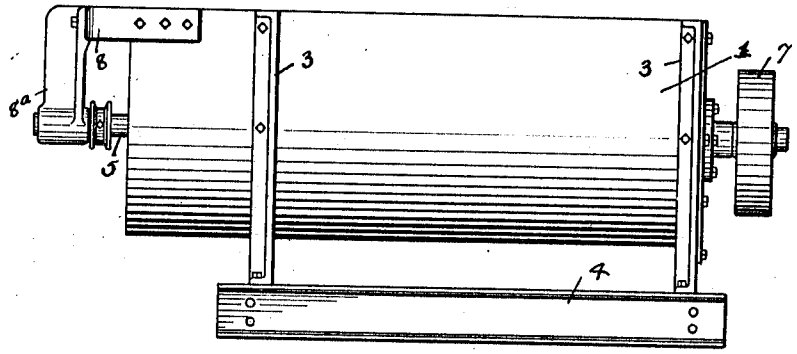


Fig. 1.

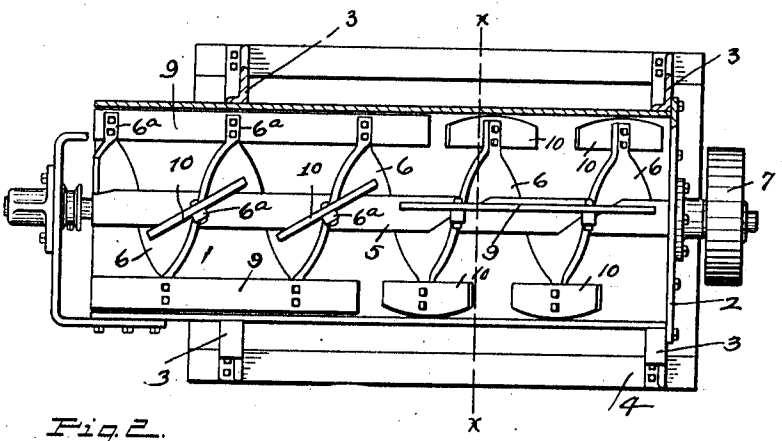


Fig. 2.

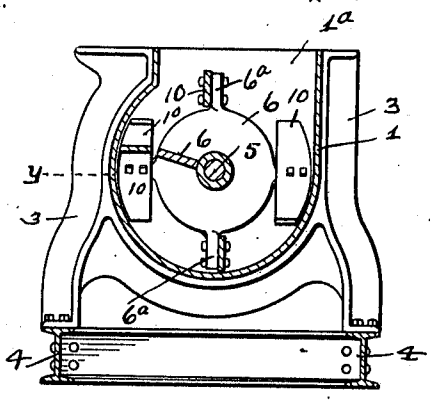


Fig. 3.

Witnesses

E. B. MAURER.

A. L. Phelps

Inventor

Lawrence W. Cargill

By C. C. Shepherd

Attorney

UNITED STATES PATENT OFFICE.

LAWRENCE W. CARGILL, OF COLUMBUS, OHIO.

CONCRETE-MIXING MACHINE.

970,419. Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed February 11, 1910. Serial No. 543,332.

To all whom it may concern:

Be it known that I, LAWRENCE W. CARGILL, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Concrete-Mixing Machines, of which the following is a specification.

My invention relates to the improvement of concrete mixing machines and the objects of my invention are to provide an improved mixing machine of this class of simple construction by means of which a thorough mingling of the ingredients of a concrete mass, may be rapidly produced and to produce certain improvements in details of construction and arrangement of parts which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation of my machine, Fig. 2 is a plan view, a portion of one side of the casing being cut away for the purpose of clearness in illustration, down to the dotted line *y* on Fig. 3, and, Fig. 3 is a transverse section of the machine on line *x*—*x* of Fig. 2.

Similar numerals refer to similar parts throughout the several views.

In carrying out my invention I provide a horizontally disposed mixer casing 1, the body of which is of a rounded trough-like form in cross section and the upper open mouth portion 1^a of which is provided with vertical side walls. One end of the casing, which we will term the rear end, is closed by a suitable plate 2 and the opposing or forward end thereof is open, as shown. The casing is mounted in suitable upright frame members or supporting standards 3, which in turn may be supported upon horizontal base frame members, such as are indicated at 4.

Mounted longitudinally and rotatably within the casing 1, is a conveyer shaft 5 on which is carried a screw or spiral conveyer 6. The conveyer shaft is journaled in and extends through the end plate 2 at one end of the machine and carries on the outer side of said end plate a belt wheel 7, while the other end of the shaft extends through the open forward end of the casing and is rotatably mounted in an arm 8^a of a bearing bracket 8 which is supported from the end of the casing, as shown. At intervals the outer edge portions of the conveyer blade 6 are formed with outwardly extending lugs 6^a. These lugs are preferably arranged on said blade edges, so as to form horizontal lines of said lugs at each quarter of the circular space within which the conveyer turns. As shown in the drawing, a desirable number of the opposing lugs 6^a or those which are arranged in alinement with each other on opposite sides of the center of the length of the conveyer have mounted thereon, straight horizontal mixing bars 9 which bars may be of different lengths as desired. Between these horizontal mixing bars, the opposing or oppositely located lugs 6^a have affixed thereto, comparatively short diagonal mixing blades or bars 10, each of the latter extending, as shown, at an angle with the direction of the lengths of the mixing bars or blades 9 and likewise crossing the conveyer blades at angles.

In operation, motion is contributed to the shaft 5 through the belt mounted on the wheel 7 and the material to be mixed is discharged through a suitable hopper not herein shown, through the mouth portion 1^a at the rear end of the machine. The material thus introduced into the machine in a plastic state, is conveyed toward the outer open end of the machine and discharged therefrom through the engagement with the mixture, of the conveyer blade 6 and the inclined blades 10 heretofore described. It is obvious that during this conveying action, the engagement of the conveyer and mixer blades, with the concrete mass, results in a thorough breaking up of the mass and mingling of the elements or ingredients composing the same, so that when the mass is discharged from the open end of the machine, the ingredients thereof are thoroughly mingled one with the other.

In the mixing and conveying operation, it will be understood that material is conveyed or moved toward the outer end of the casing by the action of both the spiral conveyer blade 6 and the inclined blades 10 and that owing to the difference in the inclination of these conveyer blades, the conveying action of the spiral blade 6 must be considerably slower than that of the inclined blades 10. As a result portions of the material which are picked up or engaged by the faster conveying members 10 are forced ahead and dropped downward on to the slower conveyer blade 6 from which mate

rial is constantly dropping into the spaces created in the material by the comparative rapid forward conveying action of the members 10. The mass thus operated on by the spiral and inclined blades is at intervals picked up by the longer straight bars or blades 9, from which it is again dumped or dropped back on to the spiral conveyer. This combined action of the comparatively slow feeding spiral blade, the more rapid feeding inclined blades and the straight bars 9, results in thoroughly breaking up and mingling the mass of material in its passage from one end of the casing to the other.

From the foregoing description, it will be seen that simple and efficient means are herein provided for accomplishing the objects of the invention, but while the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise construction set forth, but includes within its purview such changes as may be made within the scope of the appended claims.

What I claim, is—

1. In a concrete mixer, the combination with a casing and a spiral conveyer journaled longitudinally in said casing, of mixing bars carried by the spiral conveyer blade and extending in the direction of the length of the conveyer, and intermediate mixing blades carried by said conveyer blade, said intermediate blades being inclined with reference to the length of the spiral conveyer, and means for imparting a rotary motion to the conveyer shaft.

2. In a concrete mixing machine, the combination with a casing adapted to receive material to be mixed and having a discharge opening at one end, of a conveying and mixing device rotatably mounted in said casing and comprising a shaft, a spiral conveyer blade carried thereby, a plurality of mixing bars carried by said conveyer blade and extending in the direction of the length of the shaft, and a plurality of mixing and conveyer blades inclined with reference to the direction of the length of the shaft and connected with said spiral conveyer blade.

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

LAWRENCE W. CARGILL.

Witnesses:
C. C. SHEPHERD,
ARLINGTON C. HARVEY.