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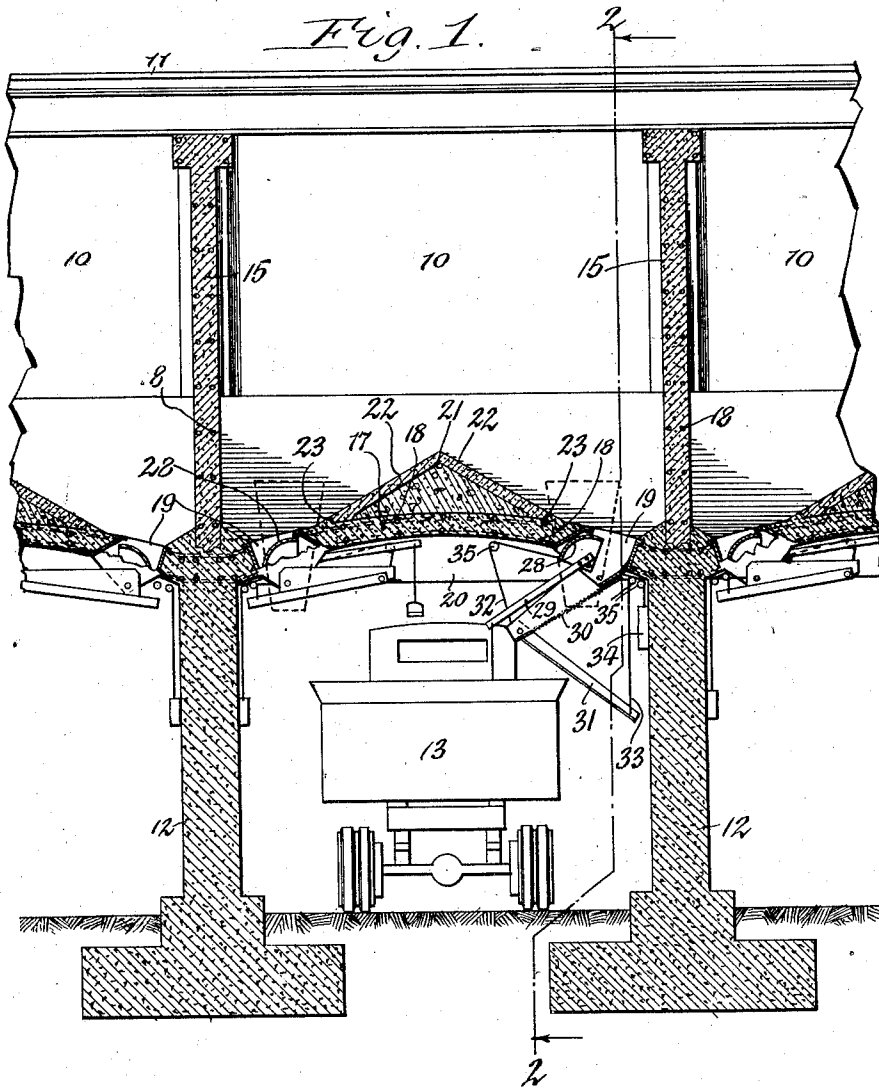
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STORAGE BIN

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6 Sheets-Sheet 1



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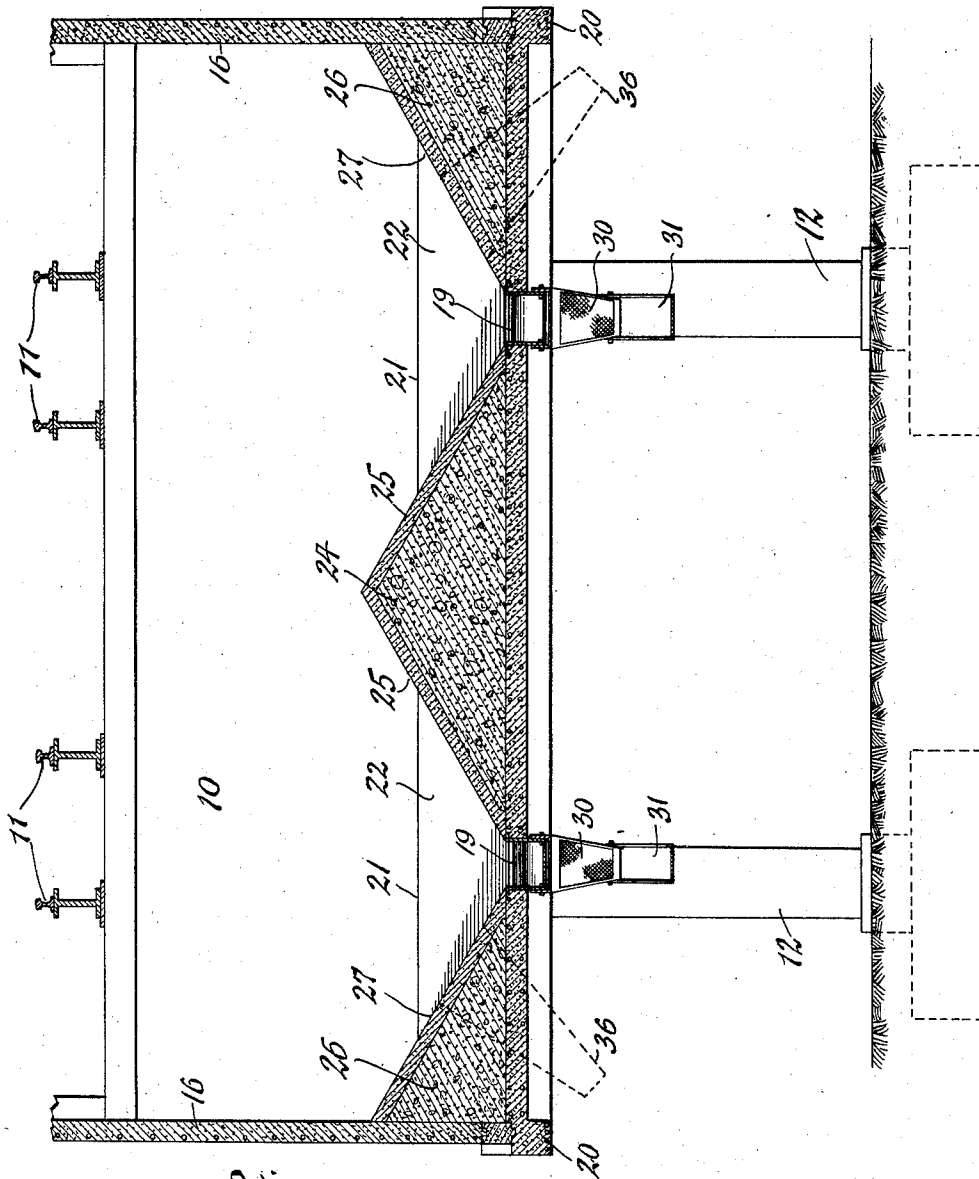


Fig. 2.

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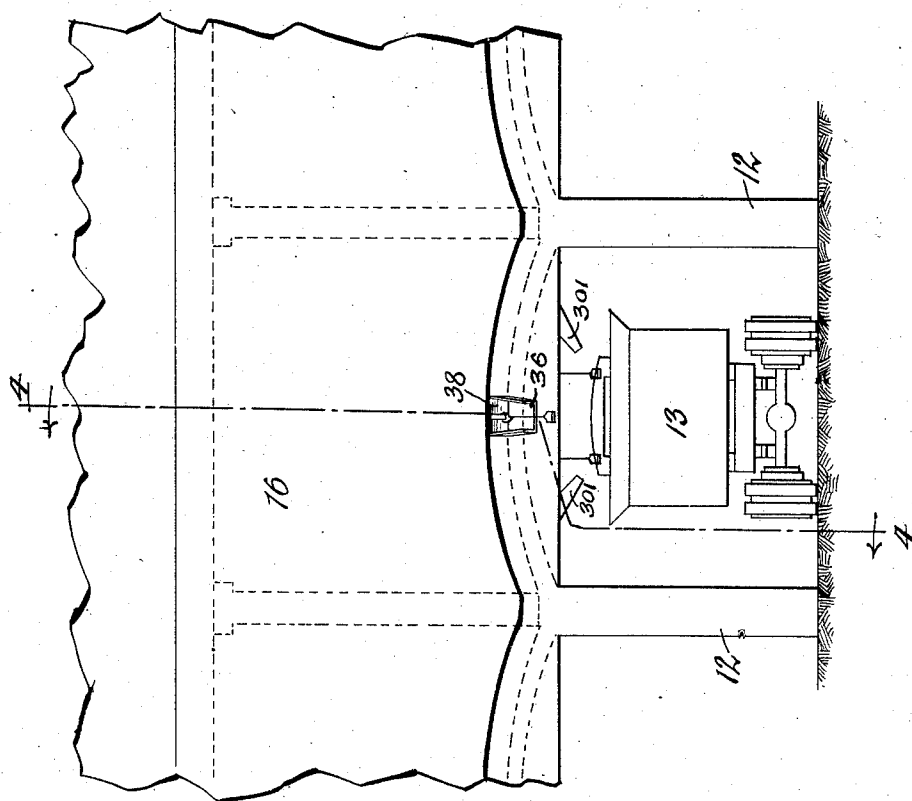


Fig. 3.

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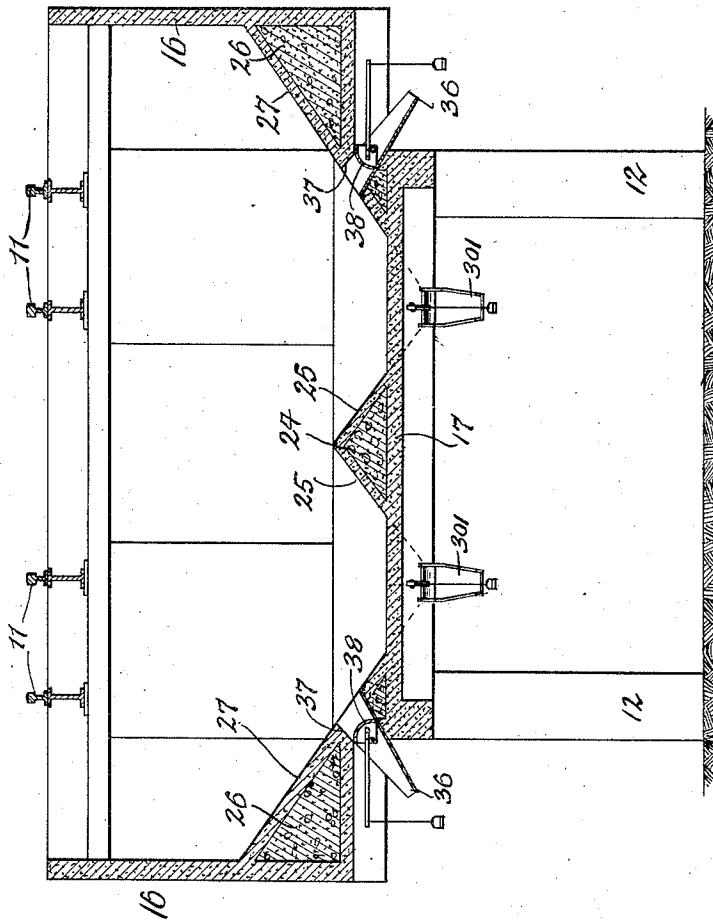
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Fig. 4.



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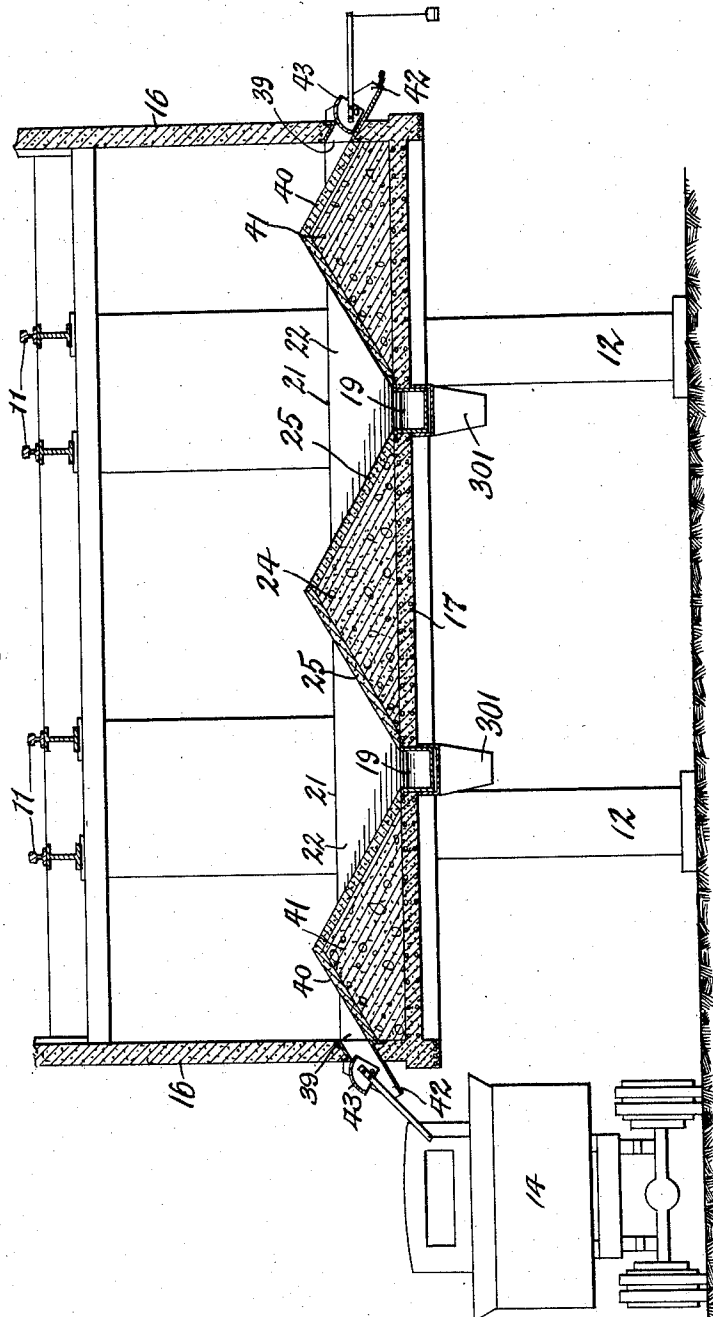
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Fig. 5.



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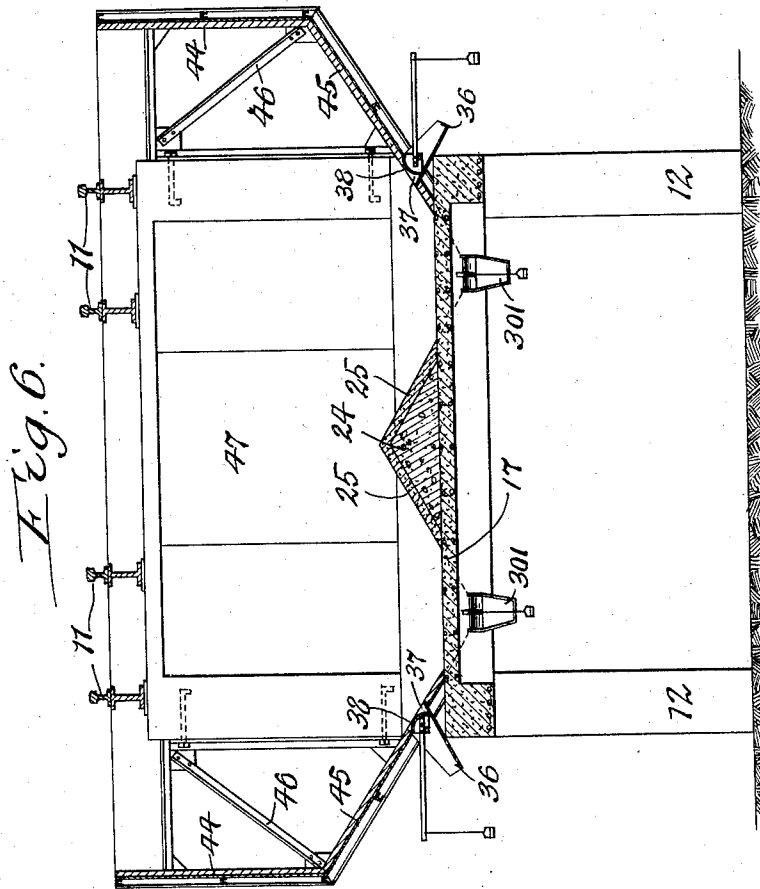
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6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

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STORAGE BIN

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This invention relates to a storage trestle which is more particularly designed for shifting coal from railway cars to trucks or wagons, but the same is equally serviceable for transferring other loose material of like character from railway cars to transporting vehicles.

In the handling of coal it is essential to save the same from degradation by reduction in size and generation of screening as much as possible, and for this reason the coal should drop a minimum distance when discharged into the bins from railway cars running over the top of the same.

Inasmuch as the cost of a trestle for carrying railways is considerable and increases very rapidly as the height increases and also due to the longer approach which is necessary in proportion to the increased height, it is desirable to keep the storage bins as low as possible, to provide large capacity, and permit trucks to pass under and along the side for loading purposes and also enable means to be employed whereby the coal is directed from the bin outlets to the trucks and to screen the material during such transfer.

It is, therefore, the object of this invention to provide a railway trestle for storing coal and the like which is comparatively low and economical in cost of construction, which has a greater bin capacity for the amount expended in construction, and which provides adequate clearance for the trucks to be loaded and the usual equipment employed for transferring the coal from the bin to the trucks and screening the same in transit.

In the accompanying drawings:—

Figure 1 is a fragmentary vertical longitudinal section of a storage trestle for coal and the like embodying one form of my invention.

Figure 2 is a vertical cross section of the same taken on line 2—2 Fig. 1.

Figure 3 is a fragmentary side elevation of another form of storage trestle containing my improvements.

Figure 4 is a vertical transverse section of the same taken on line 4—4 Fig. 3.

Figures 5 and 6 are vertical transverse sections showing other forms of my invention.

In the following description similar characters of reference indicate like parts in the several figures of the drawings.

In its general organization this trestle comprises a plurality of elevated bins or pockets 10 which are open at the top so as to permit of dumping coal or like material into the upper ends of these bins from railway cars which run upon roadways or railway tracks 11 arranged lengthwise over the bins, and a plurality of supports 12 mounted on the ground and carrying the bins on the underside so as to permit of delivery trucks or wagons 13 to be either driven between the supports 12 and under the bins for loading the trucks, which are comparatively low, as shown in Fig. 1, and also permitting the loading of larger trucks 14 which are comparatively high by driving the same along the side of the bins, as shown in Fig. 5, these methods of loading being generally referred to as "drive under-loading" and "side loading."

Each of the bins or pockets, as shown, for example, in Figs. 1 and 2, comprises two transverse walls 15 which serve as bents upon the upper edges of which the railway tracks 11 are mounted, two longitudinal side walls 16 connecting the corresponding edges of the transverse walls, and a bottom 17 which connects the lower ends of the transverse and side walls and is curved upwardly on a transverse axis so as to form an arch which is depressed at its opposite transverse ends, and elevated centrally between these transverse ends. These transverse and side walls and the bottom of the bin are made of concrete which is reinforced by metal bars 18 embedded within the concrete in any suitable and approved manner so as to resist the strains to which the concrete is subjected and thereby strengthen the same.

The supports 12 may be of any suitable form, but in the preferred construction the support for the underside of each transverse wall 15 consists of two columns of concrete which are spaced apart transversely so as to support this wall and the bin of which it forms a part adjacent to opposite ends thereof.

In actual practice a plurality of such bins are arranged to form a longitudinal row, and each of the transverse walls 15 serves as a partition between two adjacent bins in the usual and well-known manner of constructing trestles of this character.

In the preferred construction two railways are arranged side by side lengthwise over the series of bins and the bottom of each bin or hopper is provided with means for discharging the contents thereof at different points so as to permit of loading one or more trucks or wagons under the "drive under" system and also one or more trucks or wagons under the "side loading" system.

As shown in Figs. 1 and 2 the arch shaped bottom of each bin is provided at each of its depressed ends with two outlets 19 which are arranged transversely side by side, and each of these outlets being preferably arranged vertically in line with one of the railroad tracks 11 above the bin, as shown in Fig. 2.

In order to avoid making the trestle unduly high the arch forming the bottom 17 is made comparatively flat and the same is stiffened by means of reinforced longitudinal ribs or webs 20 extending downwardly at opposite longitudinal edges thereof, thereby forming a concave space on the under side of each bottom or floor of a bin which floor also forms the roof of the truck driveway extending transversely underneath each bin.

Inasmuch as a comparatively flat formation of the arch shaped bottom or floor of the bin would prevent emptying the bin completely, and instead permit some of the material to remain lying upon the top of the floor between the outlet openings at the depressed ends of the arched floor, means are provided which will prevent the coal or other material from lodging upon the central elevated part of the floor and compel the same to flow toward said outlets when the latter are opened. These means preferably consist of an upwardly projecting longitudinal deflector 21 mounted upon the upper side of the elevated central part of the floor and preferably constructed of concrete of upwardly tapering form so as to produce two longitudinal inclines 22 which slope lengthwise in opposite directions from the highest central part of this deflector toward the outlets 19 in the depressed ends of the floor, as shown in Fig. 1.

This deflector 21 is preferably formed on the upper side of the floor after the latter has been finished, and in order to form a good joint between opposite transverse edges of this deflector 21 and the floor of the respective bin the latter is provided on opposite sides of the elevated central part with transverse shoulders 23 which face each other and which are engaged by the opposite transverse edges of the deflector, as shown in Fig. 1, thereby holding the latter against lengthwise movement on the floor of the bin.

This deflector and the floor are united so that they practically form an integral structure by means of cement applied to the opposing surfaces thereof.

In order to prevent the coal or other material from lodging upon the upper side of the floor between the adjacent pair of outlets 19 at the same depressed end of the floor, a central transverse deflector 24, which is also made of concrete and of upwardly tapering form, is mounted on the respective part of the floor so as to produce two oppositely inclined surfaces 25 which slope from the high central part of this deflector transversely in opposite directions toward the outlets 19, as shown in Fig. 2.

Similar deflectors 26 made of concrete are arranged upon the opposite side ends of the bin floor so that each of these deflectors is arranged between one of the side walls 16 of the bin and the adjacent outlet 19, and is provided with an inclined upper surface 17 which slopes from the respective side wall to the adjacent outlet and thereby causes any coal or other material in the respective part of the bin to be directed toward this outlet when the latter is opened.

It will be apparent from the foregoing that by the addition of these deflectors any material within the bin will be directed toward the outlets in the floor when the latter are opened and thereby permit of completely emptying the bin when this is required.

Any suitable means may be provided for controlling the outlets of the bin but it is preferable to employ for this purpose a curved gate 28 in this outlet which is pivotally mounted in the side walls thereof so as to be capable of being turned about a horizontal transverse axis by means of a handle 29 connected with this gate. As shown at the right hand side of Fig. 1 the gate 28 is turned into its open position so as to permit the flow of coal or other material through the respective outlet from the bin, while the gate 28 of the outlet on the left hand side of this bin is closed and therefore cuts off the escape of this material.

When delivering coal from the bins into trucks or wagons it is the usual practice to separate the dust or fine particles from the coal before delivering it into the trucks. In the present case similar means are provided which preferably comprise means for guiding the coal from the outlet to the truck and comprise an upper screen section 30 which is pivoted at its upper end to the outlet 19 of the bin, and a lower chute section 31 which is pivoted at its upper end to the lower end of the screen section.

In the unfolded or operative position of these guiding means the screen section 30 is lowered so as to be inclined from the outlet 19 over the top of the box or receptacle of the truck or wagon 13, and the chute 31 inclines

laterally in the opposite direction from the lower end of the screen toward the outer side of the truck.

In this position of the guiding device the large coal is directed by the screen section 30 into the box of the truck while the dust and other fine particles pass through the screen and drop upon the chute 31, which latter directs these screenings into a receptacle which may be provided for this purpose.

When these guiding and screening devices are not in use, the same are folded upwardly into the space formed by the concave underside of the floor, as shown at the left hand side of Fig. 1, thereby leaving the transverse driveway under the bin clear for the entrance and exit of the "drive under" wagon which is adapted to receive the load of coal.

In order to permit of conveniently moving each of these coal guiding means upwardly into their inoperative position and downwardly into their operative position, counterbalancing means are provided which preferably consist of two lifting cords 32, 33, one of the corresponding ends of which are connected with the lowered ends of the screen section 29 and the chute section 31, while the opposite ends thereof are connected with counterbalancing weights 34 and the intermediate parts of these cords pass around guide rollers 35 which are mounted on the adjacent stationary parts of the trestle, as shown in Fig. 1.

By thus utilizing the cavity or pocket formed on the underside of the upwardly arched floor in which to store the coal guiding and screening means when the same are not in use, the trestle can be made of considerably less height and still provide the necessary clearance for the entrance and exit of the "drive under" truck, and thereby reduce the cost of erecting the trestle without sacrificing any operating facilities or conveniences.

When it is desired to load coal into trucks or wagons which are of such height that they cannot pass transversely under the bottom of the bin, such trucks can be loaded by driving the same lengthwise along one side or the other of the bin and delivering the coal into the same from one end of the bin or the other by means of a chute 36 extending from a side outlet 37 of the respective bin laterally to the "side loading" truck. The side outlet 37 in this case is formed in the side deflector 27, as shown by dotted lines in Figs. 1 and 2, and by full lines in Figs. 3 and 4, and the flow of material through this outlet and over the respective chute is controlled by means of a rocking gate valve 38 which is constructed and operated substantially like that employed for controlling the outlets 19 at opposite depressed transverse ends of the floor of the bin.

By thus providing a plurality of outlets at opposite depressed ends of the arch shaped

floor of the bin and also the opposite lateral ends of the bin, it is possible to simultaneously load coal or similar material into a plurality of individual trucks or wagons, thereby permitting of discharging the coal from the bin to suit different circumstances.

Instead of forming the lateral outlet of the bin in the inclined surface 27 of the lateral deflector 26 which directs the coal or other material toward the end outlets 19, these lateral outlets 39 may be formed in the side walls 16 of the bin at the foot of outwardly inclined surfaces 40 which are formed on the side deflectors 41 and slope from the top of the latter downwardly to the side outlets 39, as shown in Fig. 5. The material is directed from each of these side outlets by means of a chute 42 to a "side loading" truck 14 and the escape of material through these side outlets is controlled by a gate valve 43.

If desired, the coal may be delivered from the outlets 19 at the depressed ends of the bottom to the trucks or wagons by means of plain spouts or chutes, as shown at 301 in Figs. 3, 4, 5 and 6.

Instead of forming the side walls of the bin of concrete, as shown in Figs. 2, 4 and 5, the side walls 44 and the adjacent inwardly inclined deflector 45 may be mounted on fabricated metal brackets 46 which are hung on the opposite ends of the transverse partition walls or bents 47 which carry the overhead railway tracks 11, as shown in Fig. 6.

These brackets can be readily removed at any time if desired, to change the form of the storage trestle or for enlarging the capacity or adding further tracks, or for any other purpose.

From the foregoing it will be apparent that this trestle for storing coal or other material provides the requisite transfer facility from rails to trucks and also provides sufficient capacity to meet unusual demands of trucks in case of interruption in the supply of material to the bins by the rail service.

This construction also permits of giving adequate truck clearance below the bins so as to permit the trucks to be operated with facility and to accomplish this by making the trestle as a whole considerably lower than has been possible heretofore, thereby reducing the cost of installation accordingly.

It is to be understood that the interior of these bins may be covered with a wearing surface of concrete or other suitable material so as to avoid undue wear of the same. By means of this invention unduly high expense in construction and loss of capacity is avoided and as the main elements of this construction are all made of concrete depreciation of the structure and expense of upkeep are avoided, inasmuch as repeated cleaning and painting of the structure is not necessary to preserve the trestle as is the case when steel

or a similar material is used for this purpose.

I claim as my invention:—

A storage bin having transverse walls, longitudinal side walls connecting said transverse walls, and a bottom connecting the lower ends of said walls and including a longitudinal arch connecting at its opposite depressed ends with the lower ends of the transverse walls, and provided adjacent to its depressed end with outlets for the material stored in the bin, said arch being provided on its upper side on opposite sides of its elevated central part with shoulders which face each other, and a deflector arranged above the central part of said arch and engaging its opposite ends against said shoulders and having opposite inclines which slope toward said outlets.

In testimony whereof I hereby affix my signature.

ARTHUR P. SKAER.

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