

1,362,002.

3 SHEETS--SHEET 1.

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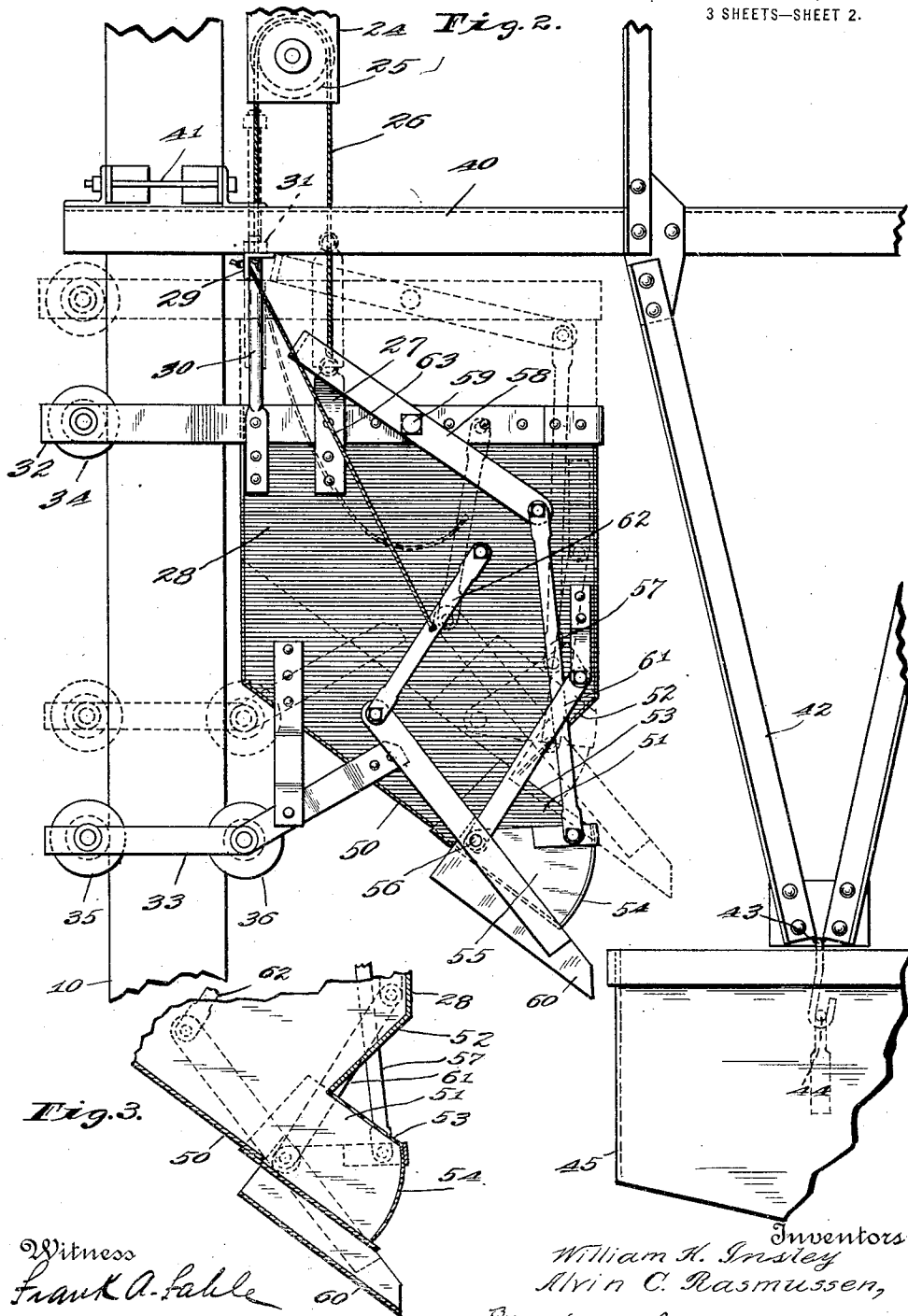
Attorneys

W. H. INSLEY AND A. C. RASMUSSEN.
 CONCRETE HANDLING MACHINE.
 APPLICATION FILED JUNE 13, 1919.

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Patented Dec. 14, 1920.

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Witness
 Frank A. Fable

Inventors
 William H. Insley
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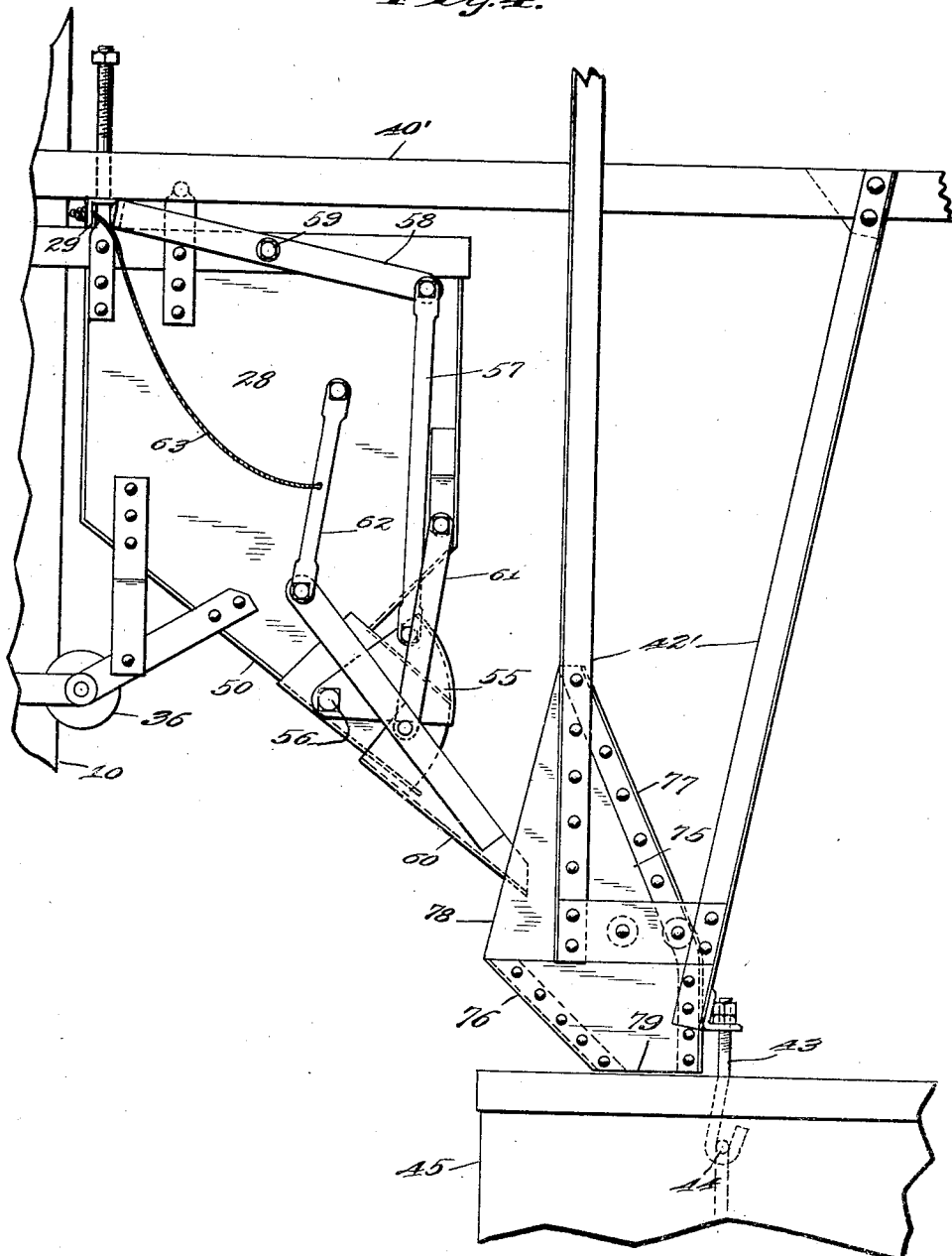
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Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM H. INSLEY AND ALVIN C. RASMUSSEN, OF INDIANAPOLIS, INDIANA,
ASSIGNORS TO INSLEY MANUFACTURING COMPANY, OF INDIANAPOLIS,
INDIANA, A CORPORATION OF INDIANA.

CONCRETE-HANDLING MACHINE.

1,362,002.

Specification of Letters Patent.

Patented Dec. 14, 1920.

Application filed June 13, 1919. Serial No. 304,029.

To all whom it may concern:

Be it known that we, WILLIAM H. INSLEY and ALVIN C. RASMUSSEN, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Concrete-Handling Machine, of which the following is a specification.

The object of our invention is to provide a simple, cheap and easily handled apparatus, by which contractors and builders of small buildings may handle freshly-mixed concrete as efficiently and conveniently as is now possible in the erection of large buildings.

The accompanying drawings illustrate our invention. Figure 1 is a side elevation of an apparatus embodying our invention; Fig. 2 is a side elevation on a larger scale of the hoisting bucket and adjacent parts; Fig. 3 is a fragmentary vertical section of the discharge portion of the hoisting bucket; and Fig. 4 a side elevation of a modified form.

In the drawings, 10 indicates a mast of convenient size and shape, preferably provided at its lower end with a step bearing 11 in which it may be rotated. The mast 10 should be of such dimensions as to be sufficiently stiff laterally according to its height and may be conveniently guyed in position by guy wires 12, said wires, if the mast is to be rotatably supported in the step 11, being attached to a collar 13 having rotatable connection with the upper end of the mast. For many jobs, especially foundations and one story buildings, the mast 10 may conveniently be made of a square timber. Arranged at the upper end of the mast is a head plate 15, provided with a pair of pulleys 16 and 17 projecting from opposite sides of the mast and adapted to support a hoisting rope 18, one end of which is attached to a winding drum 19 and carried over an idler pulley 20 in a block 21 attached by an eye and shackle 22 to the lower end of the mast. The opposite end of the cable 18 is passed over pulley 16 downwardly around a pulley 23 and thence upwardly and attached to the head plate 15. Pulley 23 is carried by a pulley block 24 which also carries a pulley 25, the purpose of which will appear.

Passed over pulley 25 is a short cable 26, one end of which is attached to a bail 27 carried by the elevator bucket 28 and the

other end of which is attached to a sliding bar 29 mounted upon a pair of upwardly-projecting fingers 30 carried by bucket 28. The upward movement of bar 29 on fingers 30 is limited by heads 31 attached to the upper ends of the fingers 30.

Bucket 28 is provided with arms 32 and 33 which straddle the mast 10. Arms 32 at the upper end of the bucket carry a roller 34 engaging the rear face of the mast 10 and arms 33 carry rollers 35 and 36 which engage the rear and forward faces of the mast, respectively.

Clamped upon the mast near its upper end, is a laterally extending arm 40 most conveniently attached to the mast by clamping means 41, 41 of such character that the arm may be supported from the mast at any desired height. This arm at its outer end carries a depending frame or finger 42 provided at its lower end with a hook 43 connected by a joint 44 with the hopper-like receiving end 45 of a chute 46 which has a downward inclination sufficient to permit freshly mixed concrete to slide down the same by gravity at such speed as to maintain the integrity of the mixture. Hook 43 is supported so as to be rotatable about a vertical axis while the joint 44 permits swing about a horizontal axis on hook 43.

It is desirable that the elevator bucket have a maximum capacity and consequently, in order to have the apparatus compact and in order to prevent wastage of the concrete in delivery from the bucket to the hopper 45, it is desirable that there be a minimum clearance between the bucket and the hopper as the bucket is raised to its upper load-discharging position. It is also necessary that the valve or gate of the hopper be capable of preventing drippage during the raising of the bucket and yet the hopper must be of such character as to discharge its load completely by gravity. In order to accomplish these various necessary results, the hoisting bucket is provided with a downwardly inclined bottom 50 extending from the mast-side of the bucket downwardly and outwardly. The sides of the hopper are so formed as to produce, in conjunction with the lower end of bottom 50, a delivery spout 51, the end of which does not project beyond the plane of that side of the hopper most remote from the mast. In order to prevent

too rapid delivery of material from the bucket, the sides are cut away in a V just above the spout 51 and a supplemental downwardly and inwardly inclined bottom 52 provided, this supplemental bottom having sufficient inclination to permit the contents to slide down it by gravity and to deliver the material to the inner end of the spout, the spout 51 being roofed over at 53 in the lower part of the V. The bottom 50 extends a trifle beyond the sides of the spout 51 so that the arc-shaped gate or valve 54 may rest upon this projected portion.

Gate 54 is provided at each end with segmental sides 55 pivoted at 56 to the sides of the spout, the construction being such as to make a reasonably close fit and also such that the gate does not project beyond the plane of greatest extension of the bucket from the mast. In order to operate the valve or gate 54 automatically, we attach to each side a link 57, only one of which is shown in the drawings, and these links are connected at their upper ends to the downwardly-projecting ends of a bail 58 pivoted at 59 to the bucket and extending across the bucket above the same. It is practically necessary to provide a pan to bridge the gap between the delivery end of spout 51 and the hopper 45 so as to insure proper delivery of the material into the hopper and for this purpose, I provide the pan 60 which lies beneath the hopper and is supported at each side by a pair of parallel main links 61, 62 pivoted to the sides of the bucket. Connecting link 62 with bar 29 is a connection 63 which we find can be conveniently a short piece of wire cable, the length of this connection being such that when the bucket is freely suspended and bar 29 is up against the heads 31, pan 60 will be drawn back so that its end will not project beyond the plane of greatest projection of the bucket.

In operation, the bucket will be filled from any suitable source when the bucket is in its lowest position on the mast and this may conveniently be done by arranging the mixer, of any standard type, in close proximity to the mast so that it may deliver directly into the bucket. When the bucket is in that position and is suspended from block 24 by cable 26, it will be noted that the valve 54 will lie of its own weight in closed position and pan 60 will be drawn back in the position shown in full lines in Fig. 2, because the entire weight of the bucket and the associated parts is supported, from cable 26, by a bail 27 and cross bar 29. When the bucket is raised by the hoisting cable 18, it will just clear hopper 45 and by the time it reaches the position shown in full lines in Fig. 2, where the outboard end of the pan 60 has nearly reached the plane of the upper end of the hopper, bar

29 comes into engagement with arm 40 and the continued upward movement of the hoisting mechanism will continue to raise the bucket 28 through bail 27 but the bar 29 being arrested, cables 63 are slackened and the pan 60 is free, by reason of its own weight, to project itself outwardly away from the mast, this movement taking place under such conditions that it clears the adjacent edge of hopper 45 and projects slightly beyond that hopper before bail 58 comes into engagement with arm 40. The further continued upward movement of bucket 28 results in a swinging of bail 58 and a consequent lifting of the gate 54 so as to open spout 51 and permit material to flow outwardly and to cross pan 60 into hopper 45, the gate 54 swinging up into the notch beneath the supplemental bottom 52. As previously stated, the supplemental bottom 52 serves to prevent too rapid a delivery of material from the spout 51. After the bucket 28 has discharged its contents, it will be lowered and, as it is lowered, bail 58 is first released so that gate 54 drops to closed position and then, as the descending movement continues, the cable 63 will be tightened and will drop backwardly upon link 62 so as to retract the pan 60 in time to clear the adjacent corner of hopper 45.

It will be understood that chute 46 will be of sufficient length to deliver material to the desired point, and, if desired, additional sections may be placed in position to receive the discharge therefrom and carry the concrete slush to more distant points.

In the form shown in Fig. 4, we have provided a receiving hopper between pan 60 (in its discharge position) and the chute hopper 45. In this construction the arm 40', similar in construction to arm 40, is provided with a depending frame 42' which, at its lower end, supports a hopper comprising side plates 75, rear plate 76, and front plate 77, the front plate extending considerably above the rear plate, so as to form an inclined receiving mouth 78 and a substantially horizontal discharge mouth 79, the arrangement being such that the material from pan 60 will be delivered into hopper 45 without splashing and waste.

We claim as our invention:

1. An elevator bucket having a discharge opening, a valve controlling said opening, a bridge pan arranged below said opening and normally retracted in the line of delivery of material from said opening, means operated by vertical movement of the bucket by which said valve may be opened and closed, and means by which the pan may be projected and retracted.

2. An elevator bucket having a discharge opening, a valve controlling said opening, an operating member by which said valve may be controlled, a bridge pan arranged

below the discharge opening and movable into and out of bridging position, an operating member by which the pan may be controlled, a hoisting cable carrying a block, a cable carried by said block and attached at one end to the bucket and at the other end to the pan-operating member, and means engaging the two operating members to open the valve and project the pan by final upward movement of the bucket.

3. An apparatus for handling fresh concrete, comprising a mast, an arm carried by said mast near its upper end and provided with a depending frame, a chute-hopper supported by said frame, an elevator bucket carried by the mast and provided with means for control of material therefrom, and an intermediate hopper carried by the frame and adapted to receive material from the bucket and deliver the same to the chute hopper.

4. An apparatus for handling fresh concrete, comprising a mast, an arm carried by said mast near its upper end and provided with a depending frame, a chute hopper supported by said frame, an elevator bucket carried by the mast and provided with means for control of material therefrom, an intermediate hopper carried by the frame and adapted to receive material from the bucket and deliver the same to the chute hopper, said intermediate hopper having a front plate extending above the rear plate to form an inclined receiving mouth in front of the discharge position of the bucket, and a discharge mouth above the chute hopper.

5. An apparatus for handling fresh concrete, comprising a vertically-movable bucket having a discharge spout delivering laterally from the bucket at an incline, a pan mounted beneath said spout and adapted to form a continuation thereof, a pair of parallel links pivoted to the bucket at their upper ends and to the pan at their lower ends so that the pan tends to move to projected position by gravity, and means acting upon the pan to retract it.

6. An apparatus for handling fresh concrete, comprising a vertically-movable bucket, converging bottom portions 50 and 52, and a short inclined spout continued on the line of the bottom 50, a bottom for said

spout extending slightly beyond its sides, at the discharge end, and a swinging gate pivotally supported upon said spout and adapted when closed to rest upon said projected bottom.

7. In a hoisting device, the combination with a vertically-movable bucket having an outlet at its lower end, of an outlet supplement arranged below the outlet, means suspending said supplement from the bucket so that the center of gravity of the supplement will tend to normally project it to fully projected position laterally from the bucket outlet, and means for holding said supplement in retracted position.

8. In a hoisting apparatus, the combination with a vertically-movable bucket having a laterally directed delivery spout with its mouth arranged within the vertical plane of the adjacent side of the bucket, a supplemental delivery pan arranged beneath said spout, suspension means attached to the bucket and the pan, whereby the pan will normally be gravity projected to its outer lateral extreme, and means for holding said pan retracted beneath the spout and within the plane of the adjacent side of the bucket.

9. In a hoisting apparatus, the combination with a vertically-movable bucket having a laterally directed delivery spout, a supplemental delivery pan arranged beneath said spout, suspension means attached to the bucket and the pan whereby the pan will normally be gravity projected to its outer lateral extreme, and means for holding said pan retracted beneath the spout.

10. In a hoisting apparatus, the combination of a vertically-movable bucket having a laterally directed and downwardly-inclined delivery spout, a pan arranged beneath said spout to supplement the same, a pair of parallel links pivoted to said bucket and to said pan in such position that the pan will be gravity propelled to its outermost position relative to said spout, and means for holding said pan in retracted position.

In witness whereof we have hereunto set our hands at Indianapolis, Indiana, this 6th day of June, A. D. one thousand nine hundred and nineteen.

WILLIAM H. INSLEY.
ALVIN C. RASMUSSEN.