Feb. 27, 1934. S. H. OWENS 1,949,218

MOVABLE STOP MECHANISM

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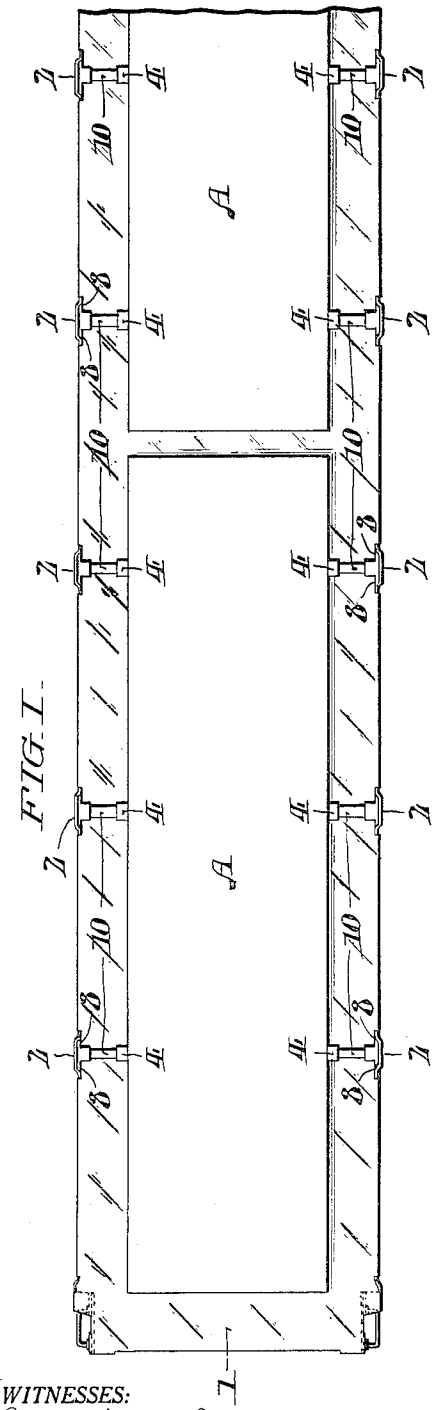


FIG. I.

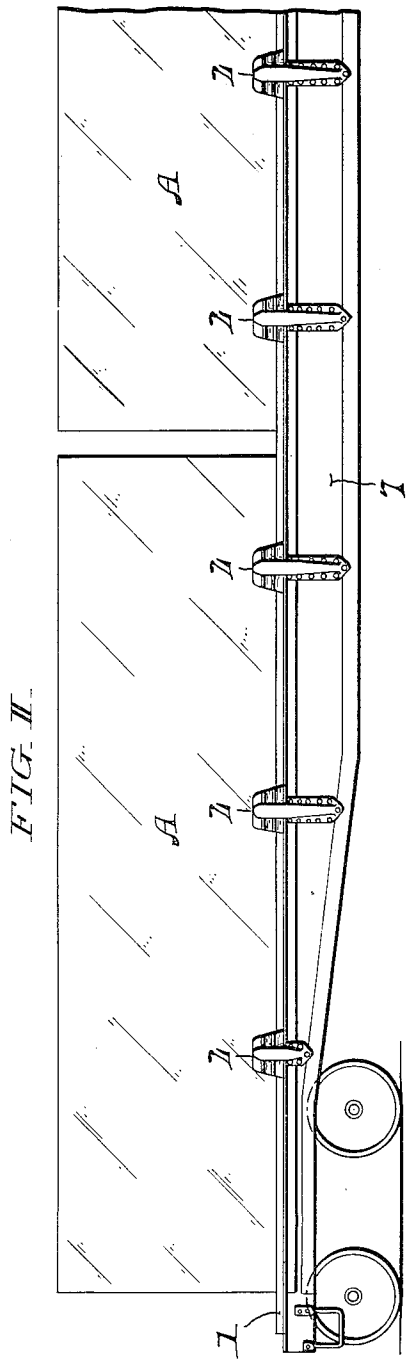


FIG. II.

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MOVABLE STOP MECHANISM

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FIG. III.

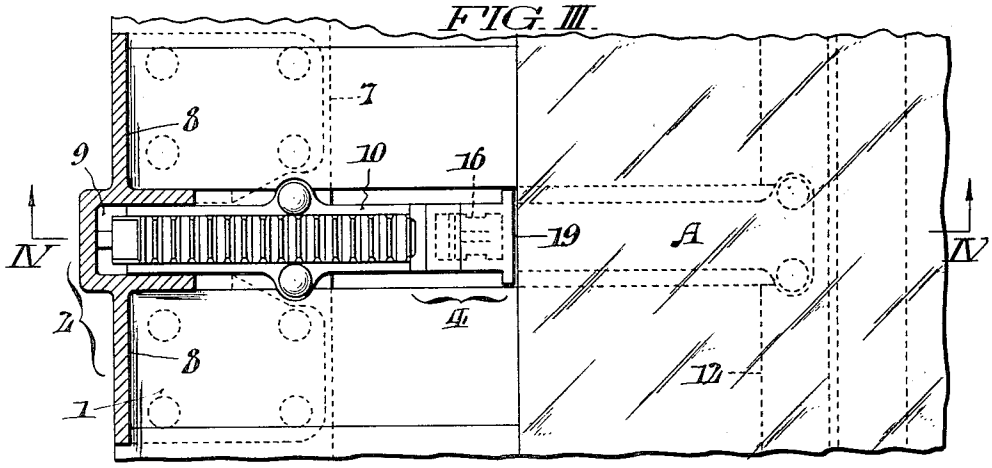


FIG. IV.

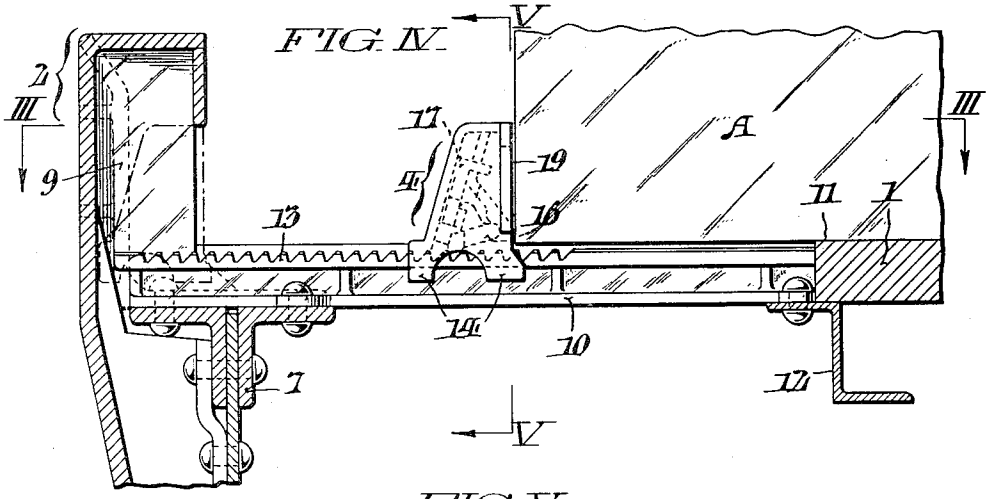
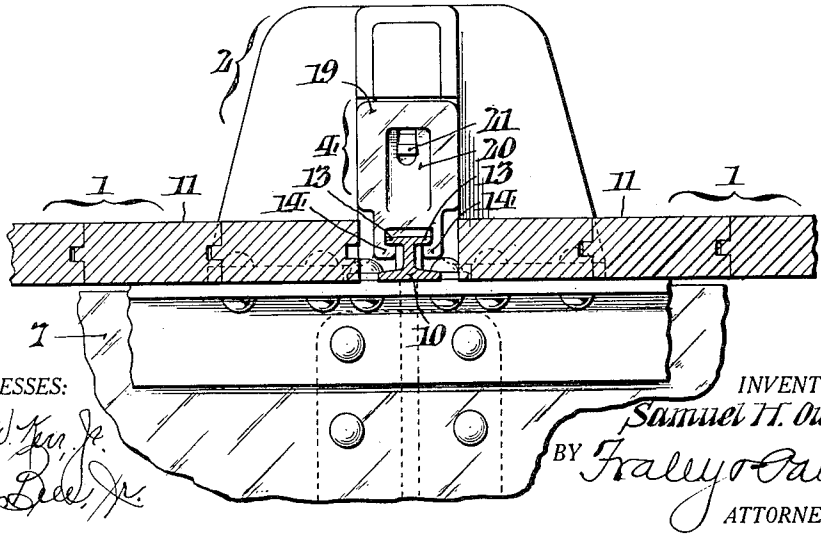


FIG. V.



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MOVABLE STOP MECHANISM

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FIG. VI.

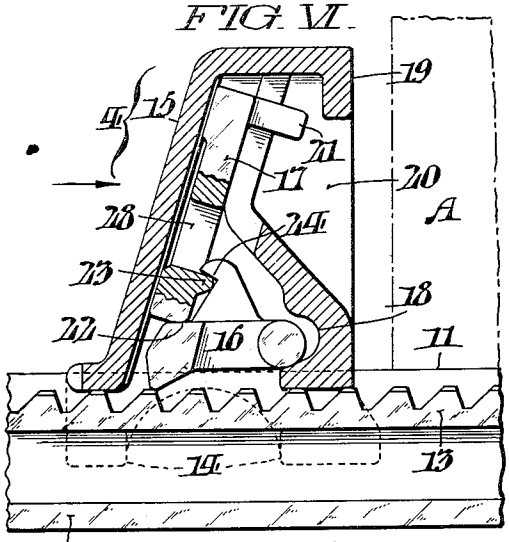


FIG. VII.

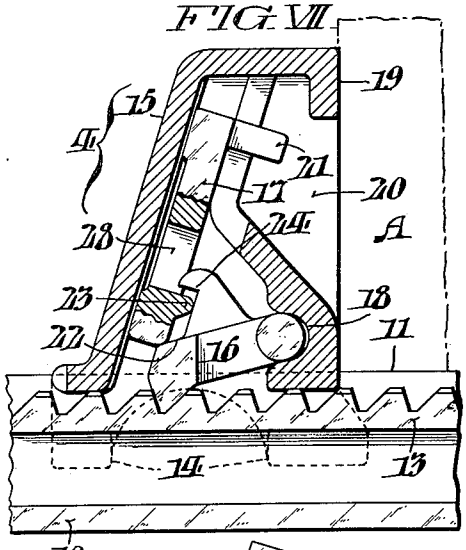


FIG. VIII.

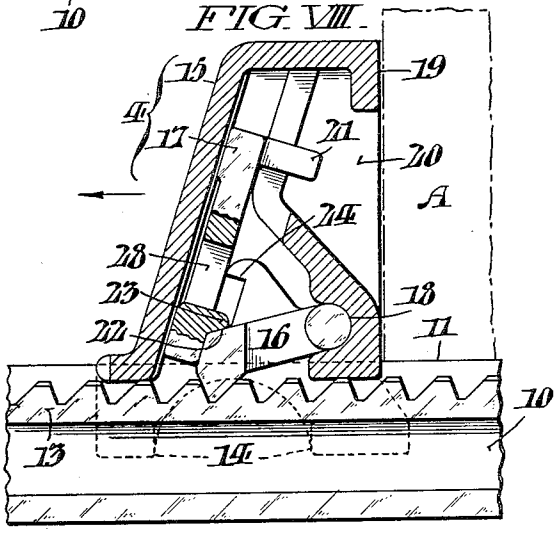


FIG. IX.

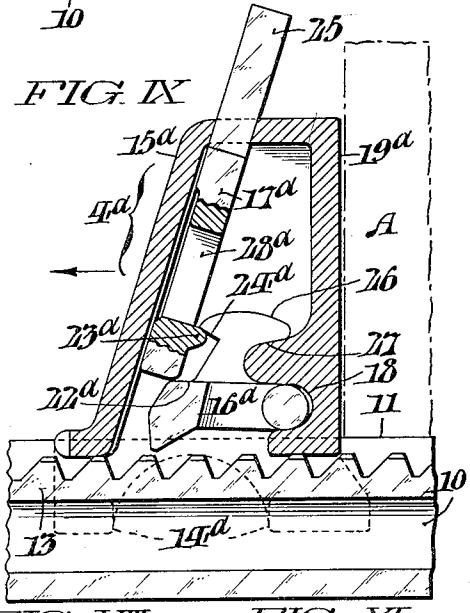


FIG. X.

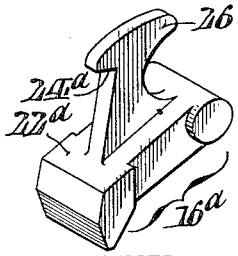


FIG. XII.

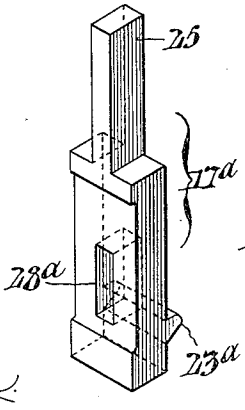


FIG. XIII.

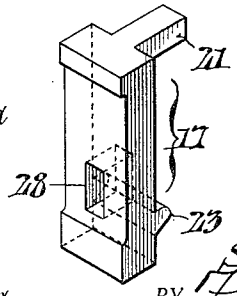
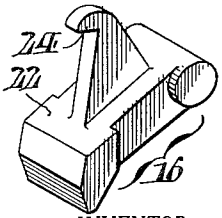


FIG. XI.



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Patented Feb. 27, 1934 1,949,218

UNITED STATES PATENT OFFICE

1,949,218

MOVABLE STOP MECHANISM

Samuel H. Owens, Altoona, Pa.

Application April 28, 1932. Serial No. 608,004

7 Claims. (Cl. 105—366)

This invention while relating generally to movable stop mechanism, has particular application to stops or abutments for container vehicles, such as railway cars, motor trucks, or the like, useful for the seating of containers of varying base dimensions upon the vehicle platform, and accordingly the invention is hereinafter described with reference to its embodiment in a container vehicle, though it will be apparent that the invention may be applied to many other uses. In my pending application for U. S. Letters Patent, Serial No. 608,007, filed April 28, 1932, there is described a complete assemblage of fixed and movable abutments for a railway car whereby the car is adapted for the carrying of containers of varying base dimensions, showing a movable stop mechanism similar to that which forms the subject of this invention as applied to the seating of containers of other than standard size. The present application constitutes a division of the above mentioned pending application, and is directed to the general application of the movable stop mechanism there disclosed.

The principal object of the invention is to provide, in association with a rack, a stop or abutment which is adapted to slide freely on the rack in one direction and to be automatically locked when moved in the reverse direction, with all of the movable elements designed to be of simple and inexpensive manufacture and capable of withstanding rough usage and severe wear.

A more specific object of the invention is to provide in such a movable stop mechanism means for releasing the stop from the rack upon which it is adapted to be guided and locked, permitting the return of the stop to its original position, said releasing means being accessible only under certain conditions so that accidental release of the stop is prevented when such releasing of the stop would be undesirable or dangerous.

Other more specific objects and advantages characterizing my invention will become more fully apparent from the description hereinafter of certain examples or embodiments of the practice of the invention, having reference to the accompanying drawings, whereof:

Fig. I represents a plan view of one end portion of a railway flat car fitted with movable stops of my invention at the sides thereof.

Fig. II represents a side elevation of the same.

Fig. III represents an enlarged plan view of a portion of the car platform at one of the side stops with certain parts shown in cross section, taken as indicated by the lines III—III of Fig. IV.

Fig. IV represents a cross sectional view of the same, taken as indicated by the lines IV—IV of Fig. III.

Fig. V represents a cross sectional view of the same, taken as indicated by the lines V—V of Fig. IV.

Figs. VI, VII and VIII represent in each instance a cross section of the movable side stop in position on its rack with a portion of a container diagrammatically represented, the several views showing the latch member and pawl in different positions.

Fig. IX represents a similar cross sectional view of a modified form of movable side stop.

Fig. X represents a perspective view of the type of pawl used in the movable side stop shown in Fig. IX.

Fig. XI represents a perspective view of the type of pawl used in the movable side stop shown in Figs. VI, VII and VIII.

Fig. XII represents a perspective view of the type of latch member used in the movable side stop shown in Fig. IX; and

Fig. XIII represents a perspective view of the type of latch member used in the movable side stop shown in Figs. VI, VII and VIII.

With particular reference to Figs. I and II it will be seen that the container vehicle, selected for illustration as an example of an embodiment of my invention, comprises an ordinary railway flat car with the addition thereon of fixed side abutments 2 for defining seats for the accommodation on the car platform 1 of railway containers of a standard size, and with movable side stops or abutments 4 for the seating of containers A of less width and greater length than the ordinary railway container.

In the preferred example of my invention in which fixed container seating abutments are used in combination with movable container seating abutments, the fixed side abutments 2 are cast in one piece and are securely riveted to the side sills 7 of the car underframe, as shown in Fig. II, extending outward from the side sills 7 so as not to encroach upon the loading space of the car. Each fixed side abutment 2 is shaped to afford two oppositely directed corner guides 8 for accommodating corresponding corners of two adjacent containers of the standard size which the car is primarily adapted to carry. Moreover, each fixed side abutment 2 includes a hollow central portion 9 for housing the movable side abutments 4 when these abutments are not in use. A rack 10 extends from within the housing 9 of the fixed abutment 2 inward toward the center line of the car transversely of its platform 1. The outer end

of each rack 10 is thus disposed beyond the side edge of the car, and its teeth are in a plane beneath the top surface 11 of the car platform 1. As shown in Fig. IV each rack 10 is riveted at its outer end to one of the side sills 7 and at its inner end to a stringer 12. As shown in Fig. V each rack 10 is of I-shaped cross section with its upper flange 13 serving as a guide for engagement with depending lugs 14 on the corresponding movable side abutment 4.

One form which the movable side abutments 4 may take is shown in Figs. VI, VII and VIII in which the abutment comprises a casing 15, a pawl 16 freely mounted for pivotal movement within the casing, and latch 17 for locking and unlocking the pawl. All of the parts of the movable abutments may comprise rough castings, one of the objects of the invention being to eliminate machined parts, thus reducing the cost of manufacture of the abutments, and rendering them suitable for the rough usage and severe wear to which railway cars are subjected. It will be particularly noted that instead of employing the usual type of pivoted pawl used in pawl and rack mechanism, I employ a pawl which is freely mounted upon a curved bearing surface or seat 18, and hence adapted for swinging movement about such bearing surface or seat, while having capacity for limited bodily movement away from such bearing surface or seat.

In the form of movable side abutment shown in Figs. VI, VII and VIII the casing 15 is provided with a vertical flat wall 19 having an opening 20 therein, through which access may be had to the handle portion 21 of the latch 17, and being otherwise imperforate. Accordingly, when a movable side abutment 4 is moved inward along its rack 10 against the side of a container such as shown at A, and there automatically locked in place, the movable abutment cannot be unlocked until the container is removed from the car platform. Consequently accidental or unauthorized release of any of the movable side abutments 4 is prevented during transit of the shipping containers.

The operation of the movable side abutments 4 will be readily understood from the views, Figs. VI, VII and VIII, showing the various positions occupied by the pawl 16 and latch 17. In Fig. VI the latch 17 has been lifted and the pawl 16 thereby permitted to fall by gravity away from its seat 18 to a position in which its shoulder 22 holds the latch 17 in raised or inoperative position. In this position the pawl 16 is free to slide over the teeth of the rack 10 when the movable side abutment 4 is progressed by hand in the direction indicated by the arrow. When the movable side abutment 4 is in place against the wall of a container A the pawl 16 may occupy a position such as shown in Fig. VII, in which the pawl engages with the teeth of the rack, still maintaining the latch 17 in raised position. A slight reverse or outward movement of the movable side abutment will then cause the parts to assume the positions shown in Fig. VIII. Accompanying this reverse movement in the direction indicated by the arrow, the pawl 16 is forced firmly onto its seat 18 which permits the latch 17 to fall by gravity to a position between the casing 15 and the shoulder 22.

To return a movable side abutment 4 to its original position within the housing 9 of the corresponding fixed side abutment the container must first be lifted from its seat as before explained. The latch 17 is then raised by reaching through the opening 20 and grasping the handle portion 21. When the latch 17 is raised a lug 23 thereon strikes a projection 24 on the pawl 16 and causes the pawl to be swung upward, pivoting on its seat 18, out of engagement with the rack. The movable side abutment 4 may then be slid outward along its rack 10.

The modified form of movable side abutment shown at 4*a* in Fig. IX is similar to the previously described abutment except that access to the latch 17*a* is had through the top of the casing 15*a*. In this example the latch member is made longer to afford a handle portion 25 which projects upward through an opening at the top of the casing 15*a*. The wall 19*a* which abuts against a container is made imperforate. The pawl 16*a* is formed with a hook-shaped portion 26 which engages a correspondingly shaped surface 27 at the interior of the casing. The operation of the modified form of abutment 4*a* is similar to the operation above described except that the pawl 16*a* when off its seat 18 bears upon the curved surface 27 and is caused to pivot about this surface incident to free sliding along the teeth of the rack 10.

It will be readily apparent that with either form of movable side abutment the latch 17, 17*a* is normally inoperative when the pawl 16, 16*a* is off its seat 18, but is adapted to fall by gravity to lock the pawl against pivotal movement when the pawl is forced onto its seat by reverse or outward movement of the casing 15, 15*a*. Furthermore, as clearly shown in the perspective views of Figs. X, XI, XII and XIII the pawls 16, 16*a* and the latches 17, 17*a* are so made that they can be fitted into each other for the purposes of removal from their casings 15, 15*a*. Thus the latches 16, 16*a* are provided with rectangular slots 28, 28*a* into which the projections 24 of the pawls will fit when it is desired to remove one of these parts through the bottom of its casing 15, 15*a*.

While I have described in detail one example of movable stop mechanism of my invention as applied to a railway car for the seating of containers thereon, it will be apparent that the invention has many other applications, and that the specific form of the mechanism herein illustrated may be varied to considerable extent without departing from the spirit of my invention as defined in the claims annexed hereto.

Having thus described my invention, I claim:

1. Movable stop mechanism comprising a rack, a stop guided for movement along said rack, and a pawl freely mounted for pivotal movement on a surface of said stop and having capacity for limited bodily movement away from said surface, said pawl being adapted to slide along the teeth of said rack when the stop is moved in one direction and to lock with the teeth of said rack when the stop is moved in the reverse direction.

2. Movable stop mechanism comprising a rack, a stop guided for movement along said rack, and a pawl freely mounted for pivotal movement on a surface of said stop and for gravitational bodily movement of limited extent away from said surface, said pawl being adapted to slide along the teeth of said rack when the stop is moved in the other direction.

3. Movable stop mechanism comprising a rack, a stop guided for movement along said rack, a pawl seated within said stop and having capacity for pivotal movement on its seat and for gravitational movement of limited extent away from said seat, said pawl being adapt-

ed to slide along the teeth of said rack when the stop is moved in one direction and to lock with the teeth of said rack when the stop is moved in the other direction, and a latch normally inoperative when the pawl is off said seat but adapted to fall by gravity and to lock the pawl against pivotal movement when the pawl is on said seat.

4. Movable stop mechanism comprising a rack, a stop guided for movement along said rack, said stop having an exterior surface serving as an abutment and an interior seat, and a pawl freely mounted for swinging movement on said seat and for gravitational bodily movement of limited extent away from said seat, said pawl being adapted to engage the teeth of said rack whereby the stop may be locked in any desired position on said rack.

5. Movable stop mechanism comprising a rack, a stop guided for movement along said rack, a pawl seated within said stop and having capacity for pivotal movement on its seat and for gravitational movement away from said seat, said pawl being adapted to engage the teeth of said rack, and a latch normally inoperative when the pawl is off said seat but adapted to fall by gravity to lock the pawl against pivotal movement and to be raised by hand to release the pawl.

6. Movable stop mechanism comprising a rack, a stop guided for movement along said rack, said stop being in the form of a casing having a wall serving as an abutment and having an opening at said wall, a pawl mounted for pivotal movement and completely confined within said stop, said pawl being adapted to slide along the teeth of said rack when the stop is moved in one direction and to lock with the teeth of said rack when the stop is moved in the reverse direction, and a latch for releasing said pawl, said latch being accessible only through the opening at the wall aforesaid.

7. Movable stop mechanism comprising a rack, a stop guided for movement along said rack, said stop having a wall serving as an abutment and an interior curved seat, a pawl mounted freely for pivotal movement on said seat and for gravitational bodily movement away from said seat, said pawl being adapted to be unseated and to slide along the teeth of said rack when the stop is moved in one direction, and said pawl being adapted to be moved onto its seat and to lock with the teeth of said rack when the stop is moved in the other direction, and a latch normally held in inoperative position when said pawl is off its seat but adapted to fall by gravity to lock the pawl against pivotal movement when the pawl is on its seat, said latch being movable by hand to release the pawl.

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