April 7, 1953 W. GIBSON 2,634,005

VEHICLE UNLOADING PLATFORM FOR LARGE CYLINDRICAL BODIES

Filed March 28, 1949 2 SHEETS—SHEET 1

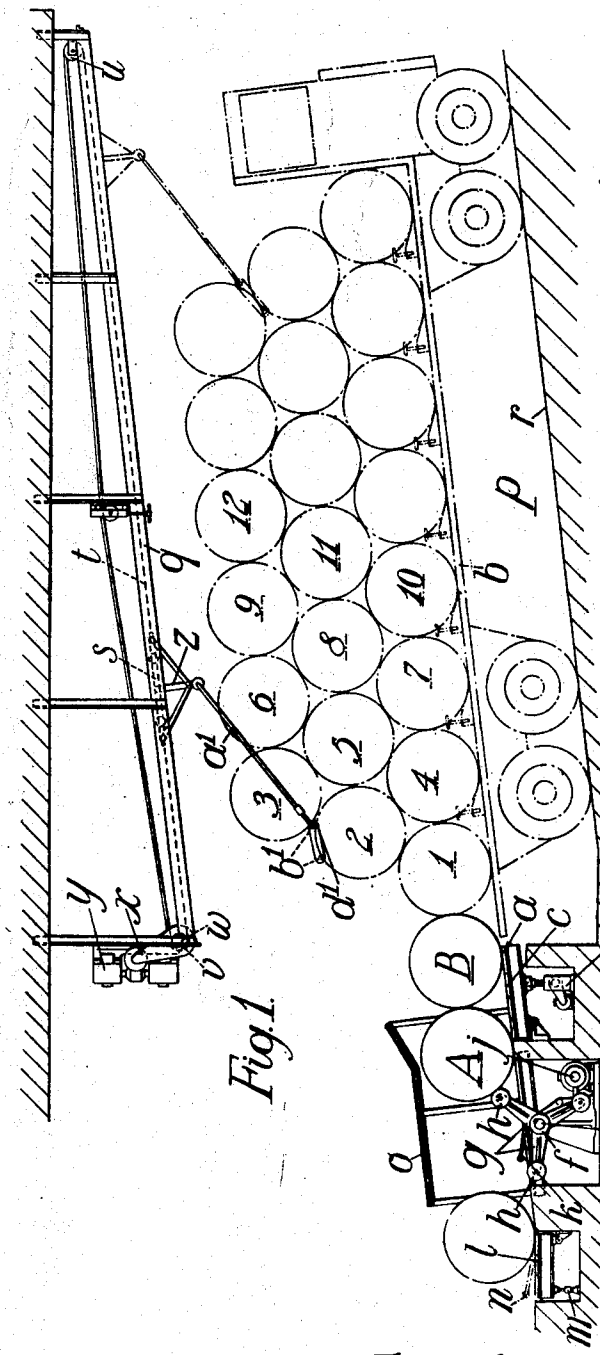


Fig. 1

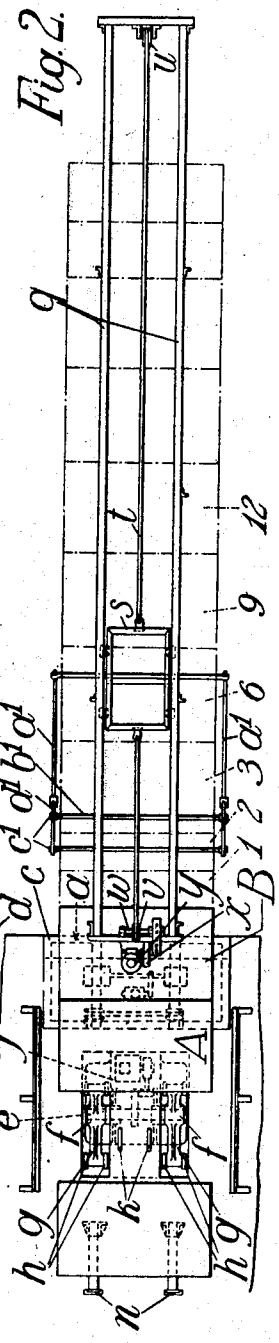


Fig. 2

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VEHICLE UNLOADING PLATFORM FOR LARGE CYLINDRICAL BODIES

Filed March 28, 1949 2 SHEETS—SHEET 2

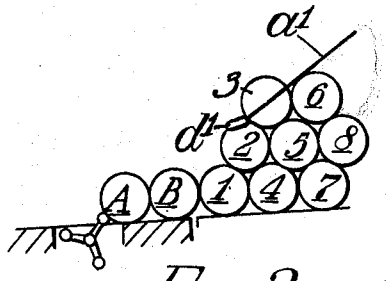


Fig. 3.

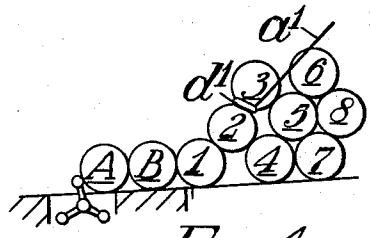


Fig. 4.

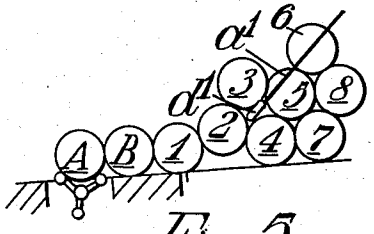


Fig. 5.

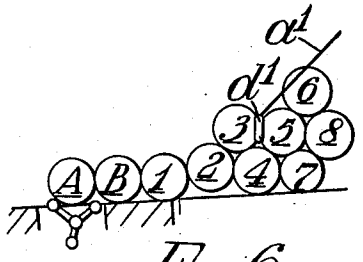


Fig. 6.

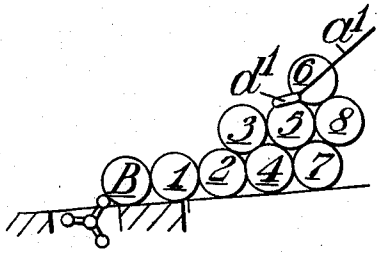


Fig. 7.

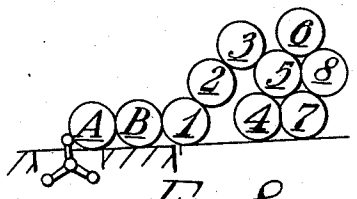


Fig. 8.

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2,634,005

UNITED STATES PATENT OFFICE

2,634,005

VEHICLE UNLOADING PLATFORM FOR LARGE CYLINDRICAL BODIES

William Gibson, London, England, assignor to Daily Mirror Newspapers Limited, London, England

Application March 28, 1949, Serial No. 83,842
In Great Britain March 31, 1948

8 Claims. (Cl. 214—44)

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This invention relates to platforms and the like, adapted for facilitating the unloading of lorries, against which lorries may be backed for the purpose of unloading therefrom reels of newsprint or other cylindrical bodies of considerable weight.

Reels of newsprint are transported to the printing works on lorries, and in order that a plurality of tiers of such reels may be carried safely, they must be stacked so that the reels forming one tier are in staggered relation with the reels forming the immediately adjacent tiers, or in other words, for instance, the reels of a second or upper tier is engaged in the hollows provided by the first or next lower tier, the axis of the reels being transverse to the length of the lorry.

Where a third tier is carried, the reels of this tier lie in the hollows provided by the second tier.

Reels stacked in this manner are very difficult to unload as until the first three or four reels are clear there is no room on the lorry to allow, after the removal of chocks provided to locate the reels of a lower tier, further reels to be levered out until they drop and then roll off.

The position is generally similar with other bodies of material, for instance cylindrical containers of considerable weight.

According to the invention, the platform is provided adjacent its forward extremity against which the tail of the lorry to be unloaded will be adjacent, with a section at least equal to the width or length of the reels or the like hingedly mounted and furnished with means whereby it may be raised or lowered within certain limits to bring its forward edge up to the height of the tail of the lorry and behind this portion there is provided a rotatably mounted spindle from bosses on which extend a plurality of arms spaced apart at equi-angular distances so that in the rotation of the spindle in the unloading operation the ends of these arms preferably provided with rollers will be brought into position to engage against successive reels.

Preferably there are provided at least two sets of such arms, one locked towards one end of the spindle and the other towards the other end thereof, so that the successive reels may each be engaged at two points in its length.

The spindle may be associated with braking mechanism and means whereby it may be rotated or its rotation permitted to bring the arms in succession into position against the successive reels delivered from the lorry.

The spindle provided with arms may be arranged above the platform, in which case the

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ends of the arms will contact with the upper surfaces of the reels, or it may be arranged below the platform, in which case slots will be provided therein to permit the arms to extend above the general surface of the platform so as to contact with the lower surfaces of the reels.

Preferably, there is provided in the path of the reels as they pass the mechanism above described, a switch or equivalent means to arrest the rotation as each successive reel passes.

Further in the rear of the mechanism described there is preferably provided a hinged platform in association with resilient means permitting this platform to take up any shock and to ensure that the reel comes to rest and with this platform there is preferably associated means adapted to permit the mechanism furnished with arms to rotate until a following reel operates the first-mentioned switch or equivalent means.

Where the spindle provided with arms is arranged below the platform, so that thrust from the reels delivered from the lorry shall not tend to push the reel over the arms, means may be provided for holding the reels down on to the platform and such means may be guides which form a framework located an appropriate distance above the platform.

Conveniently, in accordance with the invention, the road or bay into which the lorry is backed is inclined downward in a direction towards the rear of the lorry at an inclination with the horizontal, while the hinged forward portion of the platform and the portion of the platform extending through the mechanism furnished with arms to provide support for the reels is also somewhat inclined to the horizontal so as to enable the reels to move forward under the action of gravity.

With the arrangement so far described, difficulty may arise due to the reels not descending and being delivered in their appropriate order which should be as follows, assuming that the lorry is loaded with three tiers of reels as is usual.

The lowermost of the first column of reels may be regarded as number 1, the one above it number 2 and the one above that number 3, the lowermost of the next group of reels located one above the other may be regarded as numbers 4, 5 and 6, and the next column of reels 7, 8 and 9, the remaining reels being numbered in an upward direction, 10, 11 and 12.

On removal of the first of the chocks which are provided for maintaining the reels in the appropriate position, the first reel of the bottom tier will move towards the bank on to

which it is discharged, followed by a reel from the second and third tier, and to ensure this result in effect a loop is entered between the second and third reel to delay the descent of the third reel and ensure that it will enter between the second reel and the lowermost reel, that is reel number four of the succeeding series and to be moved forward as reel number 3 is descending until it engages between the reel number 5 and reel number 6, and further to ensure that the reels as they descend do not crash upon the tail portion of the lorry.

A feature of the invention is the provision of such a loop, the arrangement and construction of which will be described in greater detail with reference to the accompanying drawings, which illustrate by way of example one construction in accordance with the invention, and include diagrammatic views of the operation of the loop member.

In the drawings:

Figure 1 is a view in side elevation of an arrangement in accordance with the invention;

Figure 2 is a plan view thereof with an element forming a cover plate removed;

Figures 3, 4, 5, 6 and 7 are diagrammatic views illustrating the operation of the arrangement illustrated in Figures 1 and 2, in the unloading of reels of newsprint from a lorry, while

Figure 8 is a similar diagrammatic view showing the result which normally occurs when an element of the invention is not in use.

Referring to Figures 1 and 2, it will be seen that the platform or unloading bank *a* is provided adjacent to its forward extremity against which the tail of the lorry *b* to be unloaded will be adjacent, with a section *c* at least equal to the width or length of the reels or the like hingedly mounted and furnished with jacking means *d* whereby it may be raised or lowered within certain limits to bring its forward edge up to the height of the tail of the lorry and behind this portion there is provided a rotatably mounted spindle *e* from bosses *f* on which extend a plurality of arms *g* spaced apart at equiangular distances so that in the rotation of the spindle in the unloading operation the ends of these arms provided with rollers *h* will be brought into position to engage against successive reels.

As shown, there are provided two sets of such arms, one located towards one end of the spindle and the other towards the other end thereof, so that the successive reels may each be engaged at two points in its length.

With the spindle is associated braking mechanism and means *j* whereby it may be rotated or its rotation permitted to bring the arms in succession into position against the successive reels delivered from the lorry.

In the path of the reels as they pass the mechanism above described, a switch arm *k* is provided to actuate a switch operative in controlling the braking mechanism to arrest the rotation of these arms as each successive reel passes.

Further, in the rear of the mechanism described there is provided a hinged platform *l* in association with resilient means *m* permitting this platform to take up any shock and to ensure that the reel comes to rest and with this platform there is associated arms *n* adapted to actuate a switch to permit the mechanism furnished with arms to rotate until a following reel operates the first-mentioned switch.

With the spindle provided with arms arranged below the platform so that thrust from the

reels delivered from the lorry shall not tend to push the reel over the arms, there is provided for holding the reels down on to the platform a framework supporting a cover plate *o* located an appropriate distance above the platform.

As shown, the road or bay *p* into which the lorry is backed is inclined downward in a direction towards the rear of the lorry at an inclination with the horizontal while the hinged forward portion of the platform and the portion of the platform extending through the mechanism furnished with arms to provide support for the reels is also somewhat inclined to the horizontal so as to enable the reels to move forward under the action of gravity.

Assuming that the lorry is loaded with three tiers of reels as is usual, the lowest of this group of reels may be regarded as number 1, the one above it number 2 and the one above that number 3, the lowermost of the next group of reels located one above the other may be regarded as numbers 4, 5 and 6, and the next column of reels 7, 8 and 9, the remaining reels being numbered in an upward direction 10, 11 and 12.

With such an arrangement it will be found that, when the first reel, that is, reel 1, is moved beyond a certain distance away from the assembly of reels on the lorry and the reel number 2, there will be a tendency for the reel 2 to fall heavily, and allow the reel 3 simultaneously to descend into the depression between reels 2 and 4 and so on, as shown in Figure 8.

In order to prevent this result a rope should be passed into the gap between the topmost reel 3 and the reel 2.

So that this device may be automatic, a framework consisting of two channel rails *q* extending longitudinally is located above the position in to which a lorry will be backed against the hinged platform *c*, the rails inclining downwards towards the third tier on the lorry platform at the same downward incline as the roadway *r* upon which the lorry will stand.

Upon these two channel rails is supported a trolley *s* to which is secured a rope *t* the ends of which are connected to opposite ends of the trolley and pass over a free pulley *u* and a pulley *v* on a shaft *w* in driving connection through gearing *x*, with a constant torque device *y* which allows the trolley to move slowly up the incline under a predetermined constant torque.

Fastened to extension brackets *z* below the trolley there are two flexible ropes *a'*, *a'* which will normally hang vertically when no lorry is being unloaded and which are kept at a distance apart sufficient to allow ample clearance over the length of a reel.

These ropes will thus be free to pass downwards on either side of the reels on the lorry.

At the lower end of these ropes, two other ropes *b'*, *b'* each somewhat longer than the length of a reel is fastened at each end to a rotatable socket *c'*, *c'* free to rotate in links *d'*, *d'* which are used to keep the rotatable ropes separated by a distance approximately equal to one-tenth of the circumference of a reel.

Prior to the commencement of unloading, the first of these two rotatable ropes will be within the gaps between reels 2 and 3.

During unloading the twin rotating rope assembly will pass successively through gaps between 2 and 3, then 3 and 5, then 5 and 6, 6 and 8 and so on; being kept continually in tension

against the surface of the reel by the overhead endless constant torque rope and trolley.

After the unloading of a lorry is completed the direction of rotation of the torque motor is reversed, so that the trolley may return to its lower position ready for the commencement of another unloading operation.

In commencing to unload the lorry it will be found convenient to leave two or three reels A and B in position on the platform, the reels being moved up to a position in which the foremost of them is brought against the first and lowermost reel upon the lorry, an operation which may be effected by applying power on the spindle *e* and causing it to rotate in the reverse sense from that in which it normally moves in the unloading operation.

After the foremost of the reels supported on the platform have been brought up against the lowermost reel on the tail of the lorry, the chock against which this reel bears will be removed (the chocks being conveniently furnished with handles) so that the reel may then, when the spindle and the arms associated with them are allowed to rotate in a counterclockwise direction, roll towards the platform.

The second reel from the lorry will follow and then the third, fourth, fifth and thereafter successive reels, the remaining chocks being removed as the operation of unloading progresses.

The order in which the reels are unloaded is more clearly followed from Figures 3, 4, 5, 6 and 7, Figure 8 illustrating the disordered descent of delivery of the reels which would occur without employing the retarding means which forms part of the invention.

I claim:

1. A vehicle unloading platform for large cylindrical bodies, said platform defining an inclined rollway having its forward higher end disposed at an elevation to receive cylindrical bodies rolled from the tail end of a lorry and a retarding device located rearwardly of the forward end of the rollway and comprising a plurality of movable, spaced-apart arms adapted to successively engage the cylindrical bodies traveling down the rollway, braking means for restraining the movement of said arms, and a reverse drive for said arms.

2. A vehicle unloading platform for large cylindrical bodies, said platform defining an inclined rollway and including an unloading bank located at the forward higher end of the rollway, means for adjusting the height of said bank to the level of the tail end of a lorry to receive cylindrical bodies rolled from the lorry, and a retarding device located rearwardly of the unloading bank, said retarding device comprising a plurality of rotatable, angularly-spaced arms adapted to successively engage the cylindrical bodies traveling down the rollway, braking means for restraining rotation of said arms, and a reverse drive for said arms.

3. A vehicle and unloading platform as set forth in claim 2 in which the retarding device comprises two laterally spaced sets of rotatable radially-mounted arms each arranged to simultaneously engage a cylindrical body upon the circumference and adjacent opposite ends of the cylindrical body.

4. A vehicle unloading platform as set forth in claim 3 in which the axis of rotation of the arms is located below and crosswise of the rollway, whereby the arms are adapted to engage the lower circumference of the cylindrical body.

5. A vehicle unloading platform as set forth in claim 1 including an overhead frame extending along the rollway in spaced relation to the arms for preventing jumping of the cylindrical bodies over the arms.

6. A vehicle unloading platform for large cylindrical bodies, said platform defining an inclined rollway having its forward higher end disposed at an elevation to receive cylindrical bodies rolled from the tail end of a lorry and a retarding device located rearward of the forward end of the rollway and comprising a plurality of movable spaced-apart arms adapted to successively engage the cylindrical bodies traveling down the rollway, braking means for restraining movement of said arms and control means interposed in the path of travel of the cylindrical bodies along the rollway for momentarily releasing said braking means, an inclined ramp in line with but in advance of the rollway for accommodating a lorry with its chassis sloping downward from its head end toward its tail end and a loop suspended from a point above the ramp for extending into the gaps between the cylindrical bodies for insuring the orderly vertical descent of such bodies during unloading of the lorry.

7. A vehicle unloading platform as set forth in claim 6 including a trackway above the ramp adapted to overlie and extend lengthwise of a lorry, a trolley adapted to travel along said trackway, means for driving said trolley at uniform speed along the trackway and suspension means for connecting the loop with the trolley.

8. A vehicle unloading platform as set forth in claim 1 in which the retarding device is drivable in opposite directions.

WILLIAM GIBSON.

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