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R. G. ANDERSON

2,236,281

ANCHOR MECHANISM

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Fig. 1.

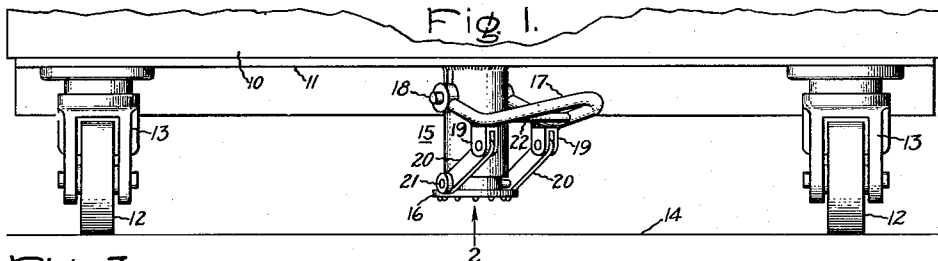


Fig. 3.

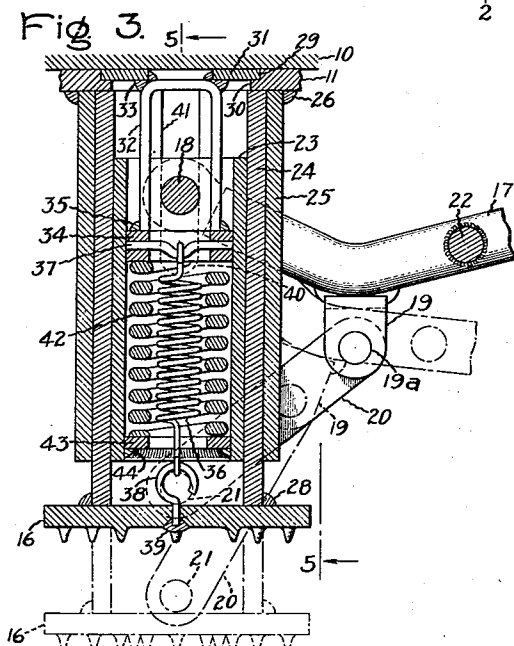


Fig. 2.

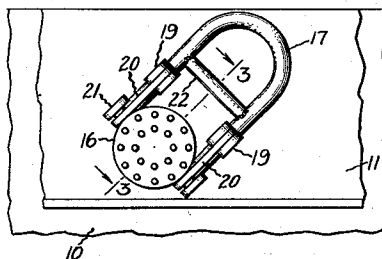


Fig. 4.

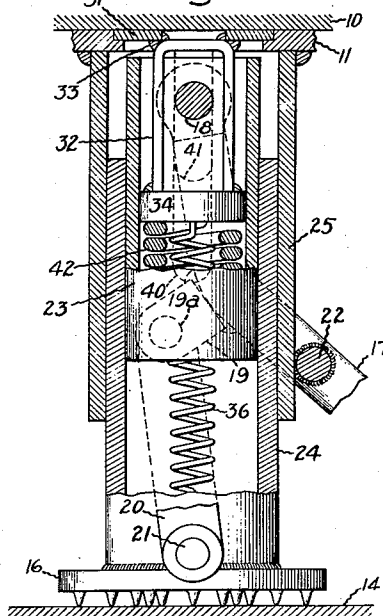
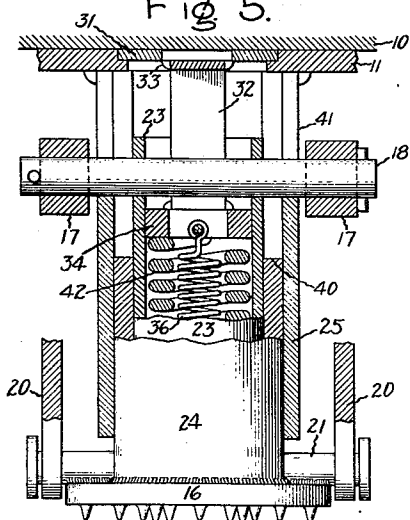


Fig. 5.



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UNITED STATES PATENT OFFICE

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ANCHOR MECHANISM

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6 Claims. (Cl. 188—5)

My invention relates to trucks, movable shipping containers and the like, and particularly to anchoring mechanisms for preventing accidental movement of such devices.

Containers adapted for shipping less than carload lots are frequently provided with casters or trucks to facilitate movement thereof into and out of freight cars and transport trucks. In order to prevent accidental movement of such containers which might be caused by motion of the train or truck, it is desirable to provide some arrangement for anchoring the movable container to the car or truck. Accordingly, it is an object of my invention to provide an improved anchoring mechanism for preventing relative movement between a movable body such as a shipping container and a body stationary with respect thereto such as a railway car.

Another object of my invention is to provide an improved toggle operated anchor for preventing accidental movement of trucks, shipping containers and the like.

Further objects and advantages of my invention will become apparent as the following description proceeds, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of my invention, reference may be had to the accompanying drawing in which Fig. 1 is an end view of the lower portion of a movable shipping container provided with an anchor mechanism embodying my invention shown in its retracted position; Fig. 2 is a bottom view of the anchor mechanism shown in Fig. 1; Fig. 3 is an enlarged sectional view of the anchor mechanism taken on the line 3—3 of Fig. 2 and indicating in dot and dash lines a position of the anchor intermediate its retracted and operated positions; Fig. 4 is a partial sectional view similar to that of Fig. 3 showing the anchoring mechanism in its operated position; and Fig. 5 is a sectional view taken on the line 5—5 of Fig. 3 showing the anchor in its retracted position.

The illustrated embodiment of my invention comprises generally a plurality of interfitting hollow cylindrical members relatively movable longitudinally with respect to one another, one of the members constituting a base and the other members being movable with respect thereto by operation of a toggle mechanism. A spring is provided to retain the anchor mechanism in its retracted position and another spring is provided for limiting the pressure exerted by the

anchor against the floor or other supporting structure when the mechanism is in its operated position.

Referring now to the drawing, in Fig. 1 I have shown the lower portion of one end of a truck body or shipping container 10 having an angle iron cross-piece 11 at the bottom thereof to which are attached wheels or casters 12 pivotally supported in brackets 13. The wheels 12 support the container 10 movably upon a floor of a car or other relatively stationary structure indicated at 14. In order to prevent accidental movement of the container 10 with respect to the supporting body or floor 14, I provide an anchor mechanism 15 secured to the angle iron 11 which constitutes its base and having a foot 16 movable into contact with the floor by operation of a U-shaped handle 17 comprising a portion of a toggle mechanism. As shown in Figs. 1 and 2, the two legs of the U-shaped handle 17 are pivoted to the anchor mechanism on a shaft 18 and the handle is provided with brackets 19 midway between the shaft 18 and its outer end on either leg of the U. The toggle mechanism is completed by a pair of links 20 pivotally connected to pins 19a in the brackets 19 and to pins 21 on either side of the anchor mechanism. The two sides or legs of the U-shaped handle 17 are connected by a bar 22 which acts as a stop limiting the movement of the toggle mechanism.

The anchor mechanism 15 as shown in Figs. 3, 4 and 5 comprises three interfitting concentric hollow cylindrical members 23, 24 and 25. The outermost member 25 is welded or otherwise suitably secured to the angle iron 11 as indicated at 26 and constitutes a portion of the base of the mechanism. The foot 16 is welded or otherwise suitably secured at 28 to the middle cylindrical member 24 which is longitudinally slidable within the cylindrical bore of the member 25 which acts as a guide therefor. The innermost cylindrical member 23 is longitudinally slidable within the cylindrical bore of the member 24 which acts as a guide therefor. The base 11 is provided with a circular opening 29 having a shoulder 30 providing an annular support within which is fitted a washer or ring 31 having a U-shaped bracket 32 welded thereto as indicated at 33 and extending within the member 23. The bracket and washer constitute a portion of the base of the anchor mechanism and a ring or collar 34 is welded at 35 to the lower end of the bracket 32 to provide an anchorage and support for the springs, as described hereinafter. In

order to retain the foot 16 and middle member 24 in a retracted position, I provide a spring 36 engaging a cross-bar 37 secured in the ring 34 at its upper end and a hook 38 welded or riveted in the foot 16 at 39 at its lower end. The cylindrical members 24 and 25 are provided with slots or elongated openings 40 and 41 respectively to accommodate longitudinal movement of the shaft 18 which is arranged transversely of the anchor mechanism in the innermost cylindrical member 23. The shaft 18 extends on either side of the anchor mechanism to provide the pivotal supports for the U-shaped handle 17. The U-shaped form of the bracket 32 also accommodates longitudinal movement of the shaft 18. When the handle 17 is pressed downwardly, the downward force is transmitted through the links 20 which move the foot 16 and member 24 downwardly against the force of the spring 36. The dot-and-dash outline in Fig. 3 illustrates an intermediate position of the toggle mechanism, and Fig. 4 illustrates the toggle mechanism in its operated position in which the pivot pins 19a of the links 20 on the brackets 19 have passed overcenter with respect to a line connecting the pivot shafts 18 and 21, the stop 22 of the toggle mechanism having engaged the outermost cylindrical member 25 which prevents further movement of the handle 17. It will readily be apparent that the toggle mechanism will be retained in its operated position against forces tending to press the foot 16 upwardly. In order to limit the force with which the foot 16 is pressed against the floor or other support 14, I provide a relatively heavy compression spring 42 concentric with the spring 36 within the innermost member 23 and engaging the collar 34 at its upper end and a collar or spring stop 43 welded at 44 to the innermost member 23 at its lower end. Operation of the toggle mechanism forces the cylindrical members 23 and 24 apart, the member 24 moving downwardly until the foot 16 engages the floor when further movement of the member 24 is stopped. The member 23 will then be urged upwardly against the compression force of the spring 42 which will thereby hold the foot 16 resiliently against the floor or other support and provide sufficient friction to hold the container 10 against movement with respect to the floor. In Fig. 4 the spring 42 is compressed, the foot 16 having engaged the floor 14. When it is desired to release the anchor mechanism, the handle 17 is raised from its position as shown in Fig. 4 thereby releasing the toggle mechanism which is returned to its original position by the force of a spring 36. As clearly shown in Fig. 2, the entire anchor mechanism is arranged beneath the container 10 so that no portion thereof projects laterally from the container where it might interfere with another container placed adjacent thereto.

It will be apparent from the foregoing that I have provided a simple and rugged anchor mechanism which may easily be operated to retain a portable container or truck in position with respect to the floor on which it is supported. The arrangement of the hollow cylindrical members which act as guides during operation of the mechanism insures ease of operation and prevents the mechanism from becoming loose, and the compression spring may be selected to provide adequate force for urging the anchor foot against the floor without requiring the application of undue force by the operator.

While I have described and illustrated a par-

ticular modification of my invention, other applications will readily be apparent to those skilled in the art. I do not, therefore, desire my invention to be limited to the particular construction shown and described, and I intend in the accompanying claims to cover all modifications within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An anchor mechanism adapted to be secured to a movable body and to be extended into engagement with a stationary body to prevent relative movement between the movable and stationary bodies, said mechanism comprising a base member and a first movable member, said base member constituting a guide for said first movable member, a second movable member, said first movable member constituting a guide for said second movable member, a foot on said first movable member for engaging the stationary body, a first spring for retaining said first movable member in a retracted position with respect to said base member, a toggle mechanism pivotally secured to said first movable member and to said second movable member for moving said first movable member out of its retracted position against the force of said spring, and a second spring arranged between said base member and said second movable member for limiting the force exerted by said foot against the stationary body by operation of said toggle mechanism.

2. An anchor mechanism adapted to be secured to a movable body and to be extended into engagement with a stationary body to prevent relative movement between the movable and stationary bodies, said mechanism comprising a base member having a hollow cylindrical portion arranged to extend outwardly from the movable body and a first cylindrical movable member arranged within and movable longitudinally with respect to said cylindrical portion, said hollow cylindrical portion constituting a guide for said movable member, a foot on said movable member for engaging the stationary body, a first spring for retaining said movable member in a retracted position in said cylindrical portion of said base member, said first movable member having a cylindrical bore therein, a second cylindrical movable member arranged within said bore of said first movable member whereby said first movable member constitutes a guide for said second movable member, a toggle mechanism pivotally secured to said first movable member and to said second movable member for moving said first movable member out of its retracted position against the force of said first spring and for moving apart said first and second movable members, and a second spring arranged between said second movable member and said base member and arranged to be stressed upon operation of said toggle mechanism for limiting the force exerted by said foot against the stationary body by operation of said toggle mechanism.

3. An anchor mechanism adapted to be secured to a movable body and to be extended into engagement with a stationary body to prevent relative movement between the movable and stationary bodies, said mechanism comprising a base member and three relatively movable concentric hollow cylindrical members, the outermost one of said cylindrical members being secured to and constituting a portion of said base

member, the middle one of said cylindrical members being longitudinally movable within said outermost member and having a foot at its end remote from said base member for engaging the stationary body, a first spring arranged within the innermost one of said cylindrical members and attached to said middle member and to said base member for retaining said middle member in a retracted position within said outermost member, a toggle mechanism for moving said middle member out of its retracted position against the force of said first spring, said toggle mechanism being pivotally secured to said middle member and to said innermost member, a second spring arranged within said innermost member and engaging said base at one end and said innermost member at its other end, said second spring being arranged to be stressed upon operation of said toggle mechanism for limiting the force exerted by said foot against the stationary body by operation of said toggle mechanism.

4. An anchor mechanism adapted to be secured to a movable body and to be extended into engagement with a stationary body to prevent relative movement between the movable and stationary bodies, said mechanism comprising a base member and three relatively movable concentric cylindrical members, the outermost one of said cylindrical members being secured to and constituting a portion of said base member, the middle one of said cylindrical members being longitudinally movable within said outermost member and having a foot at its end remote from said base member for engaging the stationary body, a first spring arranged within the innermost one of said cylindrical members and attached to said middle member and to said base member for retaining said middle member in a retracted position within said outermost member, a toggle mechanism for moving said middle member out of its retracted position against the force of said first spring, said toggle mechanism comprising a shaft secured to said middle member transversely thereof and extending outside said outermost member and a lever pivoted on said shaft and a pivoted link connecting said lever and said middle member, said middle member and said outermost member having longitudinal openings for accommodating movement of said shaft longitudinally of said members, a second spring arranged within said innermost member and engaging said base at one end and said innermost member at its other end, said second spring being arranged to be stressed upon operation of said toggle mechanism for limiting the force exerted by said foot against the stationary body by operation of said toggle mechanism.

5. An anchor mechanism adapted to be secured to a movable body and to be extended into engagement with a stationary body to prevent relative movement between the movable and stationary bodies, said mechanism comprising a base member and three relatively movable concentric cylindrical members, the outermost one

of said cylindrical members being secured to and constituting a portion of said base member, the middle one of said cylindrical members being longitudinally movable within said outermost member and having a foot at its end remote from said base member for engaging the stationary body, a first spring arranged within the innermost one of said cylindrical members and attached to said middle member and to said base member for retaining said middle member in a retracted position within said outermost member, a toggle mechanism for moving said middle member out of its retracted position against the force of said first spring, said toggle mechanism comprising a U-shaped lever having both ends thereof pivotally connected to said innermost member and links pivotally connected to said middle member and to the sides of said U-shaped lever intermediate the ends thereof, a stop secured to said U-shaped lever for limiting pivotal movement of said lever, a second spring arranged within said innermost member and engaging said base at one end and said innermost member at its other end, said second spring being arranged to be stressed upon operation of said toggle mechanism for limiting the force exerted by said foot against the stationary body by operation of said toggle mechanism.

6. An anchor mechanism adapted to be secured to a movable body and to be extended into engagement with a stationary body to prevent relative movement between the movable and stationary bodies, said mechanism comprising a base member and three relatively movable concentric cylindrical members, the outermost one of said cylindrical members being secured to and constituting a portion of said base member, the middle one of said cylindrical members being longitudinally movable within said outermost member and having a foot at its end remote from said base member for engaging the stationary body, said base having a portion extending longitudinally of said cylindrical members within said innermost member, a first spring arranged within said innermost member and attached to said middle member and to said portion of said base member within said innermost member for retaining said middle member in a retracted position within said outermost member, a toggle mechanism for moving said middle member out of its retracted position against the force of said first spring, said toggle mechanism being pivotally secured to said middle member and to said innermost member, a second spring arranged within said innermost member and engaging said extended portion of said base at one end and said innermost member at its other end, said second spring being arranged to be stressed upon operation of said toggle mechanism for limiting the force exerted by said foot against the stationary body by operation of said toggle mechanism.

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