June 29, 1937. W. E. LAMBERT 2,085,029

CONVEYING SKIP

Filed Feb. 26, 1935 2 Sheets-Sheet 1

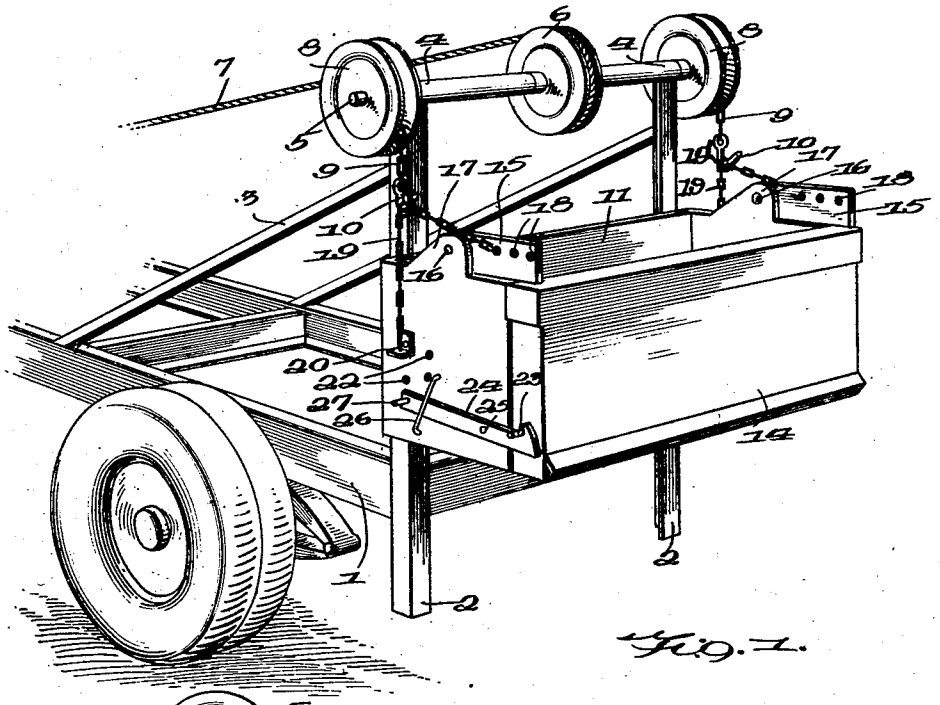


Fig. 1.

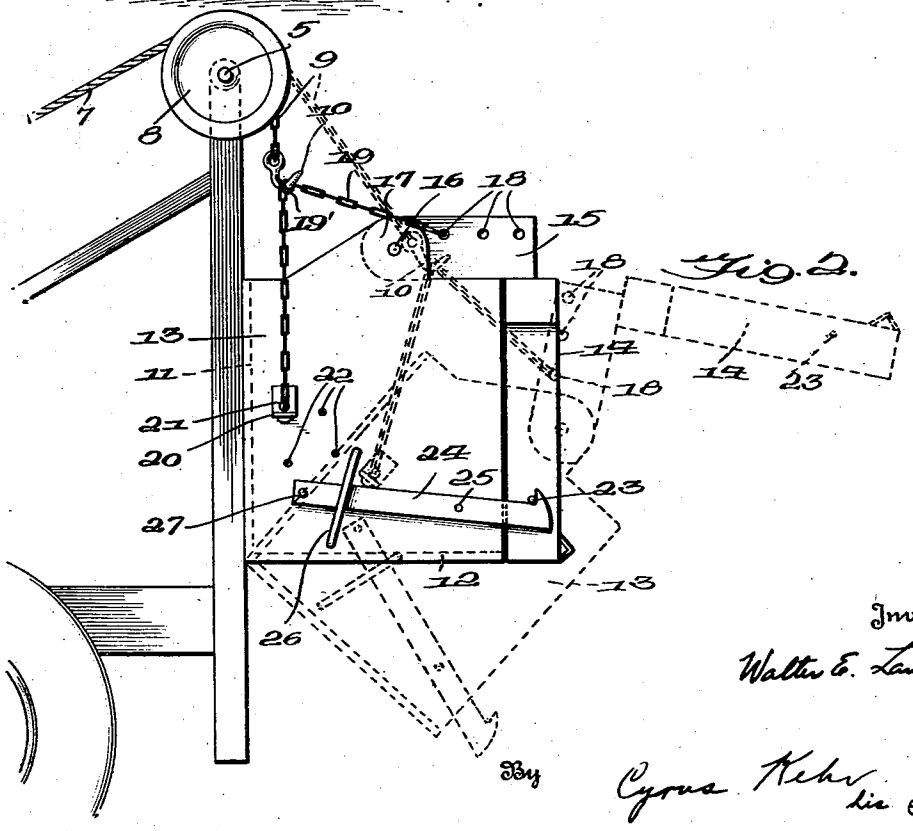


Fig. 2.

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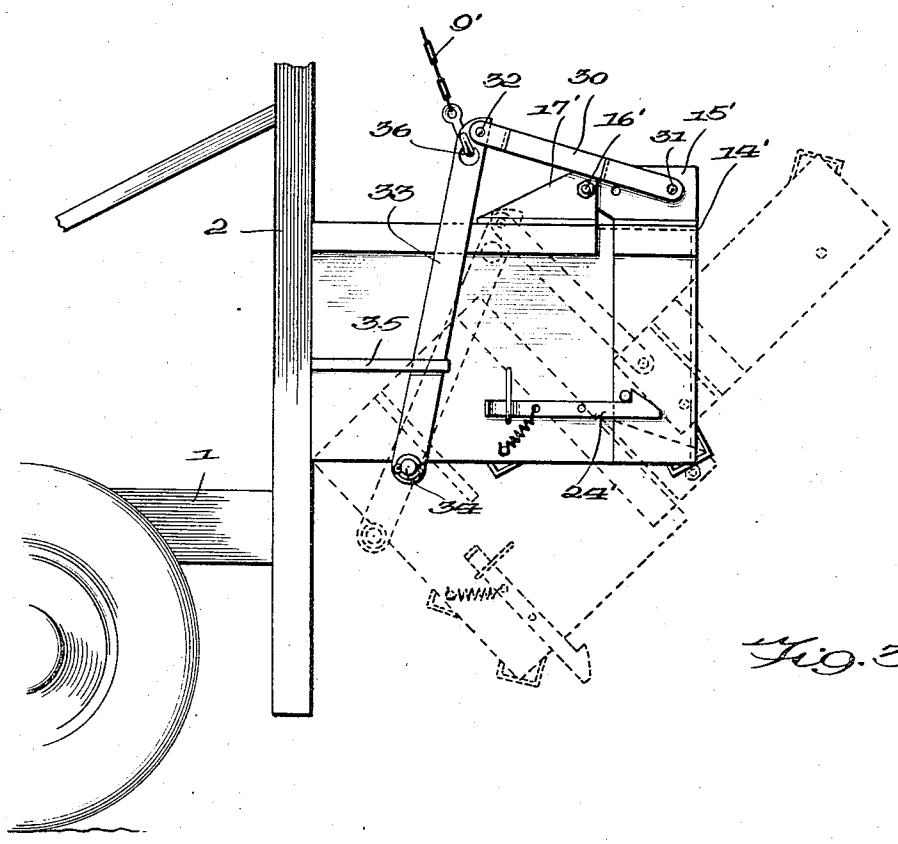


Fig. 3.

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Patented June 29, 1937

2,085,029

UNITED STATES PATENT OFFICE

2,085,029

CONVEYING SKIP

Walter E. Lambert, Knoxville, Tenn.

Application February 26, 1935, Serial No. 8,380

9 Claims. (Cl. 294—69)

This invention relates to an improvement in conveying skips of the type used primarily for transporting stone, dirt and other materials in the making of excavations or in the working of stone quarries.

This application is an improvement on the construction set forth in my former application on Conveying equipment, Serial No. 734,387, filed July 9, 1934, now Patent No. 2,062,227, granted November 24, 1936.

The object of my present invention is to provide a simplified manner of dumping the skip which will make it unnecessary to lower the skip to the ground and raise it again in order to effect a dumping, as was provided in my former construction. In my present improvement, it is only necessary to trip the skip in order to accomplish a complete dumping of its contents by gravity, and after the dumping of the contents the arrangement is such as to return the parts to normal positions by gravity. This greatly speeds up the dumping of the skip enabling the skip to be dumped and returned to the quarry or other point of loading in much less time than was necessary heretofore.

A further object of my present invention is to provide for adjustment of the door or side of the skip in order to accommodate for stone or other material of different sizes. This adjustment is provided for by varying the points of attachment of the supporting chains or cables to the hinge arms of the door or open side of the skip and to the ends of the skip which varies the extent of opening of the door when tripped, so as to provide one degree of opening for small stones, and another degree of opening for larger stones, dirt, mud, or the like.

My improvements embody primarily a skip provided with a hinged door capable of being opened for dumping of the skip by gravity whenever the door is unlatched or released.

I have illustrated in the accompanying drawings a preferred embodiment of my invention together with a modification thereof, in which:—

Fig. 1 is a perspective view of my improvements showing the preferred form of skip;

Fig. 2 is an end elevation thereof; and

Fig. 3 is a similar view showing a slightly different form of skip.

My improvements are shown applied to a motor vehicle chassis frame which is designated generally by the numeral 1, and on which are secured upright skid bars 2 which may extend substantially vertical or only slightly inclined out of the vertical, but which are braced at their upper ends by means of braces 3 extending to the chassis frame 1.

The upper ends of the skid bars 2 have bearings 4 secured thereto and in which a shaft 5 is journaled. A pulley 6 is fixed to the shaft 5 intermediate the ends thereof, and has a cable 7 extending therearound with one end of the cable fixed to the pulley 6 and the other end of the cable extending to a suitable hoisting device of customary or usual construction, and which is ordinarily mounted on the chassis frame 1 and may be adapted to be operated from the motor of the vehicle or from a separate motor carried thereby.

The outer ends of the shaft 5 have pulleys 8 fixed thereon, and wound on the pulleys 8 are chains 9 or other flexible cable devices, which chains 9 each has one end fixed to a pulley 8, the other end carries a hook 10 for supporting an end of the skip.

The skip is constructed of a rear wall 11, bottom 12, and end walls 13 secured rigidly together, so as to provide a container with an open top and an open outer side. The open side has a wall 14 which serves as a door therefor to confine the material within the skip. The door 14 has arms 15 fixed to the upper edge thereof, and the arms 15 are pivoted as at 16 to ears 17 extending upwardly from the end walls 13. The arrangement of the pivots 16 above the top of the skip gives a tendency to provide a greater or wider opening of the door when it is swung upwardly. If the pivots 16 were even with the top of the skip or below the top, the load or contents of the skip would tend to interfere with the full opening of the door and complete dumping of the material would not be accomplished as it is in this invention. On the other hand, the provision of a bottom door usually requires that the door be positively closed before the skip can be lowered to the ground for re-loading.

The arms 15 are provided with openings 18 therein, into one of which on each arm is hooked an end of a supporting chain or cable device 19, the opposite end of which is attached to a bracket 20, detachably bolted as at 21 to the end wall 13 of the skip.

The chain 19 has a ring 19' intermediate its ends to receive the hook 10 of chain 9. The chains 9 at the opposite ends of the skip carry the skip by means of the chains 19. Each end wall 13 has openings 22 therein at different points to provide for adjustment of the bracket 20 in order to vary the extent of opening of the door 14 for dumping. By means of the openings 18

and 22, it is possible to secure different degrees of opening according to the points of attachment of the opposite ends of the chain 19. The points illustrated in Fig. 2 provide a suitable opening for fine stone, but for larger stone or dirt, a greater degree of opening is desirable, in which event the hooked end of the chain 19 would preferably engage the outermost one of the openings 18 and the bracket 20 should be adjusted to the lowermost one of the holes 22 for the greater degree of opening as may be required to give the desired tilt for material such as dirt, mud, or large stones. In this way, the degree of opening may be varied according to the material being handled, and other openings may be provided or arranged in different positions, if found desirable, for the handling of other materials.

The door 14 has a pin 23 at an end thereof to be engaged by the hook end of a catch 24 pivoted as at 25 to one of the end walls 13. The catch 24 has its free end extending through a guide or stop member 26 and its extreme end is provided with a pin or outturned portion 27 for causing swinging movement of the catch to release the door.

The skip is normally filled with material at the quarry or other point of loading, at which time it is not connected with the truck, but after being loaded the truck is backed up to the skip, the cable 7 loosened to lower the chains 9 in order to hook the chains 19, after which the cable 7 is drawn in, which rotates the pulleys 8 in a direction to pull up on the chains 9 and lift the opposite ends of the skip to an elevated position, such as shown, for instance, in full lines in Figs. 1 and 2. In this position relative to the truck, the skip is transported to the point of dumping. In order to dump the skip, it is necessary only to release the catch 24 from the pin 23, and the weight of the material causes the entire skip to swing to the dotted line position which permits complete discharge of the material from the skip by gravity, as will be evident from Fig. 2. The body portion of the skip and the door 14 are so balanced that when the material is discharged so that the skip is relieved of its weight, the skip and the door return to their normal positions, as shown in full lines in Figs. 1 and 2, where the door is automatically latched again and is ready to be returned to the point of loading.

This greatly simplifies the manner of dumping the skip and makes it unnecessary to lower it to the ground or to release any cables as was necessary heretofore, thereby materially expediting the time required for dumping the skip and returning it to the point of loading.

The construction shown in Fig. 3 is very similar to that illustrated above, except for the manner of supporting the skip. The door 14' is hinged as at 16' to a bracket 17' at each end of the skip, substantially as described above. The arm 15' for each end of the door has a link 30 pivotally connected therewith by means of a bolt 31, and the opposite end of the link 30 is bolted or pivoted as at 32 to the upper end of a lever 33. The lower end of the lever 33 is hinged to an end or the bottom of the skip by means of a pin or trunnion 34. A guide 35 attached to an end of the skip limits the swinging movement of the lever 33 relative thereto. The lever 33 has an opening 36 therein receiving the hook end of a supporting chain or cable device 9'. This construction is the same at each end of the skip.

The door 14' is normally held closed by a latch 24' and is released for dumping by releasing the latch, whereby the weight of the material causes the skip and the door to be opened to the dotted line position shown in Fig. 3 for complete dumping of the contents, after which the parts automatically return to their initial positions for reloading. The degree of opening is adjusted by varying the point of attachment of the bolt 31 to the arm 15', as described above. It is evident that the dumping positions shown in dotted lines in Figs. 2 and 3 are the positions assumed by loaded skips which in normal loaded positions are lower than the full line loaded positions of Figs. 2 and 3.

I claim:

1. A skip comprising an elongated container having an open side, a door for closing said open side, arms supporting the door, means pivotally connecting the arms to the container, and a flexible device at each end of the skip having end portions thereof permanently connected with the container and with the arms for supporting the skip, each flexible device being adapted to be carried by a separate supporting element for uniform support of each end of the elongated skip.

2. A skip comprising an elongated container having end walls and having an open side, a door for closing said open side, arms carrying said door and pivotally connected with the ends at the upper edge of the container, latching means at the lower edge of the door for latching said door in a closed position, and a flexible device for each end of the skip connected with the end wall and with the adjacent arm for supporting the skip, each flexible device being adapted to be carried by a separate supporting element for uniform support of each end of the elongated skip.

3. A skip comprising a container having end walls and an open side, a door for closing said open side, arms carrying said door, means pivotally connecting the arm with the container, and a flexible device connected with the end walls and with the arms for supporting the skip, the arms having means for adjusting the points of connection of the flexible device therewith lengthwise relative thereto to vary the extent of opening of the door relative to the container.

4. A skip comprising a container having end walls and and open side, a door for closing said open side, arms carrying said door extending horizontally along the upper side of the container, means pivotally connecting the arms with the container, and a flexible device connected with the end walls and with the arms for supporting the skip, the arms having means for adjusting the points of connection of the flexible device therewith lengthwise relative thereto to vary the extent of opening of the door relative to the container.

5. A skip comprising a container having an open side, a door for closing said open side, arms connected with the door and pivoted to the container, a link having one end pivotally connected to each of the arms, a lever pivotally connected to each end of the container and having its opposite end pivoted to the link, said link and lever having means for connection with hoisting and supporting means for the skip.

6. A skip comprising a container having an open side, a door for closing said open side, means fixed to the upper edge of the door and hinging the upper edge of the door to the container for bodily swinging of said door relative thereto, means for latching the lower portion of the door closed, and supporting means for the skip having weight supporting connections directly with the

container separate from the door hinging means and with the upper portion of the door and so constructed and arranged as to cause automatic dumping of the skip upon release of the latching means and permitting automatic closure of the door after dumping.

7. A skip comprising a container having an open side, a door for closing said open side, means for hinging the upper edge of the door to the container, means for latching the lower portion of the door closed, and supporting means for the skip having permanent weight supporting connections directly with the container separate from the door hinging means and with the upper portion of the door and so constructed and arranged as to cause automatic dumping of the skip upon release of the latching means, and the container and door being so balanced as to return automatically to normal positions after dumping.

8. A skip comprising an elongated container having an open side, a door for closing said open side, arms rigidly attached to the upper portion of the door and supporting the same for bodily swinging movement, means for hinging the arms to the container, means for latching the lower portion of the door closed, and flexible supporting means for the skip having portions thereof permanently connected respectively with the container separate from the door hinging means and with the arms and supporting the skip by said connections both during transportation of the skip and during dumping thereof without release of said connections for dumping, said flexible supporting means being arranged at opposite ends of the skip in position to be carried by separate supporting elements for uniform support of the ends of the skip.

9. A skip comprising a container having an open side, a door for closing said open side, means including arms rigidly attached to the upper edge of the door for hinging the upper edge of the door to each opposite side of the container and for bodily movement of the door relative thereto to provide a wide opening of said door, means for latching the lower portion of the door closed, and a flexible device at each end of the skip having one end attached directly to the skip and the other end attached directly to the door hinging means at the end of the skip.

WALTER E. LAMBERT.