May 28, 1957 H. Z. SMITH ET AL 2,793,767

TRUCK HOIST

Filed May 16, 1955 3 Sheets-Sheet 1

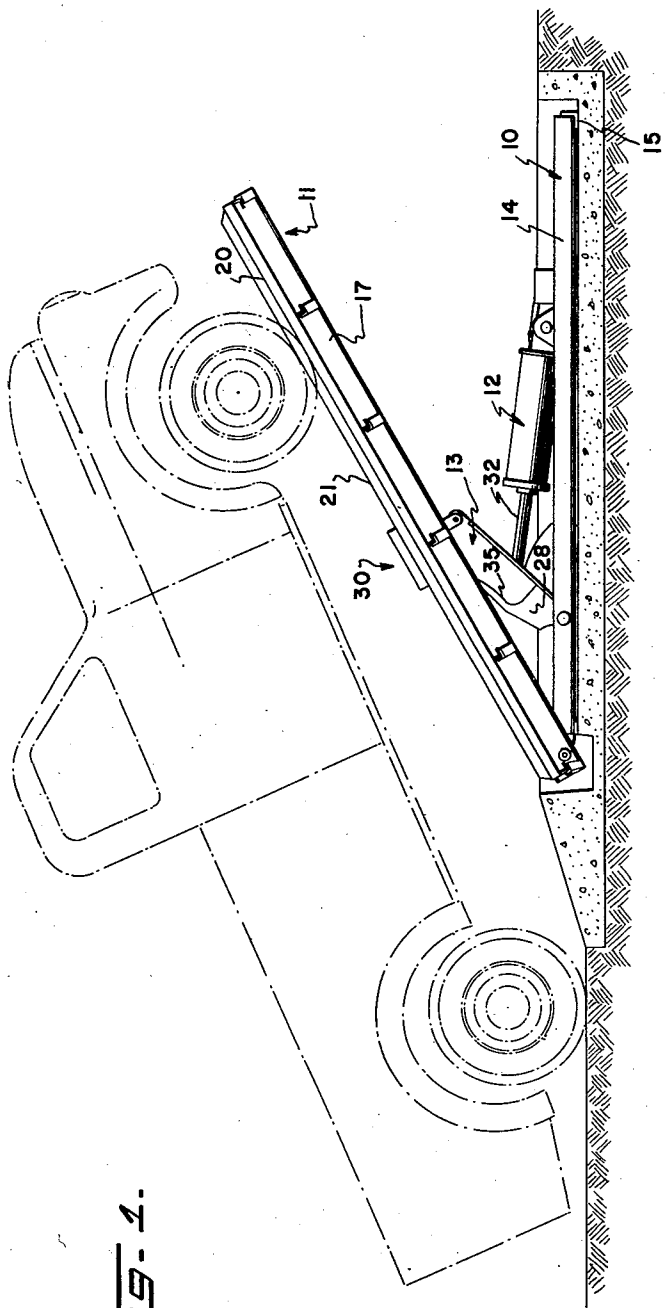


FIG. 1.

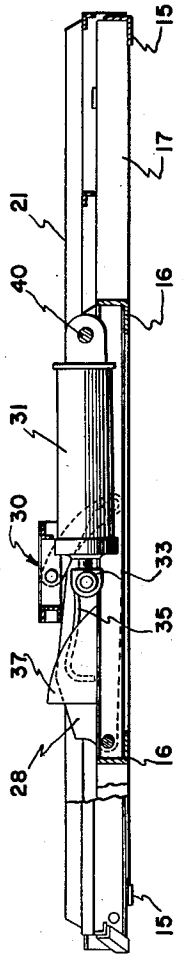


FIG. 2.

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May 28, 1957 H. Z. SMITH ET AL 2,793,767

TRUCK HOIST

Filed May 16, 1955 3 Sheets-Sheet 2

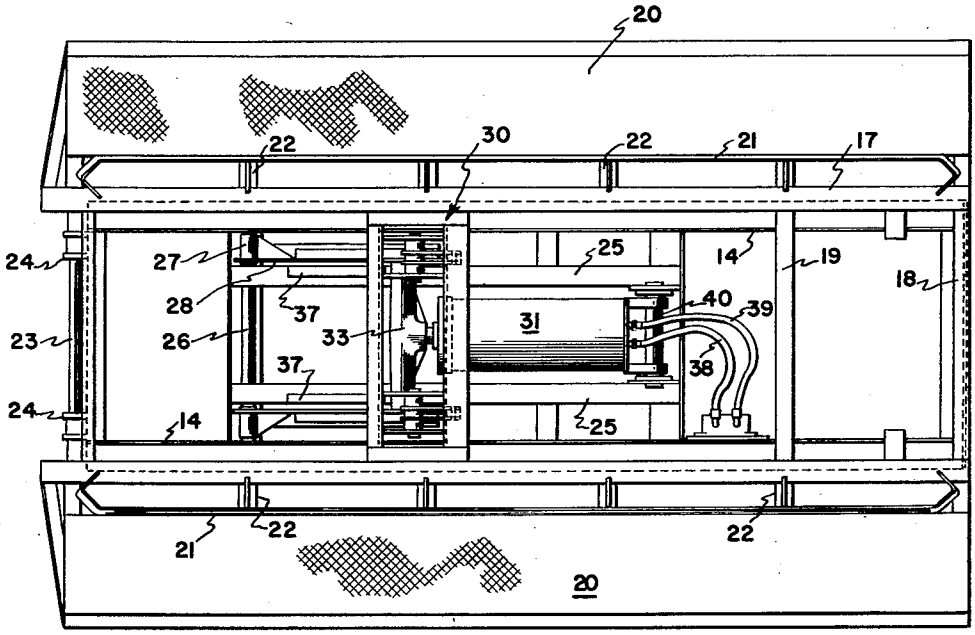
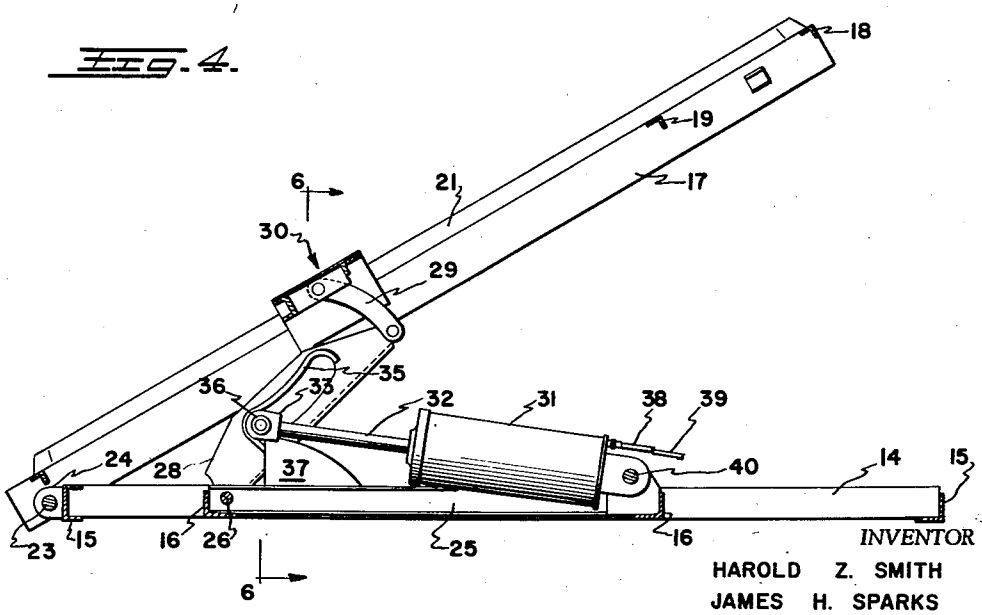


Fig. 3.

Fig. 4.



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May 28, 1957 H. Z. SMITH ET AL 2,793,767

TRUCK HOIST

Filed May 16, 1955 3 Sheets-Sheet 3

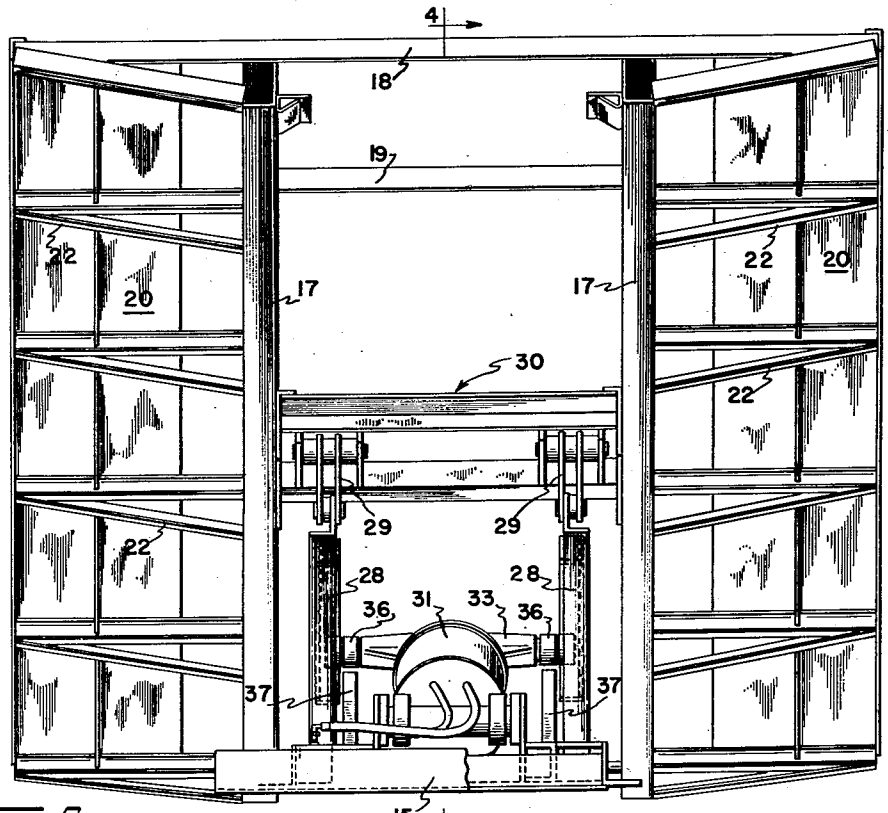


Fig. 5.

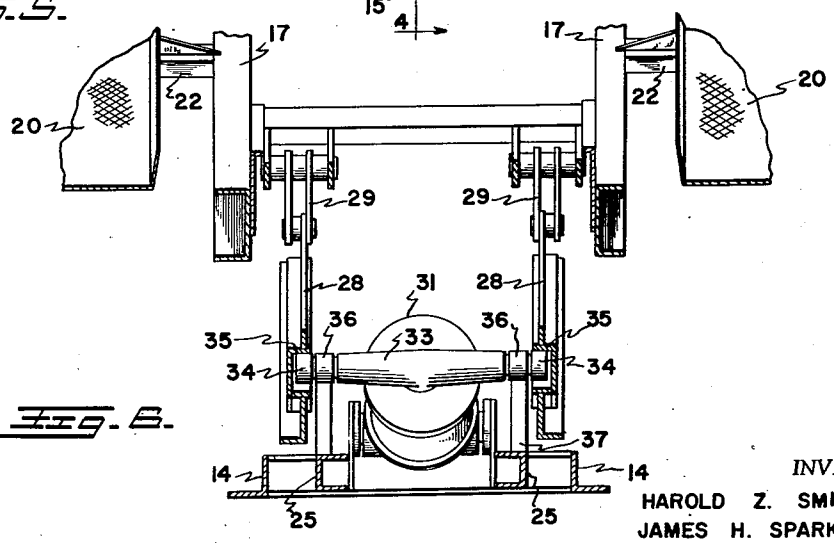


Fig. 6.

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TRUCK HOIST

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Application May 16, 1955, Serial No. 508,359

1 Claim. (Cl. 214—46.34)

The present invention relates to hydraulic hoist mechanism and in particular to a lift for elevating the front end of an auto truck or vehicle for rear end dumping or to facilitate access to the under portion thereof.

An object of the invention is to provide a simple, rugged, inclined plane lift assembly that may be shifted bodily to different locations with ease, and which requires only conventional connection with a hydraulic fluid power source to be fully serviceable.

Other and incidental objects will be apparent from the following description in conjunction with the accompanying drawings, in which:

Figure 1 is a side elevation of a service application of the hoist in raised position;

Figure 2 is a side elevation, partly in section, of the hoist in lowered position;

Figure 3 is a top plan view of the collapsed hoist;

Figure 4 is substantially a central vertical sectional view longitudinally through the hoist in raised position;

Figure 5 is an end elevation viewed from the right of Fig. 4;

Figure 6 is a vertical sectional view taken substantially on the line 6—6 of Fig. 4.

Convenient assembly, illustrative but not restrictive, is herein shown and described as one specific embodiment of the invention. It comprises a base frame **10** and a tiltable lift frame **11** pivoted at one end to an end of the base frame for oscillation in a vertical arc by means of a hydraulic pressure motor **12** carried by the base frame and having an operating linkage **13** connected to the tilt frame.

The base frame includes a pair of parallel, laterally spaced angle iron side bars **14** with outwardly directed base flanges rigidly connected by angle iron end pieces **15** and braces **16** extending transversely therebetween; together constituting a horizontal ground engaging flat base. The tilt frame similarly includes a pair of parallel, laterally spaced channel iron side bars **17** with outwardly directed flanges rigidly connected by channel iron end pieces **18** and braces **19** extending transversely therebetween. The side bars **17** are spaced somewhat farther apart than the upstanding flanges of the base frame side bars **14** so that they override the base flanges of the bars **14** when the assembly is fully collapsed as shown in Fig. 3.

The tilt frame **11** further includes a platform for the front wheels of a truck or other vehicle. This platform is constituted by a tread plate **20** laterally outward from and extending along the full length of each side bar **17**. The tread plates are suitably dimensioned as to spacing and width to accommodate the vehicle wheels, and each is provided with an inside guard rail **21** which may conveniently be a metal strip welded to the plate edge and curved inwardly at each end into a weld attachment to the adjacent side bar **17** of the tilt frame. The tread plates are rigidly attached to the tilt frame by welding to the frame end bars and by a plurality of appropriately

located metal strut brace assemblies **22** welded to the under face of each tread plate and to the adjacent frame side bars **17**.

Each tilt frame side bar at one end has a pivotal connection **23** with the adjacent end of its corresponding base frame side bar **14**. This connection preferably is a cross shaft carried by supports **24** on the base frame end piece **15**. The ends of the shaft are passed freely through the adjacent pairs of side bars and journal the ends of the tilt frame side bars **17**.

Positioned centrally between the side bars of the base frame is a motor support consisting of a sub frame having a pair of longitudinal channel iron side bars **25** in parallel spaced relation with their ends seated on and welded to the braces **16** of the base frame. The ends of the bars **25** nearest the pivotal connection of the tilt frame mount between them a transverse shaft **26** on which are journalled bearings **27** fixed to the ends of a pair of lift levers **28**. Each lever is adapted for oscillation in a vertical plane between the adjacent side bars **14** and **25** of the base and sub frames, respectively, and is pivotally connected at its other end to the adjacent end of a link **29**. This link has at its other end a pivotal connection to an element of the tilt frame, in this case a saddle frame designated generally as **30** secured transversely between and to the tilt frame side bars **17**.

Motive power for operating the tilt frame is supplied from a hydraulic pressure cylinder **31** having a double acting piston whereof the rod **32** carries a cross head **33** provided at each end with an anti-friction roller **34**. Each roller bears upon a cam track or guideway **35** on the adjacent lift lever **28** and is located outwardly alongside another anti-friction roller **36** carried by the cross head and which bears on the face of an upright cam **37** that is mounted in a fixed position on the adjacent side bar **25** of the motor support frame between the motor cylinder and the pivot shaft **26**, with the low point of the cam nearest the end of the cylinder. The opposite end of the cylinder has conduit connections **38** and **39** leading to a hydraulic pressure supply source, not shown, and has a pivotal connection **40** with the adjacent end of the motor support frame.

Normally, when the hoist is collapsed as in Figs. 2 and 3, the piston cross head **33** is retracted and its inner rollers **36** are seated against the motor support frame side bars adjacent the low points of the fixed cams **37** and with the rollers **34** at the inner limit of their guideways **35**. Upon a protractile stroke of the piston rod **32** the cross head rollers **36** ride up on the cams **37** and at the same time the rollers **34** move outwardly along their guideways and correspondingly swing the lift levers **28** upwardly. Upward travel of these levers is transmitted to the amplifying links **29** which in turn elevate the tilt frame. A retractile stroke of the piston rod pulls the parts back to their initial collapsed position with the tilt frame nested flatly upon the base frame.

We claim:

In a vehicle dumping mechanism a base frame, a tilt frame nestable flatly thereon, said tilt frame including outwardly projecting side bars, a wheeled vehicle tread plate on each set of side bars adapted to receive the front wheels and adjacent portion of a dump vehicle, a pivotal connection between the frames at one end thereof, a fluid pressure responsive motor including a cylinder having a fixed pivotal connection with the base frame and having a piston including a cross head, linkage between and in pivotal connection with both frames at each side thereof, said linkage including lift levers fulcrumed on the base frame to lie between said frames when they are nested, a pivotal and slidable connection between the

levers and cross head of the piston, and cam means on the base frame operatively engaged by the cross head at each side of the piston upon projectile movement of the piston to elevate the lift levers and thereby incline the tilt frame above the base frame.

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