Jan. 16, 1934. F. BRAUNER 1,944,063

LOADING DEVICE SPECIALLY FOR TRUCKS

Filed July 21, 1928 2 Sheets-Sheet 1

Fig.1

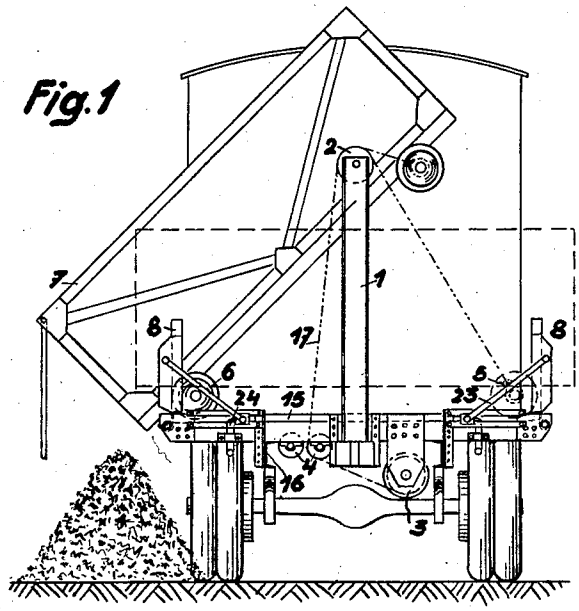


Fig.2

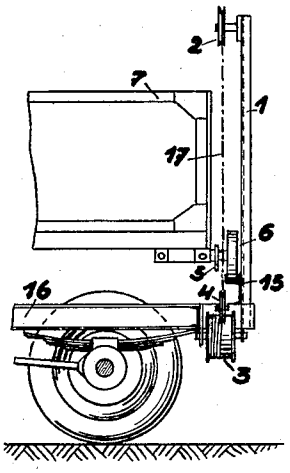
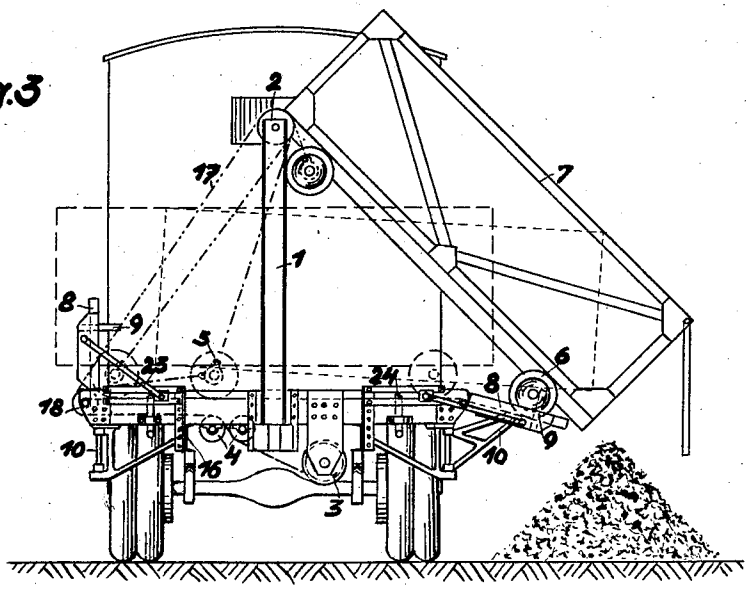


Fig.3



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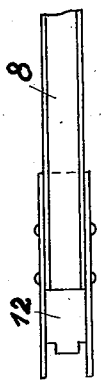


Fig. 4

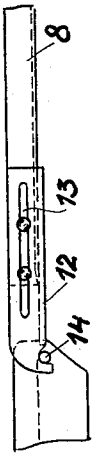


Fig. 5

Fig. 6

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Patented Jan. 16, 1934 1,944,063

UNITED STATES PATENT OFFICE

1,944,063

LOADING DEVICE SPECIALLY FOR TRUCKS

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Application July 21, 1928, Serial No. 294,504, and in Germany July 28, 1927

7 Claims. (Cl. 214—65)

This invention relates to an arrangement for the transverse shifting (loading and unloading transversely to the direction of travel) and tipping of the container detachable from the frame of trucks or vans. The novelty consists in that for the transverse shifting and tipping of the container one single rope winch serves which is mounted on the truck frame. In order to, on the one hand, avoid the inconveniences of the devices for unloading in rearward direction and, on the other hand, to economize the complicated and expensive arrangement like tippable platform and separate tipping winch hitherto used for the transverse reloading, the transverse loading and unloading of the container is effected merely on the rails adapted to be lowered by according rope guiding or by accordingly arranged sheaves with only one single rope winch arranged on the truck frame. This winch comprises preferably two drums arranged so that the two ropes extend symmetrically to the middle of the container. The most favourable arrangement is that, in which the two planes in which the ropes work are situated at the ends of the container. By suitable guiding of the ropes over according pulleys it becomes possible, to load or unload the container from or to the right or from or to the left. By guiding the rope over a pulley post, the use of which for tipping is known, the container can be tipped sidewards, and it is further possible to tip, by a separate device, the container around an axle situated at the side of the truck frame.

The several devices and arrangements mounted on a power driven truck are shown by way of example in the accompanying drawings in which:—

Fig. 1 shows the tipping mechanism.

Fig. 2 shows in side elevation the rope winch, the pulley post and the arrangement of the plane in which the rope works on one end of the container.

Fig. 3 is a mechanism for depositing the heapable material at a certain distance from the truck.

Figs. 4 and 5 show in top plan view and side elevation respectively the rail adjustable to different lengths and adapted to be lowered and raised.

Fig. 6 illustrates the reloading at the left side onto a ramp or onto another vehicle and at the right side onto the ground.

The tipping mechanism consists of a post 1 with rope pulley 2 permanently fixed or removably mounted on the transverse bar or on the truck frame. This device is provided at both ends of the container. The two ropes 17 are attached each on a drum 3 and guided over guide pulleys 4 and over the tipping pulley 2 and hooked by rope hooks into eyes 5 mounted on the axles of the rollers 6. The two rope drums 3 are driven by means of a continuous shaft, either from the motor of the power driven truck or by hand. When the two rope drums 3 are rotated by engaging the auxiliary gear or by rotating a crank handle acting with according transmission upon the driving shaft, tipping of the container takes place. The tipping axle is formed by the axles of the rollers 6, said axles being prevented from rotating by rails 8 adapted to be lowered, or raised and fixed by struts 23 and spring catches 24. As soon as the desired tipping position has been obtained, the driving gear has to be disengaged and a brake, preferably an automatic loading pressure brake acting upon the rope drum, has to be actuated.

Simple tipping in lateral direction is generally not sufficient to deposit heapable material at a sufficient distance from the truck or from the wheels. In this case the form of construction, shown in Fig. 3, is used. The rails 8 adapted to be raised or lowered are lowered on the corresponding side into a horizontal position or into a position inclined under the horizontal plane, and the container 7 is shifted to this side by the pull rope. A stop pin 9 against which the axles of the rollers 6 bear limits the transverse movement of the container, the rails 8 bearing against pivotable supports 10.

To prevent the rope 17 from colliding with the roller axle, it is guided over a guide pulley 18 arranged on the end of the transverse bar 15 and then placed on the tipping pulley 2. When the rope winch is started, the container rolls first a certain distance to the side (into the position shown in thin dash lines) to be then tipped. At the lowering the container 7 assumes first the position indicated in thin dash lines and is subsequently pulled into the normal position, indicated in thick dash lines, by the rope 17, removed from the tipping pulley 2 and running only over the guide pulley 18, being pulley in further.

In these tipping mechanisms, in which the tipping of the container is effected by means of two tipping posts 1, arranged laterally with regards to the tipping direction, the rope must be guided in such a manner that it is nowhere impeded by the body of the container. According to the invention this is effected in such a manner, that the working plane of the rope is arranged at the end of the container between the running

rollers and the end wall of the container, as clearly shown in Fig. 2.

This position of the working plane of the rope presents further the advantage that the rope drums 3 and the inner guide pulleys 4 are easily accessible at the front from the driver's cabin and at the rear from the end of the truck frame, so that any manipulation on the rope can be easily carried out. This is specially important, when at reloading the rope, placed on the one side around the guide pulley 18, has to be attached to the other side of the truck to the container (to the eye 5 of the pulley axle or to the hook 22), as for instance at the unloading to the left shown in Fig. 6 in mixed lines. In this case the rope ought to be passed through between the truck frame and the bottom plate of the container which requires either a quite special extensive construction of the frame 16 or is troublesome and requires time. When the working plane for the rope is arranged at the end of the container, this work can however be carried out very rapidly.

Detachable containers are of the greatest importance in the container service. The most important manipulations are then the loading and unloading of the truck and the reloading on other vehicles, specially from the motor truck to the railway and inversely. All these manipulations can be carried out with the rope winch, as is shown in Fig. 6.

The unloading onto a ramp or other vehicle shown on the left side of Fig. 6 is effected by a rope guided over a guide pulley 11 arranged on the rail 8, adapted to be lowered or raised, the rope end being attached to a rope eye 22 on the outer edge of the container, as shown in mixed lines. It is thus possible to completely deposit the container, of course rather close to the edge.

For loading and unloading from and onto the track level the hinged rail 8 is generally not sufficient. In such case an extension rail 20 is used consisting of a U-iron reinforced by sheet metal plates, mounted on a bolt 21, fixed in the transverse girder 15. This bolt 21 might form the pivot bolt of the rail 8.

For loading the rope is first placed over the left and the right outer guide pulleys 16 and hooked on the front axle of the container, as indicated in mixed lines. The rope might however be guided directly from the inner pulley 4 over the right hand rope pulley 18 and attached to the rear axle.

For unloading the rope guiding must be arranged so that the container is shifted until one pair of running rollers is resting on the inclined extention rail 20. With this object in view the rope extends from the inner guide pulleys 4 to the left axle. When the drums are rotated, the container is shifted, whereupon the driving gear is disengaged and the container braked so that it can run down the inclined rails 20.

This rope guiding results in the formation of a wide loop at the transition from the pulling in to the releasing, which loop might become prejudicial. A less wide loop is obtained by guiding the rope from the inner guide pulleys 4 over the rope pulleys 18 to the right hand axle, as shown in dot lines. To make in this case the rope pass over the chassis, a rope pulley 19 arranged near the truck frame is required.

Only a short end portion of the rail 8 can rest on a ramp or on another truck, so that the truck with the container must be brought as closely as possible to the ramp or to the other truck and specially, when the goods have to be reloaded onto another vehicle fitted with transverse rails, in which case the rail 8 has to be placed on a bolt 14 on the tranverse bar of the other vehicle (Fig. 5). In order to dispose of a certain tolerance for all these cases the rail 8 has a shiftable end portion 12 (Figs. 4 and 5) which is adjustable on the rail 8. This end piece 12 has a longitudinal slot 11 guided on pins laterally projecting from the corresponding rail 8.

I claim:

1. A loading arrangement especially for motor lorries for loading and unloading the container displaceable transversely to the travelling direction, comprising in combination with the vehicle frame, transverse bars fixed on and projecting from both sides of said frame adapted to guide the container, a rope winch drum mounted under said vehicle frame, a guide pulley in the middle under said frame, a tipping upright adapted to be inserted in said frame, a pulley on the upper end of said upright, a rope connected at one end to said drum extending upwards from said drum over said pulley under said frame and around and in downward direction on the other side of said pulley at the upper end of said upright and descending adapted to be detachably connected to the lower end of said container and to cause a tilting of said container when said rope is wound on said drum.

2. A loading arrangement as specified in claim 1, in which upwardly projecting rails are provided at the end of the transverse bars adapted to form abutments for the container during its tipping operation.

3. A loading arrangement especially for motor lorries for loading and unloading the container displaceable transversely to the travelling direction, comprising in combination with the vehicle frame, transverse bars fixed on and projecting from both sides of said frame, a rope winch drum mounted under said frame, a guide pulley in the middle under said frame, a guide pulley at the side of said frame, an intermediate pulley under said frame between said middle pulley and said side pulley, a tipping upright adapted to be inserted in said frame, a guide pulley on the upper end of said upright, a rope connected at one end to said drum and extending from said drum under said middle pulley over said intermediate pulley in outward direction around said side pulley and in upward direction around the pulley on said upright returning in downward direction and adapted to be detachably attached to the lower end of said container to effect the lateral displacement and tipping of said container, and a hinged rail at the end of each transverse bar adapted to be swung out and form an extension of said transverse bars to allow the lateral displacement and tipping of said container beyond the side of said frame.

4. A loading arrangement especially for motor lorries for loading and unloading the container displaceable transversely to the travelling direction, comprising in combination with the vehicle frame, transverse bars fixed on and projecting from both sides of said frame, a rope winch drum mounted under said frame, a guide pulley in the middle under said frame, a guide pulley at the side of said frame, a hinged rail at the end of each transverse bar, a guide pulley on the outer end of said rail, and a rope attached at one end to said drum extending under said middle pulley over said intermediate pulley in outward direc-

tion around said pulley on the outer end of said hinged rail and returning towards the opposite side of the frame, adapted to be detachably connected at its free end to the lower part of the container and on said drum being rotated to wind thereon and shift said container laterally completely off said frame.

5. An arrangement especially for motor lorries for unloading the container displaceable transversely to the travelling direction, comprising in combination with the vehicle frame, transverse bars on and projecting from both sides of said frame, a rope winch drum mounted under said frame, two guide pulleys one on each side of said frame, two guide pulleys under the middle of said frame one on each side of said winch drum, an intermediate pulley between one of said middle pulleys and said winch drum, an extension adapted to be fitted to each of said transverse bars to form a ramp for said container, a rope connected to said drum extending around said intermediate pulley over the middle pulley on the opposite side of said drum under and around the side pulley adjacent said ramp, adapted to be detachably connected to the end of said container in proximity to the end of said ramp adapted on the rotation of said drum in one direction to pull said container off said frame onto the upper end of said ramp and on the rotation of said drum in the opposite direction to allow said container to run down said ramp onto the ground.

6. An arrangement especially for motor lorries for loading the container displaceable transversely to the traveling direction, comprising in combination with the vehicle frame, transverse bars on and projecting from both sides of said frame, a rope winch drum mounted under said frame, two guide pulleys one on each side of said frame, two guide pulleys under the middle of said frame one on each side of said winch drum, an intermediate pulley between one of said middle pulleys and said winch drum, an extension adapted to be fitted to each of said transverse bars to form a ramp for said container, a rope connected to said drum extending around said intermediate pulley over the side pulley on the opposite side of said drum adapted to be detachably connected to the far end of said container to be loaded onto said frame, and a second rope connected to said drum extending under said intermediate pulley over its adjacent middle pulley around the adjacent side pulley across said frame and over the side pulley on the opposide of the frame adapted to be detachably connected to the near end of said container, said ropes on the rotation of said drum adapted to pull said container up said ramp onto said frame.

7. A loading and unloading arrangement especially for motor lorries for loading and unloading the container displaceable transversely to the travelling direction onto and from a point approximately at the height of the vehicle frame, comprising in combination with the vehicle frame, transverse bars on and projecting from both sides of said frame, a rope winch drum mounted under said frame, two guide pulleys one on each side of said frame, two guide pulleys under the middle of the frame one on each side of said winch drum, an intermediate pulley between one of said middle pulleys and said winch drum, an extension adapted to be fitted to each of said transverse bars to form a bridge for said container, a rope connected to said drum extending under said intermediate pulley, over its adjacent middle pulley under said extension pulley and across said frame adapted to be detachably connected to the opposite end of said container to the side of said frame to which said extensions have been fitted, and on the rotation of said drum to wind on said drum and pull said container off said frame, and a second rope connected to said drum extending under said intermediate pulley over its adjacent middle pulley over the adjacent side pulley adapted to be detachably connected to the far end of the container to be pulled onto said frame and on the rotation of said drum to wind on said drum and pull said container on to said frame.

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