June 30, 1931. J. P. FABER 1,812,328

APPARATUS FOR HOISTING AND DISTRIBUTING LOOSE MATERIAL

Filed Aug. 5, 1924 2 Sheets-Sheet 1

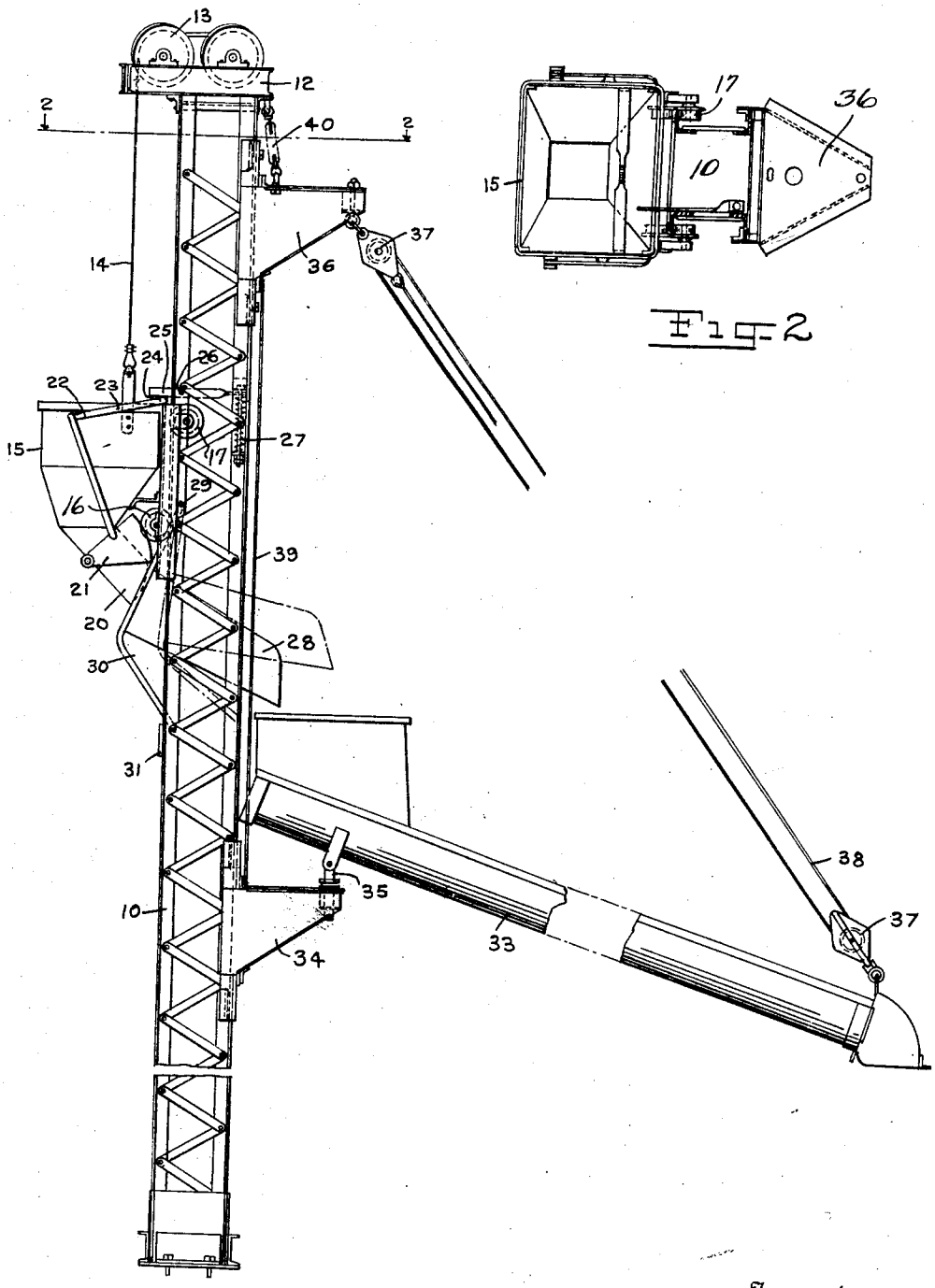


Fig-1

Fig-2

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APPARATUS FOR HOISTING AND DISTRIBUTING LOOSE MATERIAL

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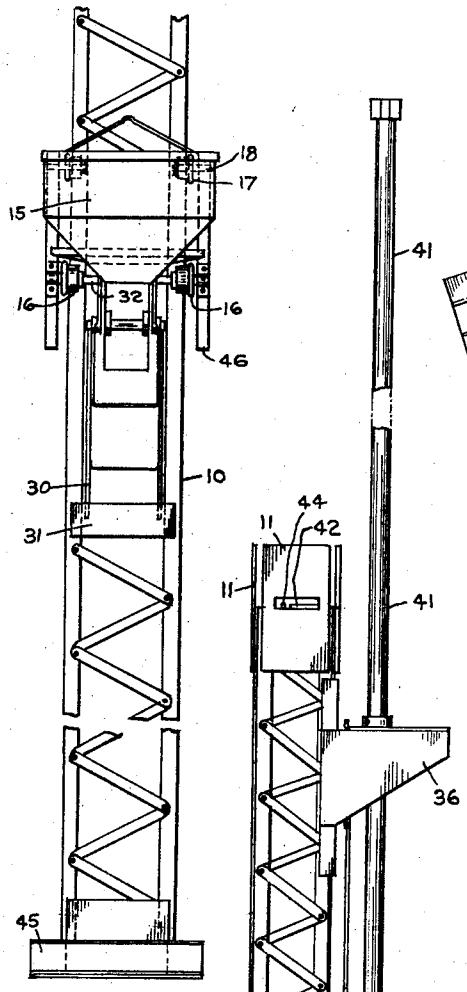


Fig. 3

Fig. 4

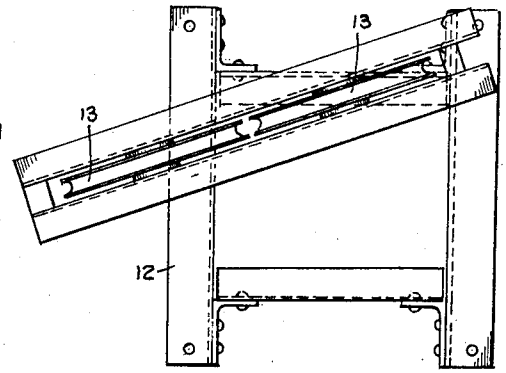


Fig. 5

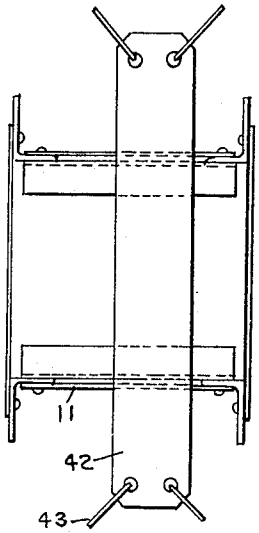


Fig. 6

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Patented June 30, 1931

1,812,328

UNITED STATES PATENT OFFICE

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APPARATUS FOR HOISTING AND DISTRIBUTING LOOSE MATERIAL

Application filed August 5, 1924. Serial No. 730,161.

This invention relates generally to hoisting apparatus such as is used in concrete construction work.

The invention includes a mast structure providing for the support of a traveling hopper or bucket on one side, and a feed chute extending through the body of the mast itself for transferring material from the hopper directly to the work or to a suitable delivery spout. Another feature of the invention resides in the movable mounting of the feed chute within the mast framework so that the chute can be held or deflected out of the path of the traveling bucket and automatically restored to material-receiving position beneath the bucket when the bucket has arrived at a discharging position.

The invention also includes bracket members adjustably positioned on the mast and serving the two-fold purpose of providing a support for an erection pole in the construction of the mast, or for supporting an adjustably positioned delivery spout in the operation of the apparatus.

Still other features of the invention include stop means for preventing engagement of the descending bucket with the ground; removable means for holding the bucket in cooperative relation to the mast; and transversely extending guy line anchoring members arranged to be mounted at junction points of the mast sections.

Certain features of the construction herein shown and described, but not covered by the claims hereof, are included in my pending application No. 313,679, filed October 20, 1928, which is a continuation in part of this application.

In the drawings, in which a preferred embodiment of the invention has been selected for illustration,

Figure 1 is a view in side elevation of a hoisting apparatus embodying the invention.

Figure 2 is a view in horizontal section taken on the line 2—2 of Figure 1.

Figure 3 is a view in front elevation of a portion of the device shown in Figure 1.

Figure 4 is a view in side elevation showing a portion of the apparatus of Figure 1 used for a different purpose.

Figure 5 is a plan view on an enlarged scale of the device shown in Figure 1, the bucket and chute not being shown.

Figure 6 is a view similar to Figure 5 showing a guy anchoring device forming part of the invention.

Referring to the drawings for a more detailed description of the invention, a supporting mast 10 for the hoisting and distributing apparatus may be formed of steel with corner angle irons connected by latticing as shown, or it may be formed of wood or of any desired combination of wood and metal. The mast may be constructed in sections to fit the height thereof to the requirements of the work, the sections being joined together at their abutting ends by means of connecting plates such as are shown at 11 in Figure 4 of the drawings.

The mast 10 is provided at its top with a head or frame 12 carrying sheave wheels 13 over which the hoisting cable 14 of a hopper or bucket 15 is passed. The bucket 15 is equipped with two pairs of flanged wheels 16 and 17 so arranged that the lower wheels 16 engage the outer surface of the mast corner frame members as a trackway while the upper wheels 17 engage the inner surface of the same frame members. In order to provide for separating the bucket from the mast, the upper wheels 17 are mounted on removable stub shafts 18 which are normally held in place by cotter pins 19. By removing the cotter pins the stub shafts 18 can be driven outwardly to release the wheels 17 so that the bucket can be removed.

The traveling bucket 15 is provided with a discharge member 20 normally closed by a hinged gate 21. A lever device 22 pivoted at 23 on the bucket rim projects at 24 into a position to engage a trip member 25 mounted at 26 on the mast to automatically open the gate 21 and discharge the bucket at any desired point, in its upward travel, at which said trip may be located. The trip member 25, again referred to hereinafter, is preferably pivotally mounted and is provided with a shock absorbing spring member 27 to prevent injury or breakage.

An important feature of the invention is

the provision of a feed chute 28 which is so mounted that it extends directly through the body of the mast 10 to discharge material received from the bucket 15 at the side of the mast opposite to that on which the bucket is mounted. Preferably the feed chute 28 is pivotally mounted at 29 on the mast and is so formed and balanced that, through the action of gravity, the chute normally tends to take a position, such as is shown in full lines in Figure 1 of the drawings, in which to receive material from the discharge port of the bucket 15.

In order to provide for the travel of the bucket without interference with the projecting end of the feed chute, a pair of curved arms 30, whose lower extremities engage a stop plate 31 on the mast in the normal position of the chute, form a pair of cam members adapted to be engaged by the axle 32 of the lower wheels of the bucket to force the chute out of the path of travel of the bucket during its passage thereby. As soon as the bucket has passed above the position of the chute, the chute swings back to its normal position and the lever on the bucket engages the trip member 25 which causes the gate 21 to open and discharge the contents of the hopper into the chute. In circumstances where the mast is located closely adjacent the work, the feed chute 28 may discharge material directly where it is needed.

In normal operations a further and more extensive distribution of the material will be needed and a delivery and distributing spout 33 will be required. In order to support the inner end of the spout 33 a bracket 34 is mounted on the mast for vertical adjustment thereon and a universal joint connection 35 is provided between the bracket and the delivery spout.

In order to support the outer end of the spout 33 a second bracket 36 is mounted on the mast and a block 37 and tackle connection 38 is provided between the upper bracket 36 and the outer end of the spout. Preferably the two bracket members are united into a unitary assembly through a connecting rod 39 so that a block and tackle connection 40 between the mast head 12 and the upper bracket 36 may be used to raise or lower both bracket members along the mast together with the delivery spout 33 supported thereby.

The bracket members 34 and 36 serve also to provide another function and that is to assist in the erection of extension units on the mast itself. In Figure 4 of the drawings the brackets 34 and 36 are shown as supporting an erecting spar or pole 41 in a position extended beyond the top of the mast in order to provide for lifting another mast section into position to be fitted at its base to the connecting plates 11.

In Figure 6 of the drawings is shown an anchoring plate 42 for guy lines 43. The plate 42 is conveniently mounted at desired joint sections and extends transversely through slots 44 formed in the connecting plates 11 for the purpose.

In order to prevent engagement of the hopper discharge member 20 with the ground in its descent, a stop plate 45 is fitted to the mast near the base thereof and extends laterally beyond the sides of the mast to receive the frame members 46 of the traveling carriage on which the bucket is mounted.

In order to cause the bucket to be discharged at different elevations in accordance with the progress of the work, the mast may be equipped with openings at different levels to receive the feed chute. The mast will also be equipped with stop plates 31 and with properly related seats for the trip member 25 and to support the chute in the different positions.

What I claim is:—

1. In a hoisting apparatus, a mast, a bucket mounted to travel along one side of the mast, a feed chute extending through the mast and adapted to receive material from the bucket and discharge the material at the other side of the mast, means for changing the vertical position of the feed chute in the mast, vertically spaced apart bracket members slidably mounted on the last-named side of the mast, means for maintaining the bracket members at a fixed distance apart, a delivery spout pivoted at its inner end to receive material from said feed chute, and a flexible supporting connection between the upper bracket and the outer end of the spout.

2. In hoisting apparatus, a mast having vertically disposed corner frame members, a bucket having a lower set of wheels arranged to engage the outer faces of the frame members on one side of the mast as a trackway, an upper set of wheels engaging the inner surfaces of the frame members as a trackway, a pair of inwardly projecting stub shafts on which the upper wheels are journaled, said stub shafts being movable outwardly to release the wheels and permit the removal of the bucket from the mast, and means for normally preventing the outward movement of the stub shafts.

Witness my hand this 28 day of July, 1924, at Dunellen in the county of Middlesex and State of New Jersey.

JOHN P. FABER.