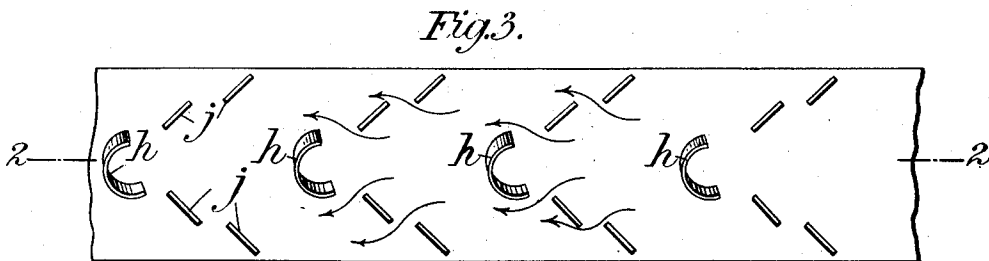
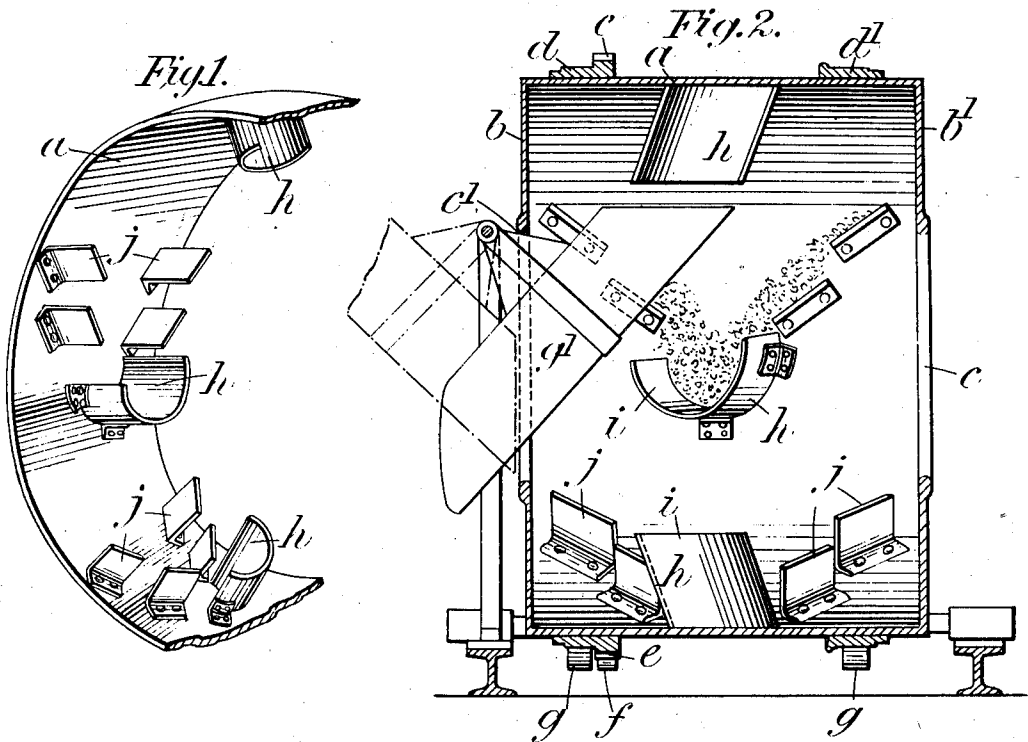


J. S. OWENS.
 ROTARY MIXING MACHINE.
 APPLICATION FILED JAN. 31, 1911.

1,093,723.

Patented Apr. 21, 1914



Witnesses.

R. C. Braddock.

Emory J. Guff.

Fig. 4.



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ROTARY MIXING-MACHINE.

1,093,723.

Specification of Letters Patent.

Patented Apr. 21, 1914.

Application filed January 31, 1911. Serial No. 605,772.

To all whom it may concern:

Be it known that I, JOHN SWITZER OWENS, a subject of the King of Great Britain, residing at London, in the county of Middlesex, England, have invented new and useful Improvements in Rotary Mixing-Machines, of which the following is a specification.

This invention has reference to rotary mixing machines of that kind in which the materials to be mixed are introduced into a revoluble mixing drum provided with a plurality of mixing blades or baffles some of which are so arranged as to form lifting pockets adapted as the drum is rotated to carry the materials up and deliver them into a discharge chute introduced through an aperture at one side of the drum.

Mixers of this type are commonly employed for producing concrete mortar and like mixtures for building and constructional purposes the ingredients being placed in the mixer a batch or charge at a time and in like manner discharged when mixed and it is to devices for this purpose to which my invention is particularly applicable although it is to be understood that the improvements hereinafter described are not confined to mixers for this purpose as they may be advantageously applied to rotary mixing machines employed for producing an intimate mixing or commingling of other materials or ingredients. Various means have from time to time been proposed in mixers of this type whereby the charge or batch shall be centralized within the drum and various forms of lifting pockets and mixing blades have been suggested. In actual practice however such a construction has been found to possess many disadvantages the chief of which is that owing to the absence of ways for the free passage of the more liquid parts of the mixture accumulation within the drum—and more especially at the back of the blades and pockets—of the softer parts of the concrete mixture is facilitated necessitating frequent stoppages of the machine for cleansing purposes.

Now it is the object of the present invention to improve the construction of drums for rotary mixing machines whereby these disadvantages shall be obviated or more specifically stated to provide a construction of drum whereby the ingredients to be mixed shall be more rapidly and thoroughly inter-

mingled while at the same time reducing to a minimum outward splashing of the materials and to render the drum largely self-cleaning.

With these ends in view my invention broadly considered may be said to contemplate a construction in which the lifting pockets are arranged in the diametric central plane of the drum and in which relatively short non-continuous mixing blades are symmetrically arranged upon both sides of said diametric central plane of the drum all in such a manner that as the drum revolves the materials to be mixed shall be caused to move in planes passing through its axis of rotation and also in planes normal to its axis of rotation.

In order that my invention may be readily understood and carried into effect by those skilled in the art to which it appertains I will now proceed to describe the same fully for which purpose reference is to be had to the accompanying drawings in which:—

Figure 1 represents a fragmentary perspective view of a drum for a rotary mixing machine embodying my invention clearly illustrating the arrangement and disposition of the parts located therein. Fig. 2 is a vertical section of a complete drum and its associated parts. Fig. 3 illustrates the arrangement of the mixing blades and lifting pockets as they would appear on the interior annular surface of the drum if such surface were spread open upon a plane, and Fig. 4 is a detail view of one of the lifting pockets hereinafter described.

Referring now to Figs. 1 and 2 the drum is composed of an imperforate annular wall *a* and end walls *b b'* one of which is provided with a central feed aperture *c* and the other with a central chute receiving aperture *c'*. Said drum is provided with annular tracks *d d'* on one of which is a gear *e* adapted to mesh with a gear wheel *f* mounted upon the frame of the machine and driven in any suitable manner and carrying rollers *g* are also mounted upon the frame to support the drum. The chute *g'* serving for the discharge of the mixed material is pivotally mounted upon appropriate supports in such a manner that it may be introduced into or removed from the discharge opening *c'* in the end wall *b* as will be well understood by those skilled in the art. The con-

struction so far described is common to rotary mixers and therefore forms no part of the present invention which resides solely in the arrangement of the mixing blades and lifting pockets secured to the interior annular surface of the drum and which I will now proceed to describe.

The interior annular wall *a* is provided with a series of lifting pockets *h* arranged along a central line 2—2 (Fig. 3) the mouths *i* of said pockets being directed slightly toward the chute receiving aperture *c'* so that as the drum revolves said lifting pockets will travel around the inwardly projecting end of the discharge chute *g'* when this latter is in position to carry the mixed materials upwardly and drop it into the chute and in order to further facilitate such discharge of the mixture into the chute the said lifting pockets are formed with one side or wall higher than the other side or wall as will be seen by referring to Fig. 4. This is an important feature of my invention as it will be seen that as the drum revolves and the pockets successively occupy their highest position the higher wall of the pockets which is situated on the side opposite the discharge aperture of the drum will act to direct the mixture more certainly into the discharge chute when this latter is in the discharge position. Mounted edgewise upon the said annular wall *a* of the drum and between the lifting pockets *h* is a series of mixing blades *j* arranged in angular relation to the central line 2—2 of the drum and disposed preferably in pairs each pair being arranged in staggered relation to the pair immediately preceding so as to form passage ways as indicated by the arrows in Fig. 3—through which the more fluid parts of the mixture pass whereby the softer portions of the concrete lodgments are to a

great extent washed out rendering the drum largely self-cleaning.

It will be seen that by my improved construction as the drum is rotated the materials to be mixed will be constantly in motion in two directions being first caused by the mixing blades *j* to move from both peripheral edges of the drum toward the center then being lifted by the pockets and discharged to the bottom from the lifting pocket situated for the time being at the top of the drum. By this means a constant and more thorough "overlapping" of the ingredients will be obtained approximately in the diametric center plane of the drum a feature of considerable importance for in the case of a concrete mixture of sand cement and ballast for example the tendency of the various ingredients is to separate or settle whereas by causing them to be thrown together simultaneously in directions more or less at right angles to each other and approximately in a central diametric plane a thorough and rapid intermixing of the various ingredients is effected.

What I claim and desire to secure by Letters Patent of the United States of America is:—

A rotary mixing machine comprising a rotary mixing drum having a circular series of centrally arranged obliquely-set lifting pockets projecting inwardly from the rim part of the drum, and a circular series of spaced apart inclined mixing blades projecting inwardly from the rim part of the drum at both sides of the vertical plane of the pockets and convergently arranged with respect to the latter.

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Witnesses:

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