

April 27, 1926.

1,582,740

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DUMP BODY LIFTER

Filed Dec. 8, 1925

2 Sheets-Sheet 1

FIG. 1.

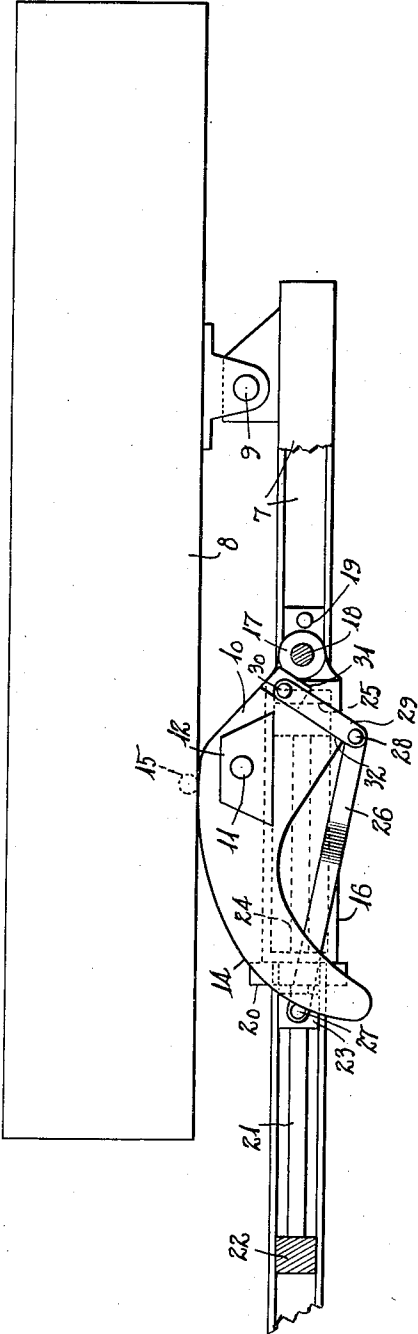
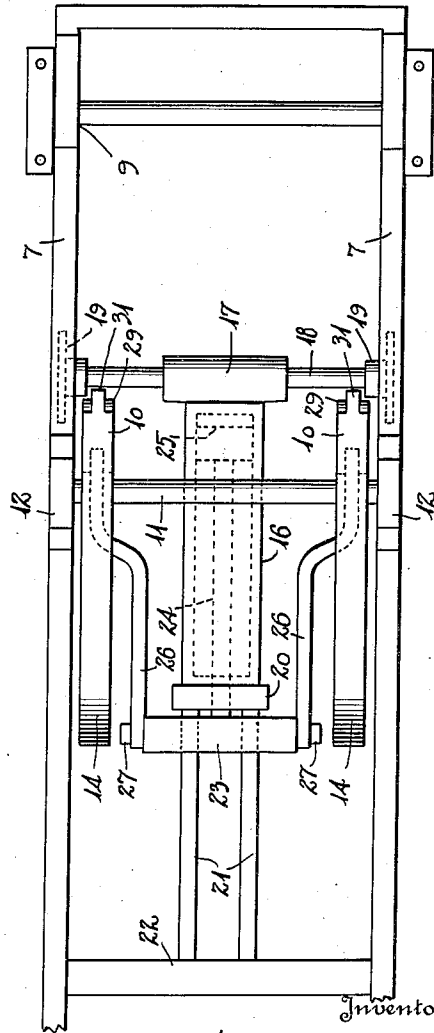


FIG. 3.



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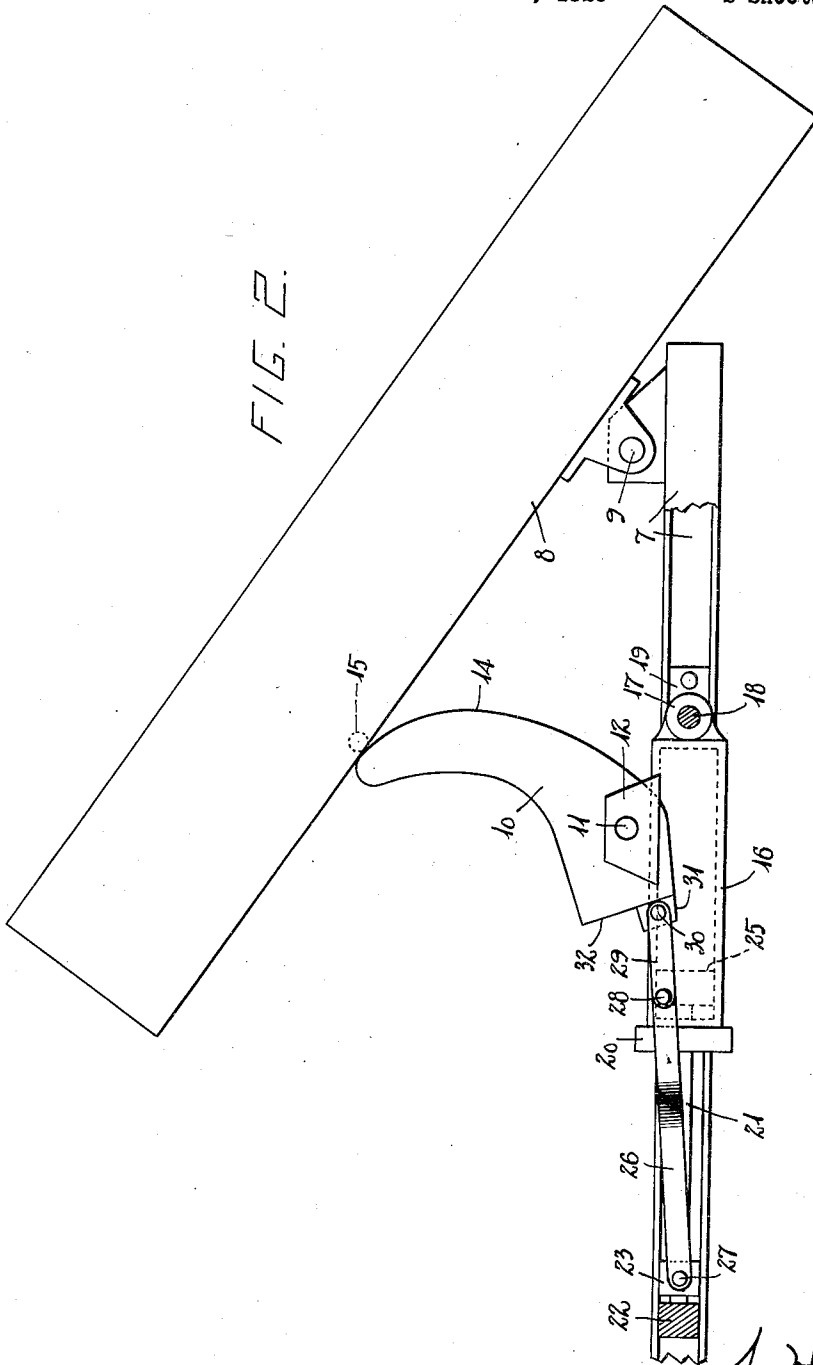
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

ALBERT H. FAGER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
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DUMP-BODY LIFTER.

Application filed December 8, 1925. Serial No. 74,019.

To all whom it may concern:

Be it known that I, ALBERT H. FAGER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Dump-Body Lifters, of which the following is a specification.

The present invention relates to lifting devices or actuating means for the tilting bodies of dumping trucks or other vehicles, and aims to provide novel and improved means for lifting the hinged dump body in an efficient and practical manner.

A further object is the provision of cam levers mounted on the frame on which the body is hinged for raising the body, and novel means connected to said levers for swinging them to raise the body, in order to decrease the ratio of leverage as the body is moved upwardly from horizontal to dumping position.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation showing the body in normal horizontal position, portions being broken away and shown in section.

Fig. 2 is a corresponding view showing the body tilted to dumping position.

Fig. 3 is a plan view showing the parts as arranged in Fig. 1, with the body removed.

The frame of the truck or vehicle has the longitudinal side beams 7 above which the body 8 is hingedly mounted, as at 9, so that the body can be swung from normal horizontal position, as seen in Fig. 1, to inclined or dumping position, as seen in Fig. 2.

The lifting device includes a pair of levers 10 mounted on a transverse rock shaft 11 which is journaled in bearings or blocks 12 secured on the beams 7, and said levers have the cam surfaces 14 to have a wiping contact with rollers 15 or other contact members carried by the body 8 at the bottom there-

of. The cam surfaces 14 are of such form that when the body 8 is in normal horizontal position, the rollers 15 contact with the cam surfaces 14 near the axis of the levers 10 and shaft 11, and when the levers are swung to raise the body the points of contact of the rollers 15 with the cam surfaces move further and further from the axis of the levers, thereby decreasing the leverage, so that the greatest leverage for raising the body is obtained when the body is started upwardly, it being apparent that when the body is raised and starts to discharge its contents from the rear end thereof, less and less effort is necessary to raise the body.

As shown, a longitudinal cylinder 16 is located between the beams 7 below the shaft 11, as a part of a hydraulic actuating means to furnish the power for swinging the levers 10 to raise the body 8. The cylinder 16 has a transverse bearing 17 at its rear end mounted on a cross rod 18 that is secured at its ends in bearings 19 secured to the inner sides of the beams 7, thereby supporting the rear end of the cylinder from the frame. The cylinder 16 has a head 20 at its forward end to which are secured the rear ends of a pair of longitudinal parallel guide bars 21, the forward ends of which are secured to a cross bar 22 secured to and located between the beams 7. In this manner, the cylinder 16 is supported from and located between the cross rod 18 and cross bar 22 in the horizontal plane of the frame, as covered by copending application Serial No. 74,020 filed even date herewith. A cross head 23 is slidable on the guide bars 21 and the stem or rod 24 of the piston 25 working within the cylinder 16 projects through the cylinder head 20 and is attached to the yoke 23. The cylinder 16 and its mounting form the subject matter of said copending application, and it will be understood that for the purposes of the present invention the cross head or member 23 may be actuated by any other suitable means to slide said cross head or yoke 23 forwardly and rearwardly.

The operative connection between the cross head or yoke 23 and the levers 10 includes links 26 pivoted, as at 27, to the ends of the cross head 23 and pivoted, at their opposite ends, as at 28, to links 29 which are in turn pivoted, as at 30, to ears 31 project-

ing from the short arms of the levers 10 opposite the long arms which have the cam surfaces 14. The short arms of the levers 10 have abutments 32 against which the links 29 bear when the levers 10 are swung downwardly, as seen in Fig. 1.

With the levers 10 swung forwardly and downwardly and the body 8 in normal horizontal position, as seen in Fig. 1, the abutments 32 contacting with the links 29 will swing said links rearwardly to inclined positions, thereby depressing the pivot joints 28 and rear ends of the links 26. In this position of the parts the pivot joints 28 are located below the shaft 11 at a distance from said shaft greater than the distance between the pivot joints 30 and shaft 11. Therefore, when the cross head 23 is moved forwardly, the movement of the rollers 15 on the cam surfaces 14 will not only decrease the leverage, but the leverage is also decreased by the action of the links 26 and 29. Thus, when the cross head 23 starts to move forwardly the links 26 exert a pull on the links 29, and said links 29 bearing against the abutments 32 will swing the levers 10, the distance between the pivot joints 30 and shaft 11 being greater than the distance between the rollers 15 and shaft 11, whereby the body 8 is started upwardly with maximum leverage. As the levers 10 are moved upwardly and the abutment 32 moves forwardly beyond a horizontal position, the links 29 are "straightened out" with reference to the links 26, as seen in Fig. 2, so that the effective short arms of the levers 10 are now between the pivot joints 30 and shaft 11, which distance is less than that which existed between the pivot joints 28 and shaft 11, thereby further decreasing the leverage as the rollers 15 ride upwardly on the cam surfaces of the long arms of the levers. The upward movement of the body 8 is therefore accelerated, using maximum leverage and power when the body is started upwardly, and decreasing the leverage and increasing the velocity of the body as the body is moved upwardly. It is apparent that as the body is raised and starts to dump, less power is needed to raise the body higher, so that the dumping operation is facilitated by the operation as above described. By the use of the links 26 and 29 it is also possible to ap-

ply the power to the levers 10 in an effective manner.

Having thus described the invention, what is claimed as new is:—

1. The combination with a frame and a dump body hingedly mounted thereon, a lever mounted on the frame and arranged to raise said body, a slidably mounted actuating member carried by the frame, and pivotally connected links pivoted to said member and lever, the lever having an abutment to contact with the corresponding link, when the lever is in normal position with the body lowered, to swing said link downwardly.

2. The combination with a frame and a dump body hingedly mounted thereon, of a lever mounted on the frame and having a cam surface to contact with the body for raising the body, a link pivoted to said lever, actuating means, and a link connecting said actuating means and first-named link, said lever having an abutment to contact with the first named link and swing the links away from a straight line position when the lever is swung by the downward movement of the body.

3. The combination with a frame and a dump body hingedly mounted thereon, of a lever mounted on the frame and arranged to raise the body, a slidable actuating member carried by the frame, and pivotally connected links connected to said lever and member, said lever having an abutment to contact with one of said links and to swing said link with it when the lever is swung in a direction to lower said body.

4. The combination with a frame and a dump body hingedly mounted thereon, of a lever mounted on the frame and having a short arm provided with an abutment at the end thereof and a long arm provided with a cam surface to contact with the body for raising the body, a slidable actuating member mounted in said frame, and pivotally connected links pivotally connected with said member and said short arm, the link which is pivoted to said short arm being adapted to bear against said abutment so as to swing with the lever when said long arm is moved downwardly.

In testimony whereof I hereunto affix my signature.

ALBERT H. FAGER.