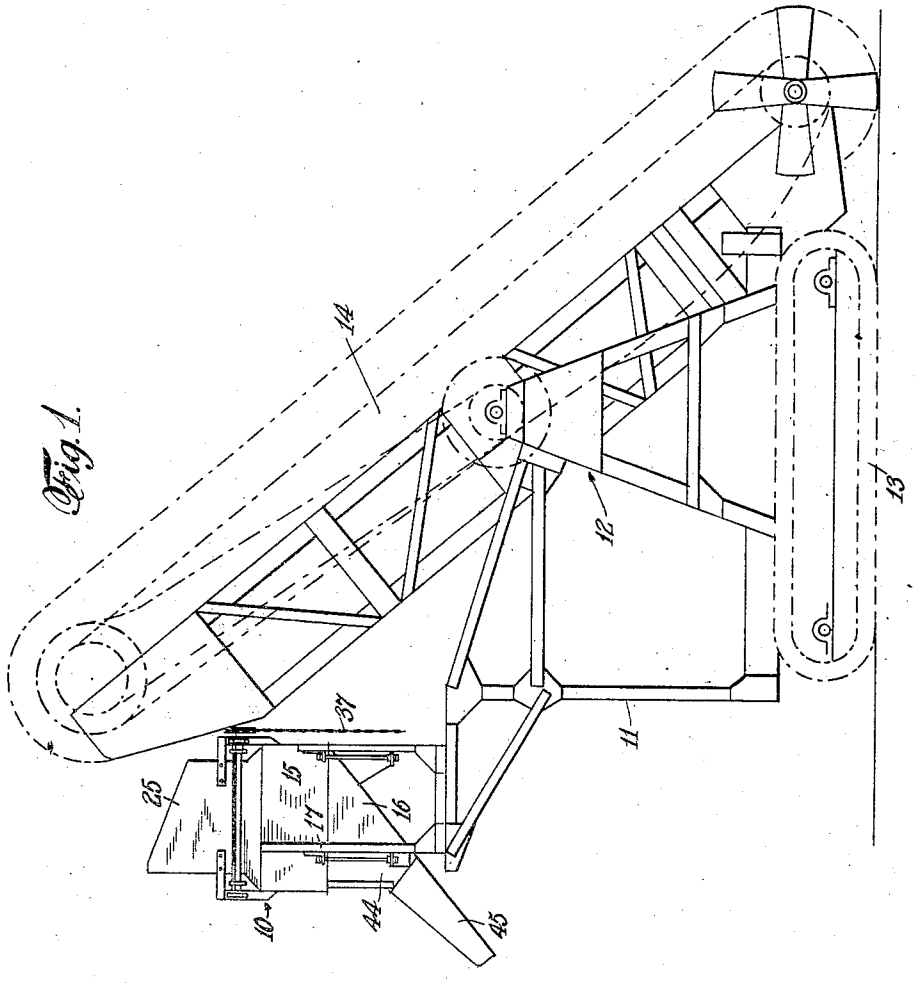
Nov. 9, 1926. 1,606,733

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HOPPER

Filed Oct. 16, 1925 3 Sheets-Sheet 1

Fig. 1.



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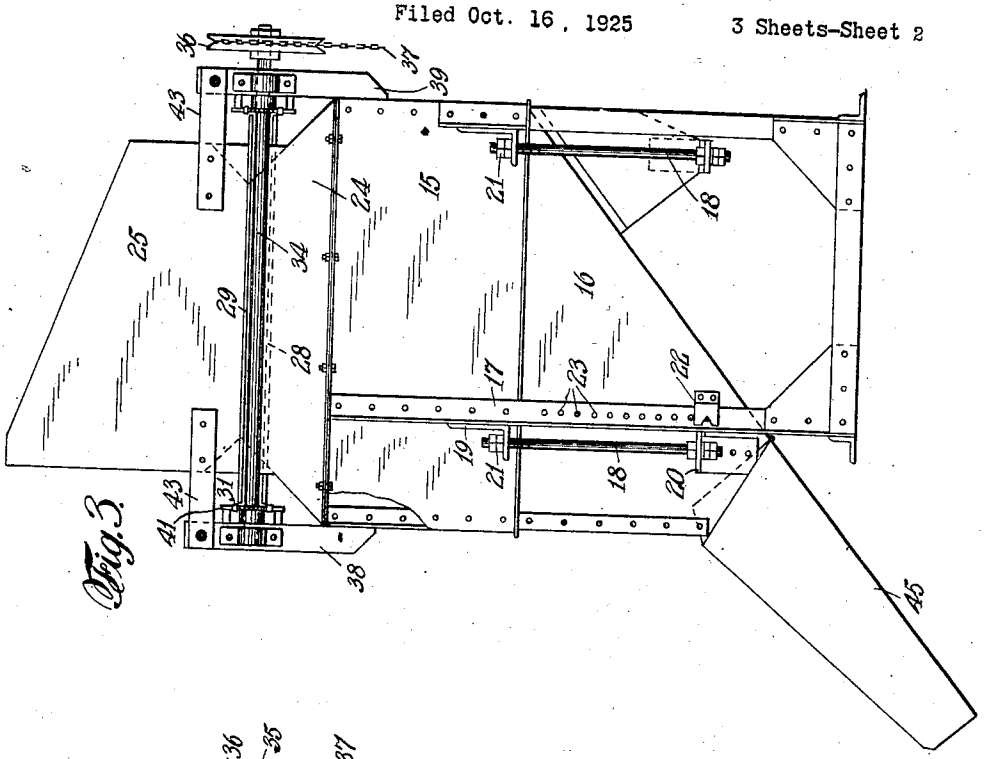


Fig. 3.

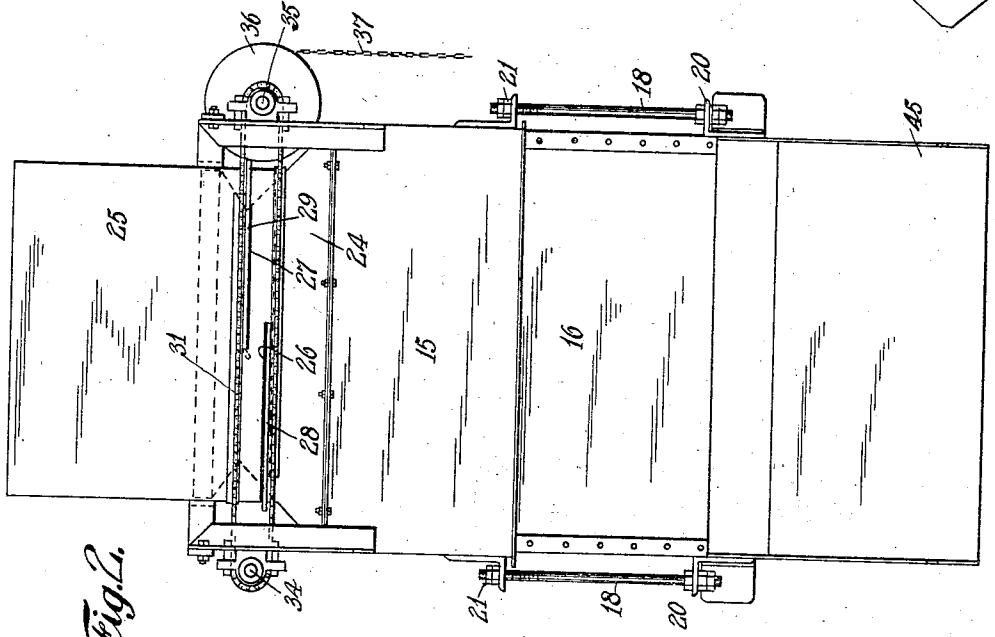


Fig. 2.

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Fig. 4.

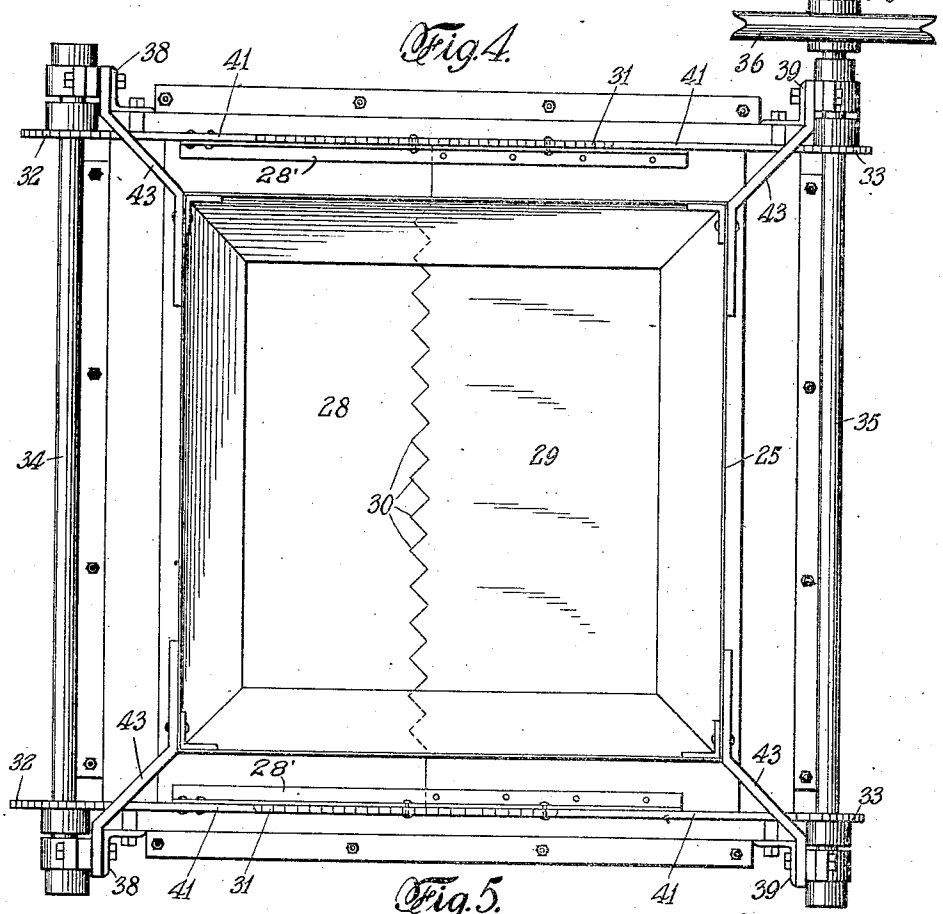


Fig. 5.

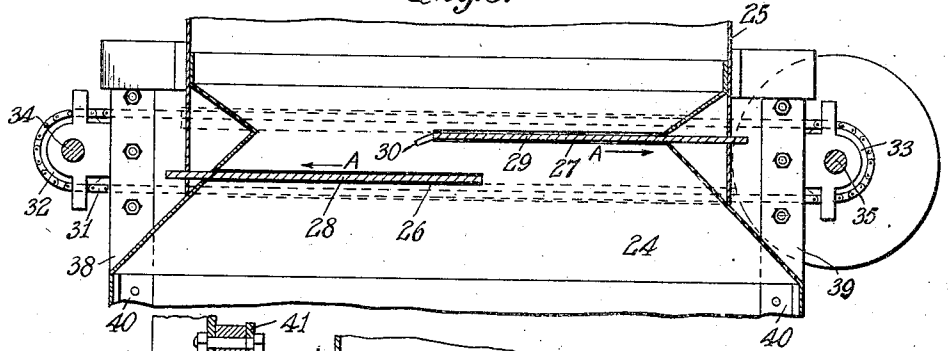
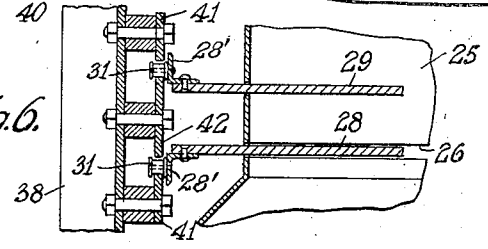


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALFRED W. HAISS, OF NEW YORK, N. Y., ASSIGNOR TO GEORGE HAISS MANUFACTURING CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

HOPPER.

Application filed October 16, 1925. Serial No. 62,717.

This invention relates to hoppers and is herein shown applied to a wagon loader of the type embodying an elevator mechanism adapted to transfer material from a pile into the hopper preparatory to loading.

In handling material, as by means of a wagon loader of the type herein shown, it is often desired to deliver, from the hopper, predetermined quantities of material to be loaded and it is the general object of this invention to provide an improved means for insuring accuracy in measuring definite quantities of material to be delivered.

Generally speaking the invention is characterized by the provision of a hopper, the volumetric capacity of which may be varied in combination with improved means for closing the inlet end of the hopper, for removing excess material from the inlet end of the hopper, and for retaining the removed excess material in position over the hopper ready to be deposited into the same when the hopper is again opened.

The invention will be understood from the following description, taken in connection with the accompanying drawings, in which a preferred form of the invention is shown and in which,—

Figure 1 is a view showing, in elevation, the hopper applied to a wagon loader.

Figure 2 is an end elevation of the hopper as seen from the left in Figure 3.

Figure 3 is a side elevation of the hopper as seen from the right in Figure 2.

Figure 4 is a plan view of the hopper.

Figure 5 is a vertical central sectional view, showing details of construction entering into the operating mechanism for the cut-off or closure plates.

Figure 6 is a fragmentary sectional view showing in detail chain supporting means.

Referring to the drawings, the hopper 10 is suitably mounted upon the frame 11 of a wagon loader 12 which includes a traction mechanism 13, and an elevator mechanism 14, the traction mechanism and elevator mechanism being adapted for operative connection with a suitable power plant, not shown.

The hopper 10 includes an upper section 15 and a lower section 16, the upper section being suitably connected to vertical supports 17 carried by the frame 11. The lower section 16 is adapted to fit into the lower or open end of the upper section 15 and is adapted to be vertically adjusted with respect to the upper section, whereby the volumetric capacity of the hopper may be varied. The means for effecting the desired adjustment of the lower section 16 comprises a plurality of tie-rods 18, opposite ends of which are connected with brackets 19 and 20, the brackets 19 being connected to the supports 17 and the brackets 20 being connected to the lower section 16. The tie-rods 18 are provided with nuts 21 which, when moved to various positions upon their respective tie-rods, effect a corresponding movement or adjustment of the section 16. In order to enable one to effect the proper adjustment of the section 16, with respect to the section 15, to obtain the desired volumetric capacity of the hopper, an indicator 22 may be provided. This indicator is carried by the lower section 16 and overlies the one support 17 which is provided with a plurality of openings 23, indicating the various positions to which the indicator 22 is to be moved to produce a desired change in the volumetric capacity of the hopper.

Upon the section 15, is mounted a cover section 24, the walls of which are inclined, as shown, and upon which is carried an auxiliary hopper 25 through which the material passes, from the elevator mechanism 14, as it enters the hopper 10. As shown most clearly in Figures 5 and 6, the walls of the cover section 24 are provided with horizontal slots 26 and 27, portions of which overlie each other. Within these slots are arranged cut-off or closure plates 28 and 29, the plate 29 being provided at its inner end with a series of downwardly inclined teeth or spurs 30. These closure plates are adapted to be moved in the direction of the arrows A shown in Figure 5 to open the inlet end of the hopper and are adapted to be moved in opposite directions to close the inlet end of the hopper.

As a means for effecting the desired movements of the closure plates 28 and 29, a pair of manually operated sprocket chains 31 is provided, the closure plates 28 and 29 being

connected at opposite ends, through angle irons 28′ to the lower and upper reaches, respectively, of the chains 31. The angle irons 28′ serve to reinforce the plates 28 and 29 against flexing and at the same time prevent undue distortion of the upper and lower reaches of the chains 31. The chains 31 pass over sprockets 32 and 33 carried respectively by shafts 34 and 35, to the latter of which is connected a pulley 36 carrying a depending chain 37, or the like, which is within easy reach of the operator and which may be so actuated as to move the closure plates 28 and 29 in one direction or the other as desired. The shafts 34 and 35 are journaled within suitable brackets 38 and 39 which are secured to corner angle irons 40 arranged within the upper section 15.

In order to support the upper and lower reaches of the chains 31 there is provided, at opposite sides of the hopper 10, a pair of guide plates 41 which are spaced from a central guide plate 42. The guide plates 41 and 42 are secured to the supports 38 and 39 and, as will be understood from Figure 6, the upper and lower reaches of the chains 31 operate within the spaces afforded between the lower plates 41 and the central plates 42. It will be appreciated, therefore, that the lower reaches of the chains are supported by the lower guide plates 41 and that the upper reaches of the chains 31 are supported by the central guide plates 42. Since the closure plates 28 and 29 are secured to the chains 31 and operate intermediate the central guide plates 42, undue displacement of the closure plates is at all times prevented.

In order to render the auxiliary hopper 25 rigid with respect to the hopper 10, a plurality of brackets 43 are employed. These brackets are connected to the supports 38 and to the corners of the auxiliary hopper 25, as shown most clearly in Figure 4.

In operation, the material, to be loaded, is elevated by the elevator mechanism 14, and deposited into the hopper 10, while the closure plates 28 and 29 are retracted at the inlet end of the hopper. After the hopper 10 has been filled up to a point above the plane of the closure plate 29, the hand wheel 36 is so rotated, through the instrumentality of the chain 37, as to move the closure plates 28 and 29 into their respective positions shown in Figure 5. The excess material at the inlet end of the hopper 10 is cut off by the closure plates 28 and 29 when they are moved to their respective position shown in Figure 5, and this excess material is supported by the closure plates 28 and 29 within the auxiliary hopper 25 while the material within the hopper 10 is being discharged through the outlet end 44, as is customary by lowering the usual chute 45. After the material within the hopper 10 has been dumped, the outlet end 44 is again closed by elevating the chute 45, and the inlet end of the hopper, is opened by retracting the closure plates 28 and 29, whereupon the excess material, together with any material that may have been deposited in the auxiliary hopper 25 during the time required to discharge the hopper 10, is permitted to enter the hopper 10.

By reason of the fact that the closure plate 29 is provided at its inner edge with a series of teeth or spurs 30, the cutting off operation may be performed with greater ease than if the inner edge of the closure plate 29 presented a straight edge, as in the case of the closure plate 28. Ease in operation of the closure plates 28 and 29, when they are being moved towards each other through the material, is further afforded by reason of the fact that these plates are spaced an appreciable distance from each other. Notwithstanding the fact that the closure plates 28 and 29 operate in different planes an adequate closure is provided between the hopper 10 and the auxiliary hopper 25 when the plates 28 and 29 are moved to their respective positions shown in Figure 5, inasmuch as the inner edge of the closure plate 29 overlies the inner edge of the closure plate 28 a sufficient distance to prevent any coarse material such as sand, crushed stone, and the like, from passing through the space afforded between the overlying ends of the closure plates.

Having thus described the invention, what is claimed is:

1. A hopper having an inlet opening, an auxiliary hopper supported above said opening, a pair of closure plates arranged to move towards and away from each other across said opening, a pair of operating chains, one reach of each chain being connected to one of said plates and the other reach of each of said chains being connected to the other of said plates, and means for operating said chains whereby said plates are moved towards and away from each other across said inlet opening, and means for supporting the reaches of said chains, said supporting means being in the form of plates over which the reaches of said chains are adapted to move.

2. A hopper having an opening, a pair of closure plates arranged to move towards and away from each other across said opening, a pair of operating chains, one reach of each chain being connected to one of said plates and the other reach of each of said chains being connected to the other of said plates, and means for operating said chains whereby said plates are moved towards and away from each other across said opening.

3. A hopper having an inlet opening, an auxiliary hopper supported above said opening, a pair of closure plates arranged to move towards and away from each other

across said opening, a pair of operating chains, one reach of each chain being connected to one of said plates and the other reach of each of said chains being connected to the other of said plates, means for operating said chains whereby said plates are moved towards and away from each other across said inlet opening, and means directly cooperating with the reaches of said chains for supporting the same.

In testimony whereof, I have affixed my signature to this specification.

ALFRED W. HAISS.