

Dec. 10, 1935.

W. LEHMAN

2,023,480

EARTH MOVING APPARATUS

Filed Jan. 18, 1933

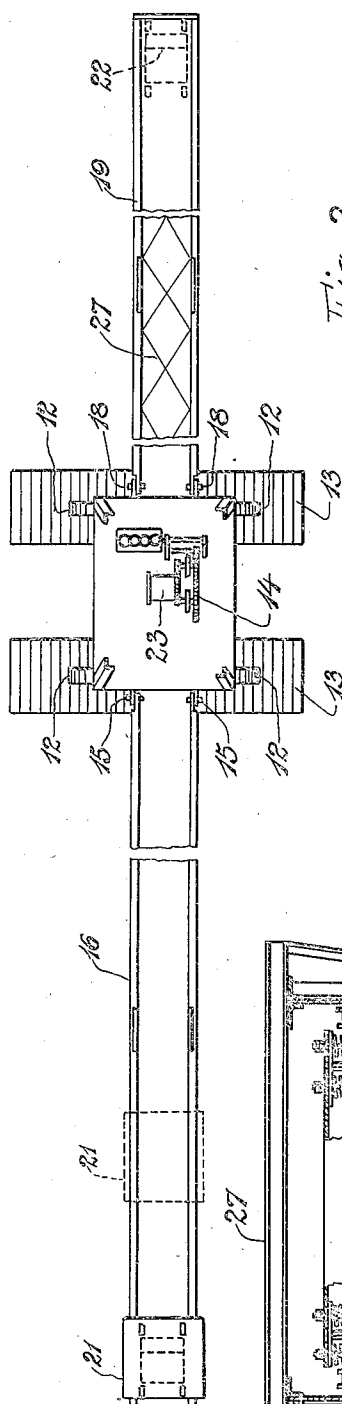


Fig. 1.

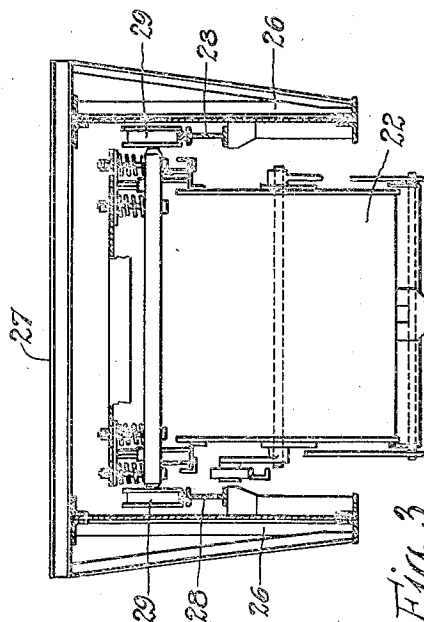


Fig. 2.

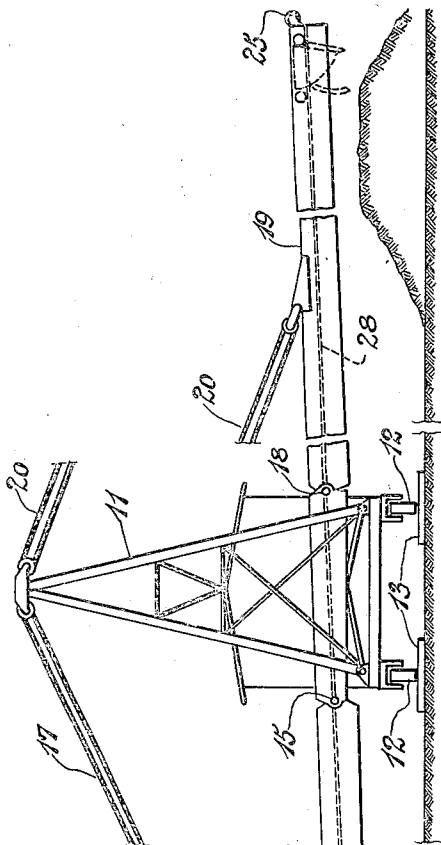


Fig. 3.

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UNITED STATES PATENT OFFICE

2,023,480

EARTH MOVING APPARATUS

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Application January 18, 1933, Serial No. 652,321

7 Claims. (Cl. 104—94)

My invention relates to new and useful improvements in earth moving apparatus.

My invention more particularly relates to that type of machine, having a central tower which supports two car-carrying wings extending in opposite directions therefrom, and so disposed that a dirt carrying car can be loaded at or near the extreme end of one wing, and can then be transported to a point at or near the extreme end of the other wing, for discharging its contents.

It is one of the principal objects of the present invention to provide a convenient assembly for the machinery unit mounted in the main tower. Other objects are to provide a convenient means for supporting the car on tracks on the two bridges, and to provide convenient means for enabling the operator to know at all times the exact location of the car.

In addition to my principal objects, I have worked out a number of novel and useful details, which will be readily evident as the description progresses.

My invention consists in the novel parts, and in the combinations and arrangements thereof, which are defined in the appended claims; and of which one embodiment is exemplified in the accompanying drawing, which is hereinafter particularly described and explained.

Throughout the description, the same reference number is applied to the same member or to similar members.

Figure 1 is a side elevation of the apparatus to which my invention is applied.

Figure 2 is a plan view of the same apparatus.

Figure 3 is a cross section of one of the bridges taken along the lines 3—3 in Figure 1.

Referring to the drawing, it will be seen that 11 is the main tower of my invention. It is supported by wheels 12 on mats 13. Mounted on tower 11 is main machinery 14, which will be described in detail later herein.

Articulated to tower 11 at 15, and extending to the left in Figures 1 and 2, is the loading wing 16, which may be raised and lowered by means of suspension rope 17. The exact details of actuating this rope from the machinery in the main tower are not shown, as they form no part of my invention.

Articulated to tower 11 at 18, and extending to the right in Figures 1 and 2, is the unloading wing 19, which may be raised and lowered by means of suspension rope 20. The exact details of actuating this rope from the machinery in the main tower are not shown, as they form no part of my invention.

The loading hopper 21 is capable of location at any one of a number of positions near the extreme end of the loading wing 16, and is to be filled by any convenient excavating instrumentality. This hopper dumps at will into a car 22, which is capable of running on tracks from the extreme end of the loading wing to the extreme end of the unloading wing, and is capable of dumping at will at any one of a number of positions near the end of the unloading wing. The details of the hopper are the invention of another party, and hence are not given herein. The details of the car are the joint invention of myself and another party, and hence are not given herein.

A rope (not shown) extends from drum 23 of main machinery 14 over sheave 24 on the extreme end of loading wing 16, and thence to an anchorage on car 22. A similar rope (not shown) extends from drum 23 over sheave 25 on the extreme end of unloading wing 19 to an anchorage on car 22. The reason for the omission of these two ropes from the drawing is that it is believed they would undoubtedly complicate the showing. By means of these two ropes, the car 22 is reciprocated from one end of the apparatus to the other.

Turning now to Figure 3, I will describe the novel mounting of my car. In view of the great length of my two wings, it is necessary that they be of box girder construction, in order to prevent buckling. There are two usual methods of supporting dirt handling cars: (1) Hanging them by means of pulleys from a beam, as in the case of the conventional concrete mixer; (2) running them on wheels at the bottom of the car on tracks on the top of the wings. The first usual method, as already stated would not give sufficient rigidity to the wing, and furthermore would require the wing to be raised too far above the level of the car. The other method would require the car to be raised too far above the level of the wing.

Accordingly, I have conceived of the idea of attaining strength for compactness by running my car on rails inside the wings. But, in order to avoid piling up dirt on cross members of the wings, it is necessary that the bottom part of at least the outer end of the unloading wing should be wholly open.

My wings accordingly are built up of V-shaped side members 26, secured together by cross braces 27, rails 28 are carried on the inside of members 26, and on these rails run wheels 29 from which the car 22 is suspended.

Having now described and illustrated one form of my invention, I wish it to be understood that 55

my invention is not to be limited to the specific form or arrangement of parts hereinbefore described, except in so far as such limitations are specified in the appended claims.

5 I claim:

1. In an earth-handling apparatus, the combination of: a central tower; a loading wing, pivoted at one end thereof to the tower; means for suspending this wing from the tower; an
10 unloading wing, pivoted at one end thereof to the tower, and extending from the tower in a direction opposite to that occupied by the loading wing, and having an inverted U cross section, the legs of such U having a V-shaped cross section;
15 means for suspending this wing from the tower; two rails, each supported by the inside of one of the legs of the U, well up thereon, and extending lengthwise of the wing; and an earth-carrying car, having four wheels adjacent the top
20 of such car, for running on said rails, the major portion of such car lying within the U.

2. In an earth-handling apparatus, the combination of: a central tower; a loading wing, pivoted at one end thereof to the tower; means
25 for suspending this wing from the tower; an unloading wing, pivoted at one end thereof to the tower, and extending from the tower in a direction opposite to that occupied by the loading wing, and having an inverted U cross section;
30 means for suspending this wing from the tower; two rails, each supported by the inside of one of the legs of the U, and extending lengthwise of the wing; and an earth-carrying car, having wheels adjacent the top of such car, for running
35 on said rails.

3. In an earth-handling apparatus, the combination of: a central tower; a wing, pivoted at one end thereof to the tower, and having an inverted U cross section, the legs of such U having
40 a V-shaped cross section; means for suspending this wing from the tower; two rails, each supported by the inside of one of the legs of the U, and extending lengthwise of the wing; and an earth-carrying car, having four wheels adjacent
45 the top of such car, for running on said rails, the major portion of such car lying within the U.

4. In an earth-handling apparatus, the combination of: a central tower; a wing, pivoted at one end thereof to the tower, and having an inverted U cross section; means for suspending
5 this wing from the tower; two rails, each supported by the inside of one of the legs of the U, and extending lengthwise of the wing; and an earth-carrying car, having wheels adjacent the top of such car, for running on said rails.

5. In an earth-handling apparatus, the combination of: a central tower; a loading wing, pivoted to the tower; means for suspending this wing from the tower; an unloading wing, pivoted
10 to the tower, and having an inverted U cross section, the legs of such U having knee-bracing
15 to give lateral stiffness thereto; means for suspending this wing from the tower; two rails, each supported by the inside of one of the legs of the U, well up thereon, and extending lengthwise of the wing; and an earth-carrying car, 20
having wheels adjacent the top of such car, for running on said rails, the major portion of such car lying within the U.

6. In an earth-handling apparatus, the combination of: a central section; a loading wing, 25
pivoted to the central section; means for suspending this wing from the central section; an unloading wing, pivoted to the central section, and having an inverted U cross section; means for suspending this wing from the central section;
30 two rails, each supported within the U, and extending lengthwise of the wing; and an earth-carrying car, having wheels adjacent the top of such car, for running on said rails.

7. In an earth-handling apparatus, the combination of: a central section; a wing, pivoted to the central section, and having an inverted U cross section, the legs of such U having bracing
35 to give lateral stiffness thereto; means for suspending this wing from the central section; two
40 rails, each supported within the U, and extending lengthwise of the wing; and an earth-carrying car, having wheels adjacent the top of such car, for running on said rails, the major portion
45 of such car lying within the U.

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