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Nohmura

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[54] **METHOD FOR PRODUCING RAW CONCRETE**

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[52] **U.S. Cl.** ..... **259/147,** 150/1, 206/47 A, 259/50, 259/89, 259/151, 259/177 R

[51] **Int. Cl.** **B28c 5/20**

[58] **Field of Search** ..... 259/3, 14, 30, 49, 50, 259/57, 72, 81 R, 81 A, 89, 90, 146, 147, 148, 151, 161, 164, 169, 175, 176, 177 R, 177 A; 150/1; 206/47 A

[56] **References Cited**

UNITED STATES PATENTS

2,988,207	6/1961	Lovelace	206/47 A
3,018,880	1/1962	Brugmann	150/1 X
3,030,081	4/1962	Wilson et al.	259/81 R X
3,131,741	5/1964	Darling et al.	206/47 A X
3,374,929	3/1968	Silfverskiold	150/1 X

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[57] **ABSTRACT**

A method for producing raw concrete is disclosed. A container having a predetermined amount of sand, ballast and cement accommodated therein is put into a rotary drum and a predetermined amount of water is poured in the container. The air is then forced into the container so as to bring the container into pressure contact with the drum, which thereafter is rotated to mix the contents in the container, and raw concrete is obtained.

2 Claims, 5 Drawing Figures

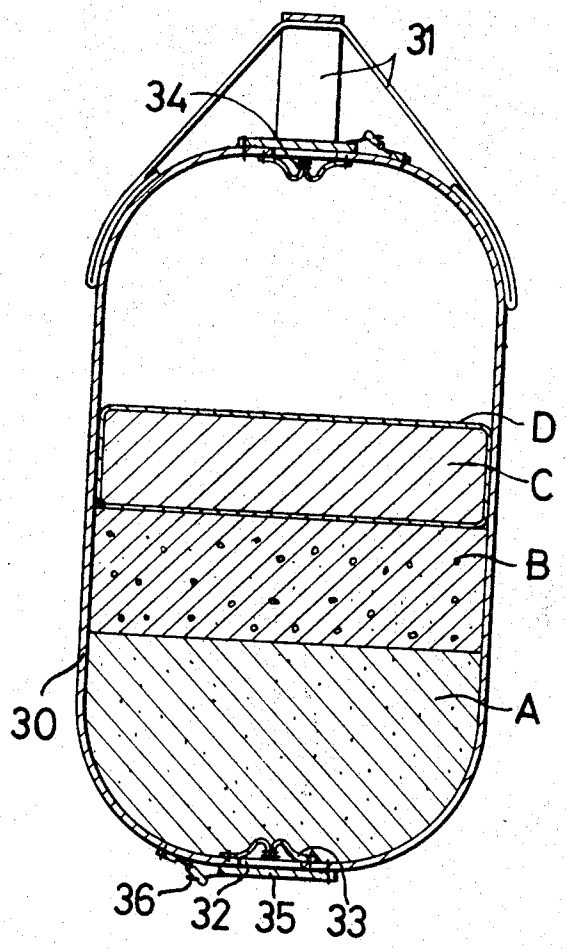

FIG. 1

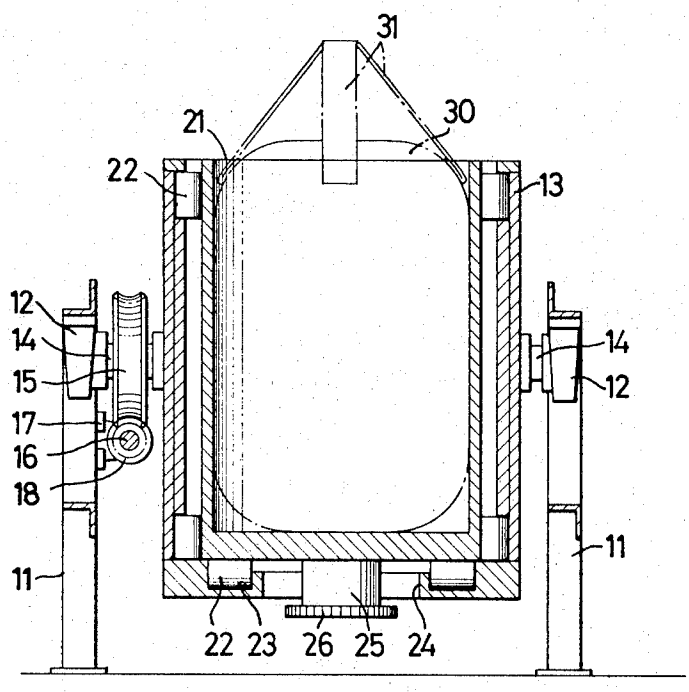
31
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FIG. 2

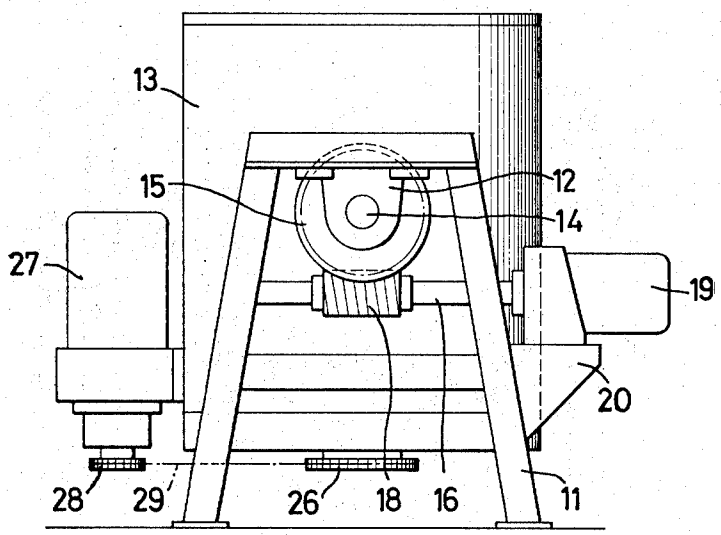
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FIG. 3

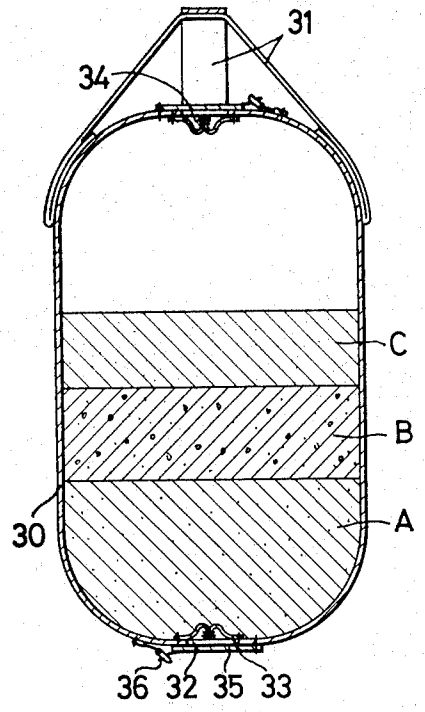


FIG. 4

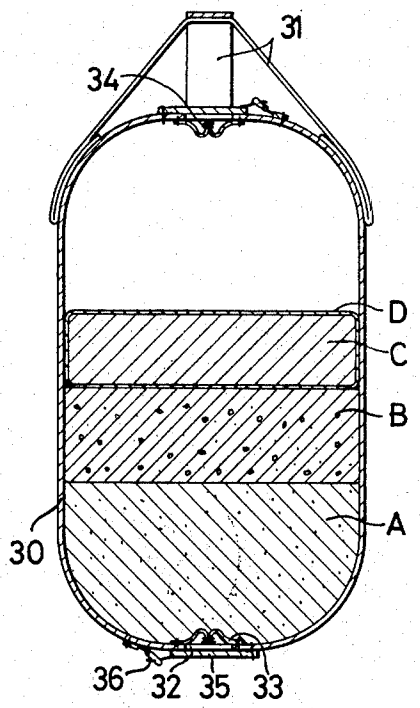
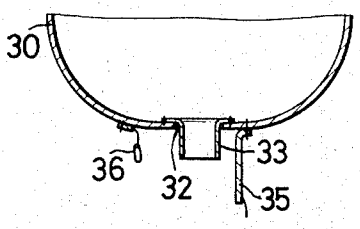


FIG. 5



METHOD FOR PRODUCING RAW CONCRETE

The present invention relates to a method for producing raw concrete.

Heretofore, raw concrete placed in a construction field was prepared in such a manner that cement, ballast and water measured in a batcher plant were put in a rotary drum of a mixer car and the mixture was stirred up by rotating the drum until the mixer car reached the field of construction.

However, since the mixer car used for transportation of raw concrete is priced very high, the cost of the raw concrete supplied by the mixer car necessarily increases. Moreover, when raw concrete is required in large quantities, a large number of mixer cars are required. Furthermore, when traffic is congested between the source of supply of raw concrete and the field of construction, a considerably long time is required for mixer cars to transport a required amount of raw concrete.

Further disadvantages are involved in the transportation of raw concrete by mixer cars. For example, when it is difficult for a mixer car to enter a construction field where raw concrete is placed, the raw concrete inside the mixer car must be conveyed to said construction field making use of a pump, and moreover said raw concrete must be further conveyed to the spot of placing by means of elevatable buckets.

An object of the present invention is to provide a method for producing raw concrete wherein sand, ballast and cement each previously measured in a batcher plant are enclosed in a container and a predetermined amount of water is poured into said container in the field of construction and said container is rotated in a mixing drum.

These and other objects are accomplished by the parts, improvements, combinations and arrangements comprising the invention, a preferred embodiment of which is shown by way of example in the accompanying drawings, and herein described in detail. Various modifications and changes in details of construction are comprehended within the scope of the appended claims.

FIG. **1** is a longitudinal, sectional elevation showing a rotating device for a container.

FIG. **2** is a lateral elevation thereof.

FIGS. **3** and **4** are longitudinal, sectional elevations of the container.

FIG. **5** is an enlarged section of a part of the bottom of the container.

Referring to FIGS. **1** and **2**, numeral **11** denotes a pair of side frames opposite to one another, bearings **12** being provided on the upper frames of said side frames **11**.

Numeral **13** denotes a cylindrical member having a bottom and mounted between the side frames **11, 11**, opposite horizontal shafts **14, 14** being provided on said cylindrical member **13** at the outside thereof, said shafts **14, 14** being rotatably journaled in the bearings **12, 12** provided on said side frames. Numeral **15** denotes a worm wheel mounted on one of the shafts **14, 14**, said worm wheel **15** being adapted to engage with a worm gear **18**.

The worm gear **18** is mounted on a shaft **16** rotatably mounted in a bearing **17** fixed to one of the side frames **11**. Moreover, the shaft **16** is connected at one end thereof to a reversible motor **19**, said motor **19** being

mounted on a mount **20** fixed to one of the side frames **11**.

Consequently, the cylindrical member **13** having a bottom is rotatable around the shafts **14, 14** as its fulcrum by rotating the motor **19**.

Furthermore, a drum **21** having a bottom is inserted into the cylindrical member **13**, rollers **22** being disposed in the spaces between the cylindrical member **13** and the drum **21** thereby enabling said drum **21** to rotate inside the cylindrical member **13**, said rollers **22** being fitted into concavities **23** provided on the inner surfaces of the bottom wall and the side wall.

Moreover, an opening **24** is provided in the center of the bottom wall of the cylindrical member **13**, a shaft member **25** being fixed in the center of the underside of the bottom wall of the drum **21** so as to project through the opening **24** of said cylindrical member **12**. A sprocket **26** is provided at the lower end of said shaft member **25**, a chain **29** being extended between the sprocket **26** and a sprocket **28** of a motor **27** mounted on the exterior wall of the cylindrical member **13**.

Referring now to FIGS. **3, 4** and **5**, numeral **30** designates a container, said container **30** being produced by such a process that a core material such as glass fiber is wound like cobwebs around a synthetic resin sheet and then lined thereon with resin or that a core material such as glass fiber is wound like cobwebs around a mold and lined thereover with resin and thereafter the mold is disassembled, said container having air-tight property.

A belt **31** for hanging the container **30** is provided on the top wall thereof. An opening **32** is provided on the top wall and the bottom wall of the container **30** respectively. A tube **33** is secured at one end thereof to the interior edge of each of the openings **32**, the other end thereof being gathered together and closed by a string **34**.

Numeral **35** denotes a lid of the opening **32**, said lid **35** being fixed at one end thereof to the container, the other end thereof being engageable with a buckle **36**.

Inside the aforementioned container are stored sand A, ballast B and cement C each previously measured. FIG. **4** shows the container **30** in which are stored sand A and ballast B both containing water. In this case, the cement C is sealed in a water-proof bag D so as to prevent said cement C from absorbing water of the sand or the ballast, said bag D being torn and removed prior to producing raw concrete.

When raw concrete is required, the container **30** is suspended with the belt **31** thereof by a crane hook, said container **30** being dropped into the drum **21** of the cylindrical member **13** which is sustained vertically. Thereafter, the top wall lid **35** of the container **30** is opened by releasing the buckle **36**, a measured amount of water is poured thereinto from the tube **33** by removing the string **34** thereof, air being forced into the container for expansion thereof so that said container **30** may be brought into pressure contact with the inside of the drum **21**. Thereafter, the tube **33** is tied by the string **34** and the lid **35** is closed so as to prevent the compressed air from escaping.

Then the motor **19** is started, and the cylindrical member **13** commences to rotate by way of the worm gear **18** of the shaft **16** and the shaft **14** of the worm wheel engaging with said gear **18**. When said cylindri-

cal member **13** is inclined at a required angle, the motor **19** is stopped.

Then the motor **27** is started, and the drum **21** is rotated in one direction inside the cylindrical member **13** by the chain **29** extended between the sprockets **28** and **26.** Consequently, the container which is held in pressure contact with the drum by the compressed air rotates along with said drum **21,** with the result that the sand A, the ballast B and the cement C inside said container are mixed with each other.

After the foregoing mixing process, the motor **27** is switched off, the cylindrical member **13** being adjusted by means of the motor **19** so that said cylindrical member **13** may restore its axially perpendicular position, the air inside the container **30** being released by opening the tube **33** at the side of the top wall, the container **30** being drawn out of the drum **21** by hooking the belt **31** on to a crane hook, said container **30** being conveyed to the spot where the concrete is placed, raw concrete being poured out by opening the lid **35** at the side of the bottom wall of the container **30** and also by opening the tube **33.**

As described hereinbefore, this invention enables to obtain raw concrete by filling the container with sand, ballast, and cement, each previously measured, said container being placed in the drum, said drum being rotated after a predetermined amount of water is supplied thereinto. Since this invention no longer necessitates mixer cars with which to mix and transport raw concrete, this invention not only prevents the risk of a delay in the delivery of raw concrete owing to traffic congestion, but also precludes inconveniences even at a place difficult of access for a mixer car.

Furthermore, this invention enables to place raw concrete at any required place by suspending the container from a crane hook, though hitherto it was necessary to transport raw concrete from a mixer car to elevatable buckets.

In addition thereto, air is compressed into the container after said container is inserted into the drum, as a result of which the expanded container is brought into pressure contact with the inside of the drum thereby improving the support of the container by the drum.

What is claimed is:

1. A method for producing raw concrete wherein a predetermined amount of sand, ballast and cement are stored in a container having an opening at the top and the bottom thereof respectively and having a lid for closing each of the openings, a predetermined amount of water being supplied into the container after said container is inserted into a rotary drum, air being forced into the container so as to bring said container into pressure contact with the drum, the ingredients being mixed inside the container until raw concrete is obtained.

2. A method for producing raw concrete as defined in claim **1** wherein cement which is previously measured and stored in the container is sealed so as not to absorb water.

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