May 7, 1940. G. R. DEMPSTER 2,199,520

TRANSPORTING AND DUMPING VEHICLE

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Fig. 1.

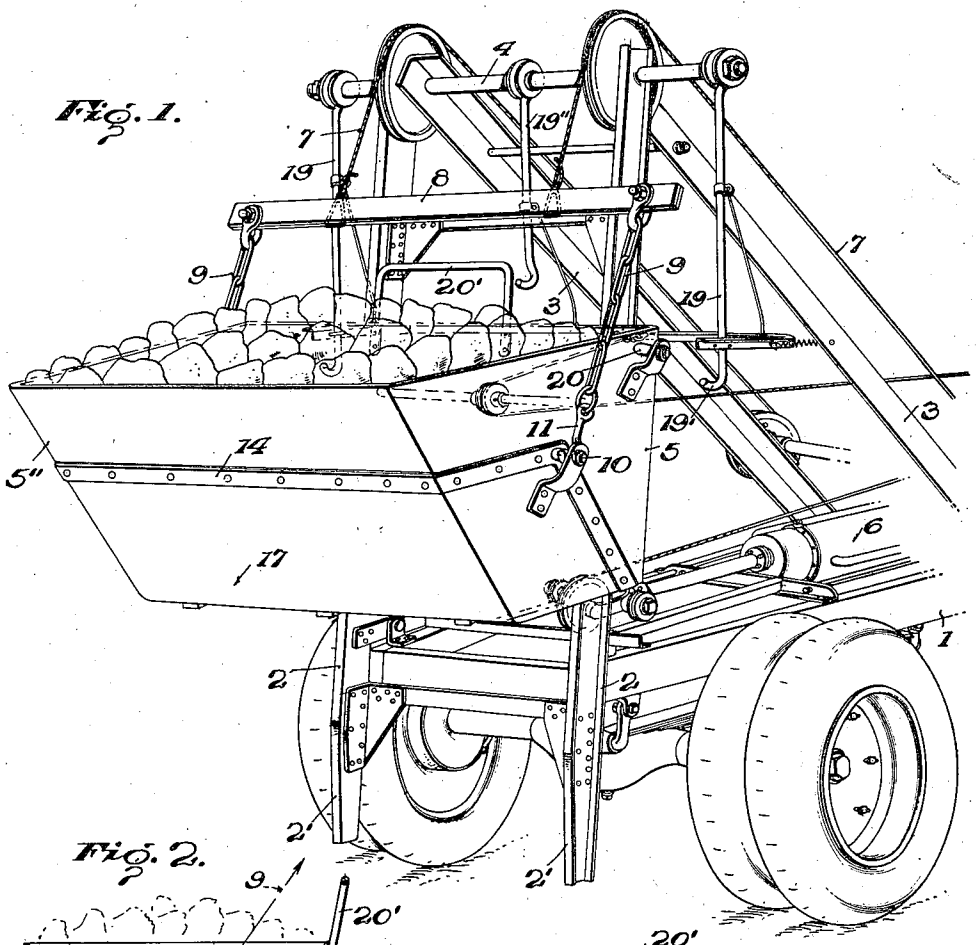
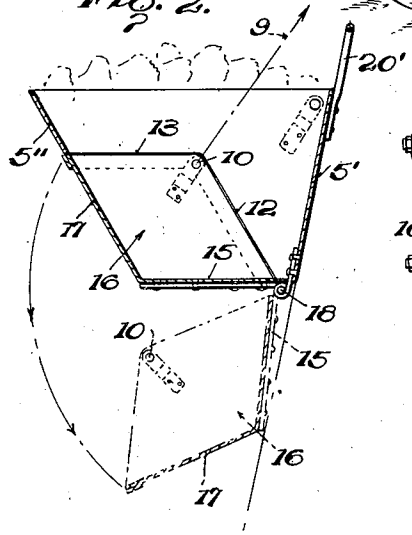


Fig. 2.



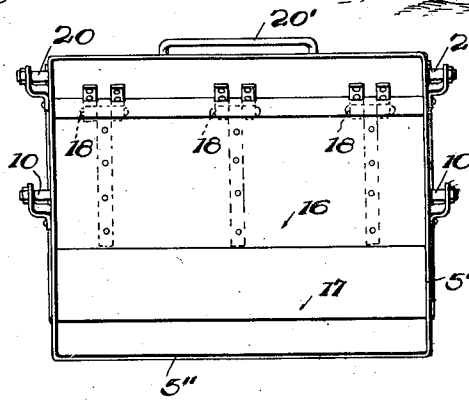


Fig. 3.

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Fig. 4.

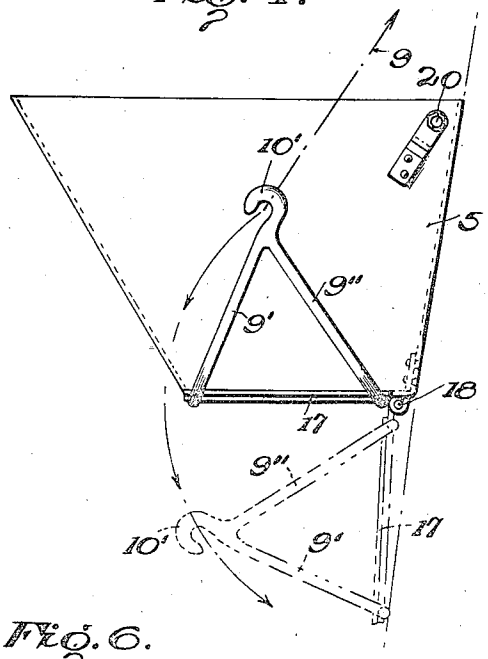


Fig. 5.

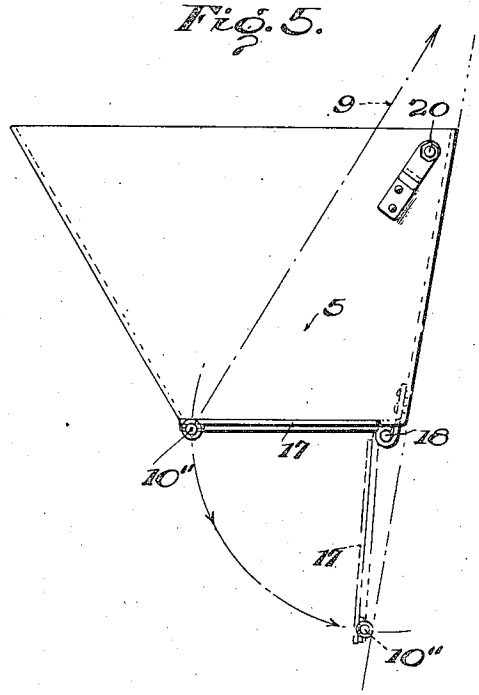


Fig. 6.

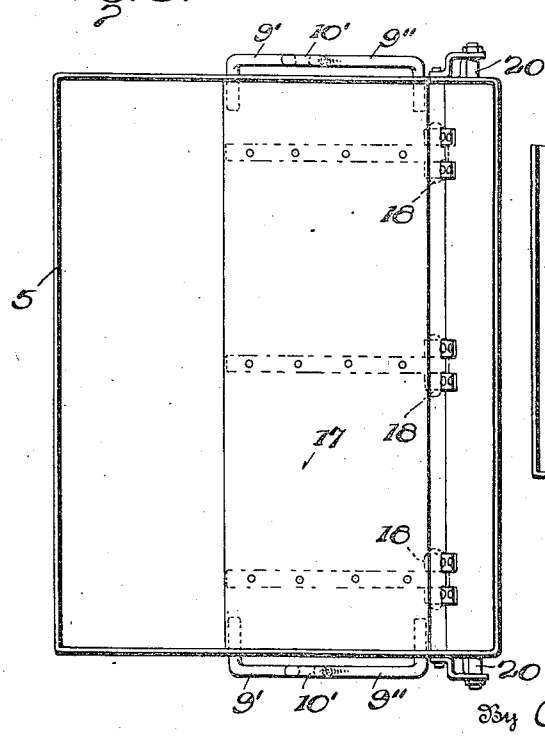
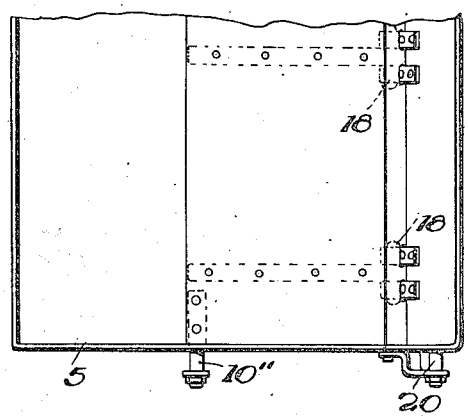


Fig. 7.



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TRANSPORTING AND DUMPING VEHICLE

George R. Dempster, Knoxville, Tenn.

Application December 23, 1936, Serial No. 117,387

5 Claims. (Cl. 214—117)

This invention relates to means for transporting materials from one location to another and dumping the same when arriving at the desired destination, and is more particularly directed to an improvement in the form of a container or bucket shown in my copending application Serial No. 5,145, filed February 5, 1935, now Patent No. 2,069,697.

In my said application and in U. S. Patent No. 2,062,227 a form of container or bucket is shown which has to be tilted bodily to discharge the contents therefrom, said tilting action being effected as in said U. S. Patent No. 2,062,227 by the application of power, or as in my application aforesaid, by releasing the lifting action of the container when in its elevated position and permitting the bucket to tilt around a fixed point near the bottom of the container and to the rear of its center of gravity.

According to the present invention the container is provided with a bottom which is hinged to the rear wall thereof and connected at or near its forward end to elevating means such as a cable or cables, whereby the bottom of the container is held closed during the time when the lifting means is in operation, and this is combined with means for engaging the container and holding the same in its elevated position when the elevating power means are released, whereby the bottom of the container, under its own weight and that of the contained material, drops downward and dumps the contents. Such construction, thus broadly stated, is well known in the art, and the present invention consists in certain specific improvements in construction and operation which will be hereinafter specifically described and then pointed out in the claims.

The inventive idea is illustrated in the accompanying drawings, but it is to be expressly understood that such drawings are for the purpose of illustration only and are not designed to define the limits of the invention, reference being had to the appended claims for that purpose.

In said drawings—

Fig. 1 is a perspective view of the invention showing the container in elevated position and supported by the elevating means, such as cables;

Fig. 2 is an end elevation of the container illustrating the position of the parts in the act of dumping the contents;

Fig. 3 is a bottom plan view of the container;

Fig. 4 is an end view of the container showing a modified construction from that shown in Fig. 1;

Fig. 5 is an end view of the container of a still further modification;

Fig. 6 is a top plan view of Fig. 4; and

Fig. 7 is a top plan view of Fig. 5.

Referring to the drawings, in which like reference numerals indicate like parts throughout the several views, 1 is a frame of a vehicle, here shown as the chassis of an automotive truck, 2—2 indicate two uprights, preferably in the form of angle bars, secured at their lower part to the rear end of the chassis 1 and somewhat inclined toward the front part of the vehicle, while 3 indicates two braces, also preferably in the form of angle bars, which are secured at their lower ends to the opposite sides of the chassis. Preferably the lower ends of the uprights 2—2 are slightly beveled, as shown at 2'—2' of Fig. 1. A shaft 4 passes through the upper ends of the uprights 2—2 and the bars 3—3, the ends of the shaft 4 extending well out beyond the two uprights 2—2. The uprights 2—2 afford a skid or way against which the back or rear side wall of the container 5 rests during the travel of the container up and down. Any suitable power mechanism may be employed for effecting this travel of the container, preferably such as that described in my Patent No. 2,069,697 above referred to, in which a suitably actuated piston in the cylinder 6 operates a pair of cables 7—7, which cables are provided with suitable means for detachably connecting the same to the container. As here shown, said means consist of a bale piece 8 directly connected with the cables, which bale piece is provided with a pair of chains 9—9, one at each end and extending downward to pins 10—10 projecting from rear end walls of the container, which chains are provided with any suitable means, as hooks or catches 11—11, for engaging the pins 10—10.

The container is provided with a rear wall 5' (Fig. 2) which rests against the track or way composed of the uprights 2—2. It is also provided with suitable end walls, as well as a forward wall 5'' and a flat bottom portion adapted to rest on the ground when the container is in its lowered position.

Referring now to Fig. 2, the end walls of the container are cut along the lines 12 and 13, and the front wall is cut along the line 14 (Fig. 1). The bottom 15 of the container, the portions 16 of the end walls of the container and the portion 17 of the front wall of the container are all rigidly secured together and mounted to turn around a hinge pin 18. The pins 10—10 are secured to the portion 16 of the end walls, preferably at

the point of junction between the lines 12 and 13, and when the chains 9—9 are connected to said pins and the bale piece 8 is elevated by the cables 7—7, the bottom end portions of the end walls and front wall will be held upward in closed position, as illustrated in Fig. 1.

Referring now to Fig. 1, means are provided for engaging and holding the container in elevated position independent of the power mechanism applied for lifting or elevationg the same. Any suitable means may be employed for this purpose. The same may consist of rods 19 pivoted to swing from the projecting ends of the shaft 4 and having at their lower end hooks 19' adapted to engage pins 20 projecting from the upper rear portions of the end walls. Any suitable means capable of being actuated from the driver's seat of the vehicle may be employed for swinging said hooks 19' into engagement with the pins 20. Or, if preferred, a bale shaped piece 20' may be attached to the upper portion of the rear wall of the container in position to be engaged by a hook on the lower end of rod 19'' swinging from the shaft 4 at a point between the uprights 2—2, which rod 19'' is actuated from the driver's seat to swing the hooks on the rod into engagement with the bale 20'. Either or both of these constructions may be employed as desired.

Referring to Fig. 2, it will be seen that when the container is retained in its elevated position and the lifting power of the cables is released, the bottom with its attached portions of the end and front walls of the container will thereby drop downward into the position shown in dotted lines, and the part 17 will be inclined forward so as to throw the dumped material away from the uprights 2—2.

It will also be seen that when power is applied to the carrying cables, the bottom of the container, with its attached walls, will be again elevated to the position shown in full lines in Figs. 1 and 2. When the container is elevated slightly higher, the hooks 19' of the rods 19, 19'' will be released from the pins 20, and the container can be lowered to the ground where it can, if desired, be detached by releasing the hooks 11 from the pins 10.

Referring now to Fig. 4, it will be seen that the container is provided with the usual back, front and end walls and the bottom 17 is hinged at 18 as in the construction shown in Fig. 1. At each end of the container there is secured to the front edge of the bottom 17 and upwardly and rearwardly extending rod 9' provided with connecting means, as a hook 10'. The rod 9' is braced by a second rod 9'' extending from near the hinge 18 up to a point in proximity with the hook 10'. These hooks 10' and hooks 11 (see Fig. 1) of the chain 9 are engaged for elevating the container, which container is also provided with pins 20 projecting outward from the upper rear portion of the end walls, or with the bale 20', just as in Fig. 1. These rods 9' and 9'' are substantially rigid with the bottom 17 and partake of all the movements thereof. When pins 20 or bale 20' is engaged by the hook 19' and the cable 9 is released, the bottom of the container swings downward to dump the contents thereof. The bottom may swing to approximately vertical position when the material would be dumped vertically downward, or it may swing to a position inclined to the left of that shown in Fig. 4, when the material will be shunted away from the uprights 2—2, similar to the action of the part 17 in Fig. 2.

The rods 9' and 9'' and the hook 10 are so constructed and proportioned that even when the bottom swings to a full vertical position, the line of draft from the cables is but slightly different from the line of draft when the bottom is fully closed, as shown in Fig. 2.

Referring to Fig. 5, the bottom 17 is hinged at 18 at a point adjacent the rear wall of the container, and the cable is attached to the pin 10'' adjacent the free edge of the bottom portion, as shown in Fig. 5, and in this case, as in Fig. 2, the bottom may be allowed to swing either into the vertical position, as shown in Fig. 5, or only partially approaching the vertical position, to the end that it may slant toward the front of the container and deliver the dumped material forwardly or vertically, as may be desired.

It will be observed that by the present invention the container may be allowed to rest on the ground, separated from the main portion of the structure to be filled, as by stone at a quarry, and when filled, it may be picked up by the elevating cables and raised to any desired height for transportation. Upon reaching its destination, the hooks 19' of the rods 19 may be caused to engage the pins 20, retaining the container in its elevated position, and when the cables are released, the bottom portion of the container drops downward of its own weight and the weight of the contained material and dumps the same, after which an elevating movement or pull of the cables closes the bottom of the container, and upon slightly further elevating the container the hooks 19' are released and the empty container may be transported to the place for refilling.

It will be observed that in all three of the constructions shown in Figs. 1, 4 and 5, the bottom of the container is hinged to the container along a line adjacent the bottom portion of the back wall thereof, and that in all three of these constructions the cable is connected to the forward edge of this hinged bottom. In the construction of Fig. 5 the cables are directly connected to the forward edge of said bottom portion; in Fig. 4 the cables are connected to the forward edge of the bottom portion through the medium of the rod 9'; and in the construction shown in Fig. 1 the cable is connected to the forward edge of the bottom portion through that part of the end walls of the container bounded by the lines 12, 13, 15 and 17. And furthermore it will be noted that in all three constructions when the container is in its elevated position and supported therein, as by the hooks 19', the bottom portion may be lowered so as to dump the material through the bottom of the container and direct it in a forward direction, that is, away from the vehicle.

While there is shown herein a piston and its associated piston rod for actuating the cables to elevate and lower the container, it will be understood that any suitable well known form of mechanism capable of performing this function can be employed without departing from the spirit of the invention.

Having thus described the invention, what is claimed is:

1. The combination of a vehicle, an upwardly extending track or way mounted thereon, a container movable upward and downward on said track or way, said container having its bottom portion hinged thereto along the line of the bottom of the rear wall thereof, and having a portion of each end wall and a portion of the front wall connected thereto, power mechanism, means connecting said power mechanism with

said bottom portion at a point adjacent the front wall of said container, said means including the portions of each end wall attached to the said bottom portion, and means for engaging said container at a point above its center of gravity and supporting said container when the power mechanism is released.

2. In a structure of the character described, a container having front, rear and end walls, and a bottom portion hinged to the container along a line adjacent to the bottom edge of the rear wall, said bottom portion also having a portion of each end wall of the container and a portion of the front wall of the container connected thereto and movable therewith around the hinge of said bottom portion.

3. In a structure of the character described, a container having front, rear and end walls, and a bottom portion hinged to the container along a line adjacent to the bottom edge of the rear wall, said bottom portion also having a portion of each end wall of the container rigid therewith and extending upwardly and rearwardly from the front edge thereof and constituting a connecting element between the front edge of the bottom portion and container-elevating means.

4. In a structure of the character described, a container having front, rear and end walls, and a bottom portion hinged to the container along a line adjacent to the bottom edge of the rear wall, said bottom portion also having a portion of each end wall of the container connected thereto and movable therewith around the hinge of said bottom portion.

5. The combination of a vehicle, an upwardly extending track or way mounted thereon, a container movable upward and downward on said track or way, said container having its bottom portion hinged thereto along the line of the bottom of the rear wall thereof, and having a portion of each end wall connected to the bottom, power mechanism, means connecting said power mechanism with said bottom portion intermediate the front and rear walls of said container said means including the portions of each end wall attached to the said bottom portion, and means for engaging said container at a point above its center of gravity and supporting said container when the power mechanism is released.

GEORGE R. DEMPSTER.