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APPARATUS FOR MIXING CONCRETE AND THE LIKE

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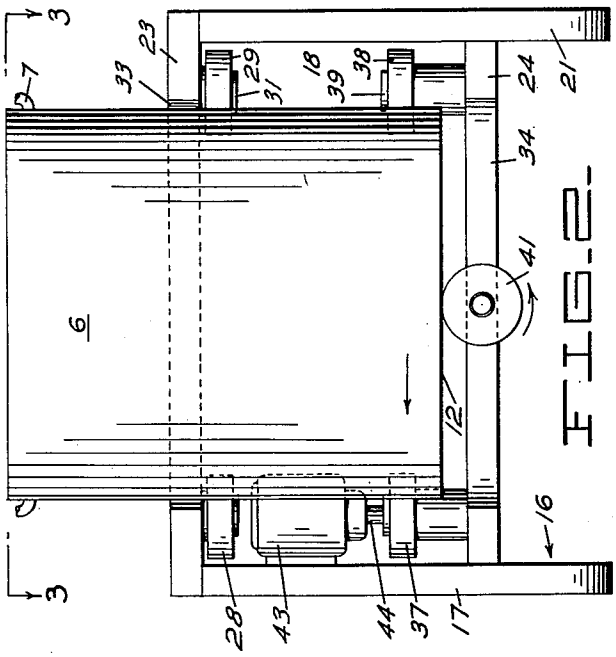


FIG. 2

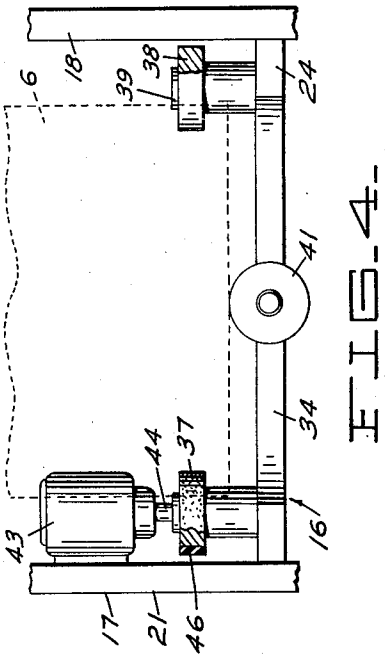


FIG. 4

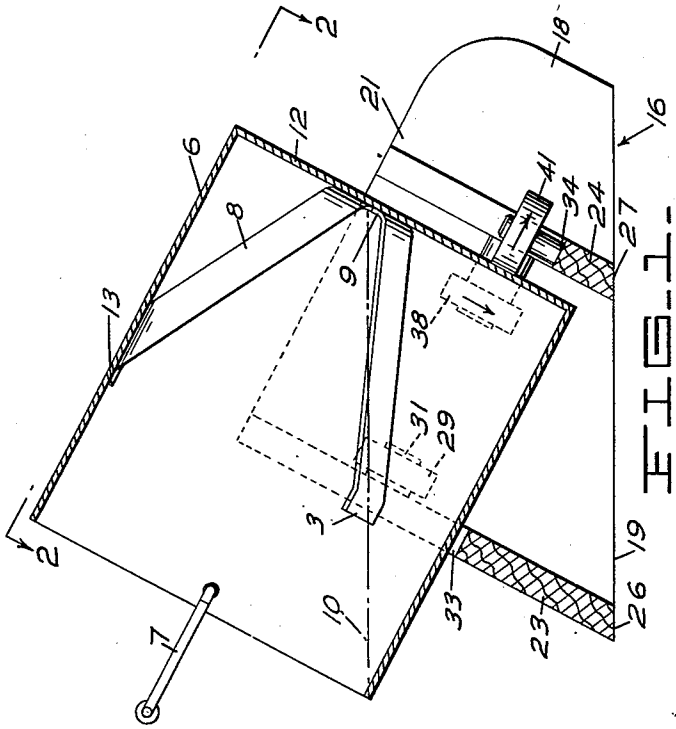


FIG. 1

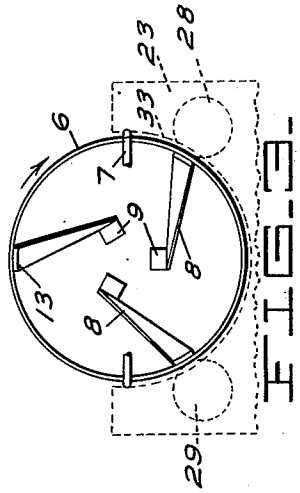


FIG. 3

INVENTOR.
WILLIAM H. PARISH
BY
Gardner & Zimmerman
ATTORNEYS

United States Patent Office

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APPARATUS FOR MIXING CONCRETE AND THE LIKE

William H. Parish, Oakland, Calif.

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2 Claims. (Cl. 259—176)

This invention relates to machines and apparatus for mixing concrete or similar material, and is more particularly directed towards such apparatus which may be utilized by the average home craftsman.

Heretofore, there have been developed numerous machines for mixing concrete on a relatively large scale, and in recent years more portable mixing devices have been obtainable on the market. However, most of these machines are relatively expensive to construct and therefore the average home owner, requiring only a limited amount of concrete work done at any particular time, finds it economically impractical to acquire such a machine. Therefore, this class of person is usually required to either rent a machine or perform the tedious task of mixing concrete by hand.

Accordingly, it is an object of the present invention to provide a simple apparatus occupying a minimum of space which is adapted for thoroughly and easily mixing small batches of the component parts of concrete or like material into a uniform consistency.

Another object of my invention is to provide a device of the character described which may be produced at a low cost and which is capable of either manual or mechanical operation.

A further object of this invention is to provide concrete mixing apparatus in which the parts are all constructed of generally available stock material so that the cost of the parts and the assembly thereof may be maintained at a minimum.

A still further object of the invention is to provide improved rotatable supporting means for a mixing chamber adapted to contain material to be mixed.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawing,

Figure 1 is a vertical longitudinal sectional view of the apparatus of the present invention.

Figure 2 is a top plan view, the plane of the view being generally indicated by the numerals 2—2 Figure 1.

Figure 3 is a view taken substantially in the plane indicated by the line 3—3 of Figure 2.

Figure 4 is a view similar to Figure 2 but with the concrete mixing chamber removed therefrom in order to more clearly disclose certain features of construction.

As is well known in the art, the job of manually mixing concrete by stirring together the component parts such as sand, gravel, cement, and water, often requires considerable effort on the part of the operator. In accordance with the teachings of the present invention this task has been materially reduced in effort and the construction permits even a person of inferior physical ability to readily mix the component parts of the concrete into a substantially homogeneous mass or mixture without requiring any expensive conventional mixing apparatus.

Broadly speaking, the apparatus of the present invention comprises a drum-like member having an open top into which the component parts of the mixture may be introduced, such member being provided with a plurality of baffles to assist in the stirring thereof. The drum is arranged for rotatable support on a plurality of rollers, and as best illustrated in Figure 1 of the drawing the rollers are positioned so that the drum is inclined at an angle of aproximately 30 degrees from the horizontal while permitting rotation of the drum about its longitudinal axis. Rotation of the drum, to effect the stirring of the mixture may be accomplished by manually rotating the drum or may be effected mechanically by means of a small drive motor as will be hereinafter more fully discussed. As will be understood, by inclining the drum as indicated, the baffles disposed within the drum will tend to pick up the material as the drum is rotated and drop the material downwardly and thereby effect a thorough mixing action.

The drum, generally indicated by the numeral 6 in the drawing may, for reasons of economy, be constructed of a conventional 12-inch diameter paint can or the like. It will be seen that the upper open end of the drum is provided with a conventional bale 7 by means of which the drum may be carried, and as will later be explained, also provides a means for manual rotation of the drum. Disposed within and secured to the drum are a plurality of baffles 8, here shown as three in number which extend from a point adjacent the longitudinal center of the drum at the bottom thereof, to a point substantially medially of the length of the drum against the side walls thereof. More particularly, the baffles may be formed for example of 1½" x ⅛" metal straps, and are flanged inwardly as indicated by the numeral 9 at the bottom so that the flanges may be welded or otherwise secured to the bottom wall 12 of the drum. The strap is then extended upwardly and radially outwardly relative to the drum to a point adjacent the inner periphery thereof where the distal end 13 thereof may be likewise welded to the drum periphery. With this construction, and by placing the baffles in substantially equal spaced relation, a thorough mixing action will be effected upon drum rotation, particularly when the drum is positioned in the angular relationship shown in Figure 1.

It has been found that the positioning of the baffles constitutes an important part of the design of the instant unit. As illustrated in Figure 3 of the drawing, each of the baffles commences from an imaginary small circle positioned on the bottom wall 12 of the drum and extends upwardly in a direction substantially tangential to such imaginary circle. In other words, it might be said that each respective baffle extends diagonally upwardly from the bottom of the pail or drum and results in optimum mixing or agitation of the products upon drum rotation. It will of course be understood that as the drum is preferably inclined, the amount of material to be placed therein is limited by the degree of inclination, the upper limit of the material being indicated by the line 10 in Figure 1.

As hereinabove mentioned, the drum 6 is adapted for inclined support on a plurality of rollers which are preferably carried on a simple plywood or sheet metal frame indicated by the numeral 16. Frame 16 preferably comprises a pair of side walls 17 and 18 disposed in parallel spaced relationship, each of such walls having a horizontal flat lower supporting surface 19 and an upper edge portion 21 which may be tapered or inclined at the angle at which the drum is desired to be positioned. Extend-

ing transversely of the side walls **17** and **18** and interconnecting the latter is a pair of roller support members **23** and **24**, the former being positioned adjacent the leading edge of the side walls and the latter being positioned preferably intermediate the ends thereof. It will be noted that the members **23** and **24** each lie in planes generally normal to the longitudinal axis of the drum when the latter is in operative position and the lower edges thereof are beveled as indicated at **26** and **27** so as to be horizontally co-planar with the lower edge surfaces **19** of the side walls. In this way, it will be appreciated that the frame **16** is adapted to seat on a horizontal surface with the same tapering as shown in Figure 1 of the drawing.

As best illustrated in Figure 2 of the drawing, support member **23** is provided adjacent the outer edges thereof with a pair of rollers **28** and **29**, the rollers being freely journaled on suitable shafts **31** or the like. Also, the intermediate portion **33** of the member is provided with a generally circular cut-away portion which permits the drum to overlie the support and engage the rollers **28** and **29**. It will of course be understood that the arcuate portion **33** is of a larger size than the outer diameter of the drum. In a similar manner the member **24** is likewise provided with an arcuate cut-out portion **34** of a corresponding diameter to the portion **33**, and disposed in opposed relationship to the rollers **28** and **29** are a pair of rollers **37** and **38**. The latter two rollers may be suitably journaled on stub shafts or the like extending inwardly from support member **24**. A final support roller **41** is mounted on member **24** adjacent the lowest portion of the cut-out portion **34** and is arranged to engage the bottom wall **12** of the drum when the latter is in its operative position.

From the foregoing construction, it is believed obvious that the drum may be placed between the side walls **17** and **18** and supported on the rollers **28**, **29**, **37**, **38**, and **41**, with the outer surface of the drum being slightly spaced from cut-out portions **33** and **34**. With such a rotatable support, an operator may grasp the bale **7** of the drum and by merely twisting the same, cause a rotation of the drum on the rollers. The rollers will, of course, maintain the drum in the reclining position illustrated in Figure 1 and as the drum is rotated on the rollers, the baffles in the drum will effect a thorough stirring or mixing of the material placed therein. It has been found that with relatively few turns of the drum, the components of a concrete mixture will be thoroughly stirred and permit the application of the concrete to the form or surface to which it is to be applied. Also, the bale provides a convenient manner of lifting the drum out of its supporting frame and rollers after the mixing has been effected.

Instead of rotating the drum by means of the bale **7**, it is possible to incorporate a small drive motor **43** in order to rotate one of the rollers so as to effect mechanical rotation of the drum. As here illustrated, the motor **43** is of a small size and is positioned on the side wall **17**. A shaft **44** of the motor is connected to the

roller **37** and in this instance, in view of the fact that a friction drive is created, roller **37** will be provided with an outer peripheral coating **46** of rubber or similar material having a high coefficient of friction. In this manner, when the drum is positioned on the five rollers, the motor may be actuated causing a rotation of roller **37**. As the latter is in firm engagement with the drum by virtue of the weight of the latter, the drum will be rotated at the approximate speed of rotation of the roller **37** and the contents thoroughly agitated and mixed. As will be noted, merely one roller may be driven by the motor as there will always be a sufficient force between the drum and roller to effect rotation of the drum, although naturally, if desired, additional rollers could likewise be driven by the motor **43**. Preferably, it will be one of the rollers on the support **24** that is utilized for the driving roller as the weight of the drum and its contents will be more effectively positioned on such a roller.

From the foregoing description it will be appreciated that while the device of the instant invention is very simple in construction and operation, it fulfills a need long established by persons desiring to mix a small quantity of concrete or the like, and may be produced at a cost sufficiently low to permit the average home owner to use the same.

I claim:

1. Apparatus of the character described comprising a drum in which the ingredients for concrete and the like may be inserted, means for supporting said drum, said means including a frame-like structure having a pair of side walls and a pair of transversely extending walls interconnecting said side walls, all of said walls having substantially horizontally disposed coplanar bottom surfaces, said transversely extending members having arcuate cut-out portions of diameters larger than the diameter of said drum, each of said transverse walls being further provided with a pair of rollers whose outer peripheral surfaces thereof extend beyond said cut-out portion whereby such surfaces may support said drum placed thereon, another roller carried by one of said transverse members having an axis substantially normal to the axes of said first mentioned rollers for supporting and engaging the bottom wall of said drum, said rollers being positioned so that said drum will be supported in said frame on said rollers with the longitudinal axis of said drum being disposed at an inclined angle relative to said bottom surfaces of said walls.

2. Apparatus as set forth in claim 1 in which said inclined angle is approximately 30 degrees.

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