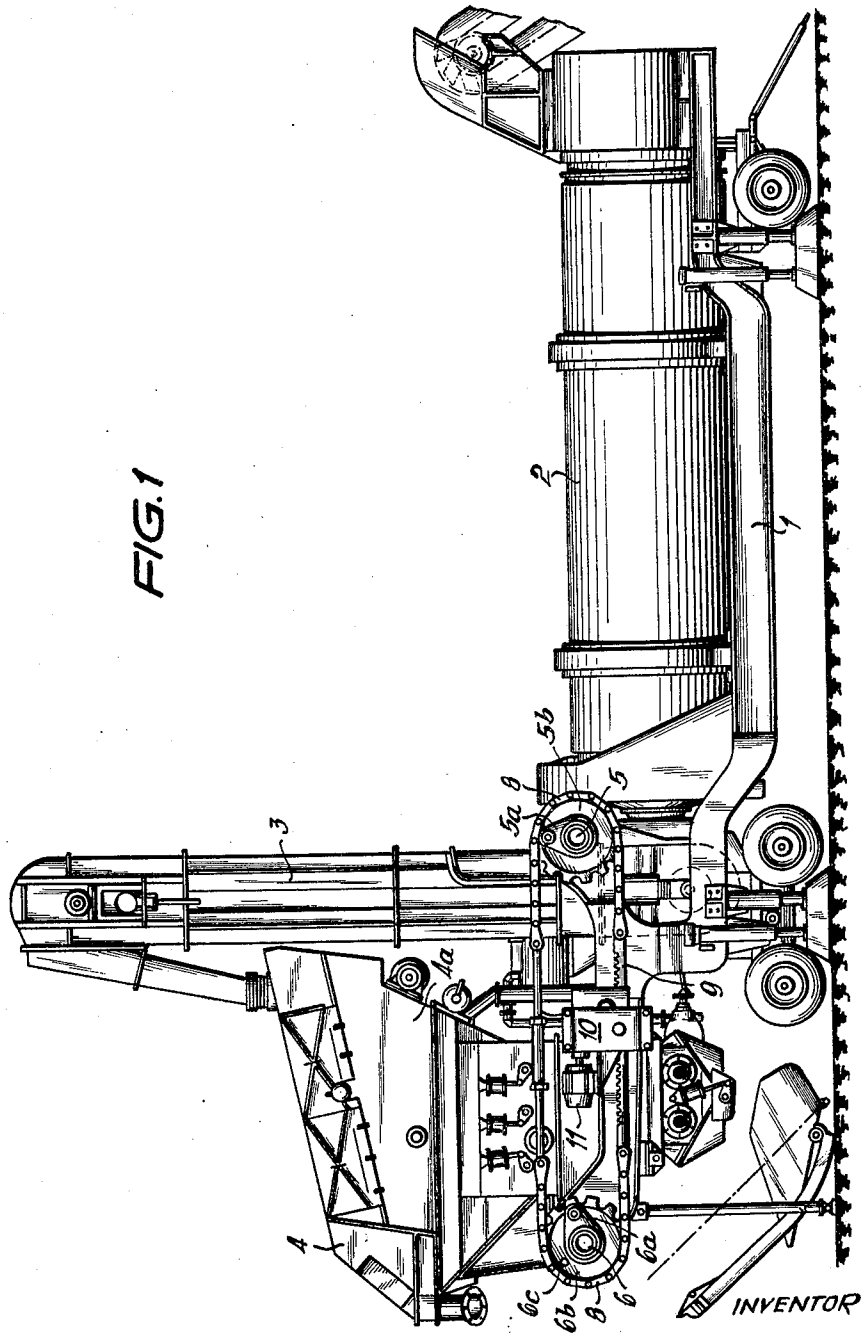
Dec. 25, 1962 C. H. HEISE 3,070,358

ROAD BUILDING MACHINE

Filed April 7, 1961 7 Sheets-Sheet 1

FIG. 1



INVENTOR
CARL HERMANN HEISE

By Toulmin & Toulmin
Attorneys

Dec. 25, 1962 C. H. HEISE 3,070,358

ROAD BUILDING MACHINE

Filed April 7, 1961 7 Sheets-Sheet 2

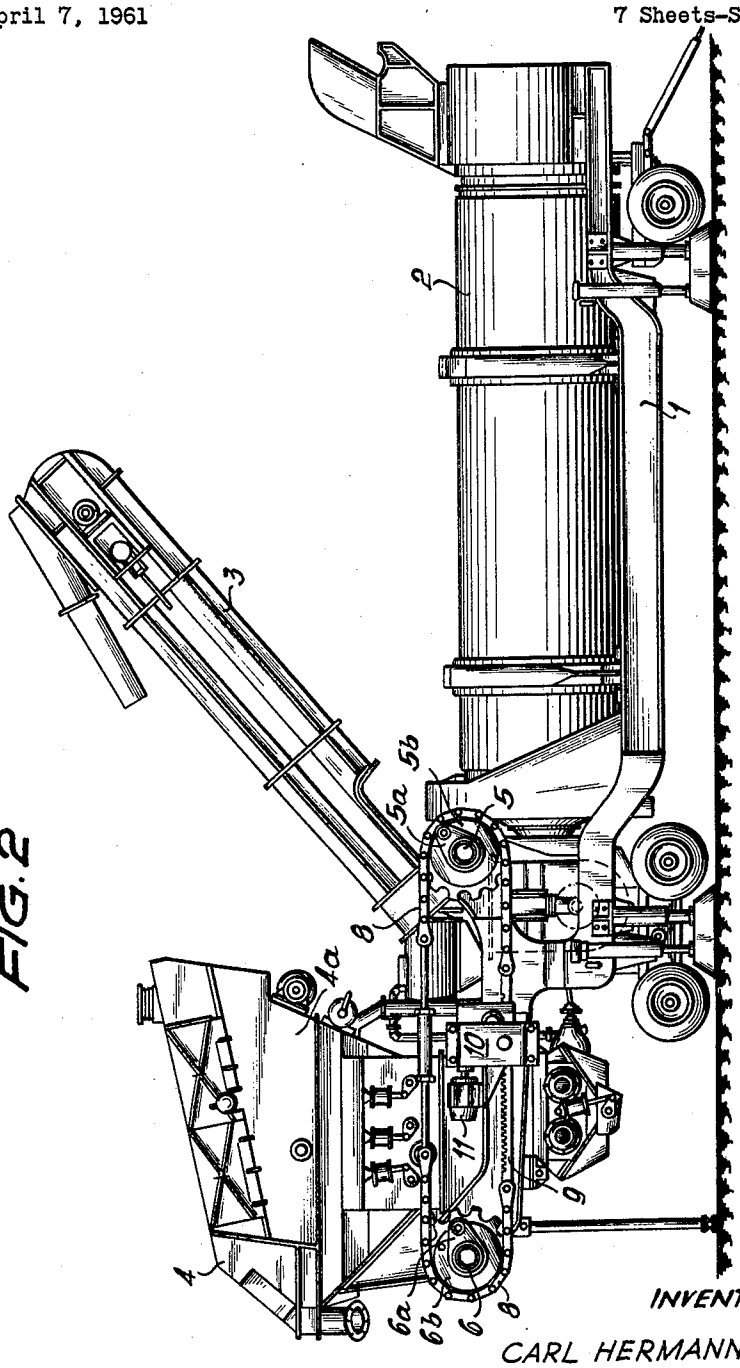


FIG. 2

INVENTOR
CARL HERMANN HEISE

By Toulmin & Toulmin
Attorneys

Dec. 25, 1962 C. H. HEISE 3,070,358

ROAD BUILDING MACHINE

Filed April 7, 1961 7 Sheets-Sheet 3

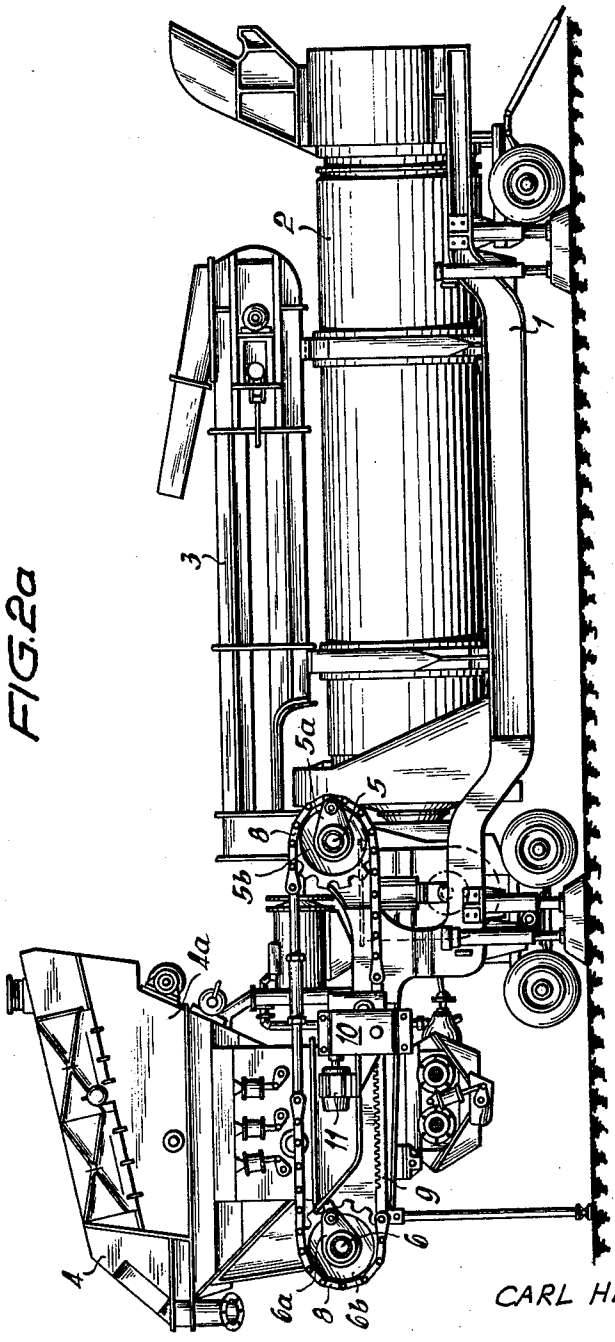


FIG.2a

INVENTOR
CARL HERMANN HEISE

By Toulmin & Toulmin
Attorneys

Dec. 25, 1962 C. H. HEISE 3,070,358

ROAD BUILDING MACHINE

Filed April 7, 1961 7 Sheets-Sheet 4

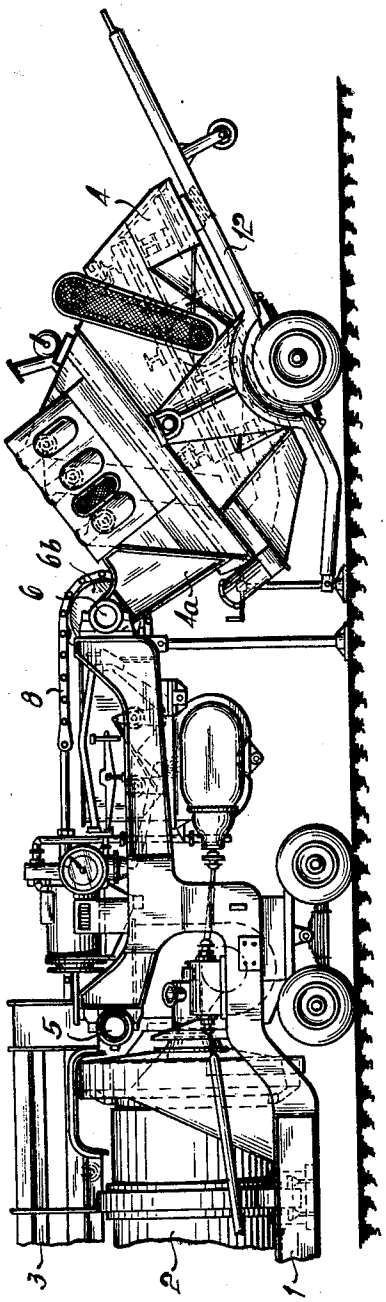


FIG. 3

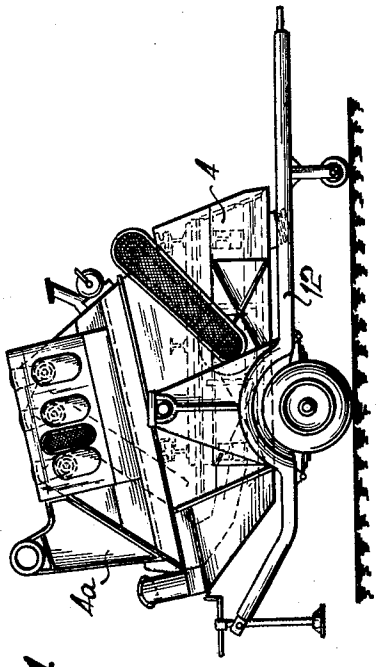


FIG. 4

INVENTOR

CARL HERMANN HEISE

By Toulmin & Toulmin

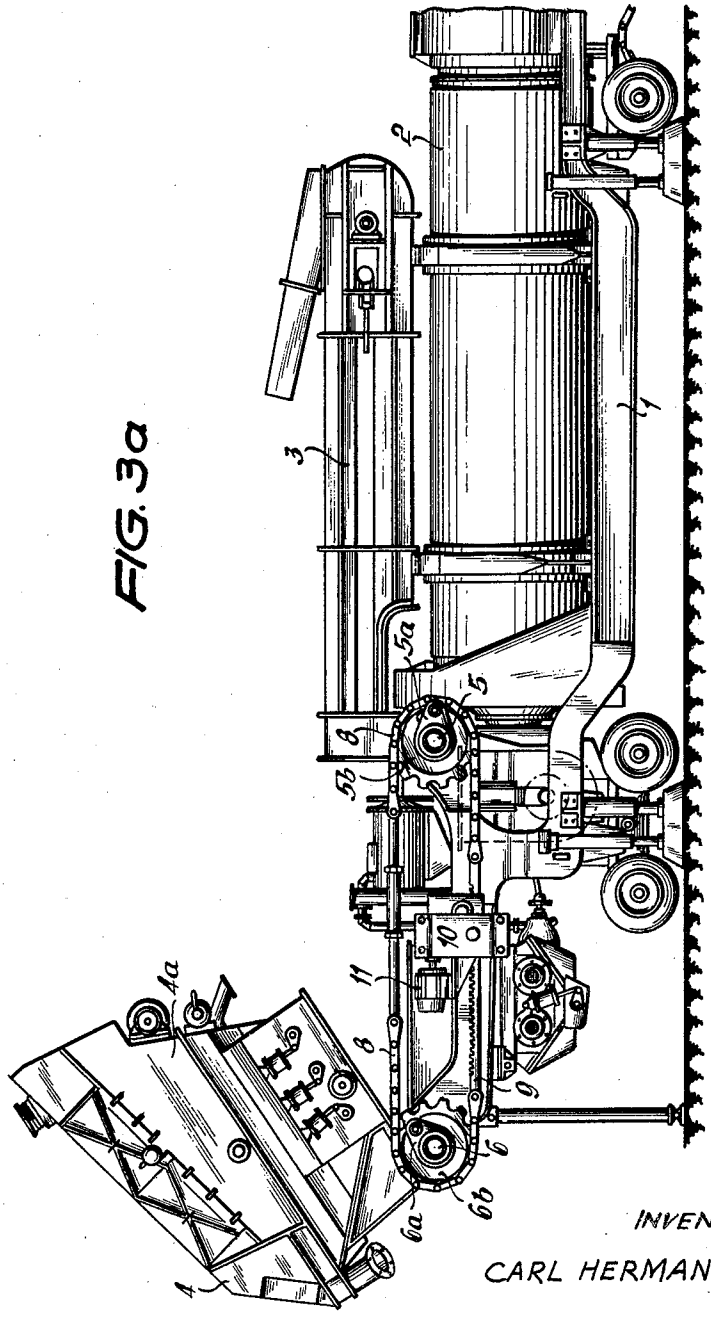
Attorneys

Dec. 25, 1962 C. H. HEISE 3,070,358

ROAD BUILDING MACHINE

Filed April 7, 1961 7 Sheets-Sheet 5

FIG. 3a



INVENTOR

CARL HERMANN HEISE

By Toulmin & Toulmin

Attorneys

Dec. 25, 1962 C. H. HEISE 3,070,358

ROAD BUILDING MACHINE

Filed April 7, 1961 7 Sheets-Sheet 6

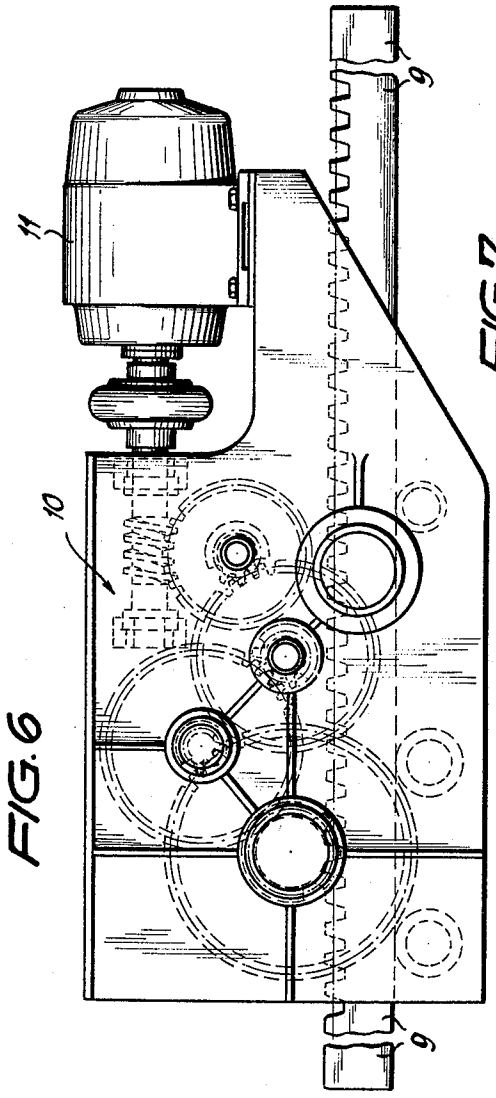


FIG. 6

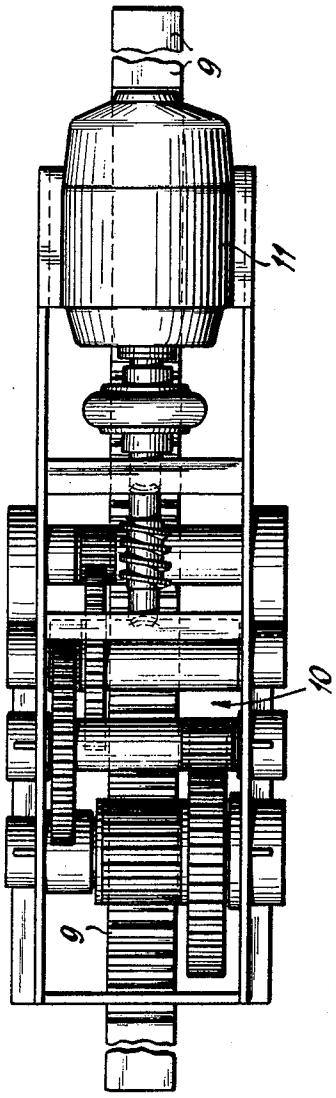


FIG. 7

INVENTOR
CARL HERMANN HEISE

By Toulmin & Toulmin
Attorneys

Dec. 25, 1962 C. H. HEISE 3,070,358

ROAD BUILDING MACHINE

Filed April 7, 1961 7 Sheets-Sheet 7

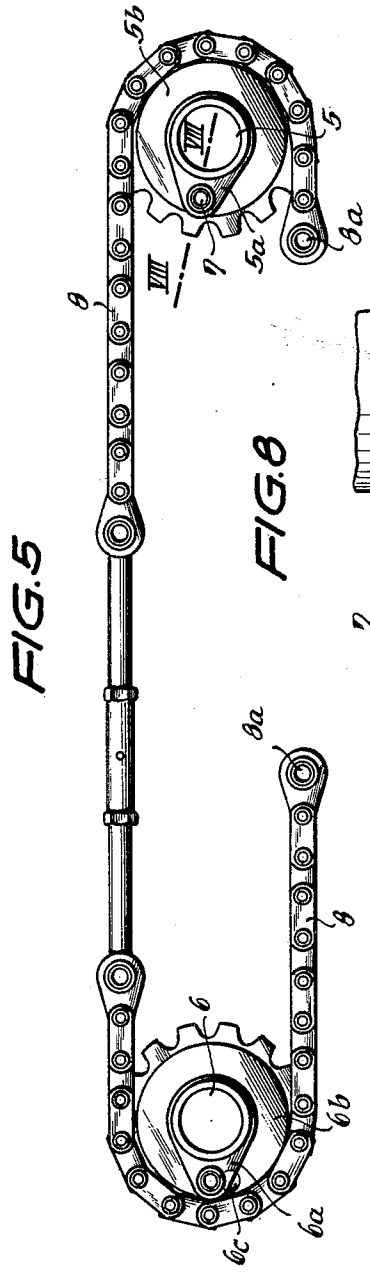


FIG. 5

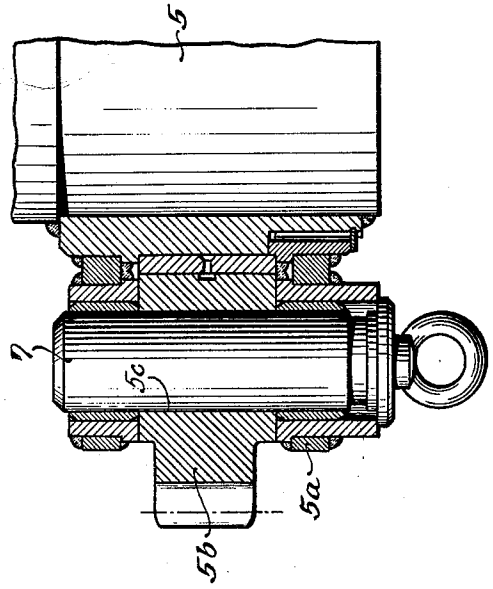


FIG. 8

INVENTOR

CARL HERMANN HEISE

By Toulmin & Toulmin

Attorneys

United States Patent Office

3,070,358

Patented Dec. 25, 1962

3,070,358

ROAD BUILDING MACHINE

Carl Hermann Heise, Kahlandstrasse 12,
Alfeld, Leine, Germany

Filed Apr. 7, 1961, Ser. No. 101,435
Claims priority, application Germany Sept. 26, 1960
4 Claims. (Cl. 259—159)

The present invention relates to machinery used in the road building trade, and more particularly for processing building materials, such as, especially, bituminous road building materials.

It is known to provide machines for processing building materials essentially comprising a conveyor transporting some of the building materials, such as sand or gravel, into a drying drum wherein these materials are dried under the influence of heat and preferably continuous rotation of the drum. The dried materials are then conveyed by a loader, such as a bucket conveyor, into a mixing tower wherein they are mixed with hot bituminous material.

It has also become known to mount the drying drum, the loader for transporting the hot material, as well as the mixing tower on a mobile frame, enabling road transportation of the processing unit. To facilitate the transportation the drying drum, the loader and the mixing tower are capable of assuming a working position and a transport position. The known machines of this latter type must, therefore, be equipped with means for moving the drum, the loader and the tower from the transport position to the working position and vice versa. In the known machines these means are very complicated and expensive. One major disadvantage resides in the fact that each of these units is equipped with separate drive and transmission means to effect the shift from the working position to the transport position and vice versa.

It is the object of the invention to provide a machine for processing building materials having a rotary drum, a loader and a mixing tower mounted on a mobile frame wherein a single unit is provided for moving the mixing tower and the loader from the working position into the transport position and vice versa.

This object is achieved by the machine for the processing of building materials according to the invention in which a first pivoting shaft supports the loader in a substantially vertical working position and a transport position resting on the drying drum and a second pivoting shaft supports the upper portion of the mixing tower having a working position resting on top of the lower portion and the transport position removed from the latter, as well as means common to both the first and the second pivoting shaft for pivoting selectively one of the shafts.

It is thus possible to use one and the same means for first moving either upper part of the mixing tower and then for moving the loader, or for first moving the loader and then moving the upper part of the mixing tower, as may be desired.

According to the invention these means advantageously comprise reversible driving means and transmission means, with the transmission means meshing with gear means on the first and second pivoting shaft. Furthermore, coupling means are provided with which the gear means, either on the first or on the second shaft are coupled selectively with the first and the second pivoting shafts, respectively.

The coupling is established by the connection between a driving unit and either the loader or the upper part of the mixing tower, depending on which pivoting shaft has been coupled to the driving unit. If after such coupling the driving means are operated either the loader or the upper part of the mixing tower is moved either from the

working position into the transport position, or vice versa, depending on the sense of operation of the reversible driving means.

In a particularly advantageous and very simple and practical embodiment of the invention, a crank arm is fixedly mounted on each of the pivoting shafts. The crank arm has a perforation and the gear means on the pivoting shaft also has a perforation. The coupling in this embodiment consists of a simple coupling bolt which is inserted through corresponding perforations of the crank arms and the gears. As the gears mesh with the transmission, advantageously a chain transmission is connected with the motor. Operation of the motor will thus impel either the first or the second pivoting shaft, depending where the coupling bolt has been inserted.

The invention will be more fully understood by reference to the following description and the accompanying drawings wherein:

FIGURE 1 is a side elevational view of the machine according to the invention wherein the loader and the upper part of the mixing tower are shown to be in operating position;

FIGURE 2 is a side elevational view similar to FIGURE 1 but wherein the loader has been partly moved from the operating position into the transport position;

FIGURE 2*a* is a view similar to FIGURES 1 and 2 but wherein the movement of the loader from the operating position to the transport position has been completed and wherein the loader now rests on the drying drum so as to assume its transport position;

FIGURE 3 is a side elevational view of the machine of invention illustrating the upper part of the mixing tower in the process of being moved from the operating position to the transport position;

FIGURE 3*a* is a partial side elevational view illustrating the upper part of the mixing tower in its transport position resting on a suitable mobile frame but still connected with the other units;

FIGURE 4 is a detailed view, in side elevation, illustrating the upper part of the mixing tower detached from the main frame, in its transport position;

FIGURE 5 is a plan view of the transmission and coupling means of the machine according to the invention;

FIGURE 6 is a somewhat schematic view of the driving and part of the transmission means for effecting the movement of the loader and the mixing tower;

FIGURE 7 is a plan view of the same part of the machine illustrated in FIGURE 6; and

FIGURE 8 is a fragmentary plan view, partly in section, on the line VIII—VIII of FIG. 5, of the coupling means in the coupling position.

Referring now to the drawings somewhat more in detail, frame 1 shown in FIGURES 1, 2 and 2*a*, supports the drying drum 2, and adjacent one end of the latter the loader 3 and the mixing tower 4 having an upper portion 4*a*.

It will be noted that in operation material such as sand or gravel is dried in drum 2 and then conveyed by loader 3 into the mixing tower 4, wherein it is admixed with bituminous material.

The loader 3 is connected with a first pivoting shaft 5. The upper part of the mixing tower 4*a* is firmly, but still detachably, connected with a second pivoting shaft 6. At their respective free ends pivoting shafts 5 and 6 support crank arms 5*a* and 6*a*, and behind the latter there are provided gear discs 5*b* and 6*b*.

The gear discs have perforations or borings 5*c* and 6*c*, and corresponding perforations or bores are provided for the cranks 5*a* and 6*a*. The gear discs 5*b* and 6*b* can be connected with the associated cranks 5*a* and 6*a*, respec-

tively, by suitable coupling means, such as, for example, a bolt 7, as best seen in FIGURE 8.

The two gear discs 5*a* and 6*a* are connected with each other by chain transmission 8, as shown in detail in FIGURE 5. A rack 9 may form a part of this same chain transmission (see FIGURES 1 and 2*a*). The rack 9 meshes with the transmission gear 10 operated by motor 11, as shown in FIGURE 6.

It will be noted that a coupling is effected by inserting a bolt 7 through perforations 5*c* or 6*c*, depending on whether the loader is to be moved or displacement of the upper part of the mixing tower 4*a* is desired. If the loader 3 is to be moved, for example, from its operative position in FIGURE 1 to its resting position shown in FIGURE 2*a*, the bolt 7 is inserted through the perforations of gear disc 5*b* and crank 5*a*, so as to establish connection between crank and gear chain.

The motor 11, which is advantageously of the reversible type, is then operated and, depending on the sense of rotation of the motor, the loader is moved in one direction or the other, via the gear transmission 10, the rack 9, the chain transmission 8, gear chain 5*b* and crank 5*a*. If the motor is operated in one predetermined sense the loader 3 is thus moved from its operating position of FIGURE 1 toward the drying drum, as shown in FIGURE 2, until it has gained the position illustrated in FIGURE 2*a*, resting on drying drum 2, which is the transport position.

In order to also move the upper part of the mixing tower 4*a* from its operating position, shown in FIGURES 1, 2 and 2*a* into the transport position, illustrated in FIGURE 3*a*, the bolt 7 is removed from the perforations in gear disc 5*b* and crank 5*a* and is inserted into perforation 6*c* of gear disc and the corresponding perforation 6*d* of crank 6*a*, thereby establishing driving connection between the motor 11 and the pivoting shaft 6 of the upper part of the mixing tower.

The motor is then operated in one predetermined sense and moves the upper part of the mixing tower 4*a* via the gear transmission 10, rack 9, gear transmission 8, gear disc 6*b* and crank 6*a* from the resting position in the direction as illustrated in FIGURE 3, and finally into the position shown in FIGURE 3*a*. The upper part of the mixing tower can then be placed on a suitable trailer, such as 12, which can be hooked to the main frame 1.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions and accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

What is claimed is:

1. In a machine for processing building materials, the combination of a machine frame, and, on said machine frame, a drying drum, a loader receiving material from said drying drum, a mixing tower receiving material from said loader and having a lower portion directly on said machine frame and an upper portion pivotally positioned on said lower portion, a first pivoting shaft supporting said loader having a substantially vertical working position and a transport position resting on said drying drum, a second pivoting shaft supporting said upper portion of said mixing tower having a working position resting on top of said lower portion and a transport position removed from said lower portion, means common to both of said shafts for pivoting selectively one of said pivoting shafts, thereby pivoting said loader and said upper portion of said mixing tower from said working positions into said transport positions and vice versa.

2. In a machine according to claim 1, said means for pivoting said pivoting shafts comprising reversible driving means, transmission means, first and second gear means on said first and second pivoting shafts, respectively, meshing with said transmission means, and coupling means for coupling selectively one of said gear means with said first and said second pivoting shafts, respectively, thereby establishing driving connection between said driving means and said loader and said upper portion of said mixing tower, respectively, so as to move the same from said working positions to said transport positions and vice versa.

3. In a machine according to claim 1, said means for pivoting said pivoting shafts comprising a reversible motor, a chain transmission, a train of gears drivingly connecting said motor with said chain transmission, first and second gear means on said first and second shafts, respectively, and meshing with said chain transmission, a perforation on each of said gear means, a crank arm fixedly mounted on each of said pivoting shafts having a perforation, and a coupling bolt for introduction through said perforations in one of said crank arms and said gear means so as to couple one of the latter with said first and said second pivoting shafts, respectively, thereby establishing driving connection between said reversible motor and said loader and said upper portion of said mixing tower, respectively, so as to move the same from said working positions to said transport positions, and vice versa.

4. In a machine according to claim 1, said means for pivoting said pivoting shafts comprising a reversible motor, a chain transmission, a train of gears drivingly connecting said motor with said chain transmission, a rack in said chain transmission meshing with said train of gears driving by said motor, first and second gear means on said first and second shafts, respectively, and meshing with said rack in said chain transmission, a perforation in each of said gear means, a crank arm fixedly mounted on each of said pivoting shafts having a perforation, and a coupling bolt for introduction through said perforations in one of siad crank arms and said gear means so as to couple one of the latter with said first and said second pivoting shafts, respectively, thereby establishing driving connection between said reversible motor and said loader and said upper portion of said mixing tower, respectively, so as to move the same from said working positions to said transport positions, and vice versa.

References Cited in the file of this patent

UNITED STATES PATENTS

1,189,772	Ammann	July 4, 1916
2,945,683	Martinson	July 19, 1960