Aug. 11, 1959 A. L. CRESCI 2,899,172

ELEVATING MECHANISM FOR TRUCK BODIES

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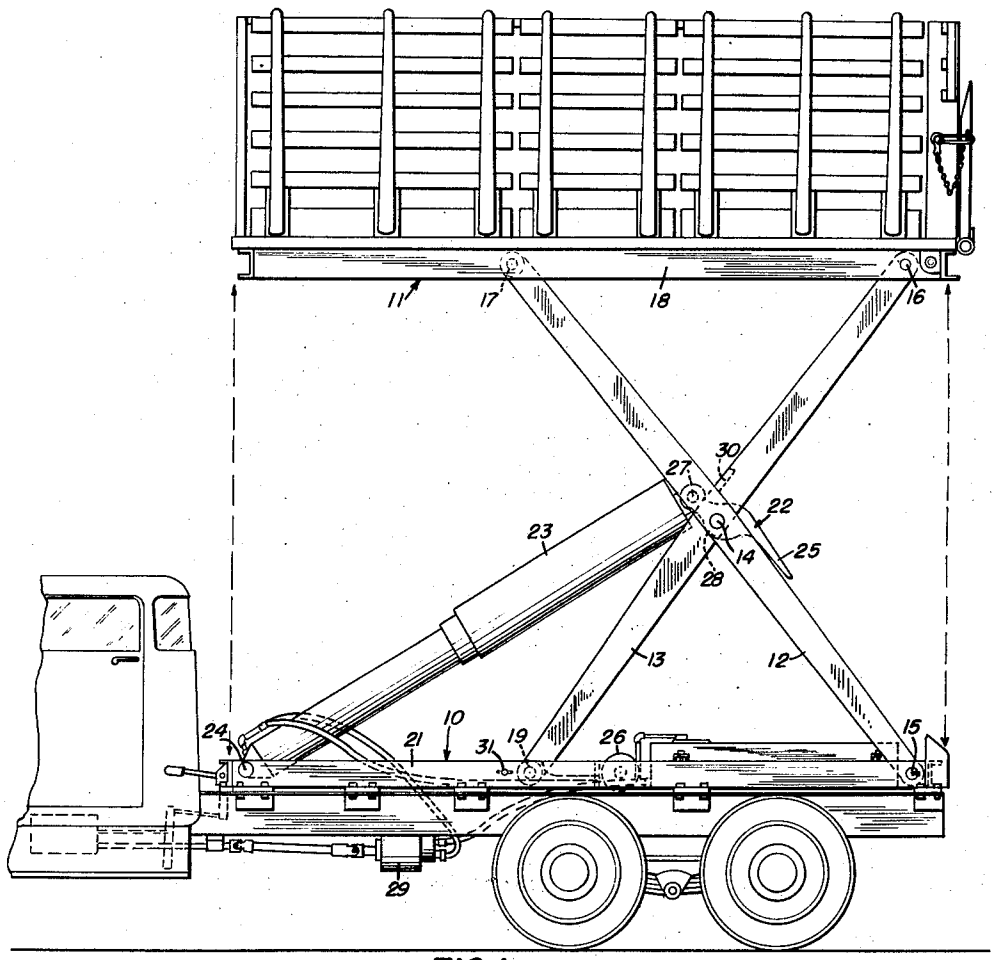


FIG. 1

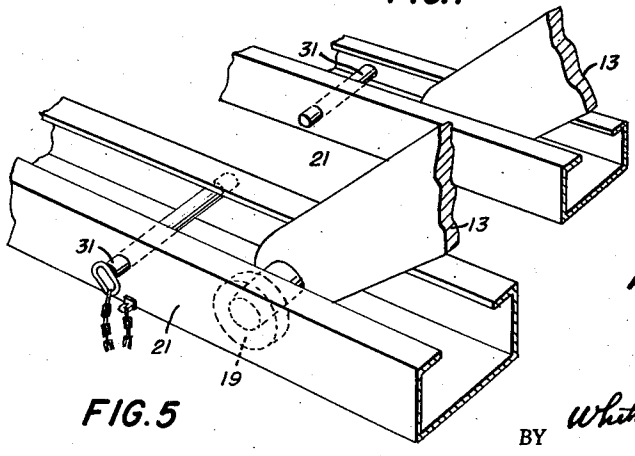


FIG. 5

ANTHONY L. CRESCI
INVENTOR

BY Whittemore, Hulbert & Belknap

ATTORNEYS

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ELEVATING MECHANISM FOR TRUCK BODIES

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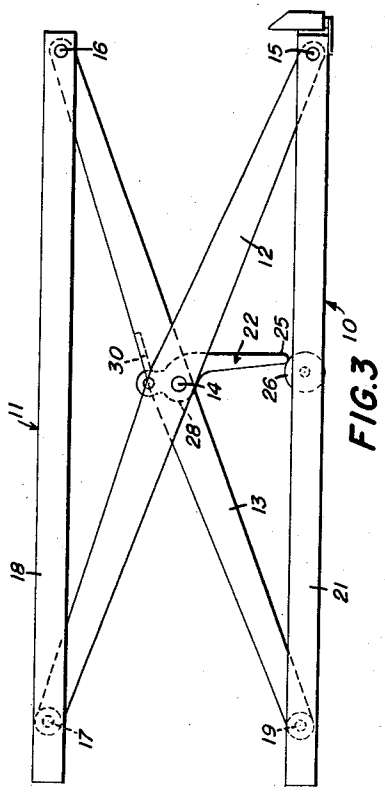


FIG. 3

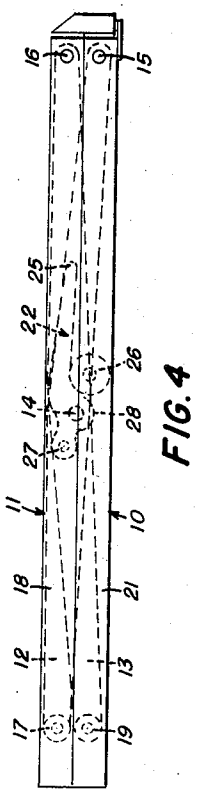


FIG. 4

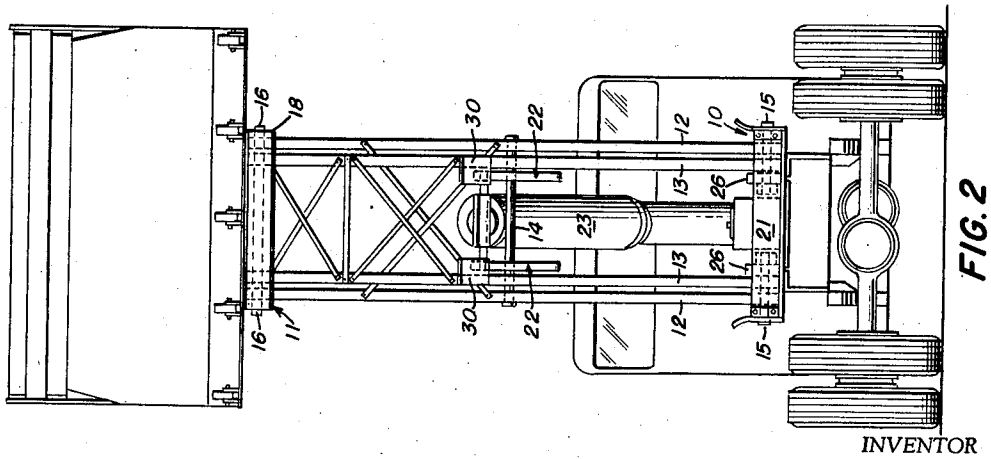


FIG. 2

INVENTOR
ANTHONY L. CRESCI

BY Whittemore, Hulbert & Belknap

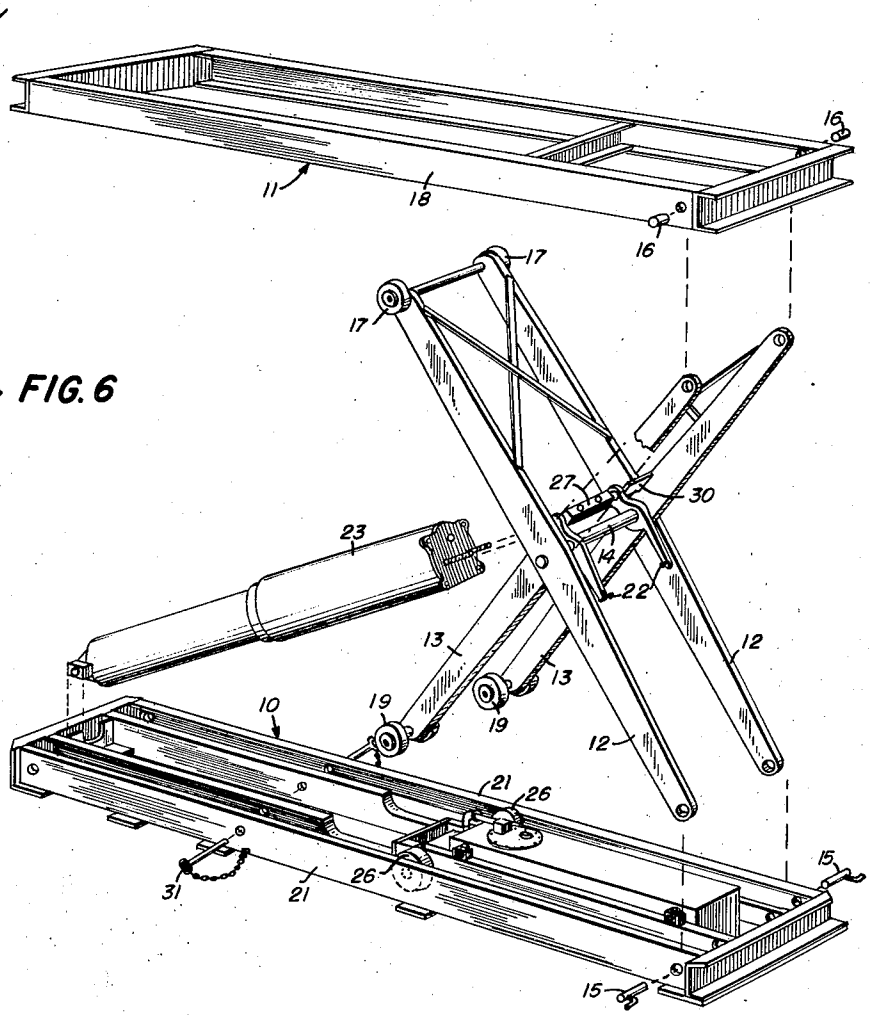
ATTORNEYS

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FIG. 6



INVENTOR

ANTHONY L. CRESCI

BY Whittemore, Hulbert & Belknap

ATTORNEYS

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ELEVATING MECHANISM FOR TRUCK BODIES

Anthony L. Cresci, Vineland, N.J.

Application May 13, 1958, Serial No. 734,913
8 Claims. (Cl. 254—8)

The present invention relates to mechanism for elevating a truck body a substantial distance above its chassis and is similar in some respects to the arrangement illustrated in the patent to Cresci 2,706,102, wherein a pair of crossed lever arms are pivotally connected intermediate their ends and these levers have pivotal connections to the body and chassis respectively.

One of the objects of the invention is to overcome initial resistance to elevation of the body by providing in combination with a hydraulic ram a novel form of cam mechanism which acts to raise the body in the preliminary lifting stages.

Another object of the invention is to combine the hydraulic ram with the cam in such a manner that, when the cam has raised the levers some distance beyond dead center of their pivotal connection, the ram acts directly on the levers to complete the maximum elevation of the truck body.

Other and obvious objects of the invention will be apparent from the following description thereof taken with the accompanying drawings in which—

Fig. 1 is a side elevation of the mechanism forming a preferred embodiment of the invention;

Fig. 2 is an end view of the mechanism shown in Fig. 1;

Fig. 3 is a side view of the levers and cam in one position thereof;

Fig. 4 is a view similar to Fig. 3 with the levers in collapsed or lowermost position;

Fig. 5 is a partial perspective of the means for guiding the lower ends of the levers; and

Fig. 6 is an exploded perspective of parts of the mechanism illustrated in Fig. 1.

In the drawings, the chassis frame is shown at **10** and the truck body frame at **11**. Connecting the body to the chassis are a pair of outside levers **12** and a pair of inside levers **13**, the levers being pivotally connected by a cross shaft **14**. Levers **12** are pivotally connected to the chassis frame at **15**, while levers **13** are pivotally connected to the body frame at **16**. The upper end of each of the levers **12** carries a roller **17** constrained to move in a straight line in channel tracks **18** forming part of the body frame. The lower end of each of the levers **13** carries a pair of rollers **19** constrained to move in channel tracks **21** forming part of the body frame.

Pivoted on cross shaft **14** are cam members **22** the upper end of each of which is pivotally connected by a cross member **27** to the movable cylinder of a hydraulic ram **23**, the latter being pivoted to the chassis frame at **24**. Each cam is provided with a free elongated tail portion **25** which is adapted to ride on a roller **26** journaled in the chassis frame at each side thereof when moving from its lowermost position, as shown in Fig. 4, and during the initial stage of elevation to the position illustrated in Fig. 3. When the body is in its lowermost position, as seen in Fig. 4, the body frame rests directly on the chassis frame. At this time the ram is confined entirely within the combined heights of the body and

chassis frames which in the present construction is approximately fifteen inches. Thus it is possible not only to reduce this combined height to a minimum, but the pivotal connection of the levers may be lowered to a point just above its dead center.

It will be seen from Fig. 4 that the angle of the hydraulic ram with respect to the horizontal is such that its connection **27** with cam **22** is above the pivotal connection **14** of the levers. The cam **22** also has a rounded portion or land **28** on the underside thereof which is concentric with the cross shaft **14**. As fluid under pressure, supplied by pump **29**, forces cylinder **23** rearwardly, the cam portion **28** rides over roller **26** and initiates the first stage of elevation, thus raising the pivot of the lever linkage. At the same time the upper end of the cam, that is that end pivotally connected to the ram cylinder, moves in a clockwise direction about shaft **14** as seen in Fig. 3. The tail portion **25** of the cam meanwhile engages the roller **26** to resist this rotation of the cam, so that there is no abrupt movement of the upper end of the cam when the rounded portion **28** rises out of contact with roller **26**. The cam member is so designed that the tail portion thereof is sufficiently long that it continues to engage roller **26** until the cross bar **27** is substantially in vertical alignment with cross shaft **14**. Thus the ram is permitted continuously to exert sufficient force to the linkage further to raise the body. The upper end of each cam at this time engages a stop member **30** protruding from each of levers **13** so that the thrust of the ram is now exerted directly against levers **13** and through their pivotal connection with levers **12** to the latter through the final stages of body lift. It is to be noted that the pivotal connection **27** between the cam member and the ram is above the pivotal connection **14** regardless of the position of the cam. In order to relieve the ram of the weight of the fully raised truck body, the linkage may be locked in the position shown in Fig. 1 by pins **31** inserted in suitable apertures in the tracks **21**. These pins are engageable by rollers **19** to prevent the latter from moving toward the collapsed position of the lever linkage.

When the truck body is to be lowered, the fluid in the ram is released through suitable valve mechanism, the weight of the body being sufficient to force the fluid out of the ram. As the levers reach the position shown in Fig. 3, the upper end portion of cam **22** moves out of contact with stop **30** and, were it not for the resistance exerted by the tail portion of the cam riding on roller **26**, the linkage would lower relatively rapidly. The cam thus acts as a buffer to rapid fluctuations in the final stages of the lowering operation. The cams are so dimensioned that they, as well as the ram, are entirely confined within the combined heights of the chassis and body frames when the body rests directly on the chassis. Thus in this latter position no parts of the ram or cams protrude above the body frame or below the chassis frame.

While a preferred form of the invention has been illustrated and described, it is obvious that such changes as fall within the scope of the claims are permissible.

What is claimed is:

1. A load carrying vehicle including a chassis frame, a body frame adapted to rest on said chassis frame, elevating mechanism for the body frame comprising a pair of arms pivoted to each other intermediate the ends of said arms, each of said arms comprising a rigid one-piece member, one end of one of said arms having a pivotal connection with said chassis frame, one end of the other of said arms having a pivotal connection with said body frame, said connections being in vertical alignment, said chassis frame and said body frame each having a track thereon, a roller mounted on the other end of said one arm engaging the track on said body frame, a roller mounted on the other end of said other arm engaging the track on

said chassis frame, a cam member pivoted intermediate its ends to the other of said arms, a roller journaled on said chassis frame, power means connected to one end of said cam member, a land on said cam member engageable with said journaled roller to lift said body frame from its resting position on the chassis frame in the initial stages of elevation, the free end of said cam member comprising an elongated portion engaging said journaled roller during a subsequent period of elevation of the body frame, and an abutment on said other arm engageable by said one end of said cam to receive the direct thrust of said power means during the final stages of elevation of the body frame.

2. A load carrying vehicle as defined in claim 1 in which the cam member is pivoted on the pivotal connection between said arms.

3. A load carrying vehicle as defined in claim 2 in which the pivotal connection between the cam member and said power means is in a plane spaced above the pivotal connection between said arms in all positions of the cam member.

4. A load carrying vehicle as defined in claim 3 in which the power means comprises a fluid operated ram and in which said ram, cam, and roller are confined within the space defined by the plane of the upper face of the body frame and the plane of the lower face of the chassis frame when said upper frame is resting on said chassis frame.

5. A load carrying vehicle as defined in claim 3 in which said land is on the underside of said member.

6. A load carrying vehicle as defined in claim 5 in which the surface of said land is concentric with the pivotal connection between said power means and said member.

7. A load carrying vehicle as defined in claim 6 in which said journaled roller is in engagement with said land when said body frame is in resting position on said chassis frame.

8. A load carrying vehicle as defined in claim 1 in which said elongated portion is substantially straight and remains in engagement with said journaled roller only until said cam member engages said abutment.

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