

Jan. 8, 1924.

1,480,232

J. TRIMBLE

APPARATUS FOR DISTRIBUTING CONCRETE

Filed March 17, 1922

2 Sheets-Sheet 1

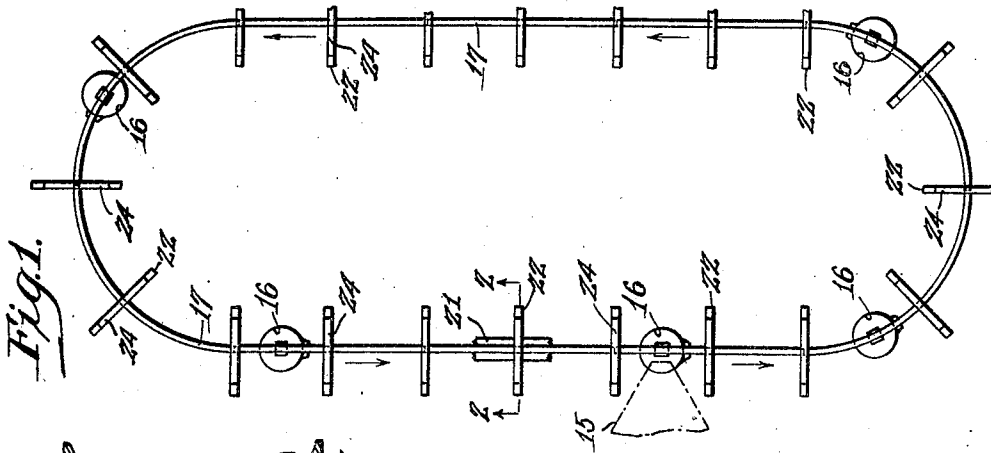


Fig. 1.

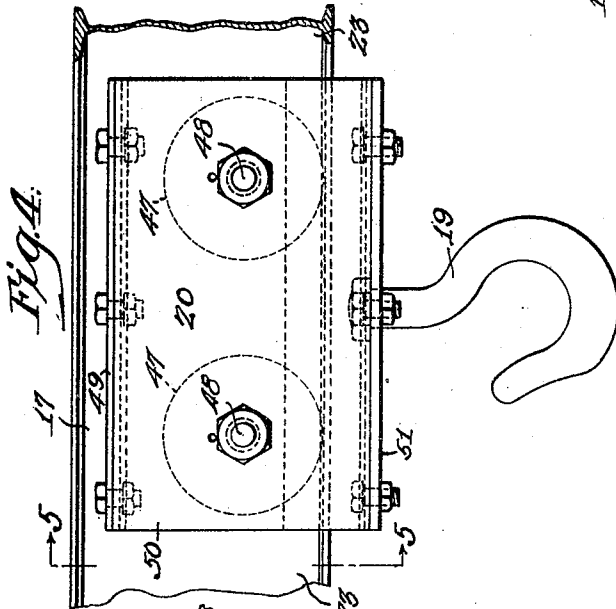


Fig. 4.

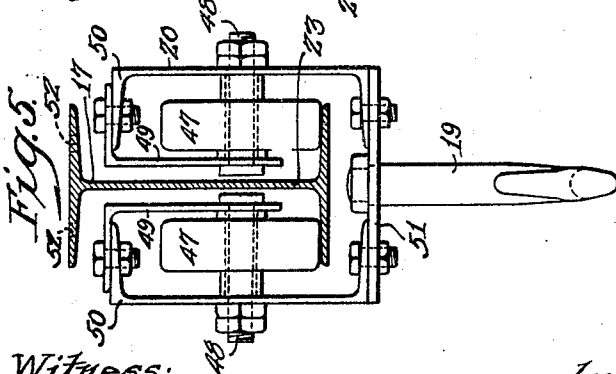


Fig. 5.

Witness:
Walter Chinn

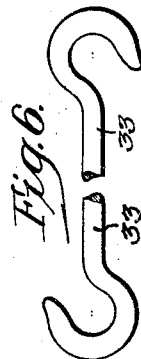


Fig. 6.

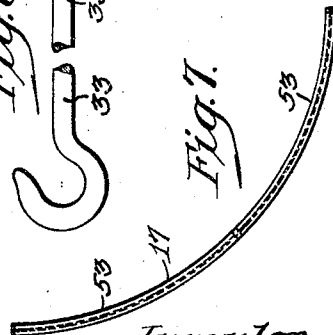


Fig. 7.

Fig. 8.



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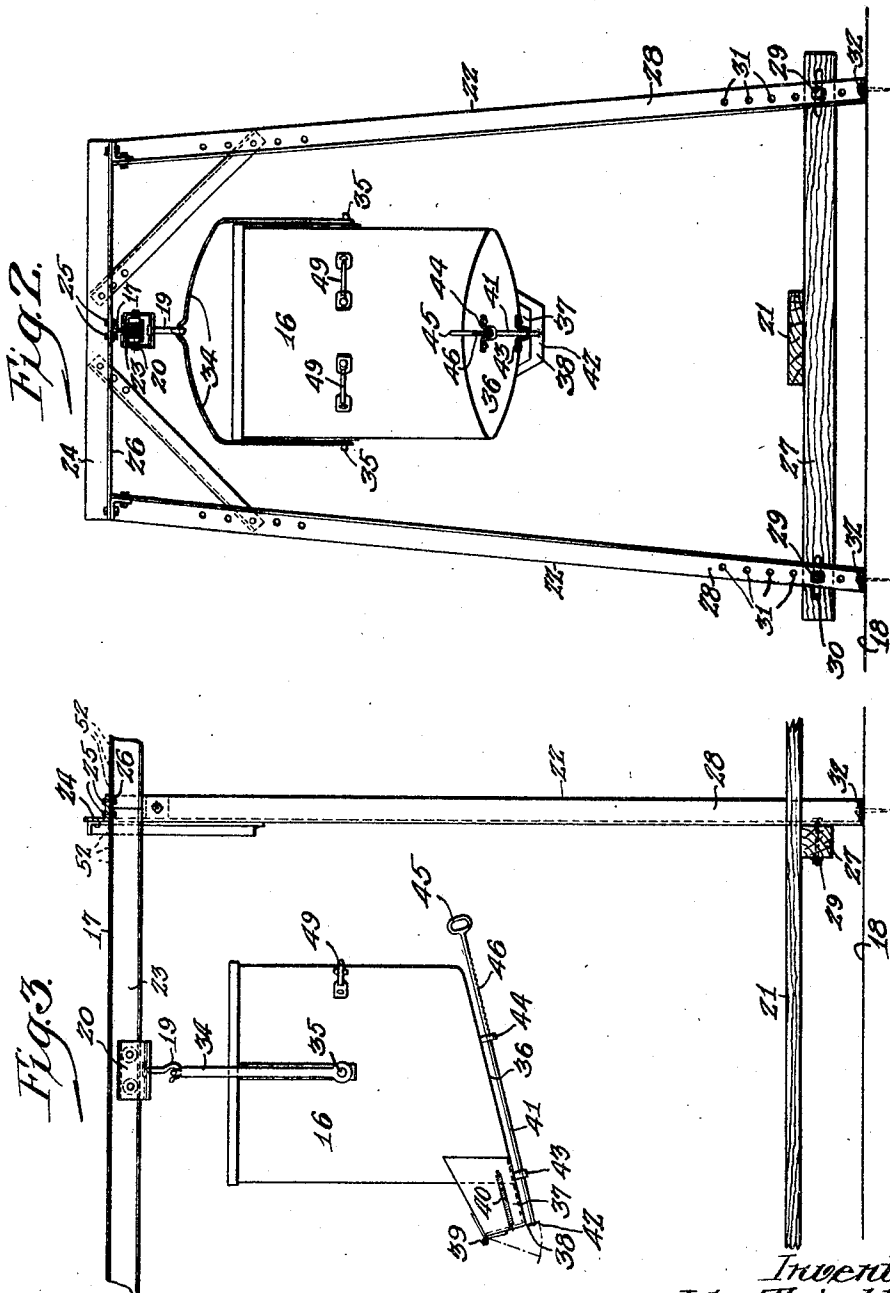
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2 Sheets-Sheet 2



Witness:
Halter Chum.

Inventor:
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UNITED STATES PATENT OFFICE.

JOHN TRIMBLE, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR DISTRIBUTING CONCRETE.

Application filed March 17, 1922. Serial No. 544,598.

To all whom it may concern:

Be it known that I, JOHN TRIMBLE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Apparatus for Distributing Concrete, of which the following is a specification.

My invention relates to laying concrete and more particularly to methods and apparatus for distributing concrete when laying reinforced concrete flooring and columns.

In the usual reinforced concrete buildings distribution is above temporary floors supported from below by suitable scaffolding, concrete being distributed from a stationary chute or hopper on each floor, the concrete being supplied to the floor by an elevator; and columns have to be poured before the flooring and girders principally because of the shrinkage of the concrete in hardening.

Hitherto usual practice is to distribute concrete from the chute or hopper in buggies pushed by hand along relatively wide temporary boardwalk tracks above the temporary form, it being necessary to have these temporary boardwalk tracks to bridge beams and girders, even when distributing to the columns.

These temporary tracks are too wide to permit laying the reinforcing metal under them while in place, and moreover they and the form become greatly fouled by reason of the concrete spilling upon them. The boardwalks are moved away after the columns have been poured, to permit placing the reinforcing material, and are subsequently put back so that the buggies can be used again to distribute concrete over the flooring.

The main object of my invention is to provide a process for lessening the labor and cost, and for increasing the ease and rapidity of distribution of concrete in structural work.

A further main purpose is to provide apparatus for performing this process.

A further purpose is to provide a movable overhead track and trolley for the distribution of concrete from the elevator to individual floors of buildings, the range of distribution being changed by moving the track.

A further purpose is to provide an overhead track for distribution of the concrete and a walk thereunder that while readily

movable is sufficiently out of the way as not to require moving after the columns have been poured in order to place the reinforcing material.

A further purpose is to provide wider range of distribution for a single position of the track by reason of the greater height at which the concrete is delivered, this greater height permitting the use of small lateral chutes from the distribution bucket. For pouring columns I lower the bucket.

A further purpose is to provide under an overhead distribution track a walk narrow enough to permit reinforcing metal to be put in place under it and with a concrete bucket adapted for distribution at the side.

A further purpose is to provide spaced vertical supports for the overhead distribution track with vertically adjustable means for carrying the walk beneath the track.

A further purpose is to provide the overhead track with spaced supports having legs on each side of the track with apertured flanges at their ends for nailing to the floor and with vertically spaced apertures for adjustably supporting the track.

A further purpose is to provide an improved trolley to run on the overhead track.

A further purpose is to provide an improved one man bucket to be carried by the trolley, movable about an axis to discharge in any direction.

A further purpose is to provide a hanging bucket with a pivotal support near and somewhat above its center of gravity so as to be readily tipped by the operator, with a sloping bottom to a sloping delivery spout for easy delivery, with a spout door spring-pressed toward closure against the end of an operating rod, and with a door operating rod that extends to a handle at the rear of the bucket.

A further purpose is to provide a preferably endless overhead track of structural shapes tied together by the spaced upright supports.

A further purpose is to provide upright supports adapted to slight foot adjustment to miss girders and beams.

A further purpose is to provide a trolley adapted to easy, inexpensive manufacture from standard light structural flats, channels and angles.

A further purpose is to have the operating rod adjustably interlock with a fixed part of

the bucket to lock the door closed or open to any desired extent.

Further purposes will appear in the specification and in the claims.

5 I have preferred to illustrate my invention by a single form only, selecting a form which is practical, efficient, and inexpensive and which at the same time well illustrates the principles of my invention.

10 Figure 1 is a top plan view of my invention, the spaced upright supports on one side being partly broken.

Figure 2 is an enlarged end elevation through line 2—2 of Figure 1.

15 Figure 3 is a side view of Figure 2.

Figure 4 is a partly broken side elevation of the track and trolley.

Figure 5 is a section through line 5—5 of Figure 4.

20 Figure 6 is a broken detail of a link for hanging the bucket at low elevation.

Figures 7 and 8 are top plan views of details.

25 In the drawings like numbers refer to like parts in all figures.

Referring to the drawings and describing in illustration and not in limitation:—

30 The stationary hopper 15 receives concrete from the skip-bucket and supplies the concrete to buckets 16 for distribution along a movable overhead track 17 over the temporary floor 18.

35 The floor 18 is a wooden form for the concrete floor and it will be channelled for floor beams and girders and have wells for the supporting columns. These channels and wells, as also supporting scaffolding are not shown, being no part of the invention.

40 It is the intention to utilize one setting of the apparatus with such shifting of the overhead support as circumstances require for all of the concrete work within its reach including the columns, girders and floor work and my construction is organized with this in view. Furthermore I do not only 45 take the weight of the concrete away from the board-walk for the operator, but make it possible for one man to push the bucket to position, to turn it for discharge if desired and to discharge it in any direction.

50 The bucket 16 is carried by means of a swivel hook 19 from a trolley 20 rolling upon the track. The loaded bucket is pushed by an operator walking along a walk 21 beneath the track to points of distribution and the empty bucket to the reservoir over the same path or is pushed around the closed circuit to the reservoir according to 55 circumstances.

60 The movable overhead track is supported by spaced vertical frame uprights 22, preferably of light angle iron, and the track is preferably of I-beams 23. The trolley rolls on the upper side of the lower flanges and 65 the beams themselves are supported and tied

together at their ends by bolting adjoining ends of successive beams to the same transverse member 24 of the frame uprights, bolts 25 joining the ends of the upper flanges of successive beams of the track to the flat 26 70 of the horizontal transverse member 24.

The walk 21, which is sufficiently narrow as not to interfere while in place with the laying of reinforcing metal, is carried on transverse pieces 27 across the legs 28 of the 75 frame supports. The proper height for these transverse pieces will in practice vary according to particular needs and circumstances and I have made provision for easy adjustment of the height of these transverse supports for the walk. Bolts 29 through 80 holes 30 in the ends of the transverse pieces and through any corresponding holes 31 of vertically spaced holes in the legs fasten the transverse pieces at any desired height. 85

The legs 28 are shown with an upward taper and the holes 30 should have sufficient length to permit registry with holes 31 at either top or bottom. It is of course evident that this necessity for registry might be 90 avoided by having the bolts 29 hook bolts under the pieces 27 hook-clamping these pieces to the legs.

I preferably provide the frame 22 with corner braces 30 and make the position of these braces adjustable by providing a suitable series of holes 31 in the frame members. In practice there will be occasional need for displacing one of the legs somewhat to avoid 100 a beam or girder and this distortion is made more easy by having adjustable the position of the brace 30.

The legs are flanged at the floor and when in place are nailed to the floor through holes 105 in these flanges, at 32 of Figures 1 and 2.

It is desirable to carry the bucket at times high and at times low, as low when delivering to columns and high when delivering to lateral auxiliary chutes for wide distribution from the track; to meet this need for 110 different heights of bucket I provide auxiliary links 33 for insertion below the swivel hook 19, thus obtaining any desirable height of bucket.

115 The improved bucket 16 is carried by a link member 34 at pivot projections 35 from opposite sides of the bucket. The bucket has a sloping bottom 36 for easy delivery of the concrete, the bottom sloping to a sloping delivery spout 37 having a delivery door 120 38 hinged at its top at 39 and spring-pressed to closure by means of lateral springs 40.

The opening of the door is controlled by rod 41 and its closure by the springs 40.

125 The door has a downwardly projecting portion 42 engaged by the end of the rod 41 which is slidably supported by guides 43 and 44 beneath the bottom of the bucket.

This rod extends from the projecting portion 42 of the delivery door along the bot- 130

tom of the bucket to the rear, and has at the rear a handle 45.

The door is opened by pushing forward the handle 45, the end of the rod 41 pushing out the projecting portion of the door against the action of the closing springs. The rod is also provided with notches 46 adapted to adjustably lock within a fixture on the guide 44 to maintain the door open to a position corresponding to that of the rod.

The bucket is preferably provided with handles 49 at the rear for added convenience in pulling, and turning, and tipping the bucket.

The pivots 37 are near and above the center of gravity of the bucket both when loaded and when empty and are in line approximately perpendicular to a vertical plane through the middle of the spout and the middle of the bucket.

The pivots 37 are near the center of gravity to make tipping easy and are above the center of gravity to avoid top heaviness, and are perpendicular to the vertical plane through the middle of the bucket and middle of the spout in order to adapt the bucket to pivotal tipping toward the spout.

The trolley 18 is conveniently and inexpensively made of channels, flats and angles.

There are two wheels 47 on each side of the I-beam rolling upon the top of the lower flanges, the wheels on each side being pivotally supported upon pivots 48 housed within inverted U housings made by bolting or riveting together the angle 49 and the channel 50, the pairs of housings being connected by means of a flat 51 which also carries the swivel hook 19.

In using my invention in concreting a floor, the overhead track, put up a section at a time, is first located with a range to distribute concrete to the columns, which are always poured first because of shrinkage of the concrete in hardening. Buckets are loaded at the reservoir and pushed by operators walking on the relatively narrow walk beneath the track and delivered into the column forms.

The columns must have time to shrink and harden before the floor concrete is poured and this period is used to place reinforcing metal over the floor.

During this operation the relatively narrow walk beneath the track is so little in the way as not to interfere and is not removed, a material advantage over present practice in which the wider and heavier walks requisite for the side-wheel buggies must be removed after the columns have been poured and put back for concreting the floor after the reinforcing material has been laid.

After sufficient hardening and incident completion of shrinkage within the columns and placement of the reinforcing material

over the flooring, concrete is distributed from the skip buckets over the floor for the range of the track, the range perhaps now including the whole floor without changing the position of the track and perhaps including only a part of the floor in which case the track is moved as needed.

Lateral chutes may be used when needed to increase the range of lateral delivery from the track and the greater elevation of my bucket as compared to the usual buggy permits the use of longer lateral chutes and consequent wider lateral delivery from the track than is possible with the usual buggy which rolls upon the walk.

The track may or may not be made endless, that is, made so as to return to itself so that the loaded buckets leave in one direction and the empties return along the same endless path to the reservoir.

I am aware that in view of my invention and disclosure others skilled in the art will see modifications and variations to meet particular need or individual whim and I claim all such modifications and variations in so far as they fall within the reasonable spirit and scope of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In apparatus for distributing concrete, a plurality of supports each comprising spaced legs united at the top to give a free space between the legs, a track supported thereby, a carrier adapted to travel along the length of the track, a walk for the operator beneath the track parallel with it and between the legs, permitting the operator to shove the carrier and a mount for the walk transverse to the legs and supported from them.

2. In apparatus for distributing concrete, a plurality of supports each comprising spaced legs united at the top, a track supported thereby, a carrier adapted to travel along the length of the track, a walk for the operator beneath the track and parallel with it and between the legs and mounts for the walk from the legs of the support adjustable in height upon said legs.

3. In apparatus for distributing concrete, a plurality of supports each comprising spaced legs united at the top, a track supported thereby, a carrier adapted to travel along the length of the track, operating means for discharging the contents of said carrier accessible from the rear and a walk for the operator supported by the legs and extending parallel to the track and between the legs, so that the operator can shove the carrier.

4. In apparatus for distributing concrete, a plurality of supports each comprising spaced legs connected at the top, a rail supported thereby, a carrier depending from

the rail and movable therealong between the legs, a walk for the operator beneath the rail, a plurality of transverse bars extending each from one leg to the other of a support and upon which the walk is mounted and adjustable connections between the legs of each support and the bars.

5. In apparatus for distributing concrete, a plurality of supports each comprising spaced legs connected at the top, a rail supported thereby, a carrier depending from the rail and movable therealong between the legs, a walk for the operator beneath the rail, a plurality of transverse bars extending each from one leg to the other of a support and upon which the walk is mounted and adjustable connections fastening the bars to the respective legs of the supports.

6. In apparatus for distributing concrete, a plurality of supports each comprising spaced flanged legs united at the top, the widths of the flanges of opposite legs lying in parallel planes, in combination with a walk between the legs connected with the flanges adjustably as to height and a rail-and-bucket conveyor above the walk.

7. In apparatus for distributing concrete, a movable overhead track of I-beams, spaced transverse supports uniting the ends of successive I-beams, legs on each side of the track for the transverse supports, apertured flanges on the legs near their bottom ends, and vertically adjustable transverse pieces for carrying a walk beneath the track carried by the legs.

8. In apparatus for distributing concrete, a movable overhead track, spaced transverse

angle-iron supports uniting the ends of successive portions of the track, angle-iron legs on each side of the track for the supports, cross braces across the corners between the supports and legs, vertically adjustable transverse pieces uniting the legs and a walk beneath the track carried by the transverse pieces.

9. In apparatus for distributing concrete, a movable overhead track, a plurality of upright supports for the track, having spaced legs each, on opposite sides of the track, vertically adjustable members transverse to the track supported by the legs, and a walk longitudinal of the track resting on the transverse members.

10. In apparatus for distributing concrete, a movable overhead endless track, supports therefor having spaced legs and a free way permitting walking between the legs, a trolley rolling on the track and a walk mounted between the legs of the supports and below the trolley, so that the operator can manipulate the trolley.

11. In apparatus for distributing concrete, a movable overhead track, side supports therefor on opposite sides holding the track above the feet of the supports and offering a free way for walking beneath the track, a trolley rolling on the track, a container for the concrete depending from the trolley and a walk mounted beneath the track and above the level of the feet of the supports so that an operator can walk thereon to shove the container.

JOHN TRIMBLE.