

J. P. HUMPHRIES.

LOADER.

APPLICATION FILED APR. 27, 1917.

1,304,774.

Patented May 27, 1919.

4 SHEETS—SHEET 1.

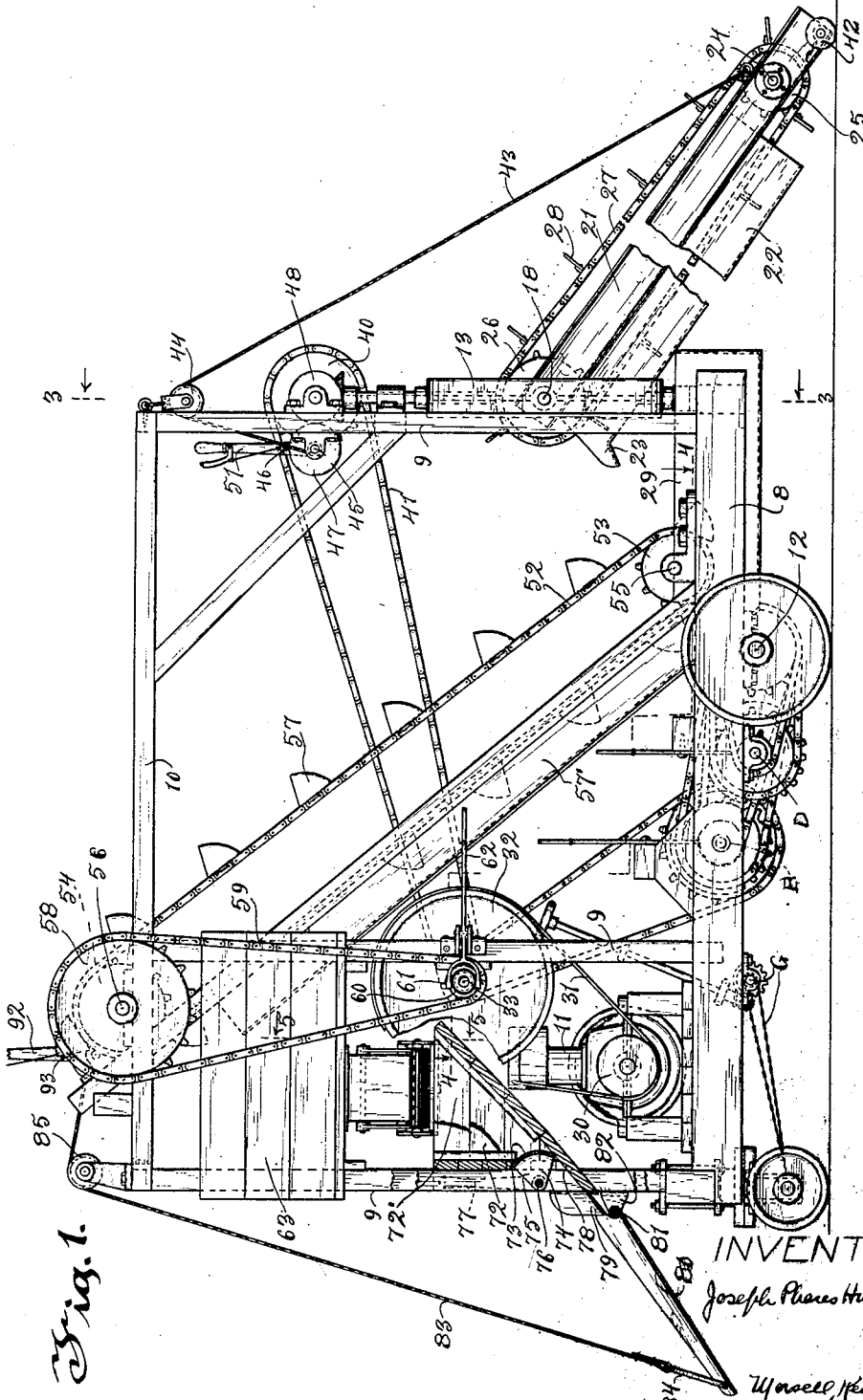


Fig. 1.

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4 SHEETS—SHEET 2.

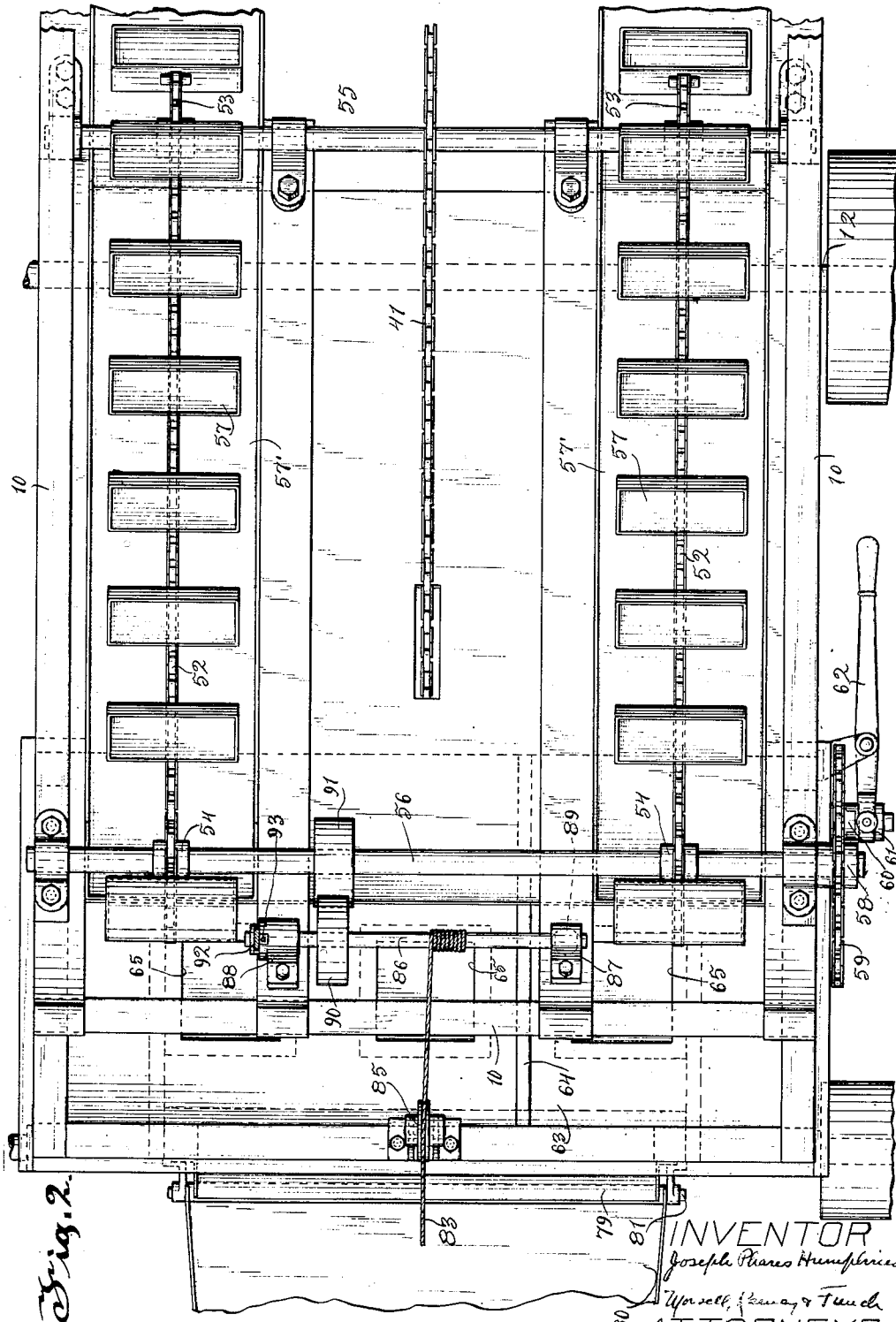


Fig. 2.

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4 SHEETS—SHEET 3.

Fig. 3.

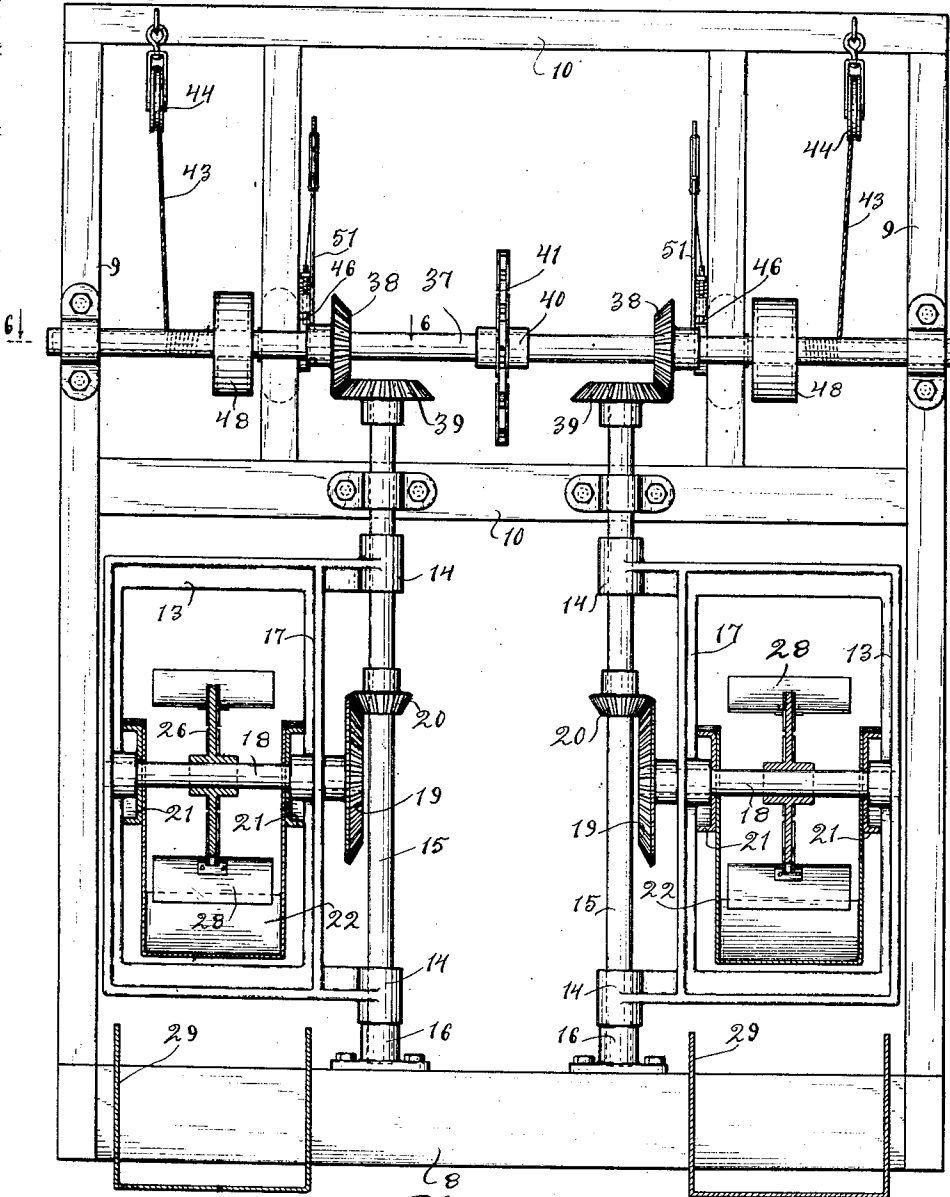


Fig. 6.

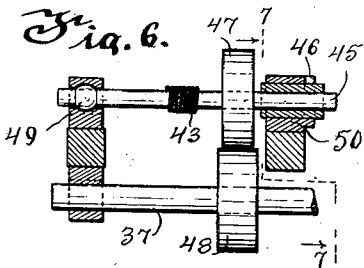
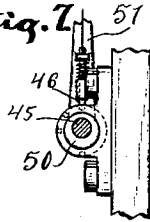


Fig. 7.



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4 SHEETS—SHEET 4.

Fig. 4.

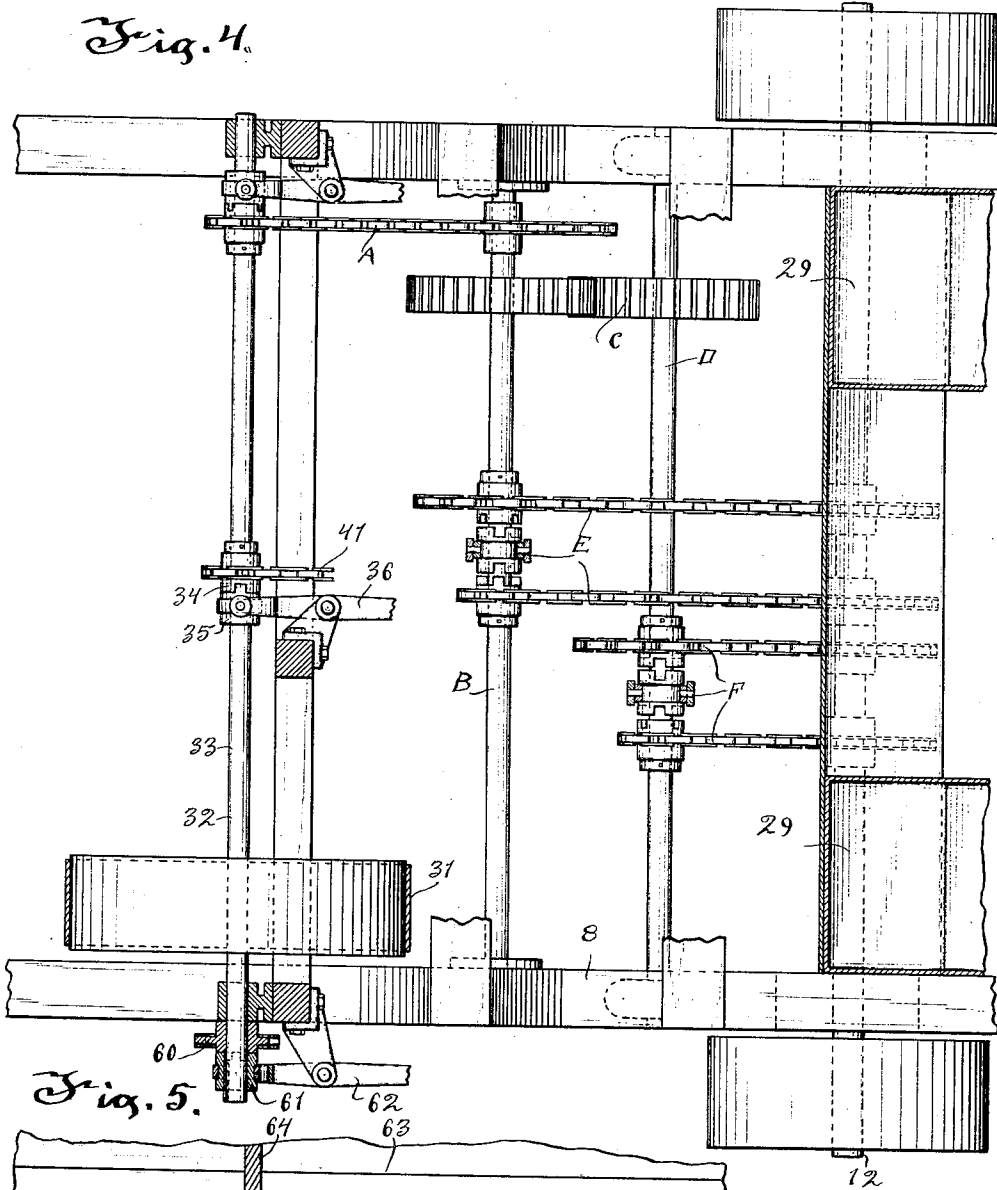
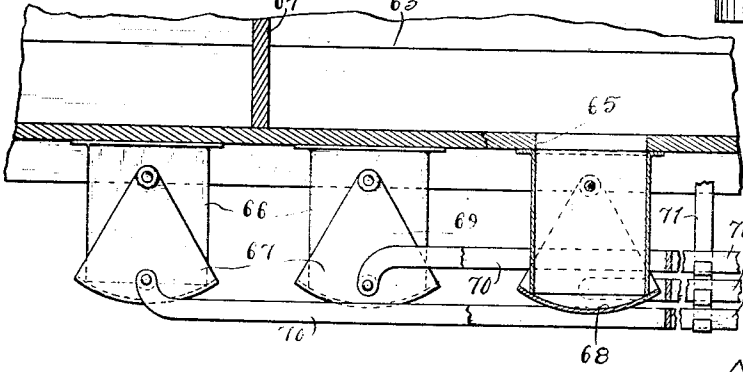


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH PHARES HUMPHRIES, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO STAMP
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LOADER.

1,304,774.

Specification of Letters Patent.

Patented May 27, 1919.

Application filed April 27, 1917. Serial No. 164,868.

To all whom it may concern:

Be it known that I, JOSEPH PHARES HUMPHRIES, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Loaders, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

The invention relates to loaders.

The invention is more particularly designed to provide a device for supplying large concrete mixers with material.

In paving and in other work where large concrete mixers are employed the common practice has been to dump the ingredients from the wagons upon the ground near the mixer and then shovel the same into wheelbarrows and convey it to the mixer for use. This system is both laborious and expensive and the present device has been designed to supplant this old method by providing a construction in which the material to form the concrete is picked up from its place of deposit and carried directly to the mixing drum and the invention further provides for delivering the ingredients in the proper quantities.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Figure 1, is a side elevation of the device embodying the invention, parts being broken away and parts being shown in section;

Fig. 2 is a plan view of the device, parts being broken away;

Fig. 3 is a section taken on the line 3—3 of Fig. 1;

Fig. 4 is a section taken on the line 4—4 of Fig. 1;

Fig. 5 is a section taken on the line 5—5 of Fig. 1;

Fig. 6 is a section taken on the line 6—6 of Fig. 3.

Fig. 7 is a section taken on the line 7—7 of Fig. 6.

In general the loader comprises a frame, conveying mechanism, a storage bin or bins, chutes leading from the bin or bins and provided with closures, and a discharge chute for conveying the material to the usual hopper loader on the concrete mixer.

The frame consists of a truck 8 of usual form provided with upright frame members 9 and lateral frame members 10. A motor 11 is mounted upon the truck and connected as hereinafter described to a drive shaft 33 which is connected through a clutch controlled sprocket and chain connection A with a shaft B which is connected by a direct gearing connection C with a shaft D. The shaft B has a change speed sprocket and chain drive connection E with the rear axle 12 and the shaft B has a change speed sprocket and chain drive connection F with the rear axle 12. These connections are adapted to drive the rear axle 12 either forward or back at different speeds and the loader is steered through mechanism designated generally by the letter G but as these features do not constitute a part of the loading mechanism proper further description is deemed unnecessary.

The conveying mechanism comprises a pick up conveyer and an elevating conveyer.

The material picking up devices are mounted at the rear end of the machine at both sides thereof and as the construction of both are the same only one need be described.

Each device comprises a horizontally swinging channel shaped bracket 13 having bosses 14 journaled upon a drive shaft 15, the lower boss resting upon a journal bracket 16 for the shaft 15, said bracket having a cross web 17 which forms with the other parts a rectangular frame, Fig. 3. A shaft 18 is journaled in this frame and carries a bevel gear 19 meshing with a bevel gear 20 on the shaft 15 whereby the shaft 18 may be rotated in any horizontal position of the bracket. Journaled at their inner ends upon

the shaft 18 are channeled shaped members 21 spaced apart and forming a vertically movable boom. Secured to the sides of these channel bars and extending down below the same and extending from the inner ends to a point near the outer ends thereof is a chute 22 having a discharge spout 23. The outer ends of members 21 are connected across in spaced relation near their front ends by a shaft 24 carrying a sprocket 25, Fig. 1. The shaft 18 carries a sprocket 26 and an endless chain 27 is mounted on these sprockets 25 and 26. Secured at certain distances along the length of the chain 27 and extending outwardly therefrom are a plurality of pusher and lifting blades 28, which on the drive of the chain, through the rotation of the shaft 18 through the gearing connection with the drive shaft 15, cause the blades to lift and push the material up and move it along in the chute 22 delivering it out through the spout 23 into a temporary storage bin 29, Fig. 3.

The drive shaft 15 is driven from the motor or engine 11 in the following manner; The drive wheel 30 of the motor is connected by a belt 31 with a drive pulley 32 mounted upon a shaft 33 carrying a sprocket 34 loosely mounted thereon but adapted to be secured thereto in driving relation through any suitable clutch, such as the clutch sleeve 35 slidably but not rotatably mounted on the shaft 33 and adapted to be brought into interlocking engagement with the gear 34 through the pivoted lever 36, Fig. 4. A transversely extending shaft 37 is mounted on the rear end of the frame and carries bevel gears 38 which mesh respectively with bevel gears 39 carried by each of the shafts 15 and a sprocket 40 is mounted on this shaft and connected by a chain 41 with the sprocket 34 whereby when the clutch sleeve 35 is in engagement with the sprocket 34, the shaft 33 driven by the motor will through the chain and sprocket drive 34, 41 and 40 drive the shaft 37 which through the gear connection 38 and 39 will drive the shafts 15 which through their gear connections 20 and 19 will drive the shaft 18 which as previously described will drive the lifting or picking up conveyer.

The front ends of the conveyer frame or boom carry rollers 42 to facilitate travel and means are provided for raising and lowering the conveyer frame comprising, in each instance, a cable 43 connected near the outer end of the boom thence extending upwardly and backwardly over a guide pulley 44, mounted on the frame, and thence extending downwardly over a winding shaft 45 which is adapted to be locked against movement by a pawl and ratchet 46 and which is driven to wind up the cable upon it through a friction drive consisting of a friction wheel 47

mounted on the shaft 45 and adapted to be brought into driving engagement with a friction wheel 48 mounted on the shaft 37. The shaft 45 has a swivel bearing 49 at one end and an eccentric bearing 50 at the other whereby the shaft may be moved laterally into or out of engagement with the wheel 48. On the release of the pawl and ratchet lock the conveyer frame may be lowered to the height desired.

After the material is brought into the bins 29 it is elevated into the storage bins by devices communicating with the respective bins. Each of these devices comprises an endless bucket conveyer consisting of an endless chain 52 mounted on sprockets 53 and 54 carried by shafts 55 and 56 respectively, and a plurality of buckets 57 carried by the chain Figs. 1 and 2, return chutes 57' being provided below the lower rim of the conveyer to catch any material not delivered to the upper bin and return it to the bin 29.

This conveyer is driven through the shaft 56 which carries a sprocket 58 connected by a chain 59 with a sprocket 60 adapted to be secured to rotate with the shaft 37 through a clutch member 61, similar to sleeve 35 and similarly associated with the sprocket, and controlled through a pivoted lever 62. Thus the rotation of the shaft 37 also serves to drive these bucket conveyers which take the material delivered from the pick up conveyers into the bins 29 and raise this material upwardly and convey it to the storage bin 63 (for several batches).

The storage bin 63 extends across the front upper portion of the frame and is provided with a movable partition 64 which is used to form two bins for different quantities and kinds of material, that is one of the conveying and lifting mechanisms will supply one bin with crushed stone and the other with gravel or sand and the capacity of the bins is so proportioned as to provide several charges for the mixer when they are full.

The bottom of the bin 63 has a plurality of openings 65 therein with chutes 66 communicating with these openings. Each chute is provided with a bottom closure 67 having a curved bottom 68 and arms 69 pivotally connected at their upper ends to the sides of the chute, the bottom being curved on a circle having the pivotal mounting as a center whereby portions of the bottom of the closure will contact with the bottom edges of the chute until completely removed therefrom so that the amount of material delivered from the chute may be regulated. Each closure 67 is opened by means of a rod 70 pivotally connected to it below the pivotal support and slidably mounted on a bracket 71 carried by the frame.

The material from the chutes 66 is deliv-

ered into a stationary hopper 72, mounted on the frame and provided with a lengthwise extending outlet 73 adapted to be closed by a curved longitudinally extending closure 74 having arms 75 mounted on a shaft 76 pivotally mounted on the frame and carrying an operating lever 77 whereby the amount of material passing from the hopper may be regulated. A portion 78 of the hopper extends below the outlet 73 and an auxiliary chute 79 forms an extension of this portion. A partition 72' is also provided in this hopper to separate the sand from the stone and provide enough of these for a single batch for the mixer. A discharge trough or chute 80 is pivotally mounted on a shaft 81, mounted in a laterally projecting bracket 82 secured to the frame, and the chute 79 projects over the pivotal mounting of the chute 80 so as to deliver the material thereto. This chute 80 is adapted to be raised and lowered through a cable 83 connected by a yoke 84 with the outer end of the chute and extending upwardly over a guide pulley 85 and thence around a winding shaft 86 journaled in brackets 87 and 88 on the frame, said shaft having a swivel connection 89 with the bracket 87 and a mounting in an eccentric bearing in the bracket 88, similar in all respects to that previously described for the shaft 45, said shaft carrying a friction wheel 90 adapted to be brought into and out of driving engagement with a friction wheel 91 mounted on the shaft 86 by means of a lever 92 which shifts the eccentric bearing for the shaft. The shaft 86 is secured in different position by a pawl and ratchet mechanism 93. The material from the hopper 72 passes down along the chute 80 into the usual charging hopper for the mixer, the chute 80 being moved up out of the way if desired when the charging hopper of the mixer is elevated.

With the construction above described, the motor may be connected up with the traction drive to move the machine to the place of work. The machine is brought up so that its discharge chute 80 will be disposed in line with the charge hopper of the machine and the material is dumped near the pick up conveyers, stone on one side and sand or gravel on the other. These pick up conveyers through the means previously described can be raised and lowered and swung about their support to take up the material within their reach. The power connections with the engine for driving these conveyers is established as previously described and the pusher blades 28 move the material up the chutes 22 into the bins 29 from whence the bucket conveyers take the material up to the respective parts of the storage bin from which the material is discharged as needed into the batch hopper from whence it is discharged into

the chute 80 and thence into the charging hopper of the mixer. The clutch controls provide for stopping the drive of the conveyers when desired and the raising and lowering means for the rear conveyers and the discharge chute are operated when necessary to suit the requirements of the work.

It will be noted that the use of the measuring hopper 72 provides for a uniform mix a thing which cannot be accomplished by the usual loading from wheel-barrows as they are never loaded twice the same.

With this device but one or two men are needed to operate it thus doing away with the services of the half dozen or more workmen frequently employed to feed the mixer.

I am aware that the details of construction of the invention are capable of considerable modification and change and I wish it understood that such changes as come within the scope of the appended claims are within the spirit of my invention.

What I claim as my invention is:

1. A loader for a concrete mixer comprising a frame, a storage bin carried thereby, conveying devices for automatically picking up and transporting material to the bin from a place of deposit on the roadway, a hopper for receiving a batch of material from the bin, means for controlling the passage of material from the bin to the hopper, and means for discharging material from the hopper into the loading device for the mixer.
2. A loader for a concrete mixer comprising a frame, a bin carried thereby and provided with an adjustable partition to form a plurality of storage compartments, a hopper provided with a partition to form a plurality of compartments to receive a batch of materials from said storage compartments, means for discharging the material from the storage compartments into the batch compartments, conveying devices for automatically picking up and transporting the materials from a place of deposit on the roadway to said storage compartments, and means for discharging material from said hopper compartments into the loading device for the mixer.
3. A loader for a concrete mixer comprising a frame, storage compartments carried thereby, means for transporting material from a place of deposit to each of said compartments including a bucket conveyer, and a horizontally and vertically swinging boom carrying a movable pick up conveyer carried by the frame, a hopper provided with compartments for enough material to form a batch, means for discharging the material from the storage compartments into the hopper compartments, and means for discharging the material from the hopper compartments into the loading device for the mixer.
4. A loader for concrete mixers comprising

ing a frame, a horizontally and vertically movable boom mounted adjacent the rear of said frame, a shoveling conveyer carried by said boom, a receiving bin mounted on the frame for receiving material from said conveyer, a storage compartment, a bucket conveyer for receiving material from the receiving bin and depositing it in said storage compartment, a hopper below said storage compartment, means for discharging the material from the storage compartment into the hopper, and means for discharging the material from the hopper into the loading device for the mixer. 10

In testimony whereof I affix my signature. 15
JOSEPH PHARES HUMPHRIES.