No. 738,076. PATENTED SEPT. 1, 1903.

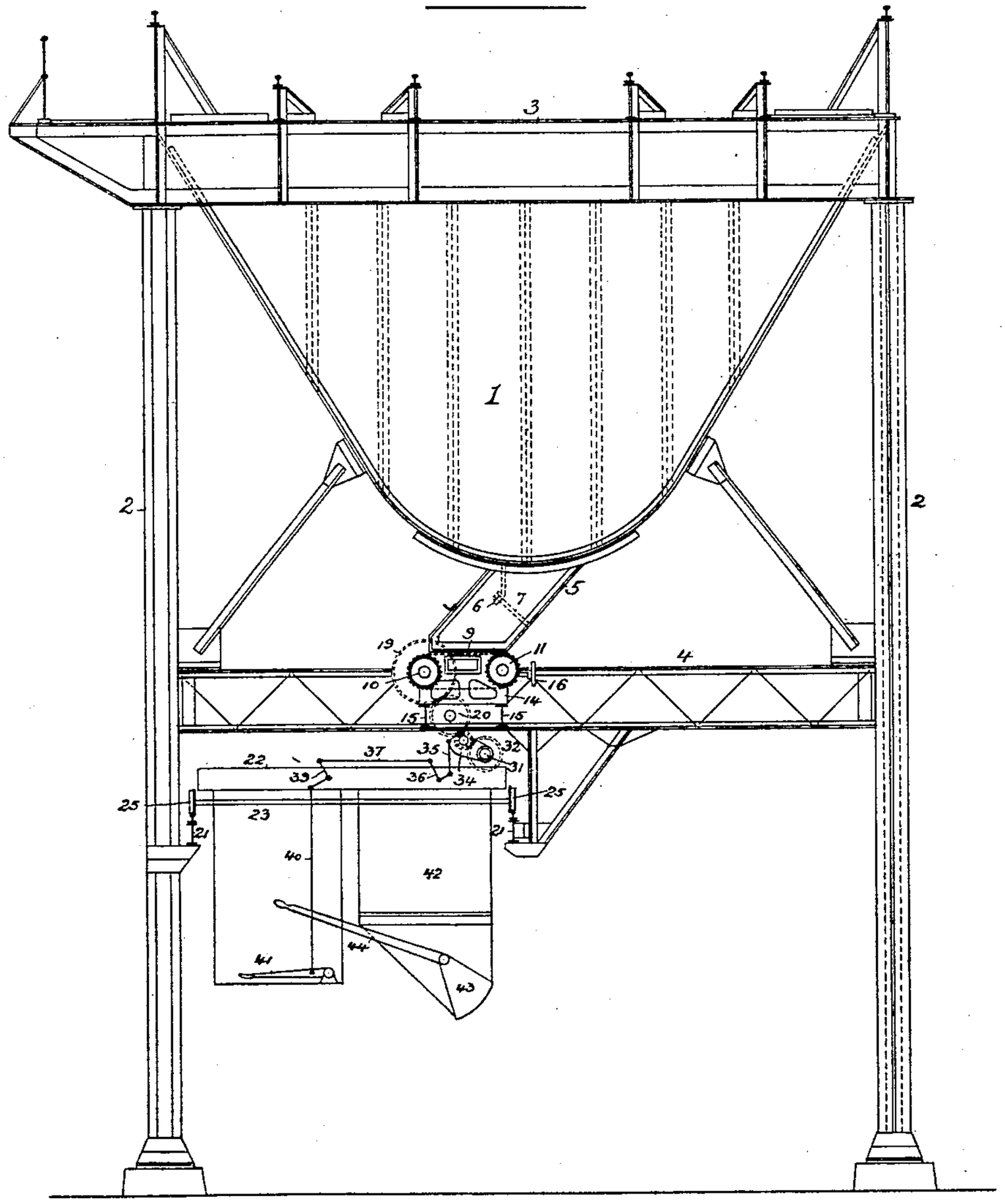
J. W. SEAVER.

DELIVERY MECHANISM FOR ORE BINS.

APPLICATION FILED OCT. 28, 1901.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.



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NO MODEL. 4 SHEETS—SHEET 2.

Fig 4.

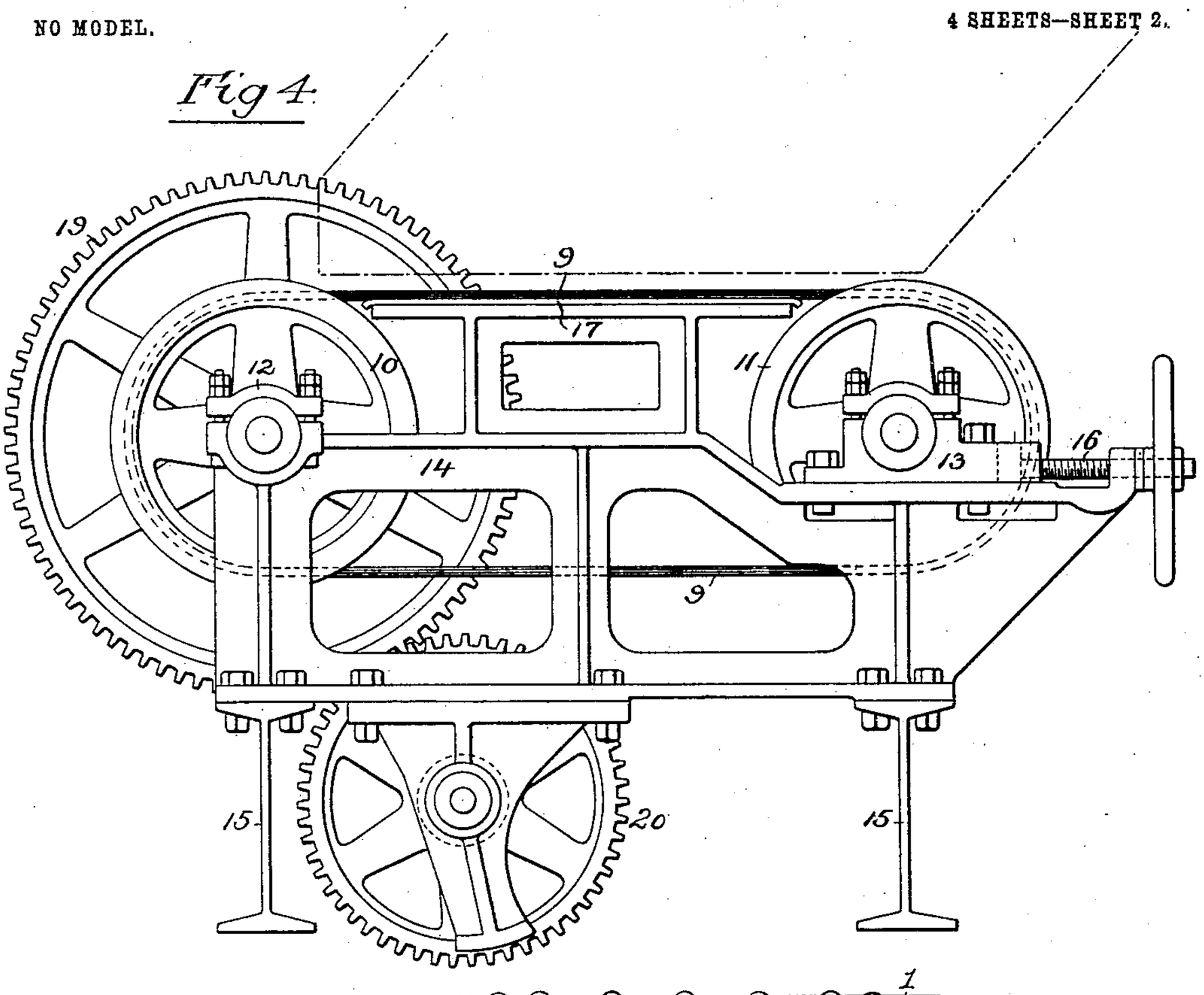


Fig 3

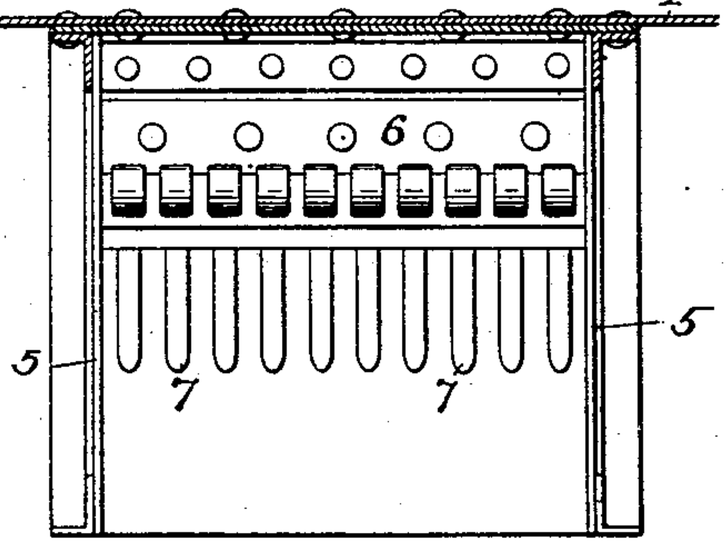
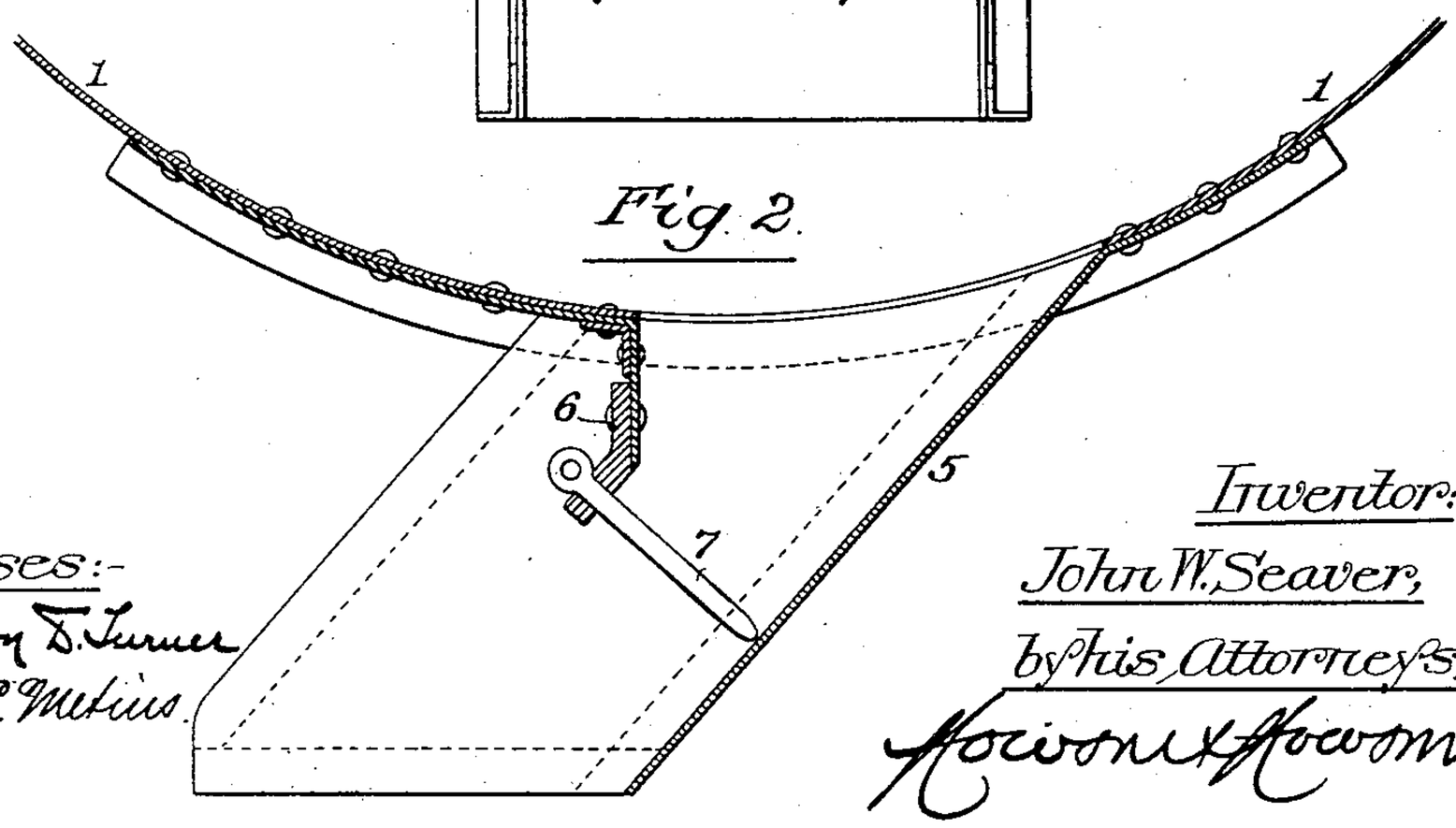


Fig 2.



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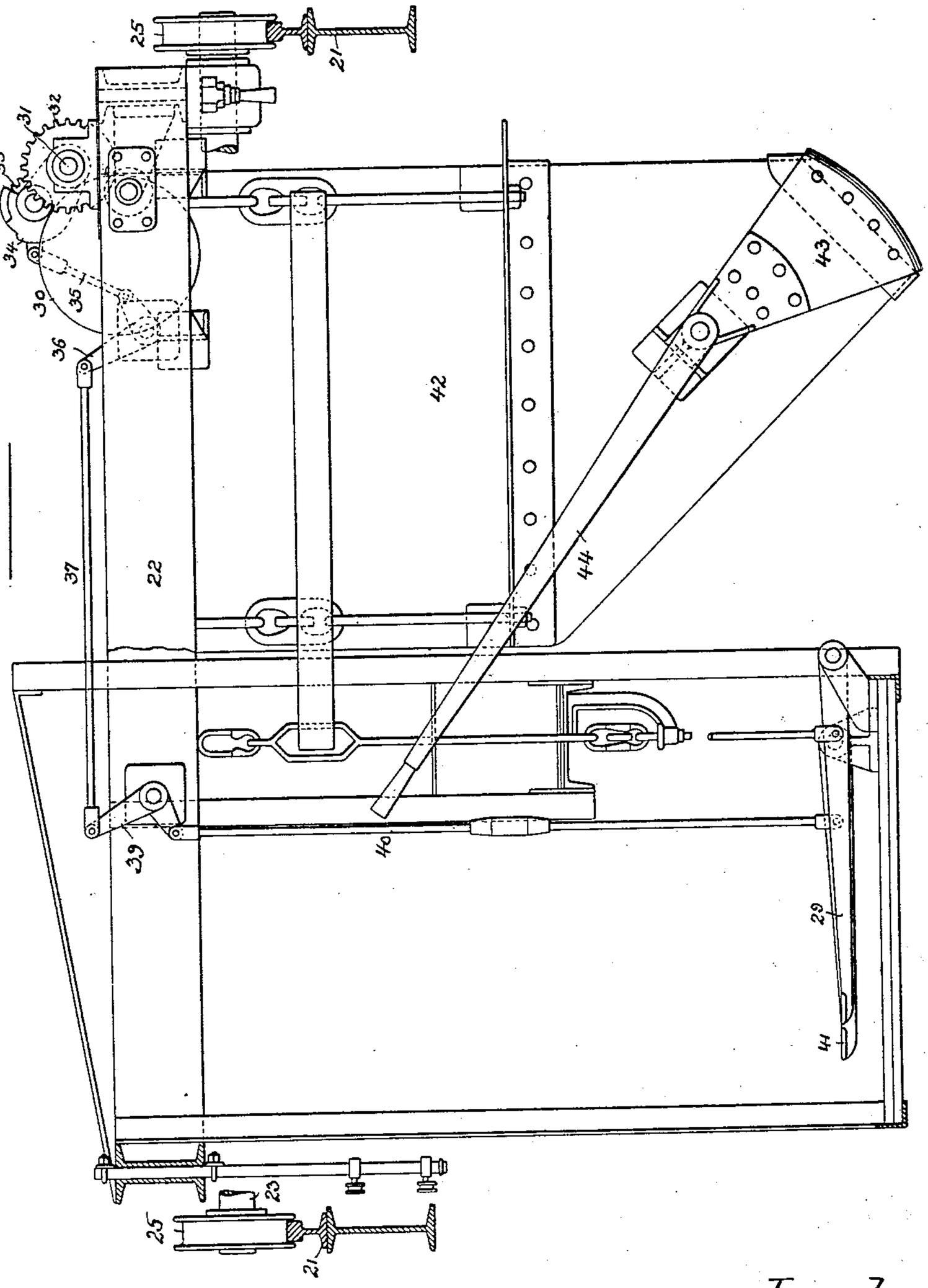
NO MODEL. 4 SHEETS—SHEET 3.

Fig. 5.



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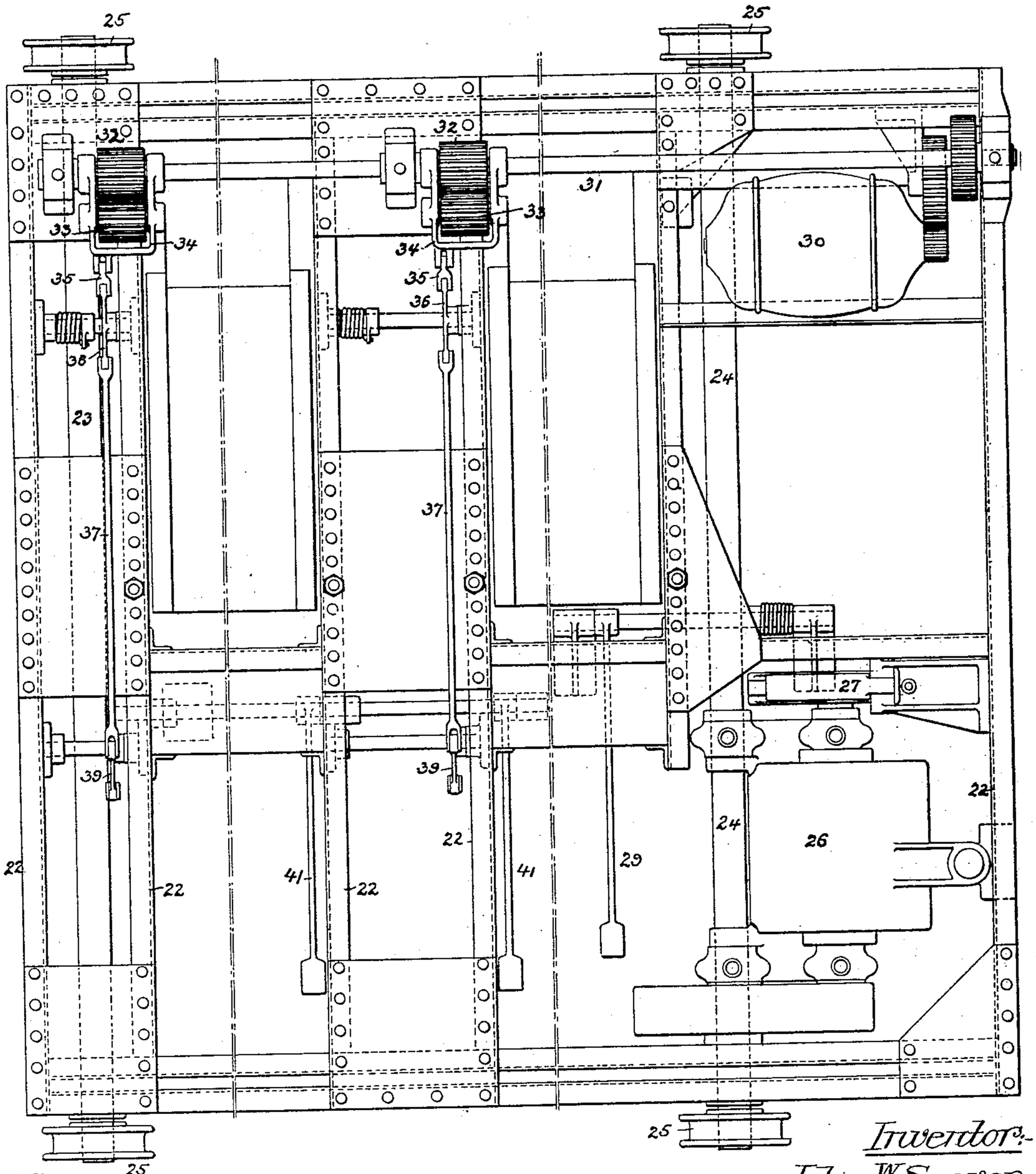
NO MODEL. 4 SHEETS—SHEET 4.

Fig. 6.



No. 738,076. Patented September 1, 1903.

UNITED STATES PATENT OFFICE.

JOHN WRIGHT SEAVER, OF CLEVELAND, OHIO, ASSIGNOR TO THE WELLMAN-SEAVER ENGINEERING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

DELIVERY MECHANISM FOR ORE-BINS.

SPECIFICATION forming part of Letters Patent No. 738,076, dated September 1, 1903.

Application filed October 28, 1901. Serial No. 80,267. (No model.)

To all whom it may concern:

Be it known that I, JOHN WRIGHT SEAVER, a citizen of the United States, and a resident of Cleveland, Ohio, have invented certain Improvements in Delivery Mechanism for Ore-Bins, of which the following is a specification.

The object of my invention is to so construct delivery apparatus for ore-bins or other receptacles for granular material as to readily control the rate of discharge and to operate any one or more of a number of delivery devices by means of a single motive-power mechanism.

This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a bin structure with delivery mechanism therefor in accordance with my invention. Fig. 2 is an enlarged section of the spout portion of the bin. Fig. 3 is a front view of said spout. Fig. 4 is a side view of the delivery-belt and of the supporting mechanism therefor. Fig. 5 is an end view of a traveling larry forming part of the delivery mechanism; and Fig. 6 is a plan view of the same, partly broken away.

The bin structure 1 (shown in Fig. 1) is mounted upon a framework comprising vertical columns 2, top girders 3, and lower cross-girders 4, the top girders supporting tracks for the cars whereby the ore is conveyed to the bins, it being understood that a series of these bins are located side by side in the supporting structure, each bin having its own delivery apparatus; but as the delivery apparatus is the same for all of the bins it will be necessary to describe but one of them.

The bin has an inclined delivery-spout 5, having a closed bottom and sides but open at the top, and across this spout, some distance above the bottom of the same, passes a bar 6, which is rigidly supported in the spout and has formed in it openings for a number of pins 7, which when inserted extend from the bar to the bottom of the spout and constitute a grated valve for governing the discharge of ore from the bin. These pins 7 may be independent of each other or their outer ends may be connected, so that they can be moved as a unit.

Directly beneath the lower end of the delivery-spout is an endless belt 9, Fig. 4, which is mounted upon drums 10 and 11, the shafts of said drums being adapted, respectively, to bearings 12 and 13, carried by opposite side frames 14, which are bolted to longitudinal beams 15, carried by the transverse girders 4 and forming part of the fixed supporting structure of the bin.

The bearings 13 for the shaft of the drum 11 are controlled by an adjusting-screw 16, as shown in Fig. 4, so as to keep the belt 9 at a proper tension, and the sagging of the upper run of the belt, which receives and carries the load of ore from the spout 5, is prevented by means of a smooth steel plate 17, which is interposed directly beneath the upper run of the belt and is secured to and carried by upwardly-projecting central portions of the frames 14.

The shaft of the drum 10 has a spur-wheel 19, which meshes with a spur-wheel 20 on a shaft carried by bearings depending from the frames 14, power being applied to this spur-wheel 20 in order to drive the belt 9 and thereby cause the latter to convey from the discharge end of the spout the ore which is permitted to flow down said spout when the pins 7 or any desired number of the same have been raised.

It will be observed that the conveyer-belt 9 and all of its supporting devices are carried by the frames 14, which are supported upon the fixed structure, so as to be entirely separate from the bin. Hence the belt and its supporting mechanism can be removed and replaced without disturbing any portion of said bin structure. Ready inspection or repair of the belt mechanism is thereby permitted, and, besides this, erection of the mechanism in the first instance is much facilitated.

By the use in connection with the delivery-belt of an inclined spout, as shown, the bottom of said spout serves to sustain a portion of the weight of the ore after the same passes the valve of the spout, and by locating the

valve above the bottom of the spout the belt is entirely relieved from the weight of ore in the bin. Consequently accidents to the belt and its operating mechanism due to overloading are effectually prevented. I do not, however, claim the use of the endless delivery-belt nor the means for supporting the same, nor do I limit my present invention thereto, as other means for governing the discharge from the bin may be substituted therefor.

The operation of the ore-delivery belt is effected by a motor and gearing on a traveling larry, the rails or runways for which are mounted on longitudinal beams 21 on the fixed structure, as shown in Fig. 1, the construction of this larry being illustrated in Figs. 5 and 6, in which the same is shown in duplex form, although a single larry can be employed, if desired.

An upper framework 22 carries bearings for shafts 23 and 24, which have grooved wheels 25, adapted to the rails or runways on the beams 21, the shaft 24 being driven by suitable gearing from a motor 26, so as to impart traversing movement in either direction to the larry, a friction-brake 27, operated by a treadle 29, serving to quickly stop the rotation of the gearing, whereby the larry can be accurately adjusted to any desired position longitudinally beneath the row of bins. Another motor 30 drives by means of suitable gearing a longitudinal shaft 31, mounted in bearings on the top frame 22 of the larry, and this shaft has spur-wheels 32, with which mesh spur-pinions 33, carried by swinging frames 34, hung to the shaft 31, so that each spur-pinion 33 can be moved around its corresponding spur-wheel 32 without interfering with the proper mesh of the two. Each swinging frame 34 is connected by a link 35 to a bell-crank lever 36, and the latter is connected by a link 37 to a bell-crank lever 39, which in turn is connected by a link 40 to a treadle 41, suitably located in the cab with which the larry is provided.

When the larry has been adjusted to its proper longitudinal position, the swinging upward of a frame 34 will serve to bring its spur-pinion 33 into mesh with the spur-wheel 20 of the belt-driving gear of one of the bin delivery mechanisms, so as to impart movement to the belt and thereby deliver ore from the bin, the rate of delivery being dependent upon the speed of the belt, assuming, of course, that the grated regulating-valve has first been opened to permit a flow of ore down the spout 5 in sufficient quantity.

The material delivered by the belt may be directed to any suitable point of discharge, or, if desired, the larry may be provided with a bin for receiving the material thus delivered, such bin being shown at 42 in Fig. 5 and being provided with a swinging gate 43, operated by a lever 44, so that the larry can convey the load to such point of discharge. If movement is imparted to the larry without withdrawing the spur-pinion 33 from engagement with the spur-wheel 20, such disengagement will be effected by the lateral movement of the pinion 33. Hence there will be no discharge from the bin unless the larry is in position to receive such discharge.

In the larry shown in the drawings two sets of belt-operating gearing are shown, so that the same is adapted for simultaneously operating two delivery-belts; but of course it will be understood that but one set of gearing need be employed, as the provision for longitudinal movement of the larry enables it to operate any desired one of the delivery-belts by simply adjusting it to position to engage with the gearing of the latter.

Although I have described my invention in connection with ore-delivery bins, it will be evident that it can be used in connection with bins for the storage and delivery of any granular material.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of a storage-bin with an inclined delivery-spout having a perforated transverse bar therein, and a series of pins passing through the perforations of said bar and constituting a grated valve for governing the flow through the spout, substantially as specified.

2. The combination of a storage-bin, mechanism for controlling the discharge therefrom, and a traveling larry having a power-operated shaft and means whereby the rotation of said shaft is caused to operate the discharge mechanism of the bin, substantially as specified.

3. The combination of a storage-bin, mechanism controlling the discharge therefrom and having as an element a toothed gear, and a traveling larry having a pinion for engaging said toothed gear and means for rotating said pinion, substantially as specified.

4. The combination of a storage-bin, mechanism governing the discharge therefrom and having as an element a toothed gear, and a traveling larry having a pinion for engaging said gear and means for operating said pinion, the traveling movement of the larry being such as to carry its pinion laterally into and out of engagement with the toothed gear of the delivery mechanism of the bin, substantially as specified.

5. The combination of a storage-bin, mechanism governing the discharge therefrom and having as an element a toothed gear, a traveling larry having a pinion for engaging said gear, said pinion being so mounted on the larry as to be movable in and out of mesh with the gear, and means on the larry for operating said pinion, substantially as specified.

6. The combination of a storage-bin, mechanism governing the discharge therefrom

and having as an element a toothed gear, a traveling larry having a motor and a shaft driven thereby, a frame swinging on said shaft and carrying a pinion meshing with a spur-wheel on the shaft, and means for swinging said frame, whereby its pinion may be moved into and out of mesh with the gear forming part of the delivery mechanism of the bin, substantially as specified.

7. The combination of a storage-bin, mechanism governing the delivery therefrom and a traveling larry having means for operating said delivery mechanism, and also having a bin for receiving material discharged from the storage-bin, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN WRIGHT SEAVER.

Witnesses:

C. W. COMSTOCK,

HERBERT S. GLIDDEN.