C. C. POST.

BUCKET CARRYING APPARATUS.

APPLICATION FILED APR. 16, 1917.

1,368,289. **Patented Feb. 15, 1921.**

4 SHEETS—SHEET 1.

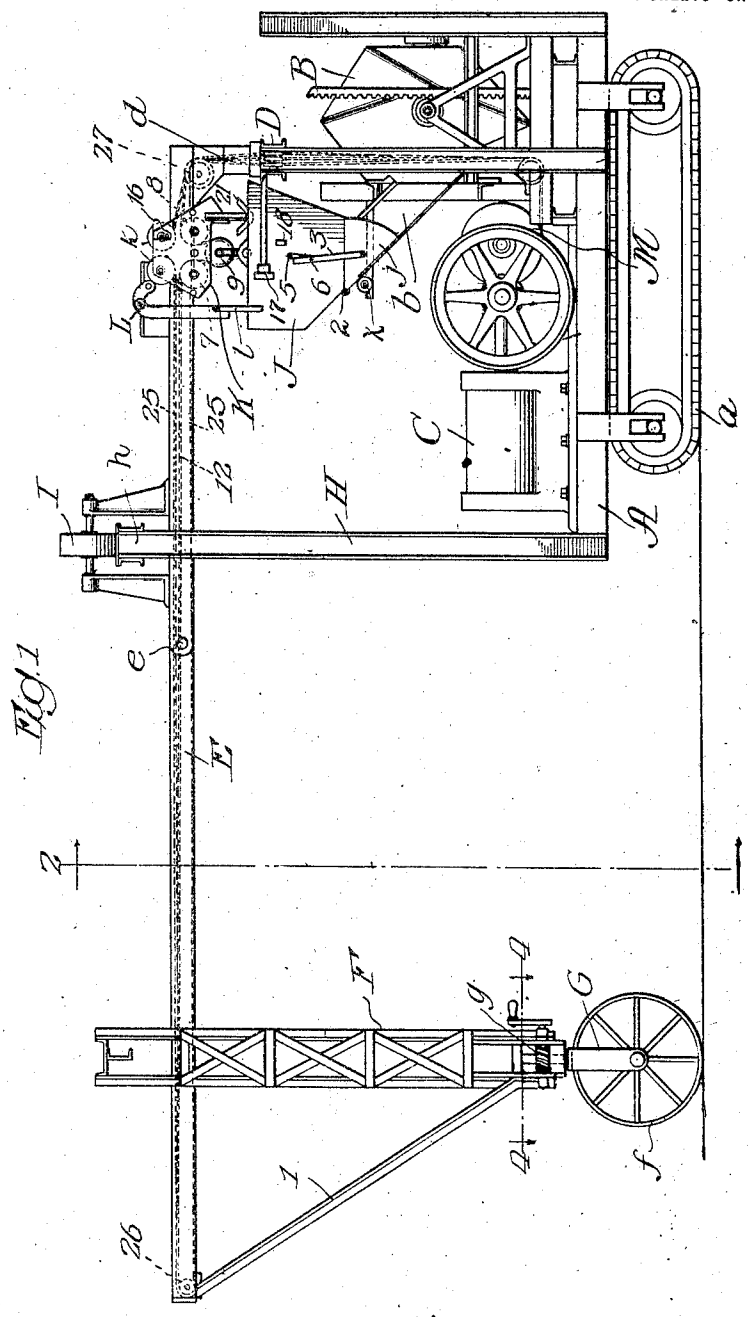


Fig. 1

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4 SHEETS—SHEET 2.

Fig. 2.

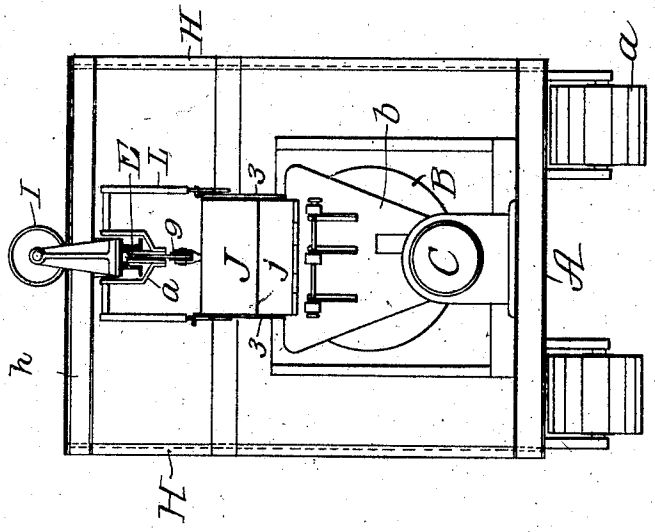


Fig. 4.

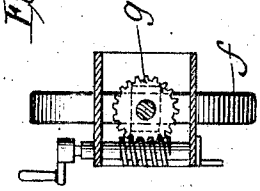
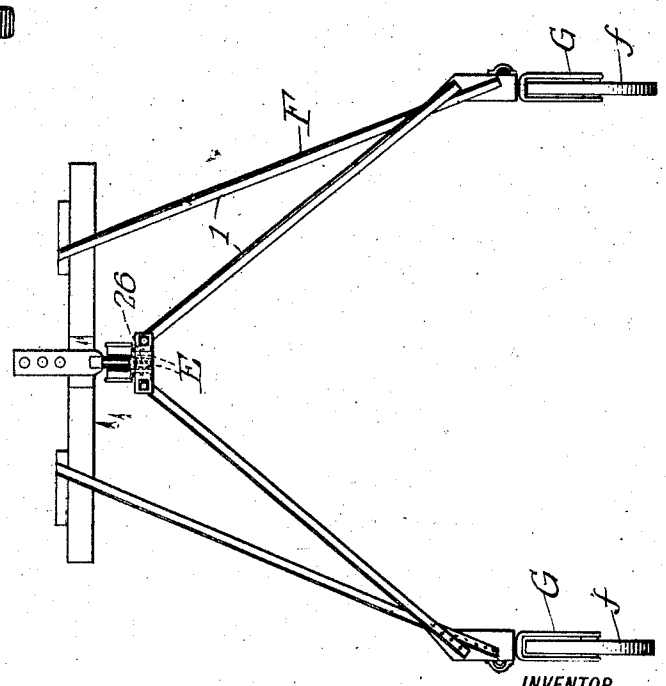


Fig. 3.



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4 SHEETS—SHEET 3.

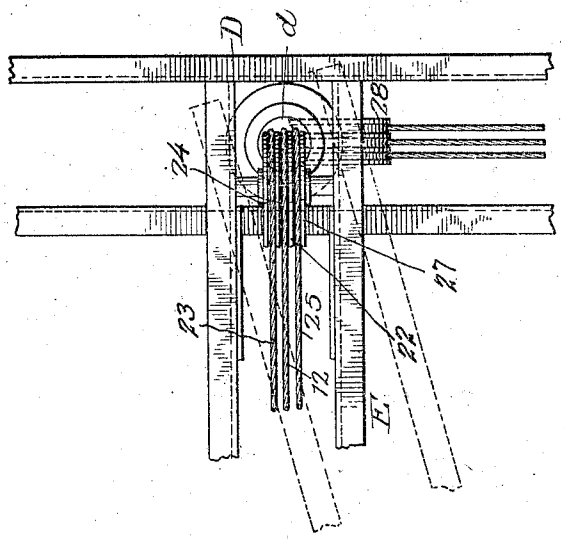


Fig. 5

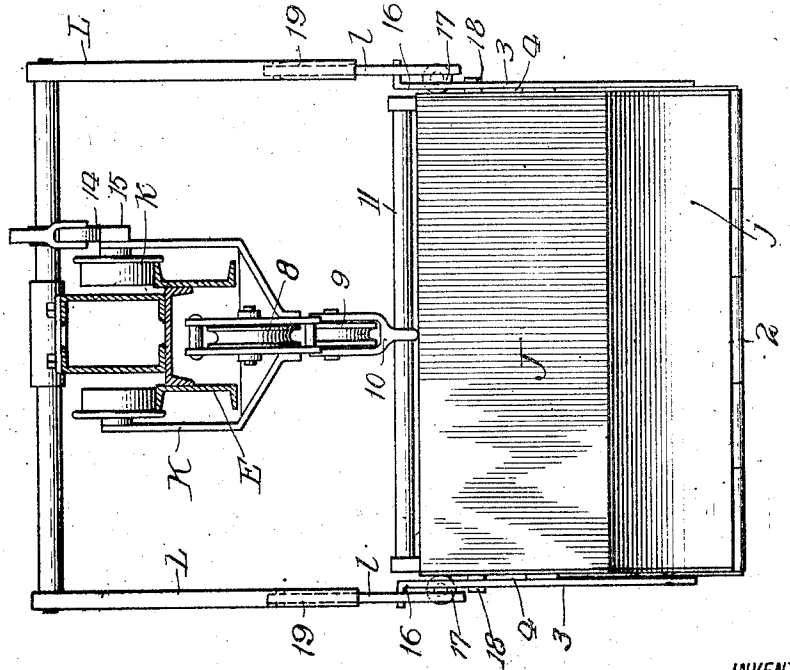


Fig. 6

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4 SHEETS—SHEET 4.

Fig. 8

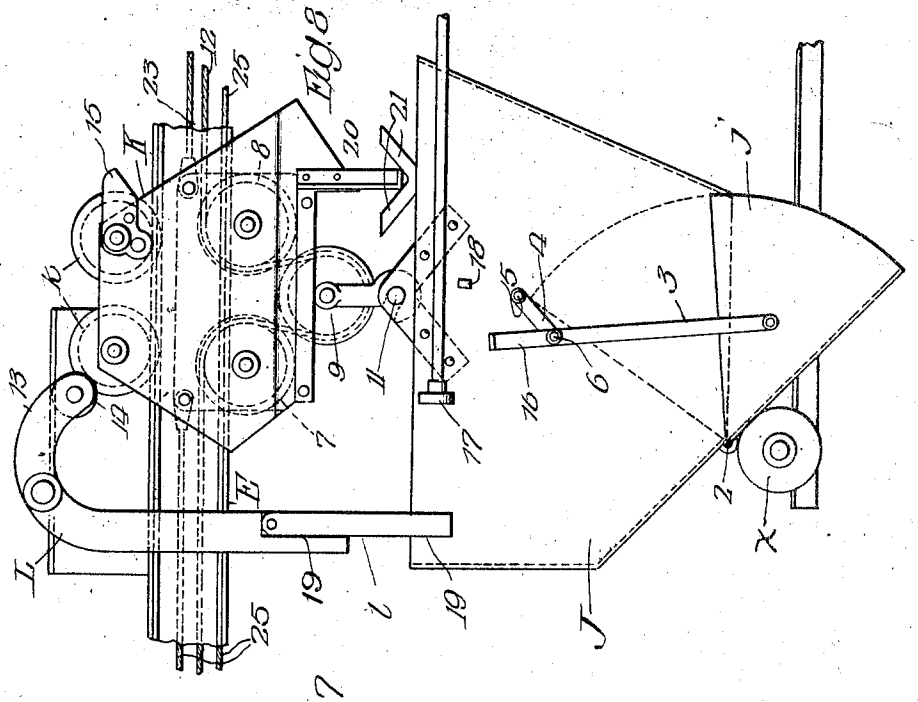
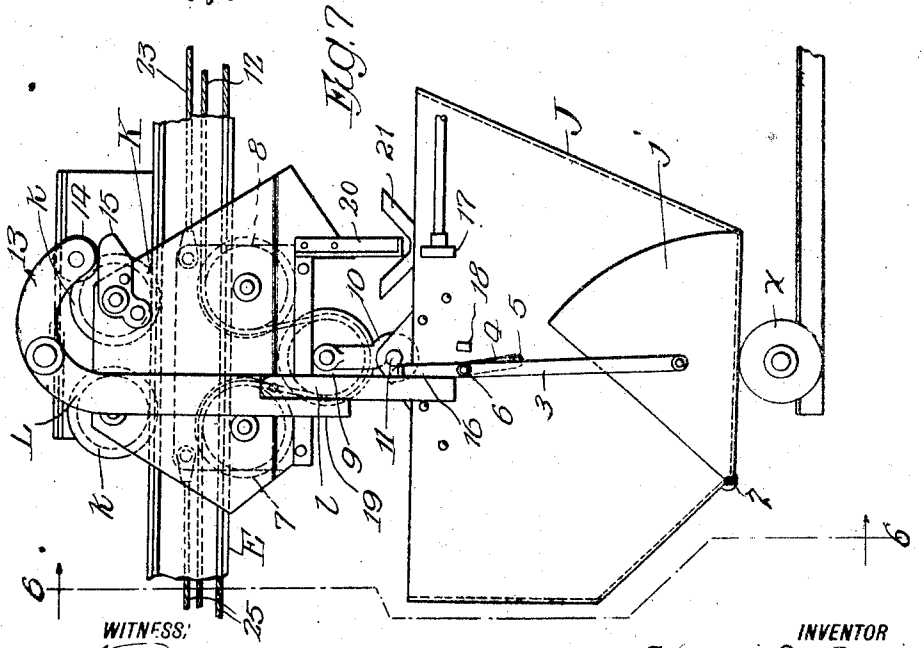


Fig. 7



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UNITED STATES PATENT OFFICE.

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BUCKET CARRYING APPARATUS.

1,368,289. Specification of Letters Patent. Patented Feb. 15, 1921.

Application filed April 16, 1917. Serial No. 162,298.

To all whom it may concern:

Be it known that I, CHARLES C. POST, a citizen of the Dominion of Canada, and resident of Winthrop Harbor, Lake county, Illinois, have invented a certain new and useful Improvement in Bucket Carrying Apparatus, of which the following is a specification.

My invention relates to carrying-buckets in general, for conveying materials from one place to another, but more particularly to apparatus of this kind for receiving and delivering the materials to a concrete mixer, such for example as those employed in putting down concrete paving, or for other purposes.

Generally stated, the object of my invention is to provide an improved construction and arrangement whereby the bucket may travel back and forth on a runway extending horizontally between the place where the load is received and the point where the bucket is dumped, and whereby the bucket may be lowered at the receiving place to facilitate the loading thereof.

Another object is to provide an improved construction and arrangement whereby said runway may be adjusted or swung into different positions to enable the bucket to receive its load.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency and desirability of a carrying-bucket-apparatus of this particular character.

To the foregoing and other useful ends, my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings:—

Figure 1 is a side elevation of a carrying-bucket-apparatus embodying the principles of my invention, showing the same in conjunction with a portable concrete mixer-plant.

Fig. 2 is a vertical transverse section on line 2—2 in Fig. 1.

Fig. 3 is an end elevation of the left hand end-portion of the structure shown in Fig. 1.

Fig. 4 is an enlarged detail horizontal section on line 4—4 in Fig. 1.

Fig. 5 is an enlarged plan view of the pivotal portion of the runway.

Fig. 6 is a transverse section on line 6—6 in Fig. 7.

Fig. 7 is an enlarged side elevation of the bucket and its supporting mechanism, showing the gate of the bucket in closed position.

Fig. 8 is a view similar to Fig. 7, showing the gate of the bucket in open position.

As thus illustrated, my invention comprises a body A upon which the concrete mixer B is mounted, said body being provided with caterpillars *a* or other suitable traction devices, so that the entire mixing-plant, including the engine C, mounted on said body, may be moved from place to place. The said mixer has a receiving-hopper *b* through which it receives the materials to be mixed. An upright frame D is provided at its upper end with a swivel *d* for the horizontally disposed runway E, which latter is adapted by this arrangement to swing around in a horizontal plane. Said runway is jointed at *e*, so that its outer end-portion can move up and down, and this outer end-portion which forms an extension is supported by an arch-like structure F having the lower ends thereof provided with wheels *f* to travel on the ground. These wheels are provided with forks G which are connected with the arch F in such manner that they can be turned about vertical axes, and a worm-gearing *g* is provided for each fork-spindle, whereby these wheels can be turned to the right or to the left to facilitate the shifting of the runway into the desired position. The body A is also provided with an upright frame H which provides a transverse track *h* for the wheel or roller I, which latter is mounted in suitable bearings on the runway E, so that said wheel travels back and forth on the track *h* when the runway is shifted laterally. The arch F is provided with braces *l* connected at their upper ends with the outer end of the runway E, so that the arch is suitably braced and held in position.

The bucket J is provided at its lower end with a gate *j* which is pivoted at 2, and this gate is connected by links 3 and 4 with the pivotal points 5 on the sides of the bucket, and the joints 6, one at each side of the bucket, are in the nature of toggle-joints for connecting the gate with the body of the bucket. A traveler K is provided with wheels *k* which travel on the runway E, in any suitable manner, and this traveler is provided with two sheaves 7 and 8, dis-

posed in the vertical plane of the runway. A sheave 9 is provided with a hook 10 for engaging the cross-bar 11 on the top of the bucket, so that the bucket is supported by said sheaves through the medium of a cable 12 which extends over the sheave 8 and under the sheave 9 and then over the sheave 7, in the manner illustrated. The runway is provided with depending arms L having pivoted stops *l* at their lower ends, and the arm 13 is rigid with the arms L and provided with a roller 14 at its end. The traveler K is provided with a cam 15 to engage the roller 14 during the automatic closing of the gate *j* (see Fig. 7), as will hereinafter more fully appear. The links 3 have upper-end-portions 16 which engage the stationary stops 17, when the bucket approaches the hopper *b*, so that the toggle-joints 6 will be operated to lower the gate (see Fig. 8). After the load has been discharged from the bucket into the hopper, and the cable connections are operated to reverse the motion of the bucket, the roller X, which is mounted on a stationary support adjacent the hopper, engages the under side of the gate to throw the latter upward into closed position. Then the upper end-portions 16 of the links 3 engage the stops *l*, and the cam 15 engages the roller 14, so that the toggle-joints 6 are brought past the center and against the stops 18 on the sides of the bucket, in which positions the toggles are self-sustaining and operative to hold the gate in raised or closed position. The cam 15 releases the roller 14 at about the time the toggles 6 strike the stops 18, so that the arms L then swing in the direction in which the bucket is traveling, allowing the portions 16 of the links 3 to pass out from under the pivoted stops *l*, it being observed that the latter are held by shoulders 19 on the arms L against pivotal movement relative to said arms in this direction. The traveler K is provided with means 20 to engage the portions 21 on the bucket, thereby to steady the bucket and prevent it from upsetting while it is traveling back and forth along the runway. When the bucket again travels toward the hopper *b*, the portions 16 engage the stops *l*, and while the cam 15 is passing under the roller 14, and while the arms L are held stationary at this time, it will be seen that the stops *l* swing freely in this direction, whereby these stops do not exert any pressure against the toggle-joints, allowing the latter to pass under and approach the stationary stops 17, so that the latter then trip the toggle-joints, causing the latter to release the gate (see Fig. 8).

The cable arrangement for operating the traveler K along the runway E, and whereby the bucket is raised and lowered by allowing the cable 12 to rise and fall between the sheaves 7 and 8 (the sheave 9 being supported in a loop of said cable) is as follows: The cable 12 has its outer end attached to the outer end of the boom or runway E, and its other end-portion extends downward over the sheave 22, through the hollow swivel *d*, and finally to the winding drum-mechanism M on the body of the machine. The cable 23 is fastened to the traveler K and extends rearward and over the sheave 24 and finally to the winding drum-mechanism, whereby the traveler may be pulled toward the hopper. The cable 25 is attached at one end to the traveler, extends forward and around a sheave 26 at the outer end of the runway, and then rearward to the hollow swivel *d*, and then downward over the other sheave 27 and finally to the winding drum-mechanism M, so that when this cable is wound up on one of the drums the traveler is pulled toward the outer end of the runway. Three sheaves 28 are arranged just below the hollow swivel *d*, on the runway, to support the three cables thus provided. When the cable 25 is operated, the traveler and the bucket are pulled toward the outer end of the runway, and by then reversing the drum for the cable 12, so that the loop in this cable is lengthened, the bucket will be lowered to receive the load. Then the cable 12 is wound on its drum of the mechanism M, and this raises the bucket with the load therein. The drum for the cable 23 is then operated to wind this cable thereon, and the drum for the cable 25 is rotated backward, whereby the traveler and bucket are pulled toward the hopper. With this arrangement, it will be seen, the bucket can be lowered at any place or at any point along the length of the runway.

It will be seen that the bucket is dumped automatically by simply bumping it against the stop 17, and that while in dumping position it is held by the portions 20 and 21, previously explained, against tilting movement on the traveler. No special operation is necessary for dumping the bucket when it arrives in dumping position, and the bucket thus adapted to automatically dump its load, is held by the portions 20 and 21 against tilting or rocking while traveling along in elevated position. The entire machine is portable, and can travel along the street, so that materials can be picked up anywhere, or wherever convenient, and carried by the bucket to the rotary concrete mixer.

What I claim as my invention is:—

1. In apparatus for conveying materials, a horizontally disposed runway, a traveler adapted for movement on said runway, a bucket hung on said traveler to move up and down at any point along said runway, provisions on the traveler to hold the bucket against rocking thereon when in raised position, means whereby the bucket is dumped

and then automatically restored to carrying condition while starting away from the dumping place in this raised position, and means to control the traveler on the runway.

2. The said apparatus, as set forth in claim 1 in which the means for supporting the bucket includes a cable extending along said runway, elements on said traveler to form a loop in said cable, and a sheave to support said bucket in said loop, so that said bucket is raised by shortening said loop and lowered by lengthening said loop.

3. The said apparatus, as set forth in claim 1 in which said bucket is provided with a gate, devices for automatically opening and closing said gate adjacent the dumping position, when the bucket is in raised position, and means on the traveler to control said devices.

4. The said apparatus, as set forth in claim 1 in which means are provided for automatically dumping the load from said bucket at the desired place of discharge.

5. The said apparatus, as set forth in claim 1, in combination with means including a hollow pivot for permitting lateral swinging movement of said runway, without interfering with the operation of said bucket, and means extending vertically through said pivot to raise and lower said bucket.

6. The said apparatus, as set forth in claim 1, in which said means include one cable for raising and lowering the traveler with the bucket thereon, and another cable for operating the traveler along the runway.

7. In apparatus for charging a concrete mixer, a portable body to support the mixer, an upright frame on said body, a pivot on said frame above the mixer, a swinging runway extending horizontally away from said mixer, means including a transverse track on said body to support said runway for lateral swinging movement about said pivot, a traveler on said runway, a bucket for conveying materials to said mixer, cables for operating said traveler on the runway and to support said bucket for lowering and raising movement under the traveler to pick up a load from the ground, and devices for causing the bucket to automatically discharge the load in to said mixer and to automatically be restored to carrying condition while starting away from the mixer in raised position.

8. A structure as specified in claim 7, in combination with a pivoted extension of said runway, and means including a frame having wheels to support said extension on the ground a distance from said portable body.

9. A structure as specified in claim 7, in combination with an extension of said runway, and means to support said extension to swing up and down, said runway extending under said track.

10. A structure as specified in claim 7, in combination with means on said traveler to control one of said devices in the restoration of said bucket to carrying condition after dumping the load.

11. A structure as specified in claim 7, in combination with means on the traveler to hold the bucket against rocking while in raised position.

12. The combination of a runway, a traveler on said runway, a bucket supported by said runway, a pivoted gate for said bucket, a locking device to hold said gate in closed position, a stop to trip said device and open the gate when the bucket arrives at the dumping position, and instrumentalities operative by backward movement of said bucket to engage said gate and also said device to close and lock the gate in closed position.

13. A structure as specified in claim 12, said instrumentalities including an arm pivoted on the runway to engage said device, and means on said traveler to control said pivoted arm, so that the bucket may pass the arm after the gate is closed and locked.

14. A structure as specified in claim 13, said arm having a pivoted lower end portion which permits said device to pass without releasing the gate when the bucket approaches the dumping position, so that said gate will remain locked until said device engages said stop.

15. In apparatus for charging a concrete mixer, a portable body to support the mixer, an upright frame on said body, a pivot on said frame above the mixer, a swinging runway extending horizontally from said pivot, means including a transverse track on said body to support said runway for lateral movement about said pivot, a traveler on said runway, a bucket for conveying materials to said mixer, cables for operating said traveler and to support said bucket for lowering and raising movement to pick up a load from the ground, and devices for causing the bucket to automatically discharge the load into said mixer and to automatically be restored to carrying condition while starting away from the mixer in raised position, in combination with means on said traveler to control one of said devices in the restoration of said bucket to carrying condition after dumping the load.

16. In apparatus for charging a concrete mixer, a portable body to support the mixer, an upright frame on said body, a pivot on said frame above the mixer, a swinging runway extending horizontally from said pivot, means including a transverse track on said body to support said runway for lateral movement about said pivot, a traveler on said runway, a bucket for conveying materials to said mixer, cables for operating said traveler and to support said bucket for lowering and raising movement to pick up a

load from the ground, and devices for causing the bucket to automatically discharge the load into said mixer and to automatically be restored to carrying condition while starting away from the mixer in raised position, in combination with a pivoted extension of said runway, and means including a frame having wheels to support said extension on the ground a distance from said portable body.

17. In apparatus for handling materials, the combination of a portable body frame, a horizontally disposed runway pivoted on said body frame to swing laterally about a vertically disposed axis, an extension of said runway pivoted on the outer end thereof to swing up and down, means to support said extension on the ground, and devices traveling on the runway and its said extension to carry a load of the materials.

18. A structure as specified in claim 17, in combination with a mixer arranged to receive the load by traveling movement of said devices from the said extension onto the runway.

19. A structure as specified in claim 17, said means for supporting the extension comprising an arch provided with wheels at the lower ends thereof.

20. A structure as specified in claim 17, said means for supporting the extension comprising wheels and means for turning each wheel about a vertical axis for steering purposes.

21. A structure as specified in claim 17, in combination with a transverse track on said body frame, and means on said runway to engage said track, whereby said extension is supported partly on the ground and partly on said body frame.

22. A structure as specified in claim 12, said gate being pivoted to swing downward away from the dumping position, and said instrumentalities comprising a rotary element disposed in position to push the gate upward into closed position while the bucket is moving away from the dumping position.

23. A structure as specified in claim 12, said locking device comprising a relatively long link pivoted at its lower end on the gate and extending upward to engage said stop when the bucket with its load approaches the dumping position, and to engage one of said instrumentalities when the bucket moves away from the dumping position, a relatively short link connecting said long link to the side of the bucket, and means for limiting the movement of both links into position to lock the gate in closed position.

Signed by me at Chicago, Illinois, this 31st day of March, 1917.

CHAS. C. POST.