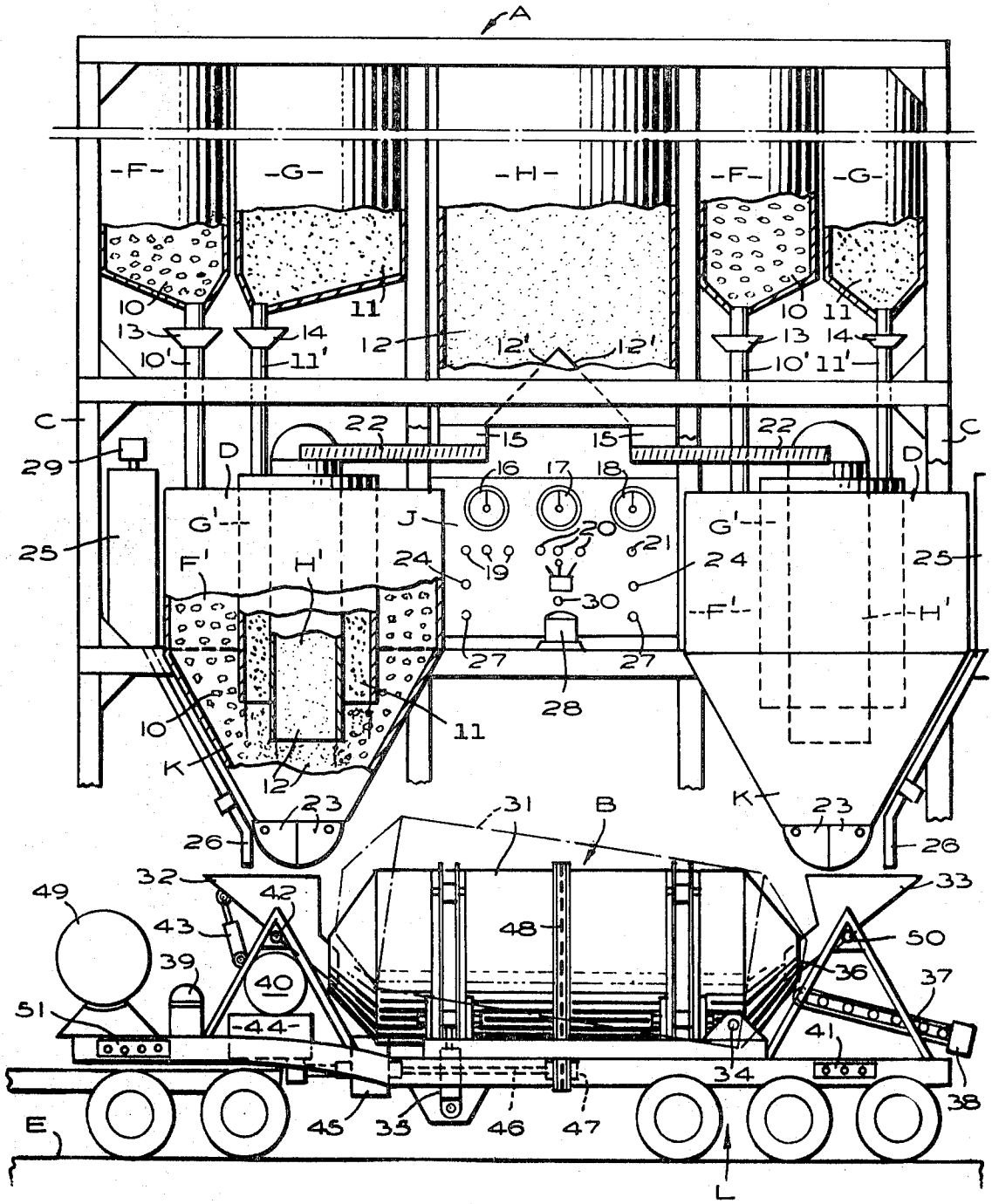


FIG. 1.

INVENTOR.
HUGH P. PARIS
BY Joseph F. Cole
ATTORNEY

United States Patent

[11] 3,617,031

[72] Inventor **Hugh P. Paris**
3101 Middlefield Road, Palo Alto, Calif. 94306

[21] Appl. No. **53,943**
[22] Filed **July 10, 1970**
[45] Patented **Nov. 2, 1971**

[54] **CONCRETE BATCHOR PLANT AND DOUBLE-END LOADING TRANSIT MIXER**
5 Claims, 3 Drawing Figs.

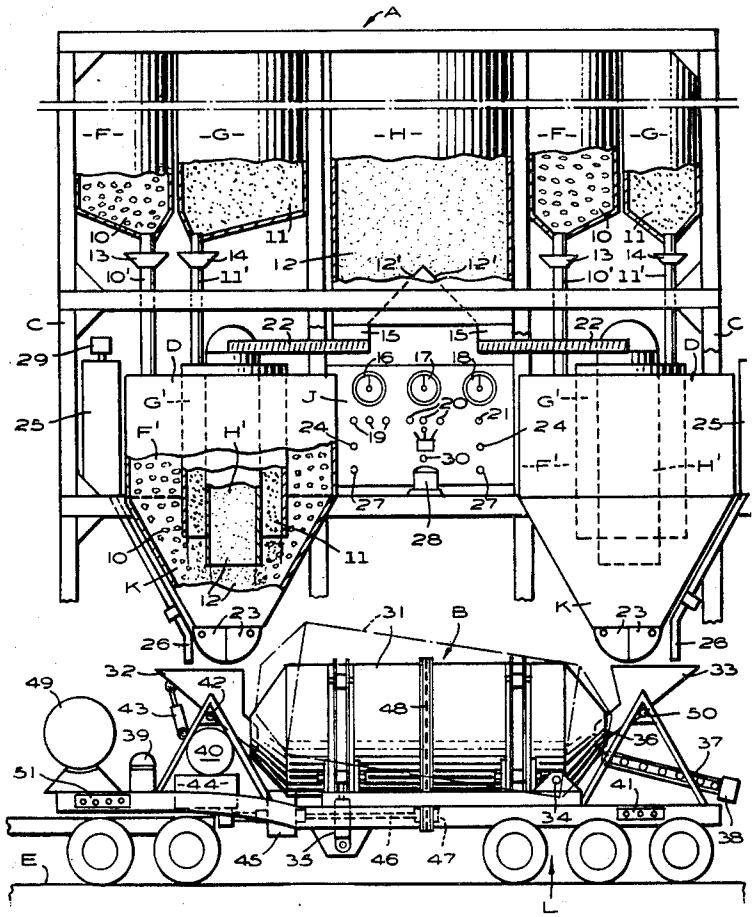
[52] **U.S. Cl.** **259/165, 259/177**
[51] **Int. Cl.** **B28c 7/04**
[50] **Field of Search** 259/175, 176, 177, 171, 161, 162, 154, 148, 149, 153, 164, 165, 166, 169, 170, 173

[56] **References Cited**
UNITED STATES PATENTS

1,213,407	1/1917	Pfahler	259/177
2,013,359	9/1935	Paris	259/171
2,174,089	9/1939	Johnson	259/154
3,314,557	4/1967	Sackett	259/154

Primary Examiner—Robert W. Jenkins
Attorney—Joseph F. Cole

ABSTRACT: A concrete batchor plant and double-end loading transit mixer wherein a pair of containers for concrete components are supported in spaced longitudinal relation with respect to one another so that a transit mixer may be driven into a loading position beneath the containers. A plurality of hoppers are provided for separate storage of gravel, sand and cement, and weighted amounts of these components are delivered to the containers. Moreover, a transit mixer has a rotatable drum with chutes disposed at its front and rear ends for conveying charges of the gravel, sand and cement to the interior of the drum, whereby the charges may be delivered simultaneously into both ends of the drum.



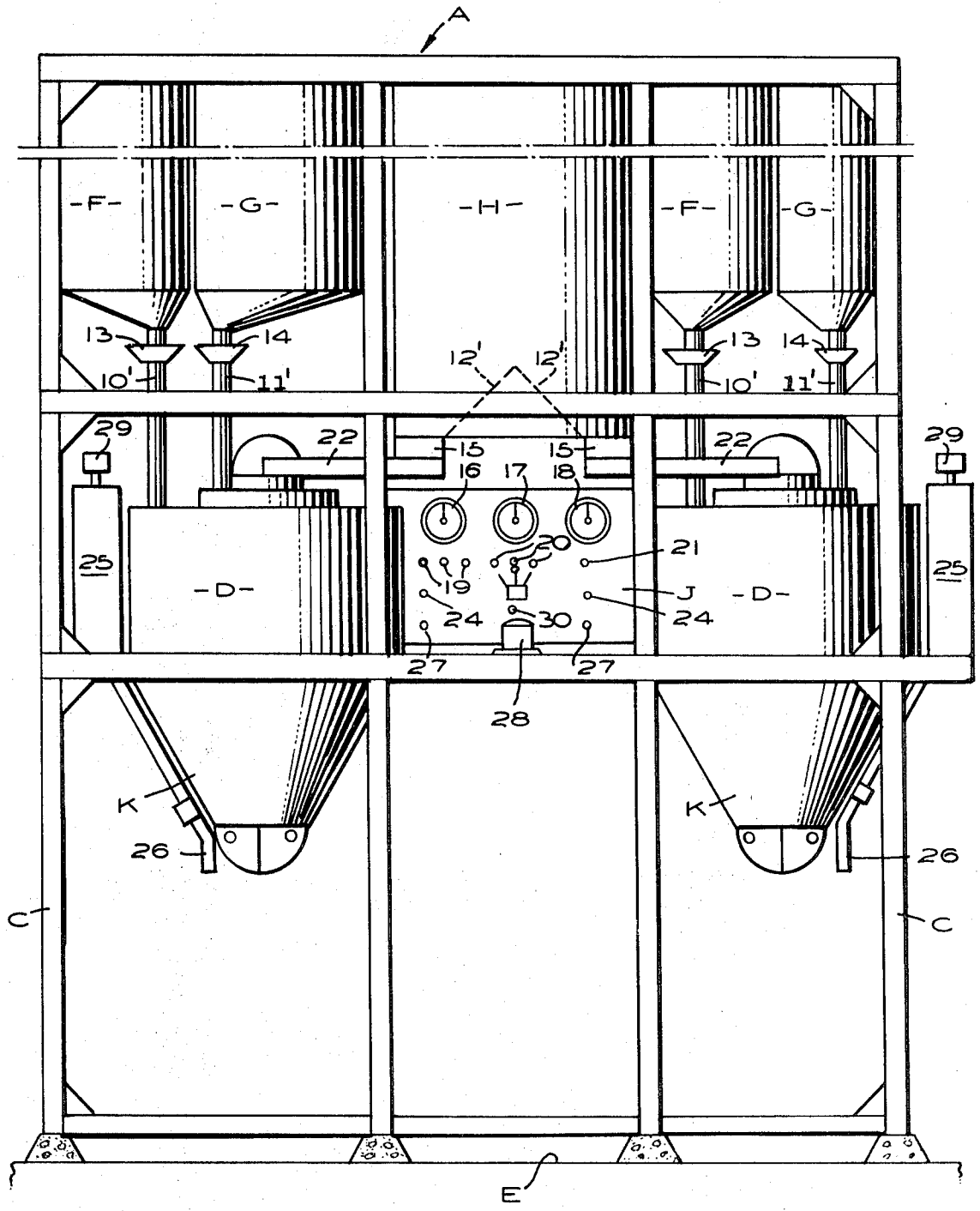


FIG. 2.

INVENTOR.
HUGH P. PARIS
BY Joseph F. Cole
ATTORNEY

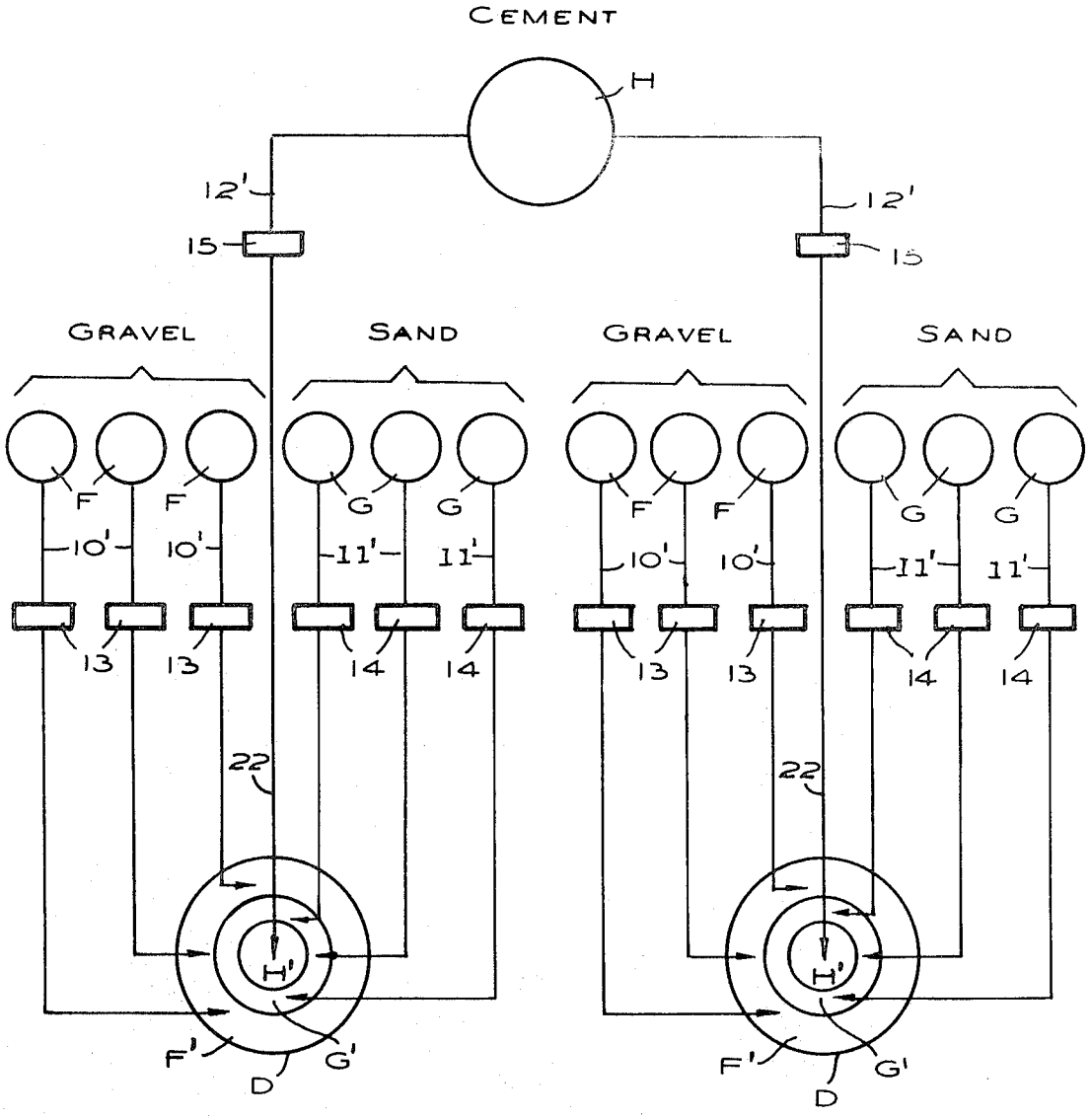


FIG. 3.

INVENTOR.
HUGH P. PARIS

BY Joseph F. Cole
ATTORNEY

CONCRETE BATCHOR PLANT AND DOUBLE-END LOADING TRANSIT MIXER

SUMMARY

It is well known that transit mixers wherein the rotating mixing drum is arranged on a slope will cause separation of the concrete components, the cement being the heavier material naturally goes to the bottom, thereby producing nonuniform mixes of the gravel, sand and cement.

Accordingly, it is proposed to provide a rotatable mixing drum on a vehicle that is arranged horizontally, and charges of gravel, sand and cement are delivered into the front and rear ends of the drum simultaneously. Thus, larger quantities of the concrete components may be hauled in the transit mixer, and these will not separate from one another during mixing.

Moreover, it is proposed to provide a concrete batcher plant having a pair of containers for receiving concrete components, these containers being supported in longitudinal spaced relation with respect to one another and arranged at an elevation above a roadway so that the transit mixer may be driven into load position beneath these containers. A plurality of hoppers are disposed above each container for separate storage of gravel, sand and cement, and measured amounts of these components are delivered according to weights to the containers. The containers are provided with gates that may be opened, whereby the charges of the gravel, sand and cement may be delivered into opposite ends of the transit mixer drum simultaneously.

Other objects and advantages will appear as the specification proceeds, and the novel features of the invention will be pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the invention, reference should be made to the accompanying drawings, forming part of this specification, in which:

FIG. 1 is an elevational view of my concrete batcher plant and double-end loading transit mixer, portions of the batcher plant being broken away and part being shown in section;

FIG. 2 is an elevational view of the batcher plant by itself; and

FIG. 3 is a diagrammatic flow sheet for the gravel, sand and cement.

While I have shown only the preferred embodiment of my invention, it should be understood that various changes, or modifications may be made within the scope of the appended claims without departing from the spirit thereof.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail, it will be noted that I provide a concrete batcher plant designated generally at A and a double-end loading transit mixer B.

The batcher plant A has a suitable supporting frame structure C in which a pair of containers D are mounted in longitudinal spaced relation with respect to one another. These containers are arranged at an elevation above a roadway E so that the transit mixer B may be driven into a loading position beneath the containers, as disclosed in FIG. 1.

Gravel, sand and cement hoppers F, G and H, respectively, are disposed above each of the containers D for the separate storage of these concrete components. It will be seen from FIG. 3 that three of the gravel hoppers F and three of the sand hoppers G are provided above each of the containers D so that gravel and sand of various sizes or meshes may be fed to the containers.

As shown in FIGS. 1 and 3, each container D is provided with separate compartments F', G' and H' for receiving charges of gravel 10, sand 11 and cement 12, respectively, from the hoppers F, G and H, respectively, with these charges partitioned from one another.

Each gravel hopper F is provided with an outlet conduit 10' that leads to the gravel-receiving compartment F' of one of the containers D, and this conduit has a conventional scale 13, whereby a measured amount of gravel according to weight may be delivered to each compartment F'. As shown in FIGS. 1 and 2, a control panel J has an automatic dial-set gravel scale 16 and three pushbuttons 19 for controlling the flow of gravel 10 from the gravel hoppers F through the outlet conduits 10'.

Likewise, each sand hopper G has an outlet conduit 11' that leads to the sand-receiving compartment G' of one of the containers D, and each conduit 11' has a conventional scale 14 so that a weighted amount of sand may be delivered to each compartment G'. FIGS. 1 and 3 disclose an automatic dial-set sand scale 17 and three pushbuttons 20 for controlling the flow of sand 11 from the sand hoppers G through the outlet conduit 11'.

Moreover, the cement hopper H has branch outlet conduits 12' and a screw conveyor 22 that leads to the cement-receiving compartment H' of one of the containers D, and these conduits have conventional scales 15, whereby measured amount of cement according to weight may be delivered to each compartment H'. The control panel J in FIGS. 1 and 2 disclose an automatic dial-set cement scale 18 and a pushbutton 21 for controlling flow of the cement 12 through the outlet conduits 12'.

As shown in FIGS. 1 and 2, each container D has a concrete component-receiving chamber K in its lower portion that communicates with all of the compartments F', G' and H' of that container, and each container D further has gates 23 which may be opened for discharge of the gravel 10, sand 11 and cement 12 from the container chamber K.

As shown in FIG. 1, the cement 12 flows as a core in the descending stream of the gravel, sand and cement as they move through the gates 23, the cement being enveloped by the gravel 10 and the sand 11. This will prevent the cement from blowing into the atmosphere when the gates are opened. The control panel J has pushbuttons 24 for opening the gates.

It will be apparent from FIGS. 1 and 2 that a water tank 25 is associated with each of the containers D, and each tank is provided with a controlled water-outlet conduit 26, whereby a measured amount of water may be mixed with the charges of gravel, sand and cement being discharged by the batcher plant. The control panel J has pushbuttons 27 for releasing the water, and a water meter 28 is provided near the control panel. Additives for mixing with the water flowing from the tanks 25 may be placed vessels 29, and outflow of these additives regulated by push button 30 on the control panel J. Such additives are conventionally added to concrete to quick drying thereof.

Turning now to the double-end loading transit mixer B, FIG. 1 illustrates a vehicle L having a rotatable drum 31 mounted thereon. This vehicle has been shown as a semitrailer. but a truck could be used. This drum is provided at its front and rear ends with chutes 32 and 33, respectively, for conveying charges of the gravel, sand and cement to the interior of the drum. The front chute 32 is located to register with the gates 23 of one of the containers D, while the rear chute 33 registers with the gates 23 of the other container D, whereby the charges may be delivered simultaneously into both ends of the drum. The drum 31 is normally disposed horizontally, and thus larger charges of the concrete components may be placed in the drum and the components will not separate from one another as the drum is turned.

The drum 31 is pivotally supported near its rear end on the vehicle L by means of a journal shaft 34, and a hydraulic jack 35, or the like, is provided for raising the front end of the drum, whereby the mixed concrete components may be discharged from the drum through an outlet opening 36 in the latter. A powered belt conveyor 37 is provided to receive the mixed concrete components from the drum. This conveyor may be operated by an air motor 38 that receives air from an air compressor 39 and an air tank 40, the flow of air to the motor being controlled by pushbutton panel 41.

The front chute 32 is swingably supported on a journal pin 42 for movement into an out-of-the-way position so as to clear the drum 31 prior to the front end of the drum being raised, as indicated by dot-dash lines of the drum in FIG. 1. The front chute may be swung on the journal pin 42 by a hydraulic jack 43, or the like.

For the purpose of rotating the drum 31, an engine 44 has been disclosed on the vehicle L, and this engine is connected through a reduction unit 45 and drive shaft 46 to a sprocket 47 on a drive chain 48 that encircles the drum 31, or the drum may be turned by other suitable means. A water supply tank 49 has been shown as being carried by the vehicle L.

The rear chute 33 may be swingably supported on a journal pin 50 so that this chute may swing as the front end of the drum 31 is raised and the rear end of the drum moves slightly to the rear.

Pushbutton panel 51 controls flow of air to and from the jack 43, or the like, and outflow of water from tank 49.

I claim:

1. In a concrete batcher plant and double-end loading transit mixer, the combination of:

a. a concrete batcher plant comprising:

1. a pair of containers for concrete components supported in longitudinal spaced relation with respect to one another, and arranged at an elevation above a roadway so that a transit mixer may be driven into a loading position beneath the containers;
2. a plurality of hoppers disposed above each of the containers for separate storage of gravel, sand and cement;
3. each container being provided with separate compartments therein for receiving charges of gravel, sand and cement, with these charges partitioned from one another;
4. an outlet conduit leading from each hopper to one of the compartments in a container, and a scale arranged in each conduit, whereby a measured amount of the concrete components according to weight may be delivered to the compartments;
5. each container having a concrete component-receiving chamber in its lower portion that communicates with all of the compartments of that container, and each container further having gates that may be opened for discharge of the gravel, sand and cement from the container chamber; and

b. a double-end loading transit mixer comprising:

1. a vehicle having a rotatable drum mounted thereon, the drum being provided at its front and rear ends with chutes for conveying charges of the gravel, sand and cement to the interior of the drum;
2. the front chute being located to register with the gates of one of the containers, while the rear chute registers with gates of the other container, whereby charges of the gravel, sand and cement may be delivered simultaneously into both ends of the drum.

2. The concrete batcher plant and double-end loading transit mixer combination, as set forth in claim 1; and

c. in which a water tank is associated with each of the containers, and each tank is provided with a controlled water-outlet conduit leading to one of the chutes of the transit mixer, whereby a measured amount of water may be mixed with the charges of gravel, sand and cement entering the drum.

3. In a concrete batcher plant:

1. a pair of containers for concrete components supported in longitudinal spaced relation with respect to one another, and arranged at an elevation above a roadway so that a transit mixer may be driven into a loading position beneath the containers;
2. a plurality of hoppers disposed above each of the containers for separate storage of gravel, sand and cement;
3. each container being provided with separate compartments therein for receiving charges of gravel, sand and cement, with these charges partitioned from one another;
4. an outlet conduit leading from each hopper to one of the compartments in a container, and a scale arranged in each conduit, whereby a measured amount of the concrete components according to weight may be delivered to the compartments;
5. each container having a concrete component-receiving chamber in its lower portion that communicates with all of the compartments of that container and each container further having gates that may be opened for discharge of the gravel, sand and cement from the container chamber.

4. The concrete batchor plant, as set forth in claim 3; and

6. in which a water tank is associated with each of the containers, and each tank is provided with a controlled water-outlet conduit arranged to deliver a measured amount of water to the charges of gravel, sand and cement discharged through the gates of the containers.

5. In a double-end loading transit mixer:

1. a vehicle having a rotatable drum mounted thereon;
2. the drum being provided at its front and rear ends with chutes for conveying charges of gravel, sand and cement into both ends of the drum simultaneously;
3. the drum normally being disposed horizontally and pivotally supported near its rear end on the vehicle, and means provided for raising the front end of the drum, whereby the mixed concrete components may be discharged from the drum through an outlet opening in the latter; and
4. the front chute is swingably supported for movement into an out-of-the-way position so as to clear the drum prior to be front end of the drum being raised.

* * * * *