

Oct. 17, 1967

E. MAIER

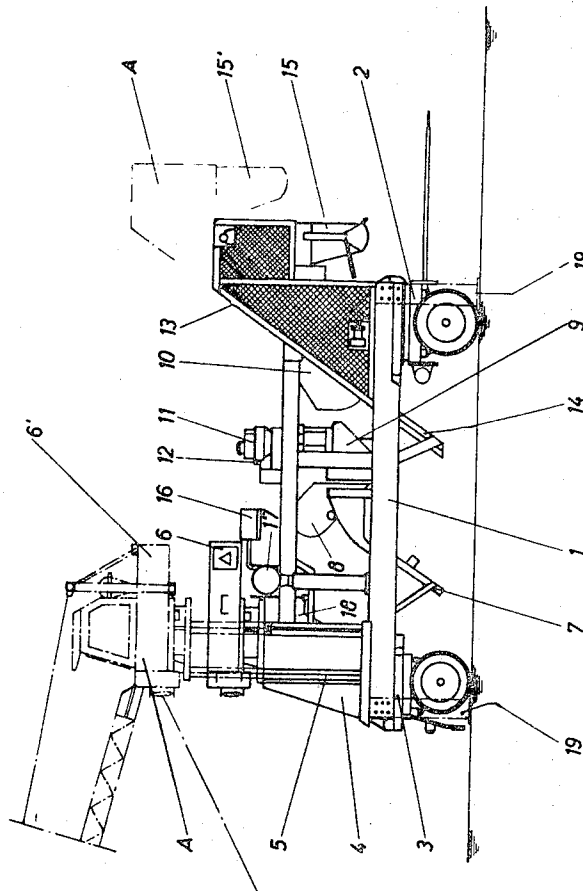
3,347,532

MOVABLE APPARATUS FOR THE MANUFACTURE OF CONCRETE

Filed March 14, 1966

3 Sheets-Sheet 1

Fig. 1



INVENTOR..

BY

Richard Maier  
Inventor  
Attorney

Oct. 17, 1967

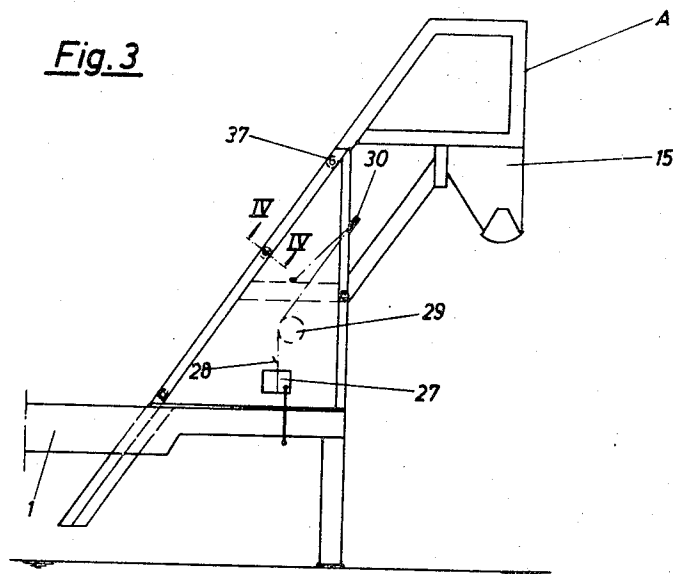
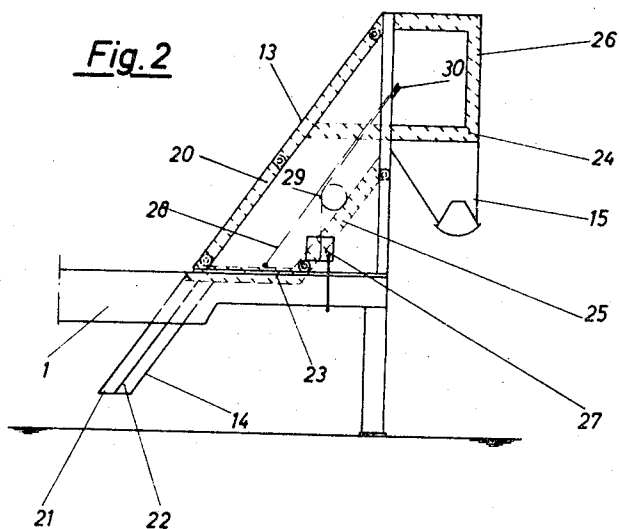
E. MAIER

**3,347,532**

MOVABLE APPARATUS FOR THE MANUFACTURE OF CONCRETE

Filed March 14, 1966

3 Sheets--Sheet 2



INVENTOR.

INVENTOR.  
BY *Richard Meier*  
*James Montague*  
Attorney

Oct. 17, 1967

E. MAIER

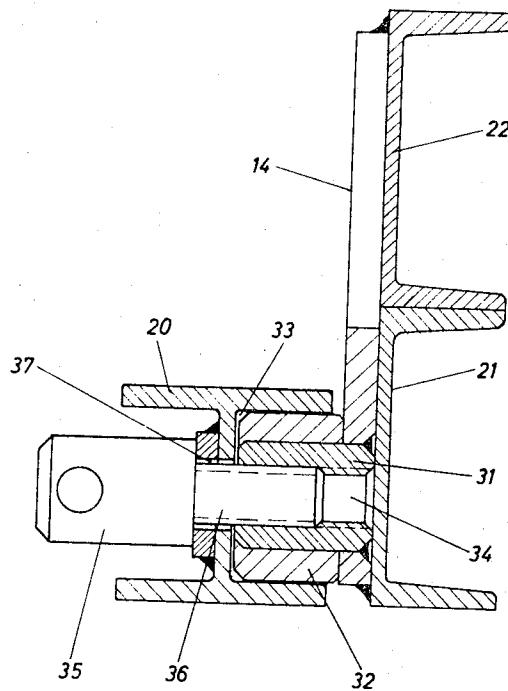
3,347,532

MOVABLE APPARATUS FOR THE MANUFACTURE OF CONCRETE

Filed March 14, 1966

3 Sheets-Sheet 3

Fig. 4



INVENTOR.  
*Eckhard Maier*  
BY *Ernest G. Hantke*  
Attorney

3,347,532

## MOVABLE APPARATUS FOR THE MANUFACTURE OF CONCRETE

Eckhard Maier, Ettlingen, Baden, Germany, assignor to Elba-Werk Ettlingen Baumaschinen- und Hebezeugfabrik GmbH, Ettlingen, Baden, Germany, a corporation of Germany

Filed Mar. 14, 1966, Ser. No. 533,928

Claims priority, application Germany, Mar. 13, 1965, E 28,875

3 Claims. (Cl. 259—154)

The present invention relates to a movable apparatus for the manufacture of concrete in general and to an improved development of such apparatus, preferably equipped with an elevator mixer, which widens its use possibilities.

Apparatus for the manufacture of concrete has been known, in which on a common frame formed as a running gear are disposed a distributor for dosing of the ingredients with a feeder for the accumulation of these ingredients, as well as conveyor means for the transportation of the charge of mixed goods from the distributor to the mixer, scales for the ingredients, binder means, as well as the production water, a mixer for the finishing of the concrete and directing—as well as control—instruments for the apparatus parts. The distributor is, thereby, if the mixture components are not stored in high containers, always designed such, that it receives the individual ingredients from mostly sector-shaped storing places disposed on the same level, in which they are stored separate from the movable apparatus.

The ingredients travel by their own gravity from the distributor into a receiving and weighing container, in which the charge of the mixed goods is joined and with which it is fed to the mixer. With the feeder disposed on the distributor, the ingredients are accumulated for substitution of the used-up masses towards the distributor. For this reason, the distributor is disposed always at one end of the running gear frame, while on the other end, the mixer is disposed, from which the finished concrete is released, and the other apparatus parts are arranged between the distributor and the mixer.

The output of such apparatus is strongly influenced among others, by the capacity of the distributor and by the height of the mixer, from which the latter can release the finished concrete. The capacity of the distributor is determined by its active storage, that means, from the masses of the ingredients, which can be accumulated on it or in it, and which arrives by its own gravity in the receiving- and weighing-container. By the releasing height of the mixer, the means of further conveyance of the concrete to the side is determined. If this releasing height is low, a repeated turn-over of the finished concrete cannot be avoided. This additional turn-over reduces, however, the economy of the apparatus.

Since the apparatus is movable on the street, from the start certain limits are set to the height of the distributor and of the mixer, which limits cannot be overdrawn. The structural height which is available does not suffice, however, in many cases, in order to bring the movable apparatus for the manufacture of concrete while maintaining a simple structure for achieving improved economy to the often desired greater output.

It is, therefore, one object of the present invention, to provide a movable apparatus for the manufacture of concrete, wherein an elevator mixer is provided for great output and for great concrete releasing height.

It is another object of the present invention, to provide a movable apparatus for the manufacture of concrete, wherein for the increase of the working height of the apparatus relative to the transportation height of the dis-

tributor carrying the feeder in known manner, is equipped with supports which can expand, as well as telescope into each other and the frame guiding the elevator mixer is adjustable as to its height by expandable and telescoping parts and securable in a variable height.

A concrete storage-silo is disposed on the mixer frame adjustable as to its height, the releasing height of the storage-silo is varied simultaneously jointly with the adjustment of the mixer frame.

The adjustment of the mixer takes place by means of a rope and guide rollers, by means of two rope winches, which are disposed adjacent to the mixer frame on the longitudinal carriers of the running gear frame. The part of the mixer frame, which is adjustable as to its height, which part includes the elevator paths for the elevator mixer, is moved by means of a rope pull in an immovable guide rail, which is disposed parallel to the elevator path. The movement is simplified by supporting rollers, which run on bearing bolts, which in turn are connected rigidly with the mixer frame adjustable as to its height. The bearing bolts have a bore equipped with inner thread, in which from the outside through the guide rail, holding bolts are screwed in. The guide rail is for this purpose equipped at predetermined distances with passing bores, so that at different height positions a rigid connection of the run-out mixer frame with the rail becomes possible. After the run-out of the mixer frame into the desired releasing height, intermediate parts of the elevator path are screwed for the formation of a continuous elevator path towards the guide rail.

The apparatus designed in accordance with the present invention makes it possible to transform within the shortest time from the transportation position by run-out of the distributor jointly with the feeder and the mixer frame into the working position and to obtain an output not expected until now on concrete from movable apparatus, with the particular advantage, that a concrete storage can be stored in a silo, the releasing height of which makes possible not only the service of largest crane buckets, but also the transmittal to transportation vehicles. A further appreciable advantage is to be seen in the fact that from the feeder, if it is designed as a cantilever device for the transportation, only the cabin and the cantilever have to be removed, which can be done with a few manual steps. On the other hand, the entire machine chassis can remain on the distributor, because for the transportation it can be telescoped. The appreciable losses of time, which still occurred for the assembly and disassembly of movable apparatus for the manufacture of concrete, in case of a site change, are reduced by the apparatus designed in accordance with the present invention to the lowest possible degree.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIG. 1 is a side elevation of a movable apparatus for the manufacture of concrete in transportation position with indicated working position;

FIG. 2 is a schematic elevation of the mixer frame in transportation position;

FIG. 3 is a schematic elevation of the mixer frame disclosed in FIG. 2, however, in working position; and

FIG. 4 is a fragmentary section of the guiding- and elevator-path, the section being taken along the lines 4—4 of FIG. 3.

Referring now to the drawings, the apparatus designed in accordance with the present invention comprises a common frame 1, which is carried in the transportation position by a removable front axle swivelling base 2 and a removable rear axle base 3. A distributor 4 with its ex-

pandable and telescoping supports 5 is mounted on the common frame 1. A feeder 6 is mounted on the distributor 4, which is here indicated as boom device. In a guide path 7 is arranged the receiving- and weighing-container 8, in which the applied ingredients enter from the distributor 4, in which they are weighed and which are brought to a transmittal hopper 9 through which the transmittal into the elevator mixing container 10 takes place. From the concrete scale 11 simultaneously, the binder means and from the water scale 12 and by means of a water clock, respectively, the required quantity of working water is added by means of separate channels disposed in the transformation hopper 9. During the transformation of the total charge, the mixing work operates already and upon further mixing, the elevator mixing container 10 is lifted in its frame 13, until it empties the finished concrete by tipping at the end of the elevator path 14 into the storage-silo 15. On the joint frame are further arranged the adjusting instruments 16, control indicators 17 and a service platform 18.

FIG. 1 shows the apparatus in transport position, while the working position is shown in dotted lines. In the working position on both sides of the frame 1 supports 19 are laterally screwed thereto, which permit a movement of the axle swivelling bases 2 and 3 without interference. Furthermore, the supports 5 of the distributor 4 and the mixer frame 13 are moved into the working position A, so that the feeder 6' and the storage-silo 15' assume an appreciably higher position than during the transportation.

In FIG. 2 the mixer frame 13 is shown again as a unit in transport position. Behind the guide path 20 and expandable thereto is disposed the elevator path 14 with its guides 21 and 22, in which the guide rollers of the rollers of the elevator mixing container 10 run. The displaceable part of the elevator path forms with the lower supports 23 and 24, the inclined support 25 and vertical support 26 and the storage-silo 15, the part of the mixing frame which is adjustable as to its height, which part is here cross-hatched for a better showing.

On both sides of the frame 1, a rope winch 27 is arranged, from which ropes 28 run over guide rollers 29 and 30 to a fixed point on the lower support 23. By means of the rope winch 27, the cross-hatched part of the mixer frame which is adjustable as to its height, is raised from its transportation position (FIG. 2) into the working position A, which is shown in FIG. 3. The storage-silo 15 is disposed now at a height which permits the direct loading of the transportation vehicles. After moving out the mixer frame, it is merely necessary to screw intermediate parts of the elevator path for the extension of the elevator path below the lower support 23, behind the guide path.

In FIG. 4 is disposed the connection between the guide path 20 and the elevator path 14 with its guides 21 and 22. On the elevator path and rigidly connected with the latter are disposed bearing bolts 31 on which supporting rollers 32 run, which simplify the movement of the mixer frame and which move in turn in a rail 33 of the guide path. All bearing bolts 31 carry bores 34 having inner thread, in which holding bolts 35 equipped with a

threaded shaft 36 are screwed from the outside by means of passage bores 37 disposed in the guide path 20.

In this manner it is possible to connect also the run-out part of the mixer frame in the shortest possible time safely with the remaining part of the apparatus and equally simple and fast to return the latter into the moved-in transportation position.

While I have disclosed one embodiment of the present invention, it is to be understood that this embodiment is given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. A rollable apparatus for the manufacture of concrete, comprising:
  - a common frame,
  - means for feeding, distributing, weighing, as well as mixing of concrete ingredients and conveying of the finished concrete,
  - an elevator mixer constituting said mixing means,
  - a distributor including expandable and telescoping supports for increase of the working height of the apparatus,
  - a feeder carried by said distributor,
  - a mixer frame,
  - an elevator mixer supported and guided by said mixer frame, an immovable guide path connected with said common frame,
  - an elevator path disposed behind said guide path and including guides, said elevator mixer including guide rollers running in said elevator path,
  - said elevator path comprising an immovable part and a displaceable part, lower supports, inclined supports and vertical supports secured to said displaceable part and movable jointly with said displaceable part.
2. The apparatus, as set forth in claim 1, which includes:
  - a concrete-storage silo secured to and movable with said supports.
3. The apparatus, as set forth in claim 1, which includes:
  - a rope,
  - a rope-winch rigidly secured to each of both sides of said common frame,
  - said mixer frame including a lower cross beam,
  - a rigid point secured to said lower cross beam, and
  - said rope running to said rigid point from one of said rope-winches over said guide rollers, in order to lift said displaceable part of said elevator-path and said support upon operation of said rope-winch.

#### References Cited

##### UNITED STATES PATENTS

3,249,343 5/1966 Siebeneicher ----- 259-165 X

##### FOREIGN PATENTS

1,351,149 12/1963 France.

623,790 8/1961 Italy.

ROBERT W. JENKINS, *Primary Examiner.*