

Jan. 11, 1949.

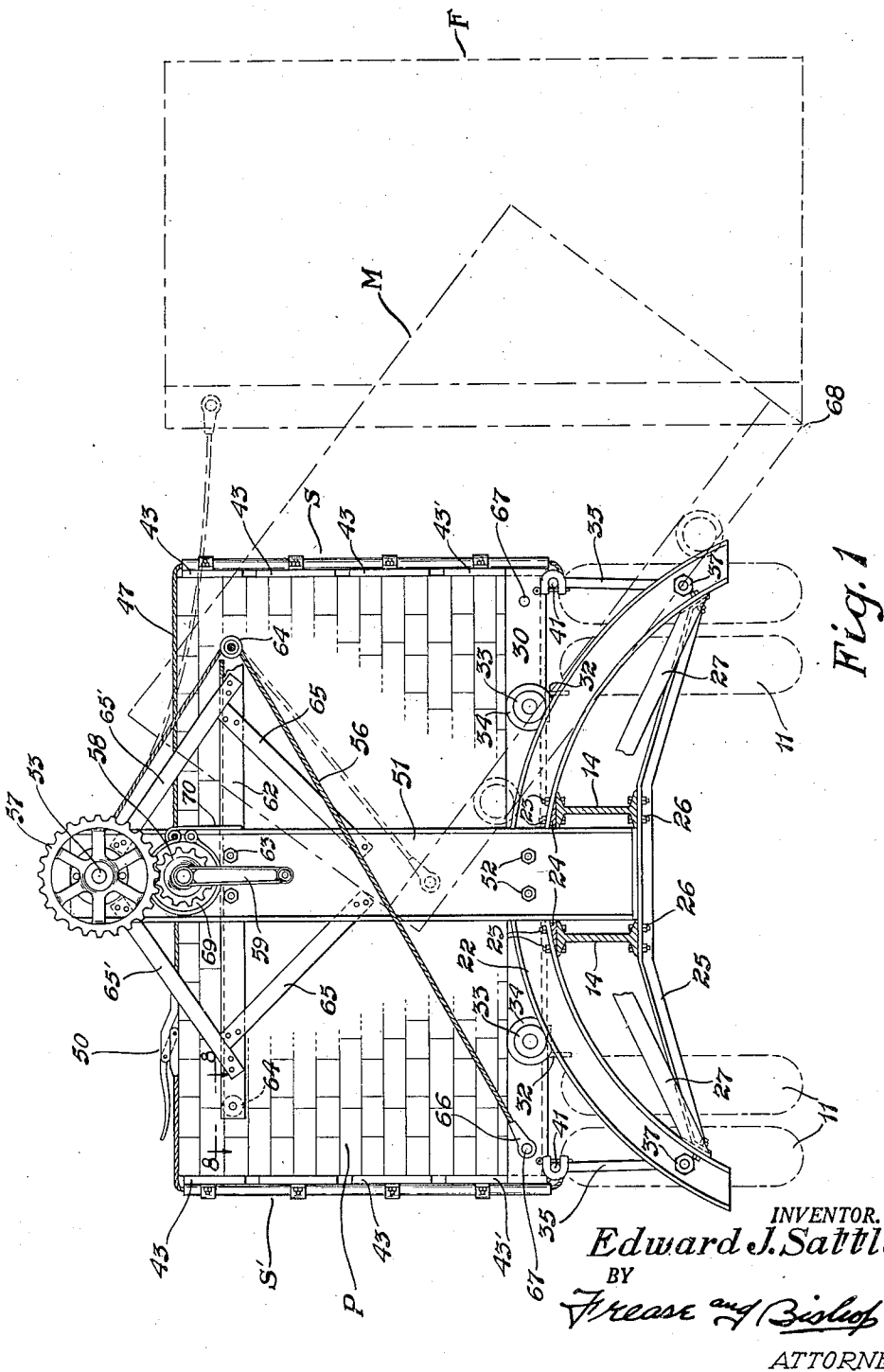
E. J. SATTLER

2,458,799

VEHICLE UNLOADING CONSTRUCTION

Filed May 29, 1946

2 Sheets-Sheet 1



Jan. 11, 1949.

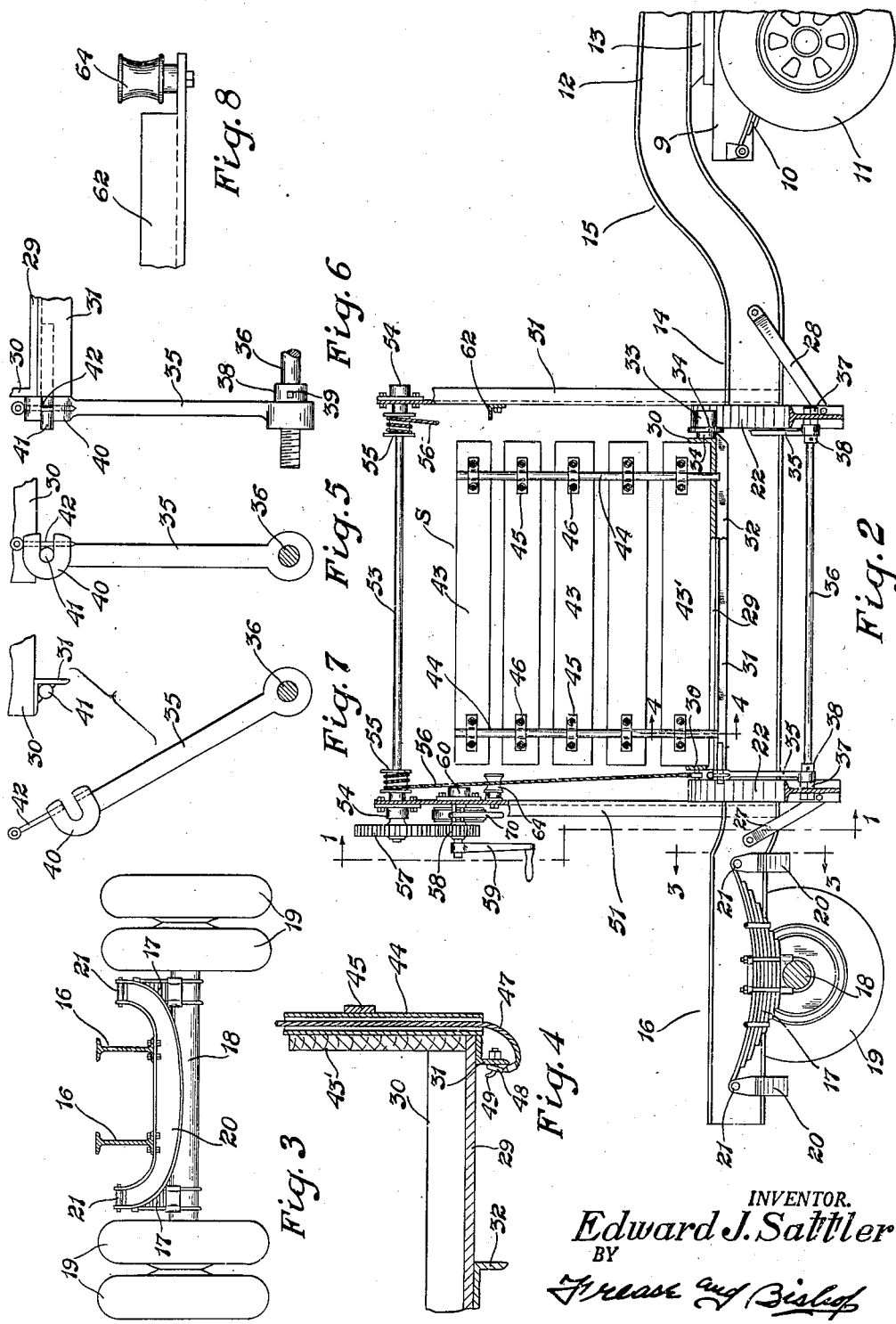
E. J. SATTLER

2,458,799

VEHICLE UNLOADING CONSTRUCTION

Filed May 29, 1946

2 Sheets-Sheet 2



INVENTOR.
Edward J. Sattler
BY
Freese and Bishop
ATTORNEYS

UNITED STATES PATENT OFFICE

2,458,799

VEHICLE UNLOADING CONSTRUCTION

Edward J. Sattler, Mineral City, Ohio

Application May 29, 1946, Serial No. 673,128

10 Claims. (Cl. 214—65.2)

1

The invention relates generally to a vehicle dumping body, and more particularly to a construction for unloading a pile or stack of bricks or the like as a unit without damaging the bricks.

Certain prior constructions for unloading loose material have included various devices for side or rear tilting and dumping, and these constructions have been used for hauling paving or building bricks, but such constructions are not adapted for unloading face bricks or the like without damage because the material necessarily drops a substantial distance, either from the vehicle body to the ground or from the top of the pile to the ground when the dumping body is hauled away, or both.

In loading ordinary paving or building bricks from a conventional dumping truck, the bricks are unloaded by raising the body of the truck to a tilted position and allowing the bricks to slide off and drop to the ground at random in a pile. In the case of face brick or glazed brick or tile, however, this method of unloading causes too much breakage or chipping or other damage, so that such bricks are ordinarily unloaded separately by hand and carefully stacked in a pile.

Obviously, the hand unloading operation is very expensive, both from the standpoint of time and labor, and requires at least one additional man either to ride on the transporting vehicle or to be present at the proper time and place where the bricks are unloaded.

In some cases the hand unloading has been speeded up by using a roller conveyor between the vehicle body and the ground, but the services of at least one workman in addition to the driver of the vehicle are still required.

Any method of unloading bricks or the like by hand is a slow and tedious process because it involves lifting the bricks a few at a time from the vehicle body and placing them carefully on a pile or stack at the job, or onto an intervening conveyor and then transferring them to the pile.

It is therefore a general object of the present invention to provide a novel and improved vehicle unloading construction for unloading a stack or load of bricks as a unit from the vehicle body to the ground without any shock or jar causing breakage or other damage.

Another object is to provide a novel vehicle unloading construction which will unload a pile or stack of bricks as a unit in such condition that the bricks will stay in position after the vehicle is driven away.

A further object is to provide an improved vehicle unloading construction which requires

2

only one man to unload a pile of bricks as a unit, rapidly without breakage.

Another object is to provide a novel and improved vehicle unloading construction which is adapted to unload a pile of bricks as a unit to either side of the vehicle without breakage or other damage.

A further object is to provide a novel and improved vehicle unloading construction which embodies means for holding a pile of bricks together without damage during transportation and unloading.

A still further object is to provide a novel strong and durable vehicle unloading construction which is adapted for being applied to a truck or a trailer or other hauling vehicle.

These and other objects are accomplished by the parts, constructions, arrangements, combinations and methods which comprise the present invention, the nature of which is set forth in the following general statement, and a preferred embodiment of which is set forth in the following description and illustrated in the accompanying drawings, and which is particularly and distinctly pointed out and set forth in the appended claims forming part hereof.

In general terms, the novel and improved vehicle unloading construction comprising the present invention includes a vehicle having a longitudinal central beam with spaced laterally extending downwardly curved tracks mounted thereon, a base receptacle or tray for hauling a pile of bricks and mounted on said tracks for lateral tilting movement, there being side boards on the tray and means for binding a pile of bricks between the side boards, and tilting mechanism supported on the longitudinal beam at the ends of the tray for unloading selectively as a unit the pile of bricks and tray onto the ground at either side of the vehicle in an upright position spaced laterally therefrom.

Referring to the drawings forming part hereof, in which a preferred embodiment of the invention is shown by way of example:

Figure 1 is an enlarged transverse sectional view, as on line 1—1, Fig. 2, looking toward the tilting mechanism at the rear end of a load of bricks carried on a vehicle embodying the invention;

Fig. 2 is a fragmentary side elevation, with parts in section, of a trailer vehicle embodying the invention;

Fig. 3 is a transverse section as on line 3—3, Fig. 2;

3

Fig. 4 is an enlarged fragmentary sectional view as on line 4—4, Fig. 2;

Fig. 5 is an enlarged fragmentary view similar to a portion of Fig. 1;

Fig. 6 is a fragmentary side elevational view thereof;

Fig. 7 is a fragmentary view similar to Fig. 5 showing the parts disconnected; and

Fig. 8 is an enlarged fragmentary view as on line 8—8, Fig. 1;

Similar numerals refer to similar parts throughout the several views of the drawings.

In the drawings the improved unloading construction is shown by way of example as embodied in a semi-trailer vehicle which is connected by means of a fifth wheel to a towing tractor in a well known manner. As shown in Fig. 2, the rear end 9 of the tractor is supported by leaf springs 10 on a set of wheels 11, and the front end 12 of the semi-trailer is connected to the tractor by means of a usual fifth wheel indicated generally at 13.

The trailer frame preferably includes a pair of longitudinally extending central I-beams 14 which are parallel with and located adjacent to the longitudinal axis of the trailer. Preferably, the beams 14 are curved downwardly as indicated at 15 immediately behind the tractor platform 16 so as to provide a trailer frame or carriage which is relatively close to the ground. The rear end portions 16 of the beams 14 are yieldingly supported by means of leaf springs 17 on the rear axle 18 of the trailer, which preferably carries the dual wheels 19. As shown in Fig. 3, the load of the trailer is carried from the rear portions 16 of the frame laterally outward to the springs 17 by means of transverse load distributing members 20 mounting the spring shackles 21 at their outer ends and connected to the beam portions 16 intermediate their ends.

Between the downwardly curved portions 15 and the rear portion 16, the intermediate portions 14 of the beams are substantially horizontal and adapted to support a preferably rectangular pile or load of bricks for being unloaded from the vehicle as a unit. Preferably, the horizontal beam portions 14 have supported thereon longitudinally spaced laterally extending curved tracks 22 which rest on the top of the beams and extend downwardly therefrom on both sides. These curved tracks may be of angle or channel cross-section, but are preferably of I-beam cross section as indicated in Figs. 1 and 2, and may have a width substantially equal to the width of the load-carrying body of the vehicle.

As shown, the tracks 22 may be secured to the upper flanges of the I-beams 14 by means of bolts 23 passing through the upper flanges of the beams 14 and the lower flanges of the tracks 22, there being wedge-shaped spacers 24 preferably inserted between the beams 14 and tracks 22. The outer depending ends of the tracks 22 may be braced laterally of the vehicle by angle struts 25 connected to the lower flanges of the I-beams 14, as by bolts 26. The rear track is preferably braced longitudinally of the vehicle by struts 27 extending angularly from the outer ends of the rear track rearwardly to the webs of the beams 14, and the front track is similarly braced by struts 28 extending angularly from the outer ends of the front track forwardly to the webs of the beams 14.

The vehicle body for carrying a pile of bricks preferably includes a tray or base receptacle 29 on which bricks are piled or stacked, and the tray

4

29 is preferably U-shaped in longitudinal section, having the front and rear upturned flanges 30 with the sides open. The tray 29 preferably has longitudinal angles 31 secured on the underside of the tray and extending one along each side edge thereof as best shown in Fig. 4, and has longitudinal angles 32 extending along its underside at locations spaced laterally inward of the angles 31.

The tray 29 is rollably supported on the tracks 22, preferably by means of rollers 33 which may be journaled on the flanges 30 by stud shafts 34 welded to the flanges 30 and projecting outwardly therefrom preferably at points above the angles 32. The rollers 33 may have retaining flanges 34 thereon for engaging the upper legs or flanges of the tracks 22, and the angles 32 act as stiffening ribs backing up the rollers 33 at opposite ends of the tray.

At each end of the flanges 30 of the tray, detachable stabilizer means are provided for maintaining the tray in horizontal position. Thus, links 35 detachably connect each of the four corners of the tray to the adjacent lower end of the tracks 22, the lower ends of the links 35 being rotatably mounted on longitudinal rods 36 which extend between and are secured at their ends to the webs of the tracks by means of nuts 37. As best shown in Fig. 6, the lower ends of the links 35 may be maintained in position on the rods 36 by means of abutting collars 38 secured to the rods by set screws 39.

The upper ends of the links 35 are each provided with a yoke 40 which is open at one side for receiving the outer end of a pin or stud 41 secured as by welding one in each angle 31 at the corner of the tray and projecting outwardly therefrom. Each yoke has a latch pin 42 slidably mounted therein for detachably locking the yoke 40 on the pin 41 to hold the tray in the horizontal position shown in full lines in Fig. 1.

In order to retain a pile of bricks of substantial height, such as indicated at P in Figure 1, in position on the tray 29; a pair of side boards S and S' may be provided for closing the open sides of the tray and extending vertically upward therefrom to a height substantially equal to the pile of bricks. As indicated in the drawings, the side boards may include a plurality of slats 43, the bottom slat 43' being adapted to rest on the outer edge of the tray 29 above the angle 31, as best shown in Fig. 4. The slats 43 and 43' are connected together by vertical members 44 spaced longitudinally of the slats and secured thereto by means of U-shaped brackets 45 which clamp the members 44 to the slats by means of the bolts 46. While two such members 44 are shown, any desired number may be used.

As indicated in Fig. 4 the vertical members 44 are tubular for guiding the passage of cables 47 therethrough, and the cables may each have an eye 48 at their ends for detachably engaging a hook 49 on the adjacent angle 31 so that cables 47 may be passed across the top of the pile of bricks P and down through the tubular members 44 to be hooked onto the angles 31 and thereby bind the pile of bricks between the side boards. Preferably, each cable 47 is provided in the portion passing over the top of the pile of bricks with a load binder clamp indicated at 50 for imposing a tension on the cable to tightly bind the bricks between the side boards. As shown in Fig. 4 each tubular member 44 extends downwardly past the side edge of the tray 29, for a purpose to be described.

5

At each end of the tray 29, means is provided for moving the tray laterally in one direction or the other along the tracks 22, by tilting the load comprising the tray with the pile of bricks supported thereon, and the two side boards S and S' with cables binding the bricks vertically and laterally. Preferably, the tilting mechanism is supported on two vertical channels 51 which are secured at their lower ends to the outer edges of the tracks 22, as by bolts 52 and which fit snugly between the I-beams 14, as shown in Fig. 1. The channels 51 extend upwardly a substantial distance above the load, and the ends of an operating shaft 53 are journaled in the upper ends of the channels in suitable bearings indicated at 54, the shaft 53 extending longitudinally over the center of the load.

At each end portion of the shaft inside of the vertical channels 51, a sheave 55 is secured on the shaft and adapted to wind or unwind a cable 56 thereon when the shaft is rotated in one direction or the other. The rear end of the shaft 53 projects beyond the rear channel 51 and has a gear 57 thereon which is adapted to be driven by a pinion 58 which meshes with the gear 57, and which has a crank 59 secured on the pinion shaft for manually turning the pinion, the pinion shaft being journaled in a bearing 60 mounted on the rear channel 51.

Each vertical channel 51 has secured on its inner surface near the upper portion of the load, a transverse angle 62 secured to the web of the channel by means of bolts 63, and having pulleys 64 journaled at its outer ends. Preferably, the angles 62 are braced adjacent their outer ends by means of angular struts 65 and 65' connected to the webs of the vertical channels 51. As shown in the drawings, the cables 56 are led from the sheaves 55 over one or the other of the pulleys 64 and then connected to the opposite lower corner of the tray 29. Each cable 56 has an eye 66 on its lower end adapted for detachable connection selectively with studs 67, one projecting from each end of the flanges 30 of the tray.

In the operation of the improved construction for hauling and unloading a pile of bricks as a unit, where for example the bricks are of the face or glazed variety requiring careful handling to avoid chipping and breaking, the bricks are piled carefully on the tray 29 in the manner indicated at P in Fig. 1. The height of the pile or stack of bricks is made equal to or slightly higher than the side boards, in order to haul a load which is substantially the same as ordinarily hauled on a large flat bottom truck or trailer, and which is considered to be a "pay load." After the bricks are carefully stacked or piled, as indicated at P, with the sides of the pile set in from the sides of the tray sufficiently to allow the side boards S and S' to rest on the side edges of the tray, as in Fig. 4, the side boards with their connecting cables 47 are clamped around the pile, by hooking the eyes of the cables on the hooks 49 on the underside of the tray 29, and then closing the clamps 50 on the cables to draw up or tighten them and bind the entire pile of bricks tightly together as a unit between the tray and the two side boards. During the loading operation, the stabilizer links 35 are of course in their closed substantially vertical positions as indicated in Figs. 1, 5 and 6, so that the tray is secured firmly in horizontal position.

After the load has been thus bound, it is ready

6

to be transported from place to place and will be maintained in position until the place of unloading is reached. When it is desired to unload the bricks P as a unit, the cables 56 are led over the pulleys 64 which are on the side of the vehicle to which the bricks are to be unloaded, and the eyes 66 of the cables are attached to the studs 67 on the opposite side of the vehicle. In Fig. 1, the load is to be dumped to the right side, and the cables 56 are led over the right side pulleys 64 and fastened to the left side studs 67. For controlling the load, additional cables may be led over the left side pulleys to the right side studs.

The next operation is to disconnect the links 35 by pulling the latch pins 42 at the tops thereof and allowing the links to swing downwardly to the ground, and by making the links the proper length to engage the ground on both sides of the vehicle, overbalancing of the vehicle to one side is prevented while the tray is being unloaded. In order to guard against premature movement of the tray, or movement thereof in the wrong direction, when the links 42 are disconnected, friction brake means is preferably provided on the shaft of pinion 58. Such brake means is shown as a conventional brake drum and band 69, having a hand operated lever 70 for tightening the band on the drum to apply the brake. The lever is shown in locked position with the brake on. Obviously, the brake 69 can be used to hold the load in an intermediate position on the tracks 22, if desired.

The load is now ready to be tilted by moving it laterally on the tracks 22, and this is done by releasing the brake 69 and turning the crank 59 in the proper direction to wind up the cables 56 on pulleys 55 and raise the lower left corner of the tray and at the same time move it to the right until the lower right corner 68 engages the ground, as indicated by the intermediate position M in dot-dash lines in Fig. 1. Further turning of the crank 59 in the same direction will tilt the lower left corner of the tray upwardly with load pivoting on the ground about the lower right corner 68, and when the center of gravity of the load has been shifted in this fashion sufficiently upwardly to the right, the load will move by gravity to its fully unloaded or upright position F as indicated in dot-dash lines in Fig. 1, with the right side board S on the bottom of the load.

The pinion 58 is provided with suitable ratchet mechanism of well known construction so that when the cables 56 have swung the load about the pivot 68 far enough that gravity will swing it the rest of the way, the pinion 58 will ratchet so as to allow the cable 56 to pay out gradually. Referring to Fig. 4, when the corner of the load is engaging the ground at 68, the lower ends of the tubular members 44 which overlap the tray 29 prevent the weight of the load from forcing the side boards 43 and 43' inwardly and crushing the bricks. After the load has reached the upright position indicated at F in Fig. 1, the cables 56 are readily unhooked from the hooks 49 on the lower angle 31 on the inside of the load, whereupon the cables can be pulled out of the tubes 44 on the lower side board S, the tray 29 can be pushed back onto the tracks 22, and if necessary, the eyes 66 of the cables can be attached to the opposite studs 67 for returning the tray to its horizontal position on the tracks where the links 35 can again be attached thereto. The top side board is then easily removed from the top of the pile of bricks F and placed on the

tray for transporting it, and the bottom side board is left under the pile of bricks to be picked up later after the bricks have been used or transferred to another location.

Obviously, the operation of unloading to the left side, as viewed in Fig. 1, is accomplished in the same manner by leading the cables 56 over the left side pulleys 64 and attaching them to the right side studs 67.

The novel and improved unloading apparatus provides for quickly unloading a pile of bricks as a unit to either side of the vehicle without any shock or jar causing breakage, and without requiring the services of any workman in addition to the driver of the vehicle. Moreover, the bricks when unloaded are piled so as to remain in position after the vehicle is driven away.

Accordingly, the present improved vehicle unloading construction saves time, labor, and expense, and substantially eliminates damage due to unloading.

In the foregoing description, certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such words are used for descriptive purposes herein and are intended to be broadly construed.

Moreover, the embodiment of the improved construction illustrated and described herein is by way of example, and the scope of the present invention is not limited to the exact details of construction.

Having now described the invention, the construction, the operation and use of a preferred embodiment thereof, and the advantageous new and useful results obtained thereby; the new and useful constructions, and reasonable mechanical equivalents thereof obvious to those skilled in the art, are set forth in the appended claims.

I claim:

1. Vehicle unloading construction including a central beam extending longitudinally of the vehicle, longitudinally spaced downwardly curved tracks mounted on said beam and extending laterally thereof in both directions, a tray rollably mounted on said tracks for supporting a stack of material, an upright post supported on the beam, cable means supported on said post for moving said tray along the tracks to tilt the tray, and detachable means for securing said tray to said tracks when the tray is in substantially horizontal position.

2. Vehicle unloading construction including a central beam extending longitudinally of the vehicle, a downwardly curved track mounted on said beam and extending laterally thereof in both directions, a tray rollably mounted on said track for supporting a stack of material, an upright post supported on the beam, cable means on said post for moving said tray in either direction along the track to tilt the tray, and detachable means for securing said tray to said tracks when the tray is in substantially horizontal position.

3. Vehicle unloading construction including a central beam extending longitudinally of the vehicle, longitudinally spaced downwardly curved tracks mounted on said beam and extending laterally thereof in both directions, a tray rollably mounted on said tracks for supporting a stack of material, an upright post on the beam at each end of the tray, cable means supported on said post for moving said tray along the tracks to tilt the tray, detachable means for securing said tray to said tracks when the tray is in substan-

tially horizontal position, and means detachably connected to opposite sides of the tray for binding a pile of bricks supported thereon together as a unit.

4. Vehicle unloading construction including a central beam extending longitudinally of the vehicle, a downwardly curved track mounted on said beam and extending laterally thereof in both directions, a tray rollably mounted on said track for supporting a pile of bricks, cable means supported on said beam for moving said tray in either direction along the track and arranged to tilt the tray as it leaves the track, detachable means for securing said tray to said tracks when the tray is in substantially horizontal position, and means detachably connected to opposite sides of the tray for binding together as a unit a pile of bricks on the tray.

5. Vehicle unloading construction including a central beam extending longitudinally of the vehicle, longitudinally spaced downwardly curved tracks mounted on said beam and extending laterally thereof in both directions, a tray rollably mounted on said tracks for supporting a pile of bricks, and cable means mounted adjacent the upper part of said tray and attached to its lower part for moving said tray in either direction to engage one corner of the tray with the ground and adapted for further tilting the tray toward a vertical position on the ground.

6. Vehicle unloading construction including a central beam extending longitudinally of the vehicle, a downwardly curved track mounted on said beam and extending laterally thereof in both directions, a tray rollably mounted on said track for supporting a pile of bricks, and cable means mounted adjacent the upper part of said tray and attached to its lower part for moving said tray along said track to engage one side of the tray with the ground and for further tilting the tray to vertical position on the ground and spaced laterally of the vehicle.

7. Vehicle unloading construction including a central beam extending longitudinally of the vehicle, longitudinally spaced downwardly curved tracks mounted on said beam and extending laterally thereof in both directions, a tray rollably mounted on said tracks for supporting a pile of bricks, detachable means for securing said tray to said tracks when the tray is in a substantially horizontal position, a pair of side boards supported on the tray and engaging all of the exposed bricks on opposite sides of said pile, and cables detachably secured to the underside of the tray and passing around the side boards for binding a pile of bricks supported on the tray between said side boards.

8. Vehicle unloading construction including a central beam extending longitudinally of the vehicle, a downwardly curved track mounted on said beam and extending laterally thereof in both directions, a tray rollably mounted on said track for supporting a pile of bricks, detachable means for securing said tray in substantially horizontal position on said track, means for moving the tray along the track to engage the outer edge of the tray with the ground and adapted for further tilting the tray to vertical position, side boards adapted to be supported on the tray and cables slidable on the side boards and detachably connected to the tray for binding a pile of bricks supported thereon, said sideboards engaging all of the exposed bricks on opposite sides of the pile.

9. Vehicle unloading construction including a longitudinal beam, a downwardly curved track

9

mounted on said beam and extending laterally thereof in both directions, a rectangular tray rollably mounted on said track for supporting a pile of bricks, links for detachably connecting the four corners of the tray to the track for maintaining the tray in horizontal position, an upright post supported on the beam at each end of said tray, a shaft journaled in the upper ends of said posts, a cable connecting said shaft to a bottom corner of said tray, and means for winding the cable on said shaft for tilting the tray.

10. Vehicle unloading construction including a longitudinal beam, a downwardly curved track mounted on said beam and extending laterally thereof in both directions, a rectangular tray rollably mounted on said track for supporting a pile of bricks, links for detachably connecting the four corners of the tray to the track for maintaining the tray in horizontal position, a pair of side boards supported on the tray, flexible means secured to the underside of the tray and passing around the side boards for binding a pile of bricks

10

supported on the tray between the side boards, an upright post supported on the beam at each end of said tray, a shaft journaled in the upper ends of said posts, a cable connecting said shaft to a bottom corner of said tray, and means for winding the cable on said shaft for tilting the tray.

EDWARD J. SATTLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
31,135	Wilkinson	Jan. 15, 1861
1,252,896	Fontaine	Jan. 8, 1918
1,252,899	Greer et al.	Jan. 8, 1918
1,381,031	Thompson	June 7, 1921
1,387,163	Munzlinger	Aug. 9, 1921
1,922,560	Sullivan	Aug. 15, 1933