

March 24, 1942.

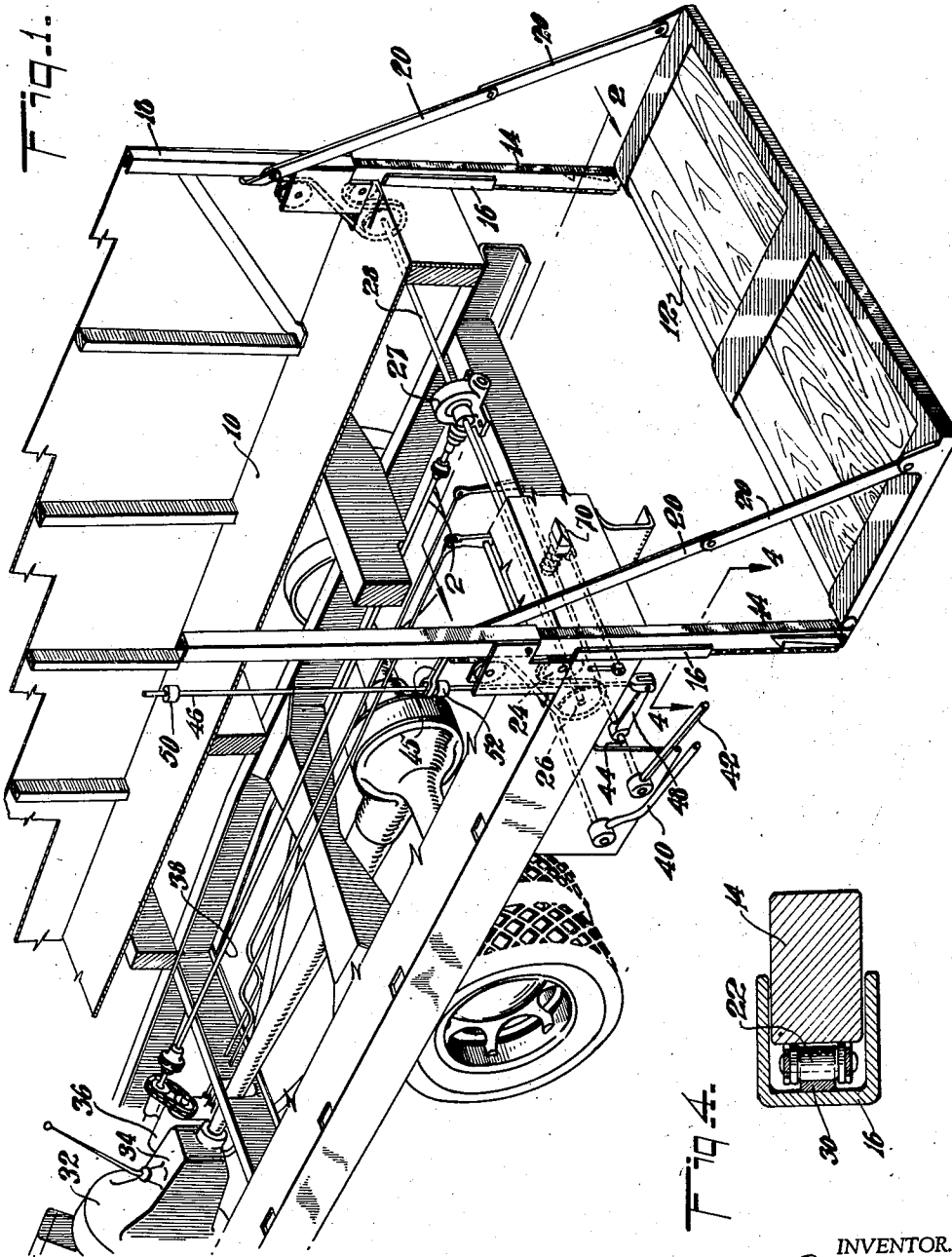
F. RICHTER

2,277,529

TAILBOARD

Filed Sept. 6, 1939

3 Sheets-Sheet 1



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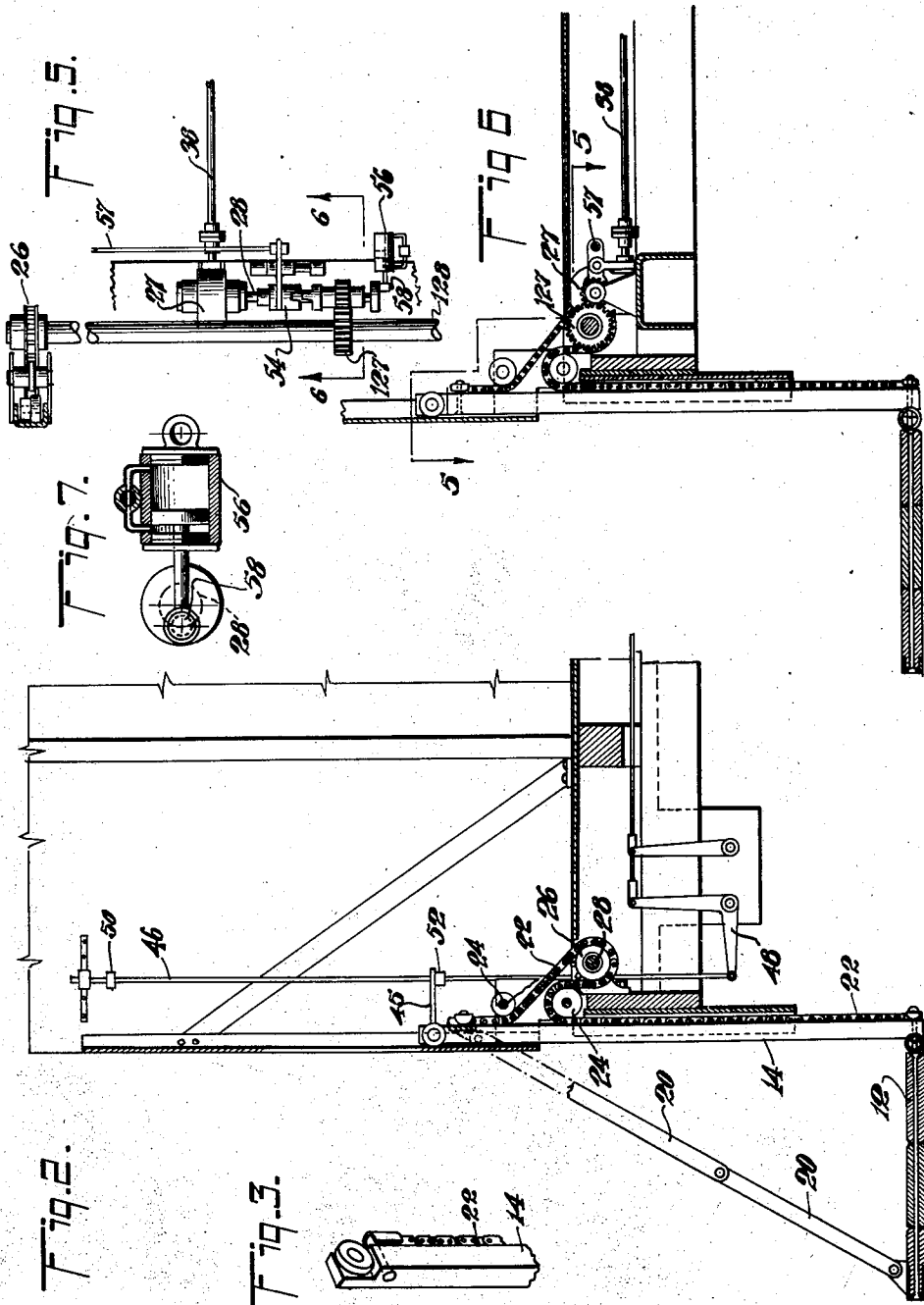
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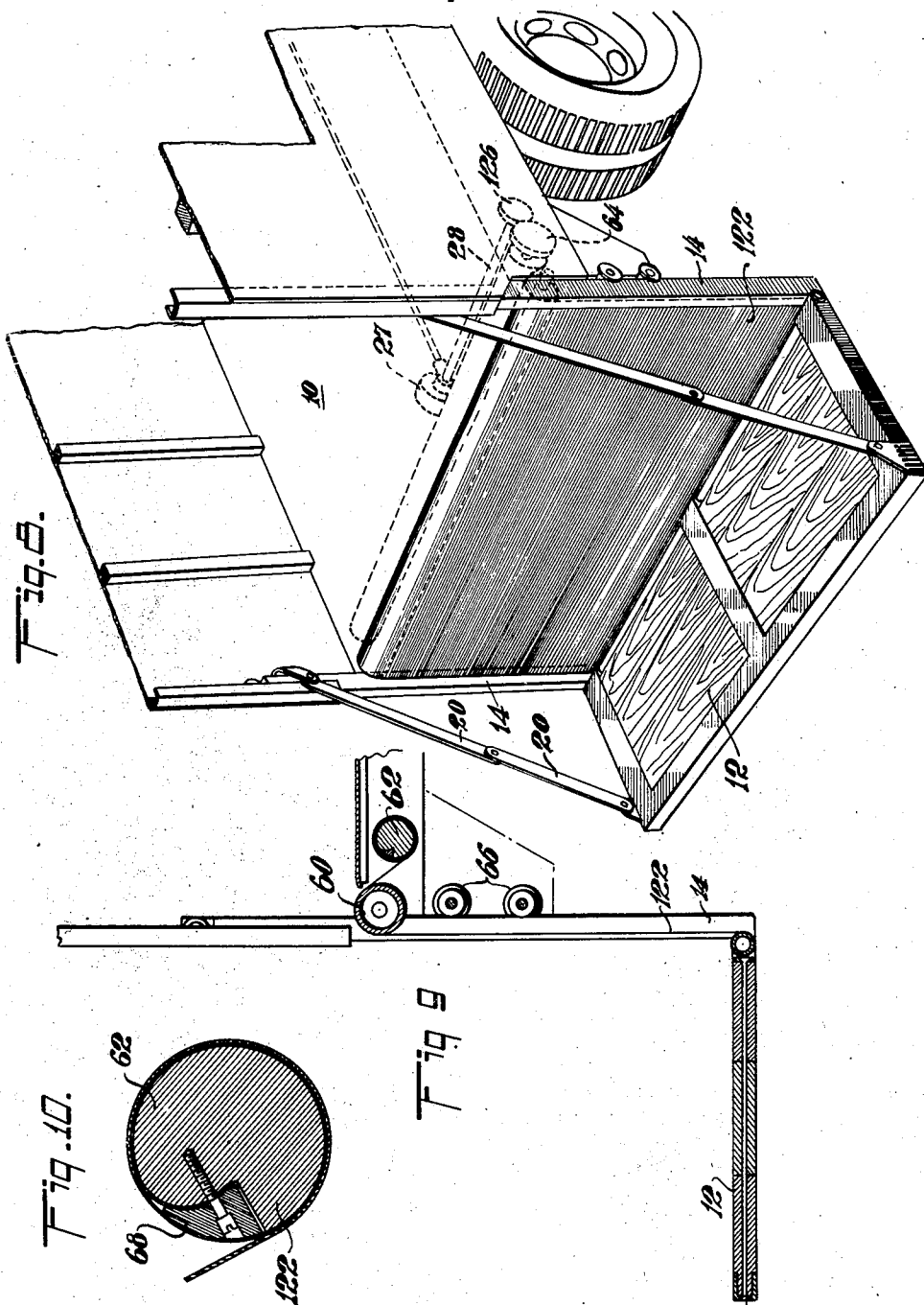
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2,277,529

TAILBOARD

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Application September 6, 1939, Serial No. 293,538

9 Claims. (Cl. 214—75)

This invention relates to a tailboard mechanism and more specifically to a mechanism for raising and lowering a tailboard.

In general, it is an object of the invention to provide a device of the character described which efficiently performs the purposes for which it is intended, which is simple and economical of construction, which can be expeditiously, conveniently and safely manipulated, and which can be readily manufactured and assembled.

Another object of the invention is to provide a tailboard raising and lowering mechanism which may or may not use the force of gravity during the lowering operation, and which is mechanically operated by the vehicle motor during the raising operation; to provide such a mechanism in which the force of gravity plays no part when the lowering is being controlled by the mechanism; and to provide such a mechanism which at all times prevents articles from falling from the tailboard toward the ground beyond the tailboard under the vehicle.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawings, in which:

Figure 1 is a perspective view of the rear end of a truck with mechanism for raising and lowering a tailboard, all embodying one form of the invention;

Fig. 2 is a view in elevation, partly in section, of a part of the mechanism shown in Fig. 1 and taken along the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a detail shown in Fig. 2;

Fig. 4 is a plan view in cross section of a detail of the mechanism shown in Fig. 1 and taken along the line 4—4 of Fig. 1;

Fig. 5 is a plan view of a modification of a portion of the mechanism shown in Fig. 1;

Fig. 6 is a view in elevation of the modified detail of Fig. 5 shown with other features of the invention;

Fig. 7 is a view of a unit which is a part of the mechanism shown in Fig. 5;

Fig. 8 is a perspective view of the rear end

of a truck embodying the modification of the mechanism shown in Fig. 1;

Fig. 9 is a view in elevation, partly in section, of a portion of the mechanism shown in Fig. 8; and

Fig. 10 is a view in cross-section of an element of the mechanism shown in Figs. 8 and 9.

In the drawings, 10 denotes the floor of an automotive truck which has a tailboard 12 movable vertically while the tailboard is in horizontal position. The tailboard is carried by a pair of supporting elements 14 which are positioned at the rear corners of the truck and are slidable vertically with respect thereto. There may be a pair of channel irons 16 below the floor of the truck, and a pair of channel irons 18 above the floor of the truck in which the supports 14 may move. The tailboard is usually pivotally attached to the supports, and means are provided to hold the outer edge of the board so that the entire board is horizontal. Thus there may be a pair of braces 20 at each side pivotally connected to the tailboard for moving the latter to and from a horizontal position.

There are means positioned at the rear corners of the truck for raising the tailboard supports 14. A traction element, which may be a belt or a linked chain 22, is attached at one end to the upper end of one of the supports 14 and attached at its other end to the lower end of one of the supports 14. It passes by various idling sprockets 24 and around sprocket 26. The latter is attached to shaft 28 which extends horizontally under the floor 10 of the truck from side to side. At the other end of the shaft 28 there is a similar sprocket 26 and a similar chain, attached in a similar fashion to the other supporting element 14. On the inside of the channel iron 16 there may be a track 30 along which the cross pieces of the chain 22 may slide.

Any suitable means may be used to deliver power to the shaft 28 from the engine 32 of the truck. The following arrangement has been found satisfactory: Associated with the usual transmission box 34, there is a power take-off unit 36 in which there is the usual clutch and gearing elements. A shaft 38 extends back under the floor from the unit 36 and is mechanically linked to shaft 28 by a self-locking worm reduction unit 27. The angle of the latter is less than 15°. A handle 40 may be provided anywhere on the truck, and preferably near the rear end, for operating the clutch in the power take-off unit 36, to which unit it is connected by any

suitable assemblage of mechanical elements. There is also a handle 42 which may be moved between three positions, e. g., an upper, a middle and a lower position. This handle 42 is connected through shaft 44 and other mechanical elements to the power take-off unit 36. In its upper position, as shown, it causes the gearing in that unit to rotate shaft 38 so that the supports 14 and tailboard 12 are raised. When handle 42 is in its middle position it disconnects shaft 38 from unit 36, and when it is in the lower position it so connects the unit and shaft 38 that the latter turns in an opposite direction, causing the tailboard to be lowered.

There are means for causing the tailboard supports to stop in their upward motion when the tailboard reaches the level of the truck floor 10. An arm 45, attached to one of the supports 14, has a forked end which rides along an upright rod 46. The latter is pivoted to the end of an arm 48, which is affixed to shaft 44. There is a nut 50 affixed to the upper end of the rod 46. When support 14 reaches a predetermined height, arm 45 comes in contact with nut 50, raising it and the rod 46, thereby causing arm 48 and shaft 44 to rotate from the raising position to neutral position. This causes shaft 38 to cease to turn, and the tailboard comes to rest. Similarly, there is another nut 52 on rod 46 at the lower end thereof. Similarly, when the arm 45 is lowered along with the tailboard support, it contacts the lower nut 52 at a predetermined point in its travel. This causes shaft 44 to be moved in the opposite direction toward the neutral position, and again the motion of the tailboard is brought to a stop, this time before it reaches the ground.

Under some circumstances, it is desirable to let the force of gravity lower the tailboard rather than to operate it through the shaft 38. A mechanism for permitting this is shown in Figs. 5, 6 and 7. In those figures a shaft 38 and the reduction unit 27 are like the similar parts of the mechanism shown in Fig. 1. Shaft 28, however, has a dog clutch 54 inserted therein. The latter is operated by any suitably placed handle 57. Shaft 28 is connected to sprockets 26 by intermediate gearing 127 and shaft 128. In order that the tailboard shall not descend too rapidly when gear 26 is no longer connected with the reduction unit 27, there is a double acting dash pot 56 operated by a crank arm 58 on shaft 28.

It is often advantageous to have the horizontal space between the floor of the truck and the lowered tail piece closed so that the danger of goods falling off from the tail piece and rolling under the truck is avoided. A device to accomplish this is shown in Figs. 8-10. A sheet 122 of any suitable material, and preferably a flexible material, is attached either to the bottom of the supports 14 or to one edge of the tailboard 12. It extends upward to the height of the floor 10 and is carried over an idling roller 60 and thence to a roller 62 under the floor, to which it is attached. The roller 62 may be caused to roll in any convenient fashion, as by a gear 64 positioned to mesh with a gear 126 on shaft 28. The latter may be connected to the engine the same way as shaft 28 in Fig. 1. There may be guiding rollers 66 to assist in positioning sheet 122. The sheet is attached to roller 62 in any desired fashion, as for example as shown in Fig. 10. The end of the sheet is placed between the main portion of the roller and a small subsidiary portion 68 and clamped therebetween. The main and

subsidiary portions have a combined cylindrical surface on which sheet 122 may be wound up.

The operation of the device will be clear from the foregoing description. The handle 40 is first operated, and then handle 42 is turned to raise or lower the tailboard. After the latter has been carried a predetermined maximum distance toward the ground or to the floor level, the mechanism automatically shuts off. The lowering may be accomplished by gravity where the power drive may be separated at some point, for example, the dog clutch mentioned.

There may be a releasable locking support or pin 70, preferably spring-operated, and adapted to extend rearwardly from below the truck floor to prevent the tailboard from descending except at such times as the operator desires.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all the generic and specific features of the invention herein described, and all statements of the scope of the application which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination comprising a tailboard, an upright vertically-movable support therefor, a rotatable element, and a traction element having two ends attached respectively to said support at spaced points thereof and having contact with said rotatable element a vertical portion of one end of said traction element extending parallel to said support, a vertical portion of the other end of said traction element extending parallel to said support, the length of each of said portions depending upon the position of said tailboard, the combined lengths of portions being substantially constant.

2. The combination comprising a tailboard, an upright vertically-movable support therefor, a rotatable element, and a traction element having two ends attached respectively to said support at spaced points thereof and having contact with said rotatable element, one of said ends being higher than the remainder of said element, a vertical portion of one end of said traction element extending parallel to said support, a vertical portion of the other end of said traction element extending parallel to said support, the length of each of said portions depending upon the position of said tailboard, the combined lengths of portions being substantially constant.

3. The combination comprising a tailboard, an upright vertically-movable support therefor, a rotatable element, and a traction element having two ends attached respectively to said support at spaced points thereof and having contact with said rotatable element, one of said points of attachment being above the other for all positions of said traction element, said rotatable element being adjacent said support, a vehicle associated with said tailboard, motive means for said vehicle, and means for delivering power from said motive means to said rotatable element and composed of shafting and gearing, a vertical portion of one end of said traction element extending parallel to said support, a verti-

cal portion of the other end of said traction element extending parallel to said support, the length of each of said portions depending upon the position of said tailboard, the combined lengths of portions being substantially constant.

4. The combination comprising a tailboard, an upright vertically-movable support therefor, a rotatable element, and a traction element having two ends attached respectively to said support at spaced points thereof and having contact with said rotatable element, a vehicle associated with said tailboard, motive means for said vehicle, means for delivering power from said motive means to said rotatable element, means for disconnecting said power delivering means from said tailboard support, and means operative when said power delivering means are disconnected for causing said support to descend more slowly than it otherwise would.

5. The combination comprising a tailboard, an upright vertically-movable support therefor, a sprocket, a chain having opposite ends each unconnected with the remainder of said chain except at one point and having its ends attached respectively to an upper and a lower point of said support and engaging with said sprocket, and means for limiting the motion of said ends to a vertical motion.

6. The combination comprising a tailboard, an upright vertically-movable support therefor, a sprocket, a chain having its ends attached respectively to an upper and a lower point of said

support and engaging with said sprocket, a shaft for rotating said sprocket, a vehicle associated with said tailboard, motive means for said vehicle, and means for delivering power from said motive means to said shaft and including a self-locking worm reduction unit.

7. The combination comprising a tailboard, an upright vertically-movable support therefor, a sprocket, a chain having its ends attached respectively to an upper and a lower point of said support and engaging with said sprocket, a vehicle associated with said tailboard, motive means for said vehicle, and means for delivering power from said motive means to said sprocket and including a self-locking worm reduction unit.

8. The combination comprising a tailboard, an upright vertically-movable support therefor, a rotatable element, a sheet having a lower edge permanently positioned adjacent an edge of said tailboard and having a part adapted to be moved by said element whereby said lower edge and said tailboard may be raised and lowered.

9. The combination comprising a tailboard, an upright vertically-movable support therefor, a rotatable element, a sheet having a lower edge permanently positioned adjacent an edge of said tailboard and having a part adapted to be moved by said element whereby said lower edge and said tailboard may be raised and lowered, said sheet extending substantially from one side to the other of said tailboard.

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