April 17, 1962 F. E. WILLOUGHBY 3,029,869

APPARATUS FOR INSTALLING TEMPORARY CLOSURES IN TRANSPORT VEHICLES

Filed Feb. 9, 1959 3 Sheets-Sheet 1

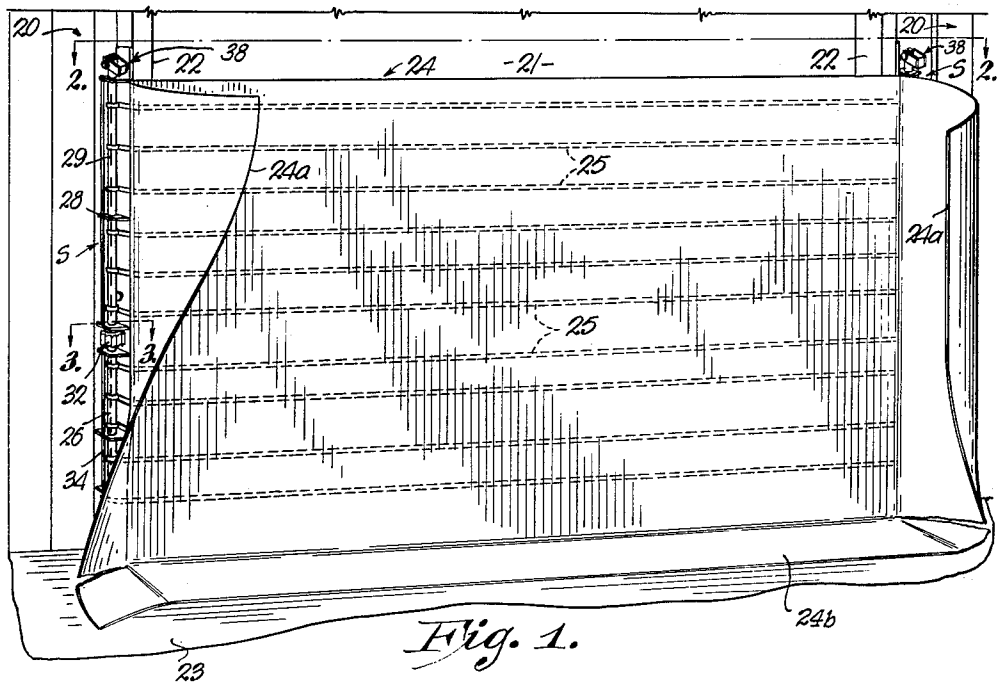


Fig. 1.

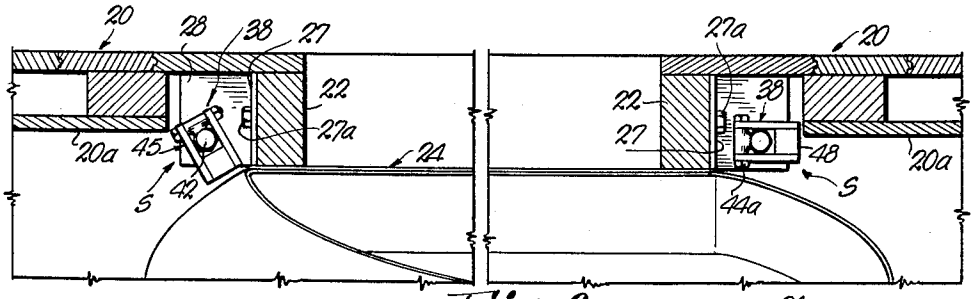


Fig. 2.

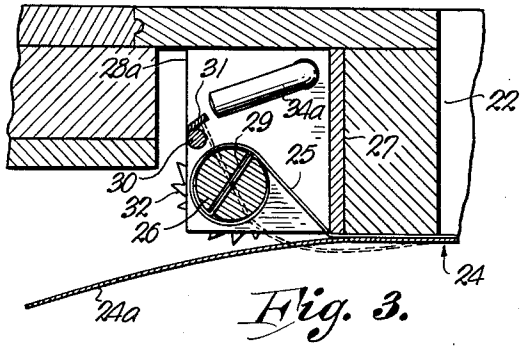


Fig. 3.

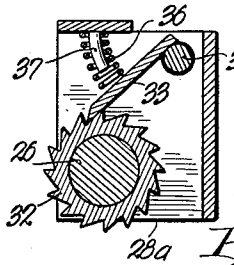


Fig. 4.

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APPARATUS FOR INSTALLING TEMPORARY CLOSURES IN TRANSPORT VEHICLES

Filed Feb. 9, 1959 3 Sheets-Sheet 2

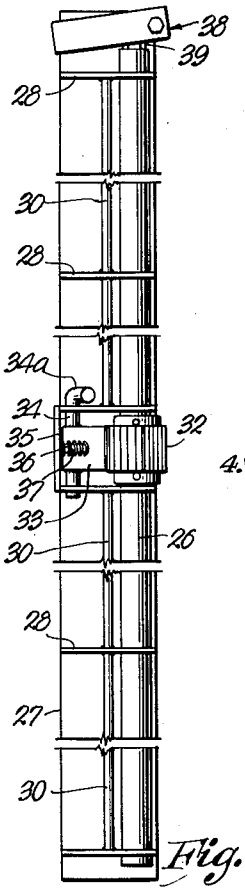


Fig. 5.

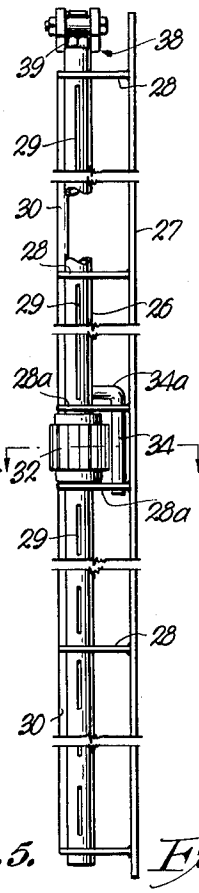


Fig. 6.

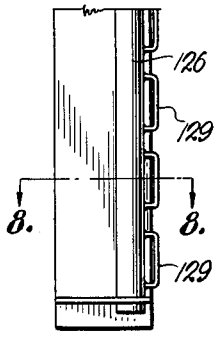


Fig. 7.

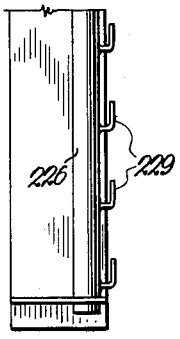


Fig. 9.

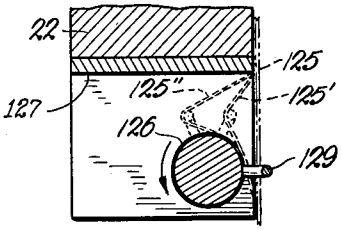


Fig. 8.

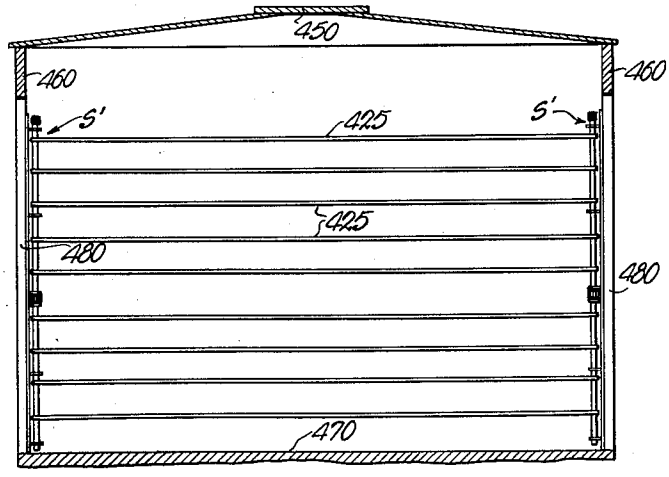


Fig. 11.

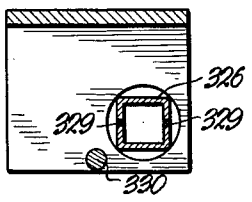


Fig. 10.

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APPARATUS FOR INSTALLING TEMPORARY CLOSURES IN TRANSPORT VEHICLES

Filed Feb. 9, 1959 3 Sheets-Sheet 3

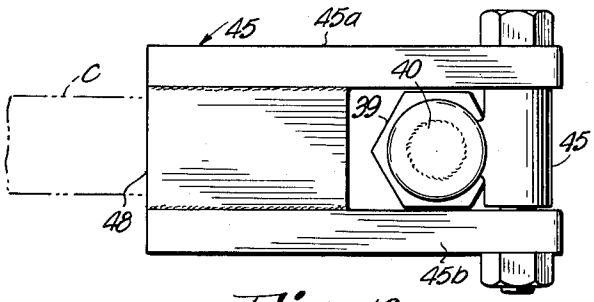


Fig. 12.

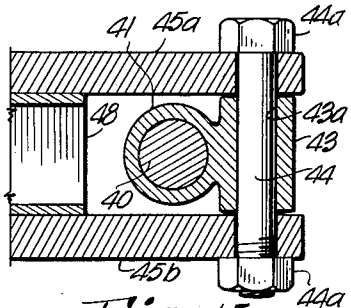


Fig. 15.

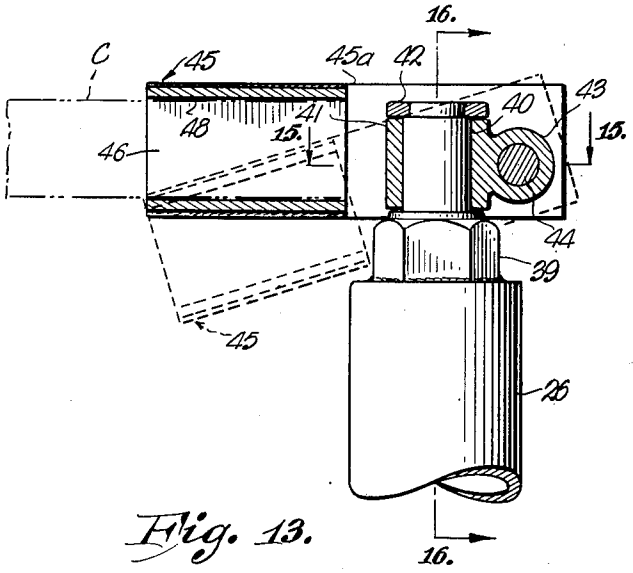


Fig. 13.

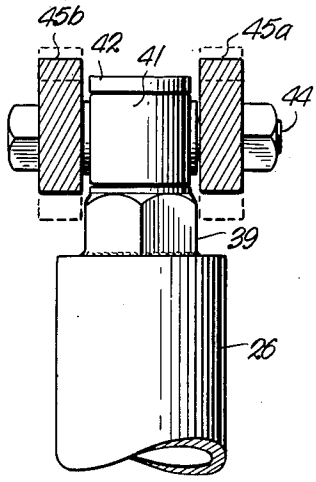


Fig. 16.

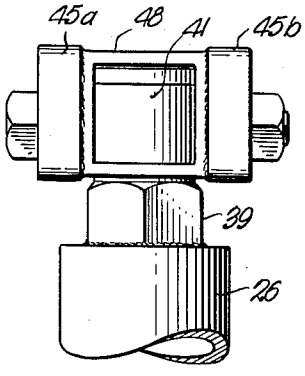


Fig. 14.

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United States Patent Office 3,029,869 Patented Apr. 17, 1962

3,029,869

APPARATUS FOR INSTALLING TEMPORARY CLOSURES IN TRANSPORT VEHICLES

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Filed Feb. 9, 1959, Ser. No. 792,164
14 Claims. (Cl. 160—328)

This invention relates to the installation of temporary closures or barriers in railway cars are like vehicles of the type employed for transporting pulverulent materials, and refers more particularly to apparatus by which such installation can be accomplished with ease and facility and at a great saving in labor and materials.

The invention is directed principally toward simplifying the installation of temporary closures, known in the trade as paper grain doors, in railway cars of the type generally used for transporting small grains. The paper grain doors presently in use comprise relatively heavy paper board sheets of somewhat greater width than the door openings of the car and reinforced with a plurality of spaced parallel steel straps, the straps being secured to the paper board structure. The straps have a length sufficient to span the door opening and extend beyond the door jamb. To secure the paper doors in place it is the present practice to nail the strap ends to the jamb.

The nailing of closures of the type mentioned has long presented a number of problems. Not the least of these is the man hours required in obtaining proper nailing. For a proper installation it requires on an average of 144 nails per door in cars with new or relatively new jambs. The driving of the nails alone takes a great deal of time and is further complicated by the fact that during nailing the door must be held in proper position. A further difficulty with the nailing is the fact that the straps, to do the best job, must be put under a certain amount of tension during mounting and this tension should be uniform through all straps if possible. As will be evident, this is a difficult task to accomplish by simply driving nails. Moreover, nailing is particularly difficult in cold and inclement weather and at all times involves risk of injury to the workmen.

Another problem arising from the conventional nailing operation is the wear and tear of repeated nailings on the door jambs or other areas in which the nails are received. The wood retains its ability to provide a secure mounting for the nails only a short while. Prolonged use requires more and more nails to be used and eventually a point is reached where the jambs must be replaced. This can involve a cost of from $500 to $600 per car for each replacement. Since it is usually difficult for the car owner to tell when a car is no longer suitable for grain shipping there is a further problem in that many, many times empty cars unsatisfactory for nailing are sent to the shipping site but are rejected by the shipper because of the inability of the cars to receive the temporary closures, which are necessary to prevent leakage.

It is one of the primary objects of the present invention to provide apparatus for mounting and tightening strap reinforced paper grain doors in railway cars or like rolling stock which eliminates entirely the use of nails and the problems attendant thereon.

It is another object of the invention to provide apparatus of the character described which forms a permanent part of the car, and which is at all times ready for use.

Still another object of the invention is to provide apparatus of the character described which makes it possible to obtain uniform and simultaneous tightening forces on the reinforcing straps of the temporary door. A feature of the invention in this respect resides in the structure

provided for receiving the straps of the door and bringing them into operative relationship with the strap holding and tightening elements.

Yet another object of the invention is to provide apparatus of the character described which is compact in relation to the over-all size of a railway car or similar storage and transport vehicle, and which is so placed therein as to permit the full space of the car to be employed for storage, either of grain when the temporary door is in use, or of the other goods when not in use.

Still another object of the invention is to provide apparatus of the character described and operable to mount strap barriers across the inside of the car to form partitioned storage compartments.

Yet another object of the invention is to provide apparatus of the character described which requires no special tools for operation and which can be incorporated in existing railway cars at a low cost.

A further object of the invention is to provide apparatus of the character described in which removal of the doors, once the transport vehicle has reached its intended unloading site, can be accomplished with ease and facility.

Other and further objects of the invention together with the features of novelty appurtenant thereto will appear in the course of the following description.

In the accompanying drawings which are to be read in conjunction with the instant specification and in which like reference numerals indicate like parts in the various views;

FIG. 1 is a fragmentary perspective view taken from the inside of a typical railway car looking toward a door opening and illustrating apparatus embodying the invention in connection with a paper door in the final stages of installation;

FIG. 2 is a somewhat enlarged fragmentary sectional view taken generally along the line 2—2 of FIG. 1 in the direction of the arrows and showing the upper ends of the strap receiving assemblies;

FIG. 3 is an enlarged sectional detail taken along the line 3—3 of FIG. 1 in the direction of the arrows;

FIG. 4 is an enlarged sectional view taken along the line 4—4 of FIG. 6 in the direction of the arrows;

FIG. 5 is an enlarged elevation of a typical strap receiving and tightening assembly of the type illustrated in FIG. 1, the assembly being disassociated from the railway car;

FIG. 6 is a view similar to FIG. 5 but taken from the right-hand side of FIG. 5;

FIG. 7 is a fragmentary elevation of the lower end portion of a modified strap receiving and tightening assembly according to the invention;

FIG. 8 is a sectional view taken along the line 8—8 of FIG. 7 in the direction of the arrows, showing in broken lines successive rotary positions of the strap receiving means with a strap therein;

FIG. 9 is a fragmentary elevation of the lower end portion of a further modified strap receiving and tightening assembly according to the invention;

FIG. 10 is a typical cross section through a still further modified strap receiving and tightening assembly incorporating the features of the invention;

FIG. 11 is a transverse section on a reduced scale through a typical railway car equipped with the invention and illustrating the use of the invention to obtain strap barriers across the inside of the car from one wall to another;

FIG. 12 is an enlarged top plan of the shaft turning means at the upper end of the strap receiving and tightening shaft;

FIG. 13 is an enlarged side elevation of the shaft turn-

ing means showing a portion of the upper end of the shaft;

FIG. 14 is a side elevation taken from the left-hand side of FIG. 13;

FIG. 15 is a sectional and fragmentary view taken generally along the line 15—15 of FIG. 13;

FIG. 16 is a side elevation taken from the right-hand side of FIG. 13.

Referring now to the drawings, and initially to that embodiment of the invention illustrated in FIGS. 1–6, inclusive, and 12–16, inclusive, in FIG. 1 I have shown a portion of the inside of a typical railway car having the inside wall 20 interrupted by a door opening 21. The sides of the door opening are defined by the vertical door jambs 22. It will be understood, of course, that the car is equipped with the usual outside doors (not shown). The floor of the car is illustrated generally at 23.

To illustrate the advantages and features of my invention, I have shown a typical strap reinforced paper grain door 24 disposed across the door opening 21. There are several paper doors presently on the market and while they vary somewhat in construction, all include the common feature of a plurality of parallel reinforcing straps 25 intended to extend completely across the opening and behind the jambs 22. In the particular door I have illustrated, the straps 25 are made integral with the paper structure over the major portion of their length; however, at the ends the straps are disassociated from the paper to provide flaps of paper 24*a* which can be pulled back as illustrated to expose the individual strap ends. Usually the paper is scored to assist in separation of the paper from the straps and there is likewise provided a flap 24*b* at the bottom which can be turned inwardly to rest upon the floor of the car.

As will be evident from FIG. 2, in the preferred installation of my invention in a railway car I propose providing an open space on the inside of the jamb 22, which is formed by interrupting the inside sheathing 20*a* of the car wall. The open spaces or recesses on the inside wall run preferably from top to bottom of the car. It is in these recesses that I position the strap receiving and tightening assemblies generally indicated by the letter S. There are two such strap receiving and tightening assemblies for each door, one being mounted on each side of the door opening.

As its main element, each strap receiving and tightening assembly S includes a vertical or upright shaft 26. To mount the shaft to the jamb there is provided a mounting or base plate 27 which is apertured at intervals to receive suitable bolts 27*a* or other connecting means for firmly securing the mounting plate to its jamb. The plates and shafts are of sufficient length to encompass the full height of the paper door and perhaps a little more. They need not, however, run entirely to the top of the railway car since it is usual in the installation of paper doors to leave an open space above the upper edge of the paper door providing access to the interior of the car. It will be understood, of course, by those versed in this art that such cars are not filled to the roof in the case of grain.

The shaft 26 is so supported by its plate 27 that it is free to turn about its vertical axis. In the preferred form of the invention this is accomplished by a plurality of vertically spaced brackets 28 which are firmly secured to the base plate 27 as, for example, by welding. The brackets may be formed of steel plate and are apertured to receive the shaft 26 in a freely rotatable fit.

As will be evident from on inspection of FIGS. 3 and 6, in the embodiment of the invention here being described, the shaft 26 is provided along its length with a plurality of longitudinally spaced slots 29 extending diametrically therethrough. The slots are elongated in the direction of the axis of the shaft and preferably are given a length and width which will permit free insertion of a strap end therein. As a matter of fact, because of

the variation in spacing of the straps on grain doors of various manufacturers I have found that it is advisable to make these slots of a length two to three times the width of a strap. Generally speaking there should be at least one slot for each of the straps included in the door. In my work to date I have found that a solid shaft rather than a tubular shaft is preferable because of the heavy loads imposed and I have found that a convenient way of making a solid shaft equipped with the necessary slots is to bring together semicircular steel structural members with spacers interposed therebetween, the spacers serving to form and divide the slot openings. The semicircular sections and spacers are, of course, welded together to form an integral shaft-like element and the slight degree of departure from a true circle that results from this manner of construction does not appear to affect the operation.

Referring now to FIGS. 3 and 5, it will be observed that running parallel with the shaft and relatively closely adjacent its periphery is a rod-like element 30. Preferably the rod 30 is made in segments, each segment extending between a pair of brackets 28 as illustrated in FIG. 5, with the ends of the rod segments being welded or otherwise firmly secured to the brackets. The prefered position of the rod relative the shaft and mounting bracket is shown in FIG. 3. Preferably it is so disposed that when the slot 29 of the shaft is in the position shown by broken lines in FIG. 3, the rod will be offset from the plane of the slot, the offset being in the direction that the shaft is rotated when the straps are being coupled with the shaft and tightened, as will later be explained in greater detail. The spacing of the rod 30 from the shaft should be sufficient to permit several layers of the strap to be wound about the shaft. If desired, a flange 31 can be secured to the rod along the full length of each segment, this flange extending to one side of the rod and lying in the path of the strap when it is inserted through the slot.

The strap receiving and tightening assemblies S also include means for controlling the direction and character of the rotation of the shafts 26. Referring again to FIGS. 3 and 6, inclusive, it will be observed that centrally of the shaft there is mounted upon the shaft a ratchet type gear 32. The gear 32 is firmly secured to and thus rotates with the shaft. Preferably apertured journal brackets 28*a* journaling the shaft 26 and firmly secured to base plate 27 are positioned directly above and below the ratchet gear.

Cooperating with the ratchet gear 32 is a pivotal dog or pawl 33. The pawl is rotatably carried by a shaft or pin 34 which extends through and is journaled by suitable apertures formed in the brackets 28*a* adjacent the ratchet. The pin 34 forms one leg of an L-shaped member which may be bent from rod stock, the other leg 34*a* of the L being disposed above the upper bracket 28*a* and providing a manually operable handle by which pivoting of the pin 34 can be accomplished. The pawl 33 is yieldably and resiliently maintained in engagement with the ratchet by means of a coil spring 36 which bears at one end against the pawl and is centered at the other about a centering lug 37. The lug is secured to a brace 35 extending vertically between and secured to brackets 28*a* (see FIG. 5). It will be observed that lug 37 terminates sufficiently far from the pawl as to permit the pawl to be disengaged from the teeth of the ratchet during rotation of the ratchet or when the handle 43*a* is rotated. As will be evident, under normal circumstances the ratchet is free to rotate in step-wise fashion in a counterclockwise direction as viewed in FIG. 4, the pawl preventing rotation in the opposite direction when the turning force on the shaft has been removed.

In order to provide a quick and easy means of turning the shafts 26 about their respective axes, I prefer to equip each strap receiving and tightening assembly with a turning mechanism generally indicated at 38 in FIGS. 1, 2, 5

and 6, and shown in greater detail in FIGS. 12 to 16, inclusive. This mechanism is designed to cooperate with a polygonal nut 39 which is secured to the upper end of shaft 26 for rotation therewith. As shown in FIG. 12 extending axially upward from nut 39 is a pin 40 which is made integral with and adapted to turn with the nut. Rotatably fitting over pin 40 is a sleeve 41. The sleeve is retained in position on the pin by a retainer ring 42 which is secured as by welding or otherwise to the upper end of the pin. The sleeve 41 is in turn provided with a laterally projecting boss portion 43 having a cylindrical passageway 43*a* therethrough, this passageway being at right angles with the axis of the sleeve. Journaled in the latter passageway is a pivot pin 44 which extends well past the ends of the extension, as is best seen in FIG. 15. The pin 44 provides pivotal support for the spaced legs 45*a* and 45*b* of a yoke-like member 45, the legs being apertured to fit over the pin and nuts 44*a* being threaded on the pin outside the legs. The legs 45*a* and 45*b* are spaced apart only a slightly greater distance than the distance between the parallel faces of the nut 39 so that the yoke will slip easily down over the nut when the legs are parallel with a pair of faces (the position illustrated in the drawings). The outer end of the yoke has formed therein an opening or recess 46 into which can be placed the end of any available tool such as a crowbar C or the like having small enough cross section to enter the recess. In the particular form of the invention here illustrated the yoke is formed by a pair of parallel bars and the recess is completed by including a tubular member 48 of rectangular cross section between the bars and welding it at its sides to the respective bars to form a rectangular opening.

The operation and effect of the turning mechanism is believed apparent from the drawings and the foregoing description. When the yoke 45 is in a position with the lower edges of the bars above the upper limits of the flat faces of the nut, the yoke can be turned freely relative the shaft to any position which is desired for the yoke. However, when the faces of the legs of the yoke are parallel with a pair of faces on the nut, the yoke is free to fall downwardly so that the inside faces of the yoke legs will lie adjacent a substantial portion of the nut faces. This position is illustrated in broken lines in FIGS. 13 and 16. With the yoke in the latter position, any force applied to the yoke tending to turn it about the axis of the shaft will cause a concurrent rotation of the shaft in that direction, assuming that the ratchet mechanism previously mentioned has been conditioned for the desired direction of rotation. The yoke lends itself to accomplishing rotation of the shaft with only short swings of the yoke since following each increment of rotation the yoke can again be lifted to a point where the yoke legs are free of the nut and move back to engage another pair of nut faces. It will be likewise evident that the operation is the same in either direction, there being not ratchet mechanism connected with the yoke to limit its free rotation once the legs thereof are free of the nut.

The manner of operation of the invention is as follows. In the case of a paper door constructed according to the representation of FIG. 1, the left-hand end of the door is brought into its approximate installed position with the strap ends separated from the paper. The strap ends are then threaded through the slots 29, the extent of threading being such that the end of the strap projects beyond the shaft and adjacent the rod 30, that is, generally in the position illustrated in FIG. 3 in the broken lines. As has previously been mentioned, in the manufacture of the strap receiving and tightening assembly S it is desirable that the rod be so located with respect to the shaft that the shaft can be turned to a position which permits the straps to be threaded through the shaft with a minimum of bending or flexing. The position shown in FIG. 3 is the preferred position for the rod relative the shaft, mounting bracket and jamb. The shaft, of course, will have been moved to a position in which its slot is indexed according to the broken lines in FIG. 3. While it is not absolutely necessary that the flange 31 on the rod be provided for engaging the strap ends, nevertheless its presence does assist in obtaining uniform position of the individual straps, each being inserted through a fixed distance. It is also possible to rather closely approximate the trued position of the paper door by eye.

Once the straps have been inserted and the door generally trued to a position in which all straps extend through the shaft to approximately the same extent, rotation of the shaft is commenced, the direction of rotation being counterclockwise as shown in FIG. 3. Immediately that rotation commences, the rod 30 will resist movement of the strap end portion projecting beyond the shaft and cause it to bend or crimp and take a permanent set which resists pulling of the strap from the slot. Rotation of the shaft is continued for approximately one and a half turns so that the crimped portion is covered by a further wrap. I have found that rotation of the shaft through one and a half revolutions causes sufficient coupling of the strap with the shaft to resist slippage under practically any tension which the strap itself will withstand.

Once the left-hand end of the paper has been secured to its receiving and tightening assembly as outlined above essentially the same procedure is followed with the straps at the right-hand end of the door. The straps are threaded through the slots 29 in the right-hand assembly while the paper door still remains slack. There is ordinarily enough slack in the door itself to permit rotation of the right-hand shaft through at least one full revolution thus to bring the crimped portion under the wrap of the strap as described above. Further rotation of the right-hand shaft causes the straps to draw taut and as will be evident they can be put under considerable tension due to the locking effect realized from the ratchet and pawl mechanism.

Following tightening of the door straps to the desired degree the flaps 24*a* are then brought into position adjacent the wall and can be battened to the wall, or left free, as may be desired, since material delivered into the car will serve to press them firmly into engagement with the inner sheathing.

Whenever it is desired to remove the door or to remove straps from either of the receiving and tightening assemblies the shaft 26 can be rotated in a direction to unwind the straps by simply manipulating the pawl handle 34 to release the shaft for reverse rotation. As will be evident, this facilitates disassembly of the doors from the car and there are no nails, hanging strap ends or the like to contend with.

The invention is not limited to use with paper doors of the type shown in FIG. 1. Doors of some manufacturers are so constructed as to make the straps integral with the paper throughout the full width thereof. In utilizing doors of this type it is necessary to initially prepare the door by disassociating a portion of the strap at each end from the paper to permit it to be inserted into a strap receiving slot. This, however, is a simple task.

FIGS. 7 to 10, inclusive, illustrate various modifications of the strap receiving and holding means which can be employed. FIGS. 7 and 8 illustrate an assembly wherein the shaft 126 is provided with a plurality of spaced and longitudinally aligned loops 129 which have a bight portion spaced from the shaft and a pair of inturned legs which are secured to the shaft as by welding or otherwise. In this instance it is not necessary to include the crimping rod or bar 30 present in the previous embodiment. However, in all other respects the assembly will be the same as that of the previous embodiment. As shown in FIG. 8 it is desirable in connecting a door with the strap receiving means to originally position the shaft so that the loops 129 can receive the straps 125 (shown in broken lines) without bending. Once the straps are all in place rotation of the shaft is then commenced in the direction shown by the arrows which causes

the straps to be successively reversely bent as illustrated in the succeeding broken line positions 125' and 125'' in the direction of rotation. It will be observed that the edge of plate 127 assists in the bending. Rotation of the shaft through approximately 240° brings the bent under end portion of the strap between an outer wrap and the shaft and from this point on the strap is firmly held to the shaft and can be wound thereon without slippage even though the resistance to winding may be very great.

In the embodiment shown in FIG. 9, the loops 129 of the previous embodiment are replaced by lugs 229, which are generally L-shaped in appearance. It will be observed that one leg of each lug is spaced from and parallel with the axis of the shaft 226 while the other is turned inwardly and is secured to the shaft as by welding or otherwise. The operation of the embodiment shown in FIG. 9 is essentially the same as that described in connection with FIG. 8, the main difference being that it is not required to thread the straps through loops. In the FIG. 9 embodiment the straps can simply be dropped into the open space between the free end of the vertical leg of the L and the shaft.

In FIG. 10 there is illustrated a strap shaft 326 which is square rather than round in cross section. It will be observed that this shaft is provided with slots 329 as in the original embodiment. In this instance the assembly is equipped with a crimping bar rod 330 which operates exactly in the same fashion as described in connection with FIGS. 1 through 6. In some cases the square shaft may have an advantage as it causes further bending and deformation of the strap during winding, the strap necessarily conforming to the square cross section of the shaft.

It is contemplated that various combinations of the shafts may be employed in a single car. For example, the left-hand strap receiving and tightening assembly S may include a slotted shaft of the type illustrated in FIGS. 5 and 6 while the right-hand may include a shaft equipped with strap receiving and tightening means according to either FIGS. 7, 8 or 9. Other combinations will be evident.

While in FIGS. 1 through 3, inclusive, I have shown the strap receiving and tightening assemblies S disposed in recesses formed behind the door jambs, in some railway cars or other transport vehicles it may be desirable for one reason or another to secure the assemblies to the inside edge of the jamb or sheathing of the car, as is illustrated at S' in FIG. 11. This figure illustrates a typical cross section through a railway car, the roof being indicated at 450, the side walls at 460, the floor at 470 and the door openings at 480. FIG. 11 likewise illustrates a further advantage of the invention in that straps 425 can be connected with corresponding assemblies S' on opposite sides of the car and tightened therebetween to form a strap barrier extending transversely through the car and partitioning it into separate storage compartments. This feature of the invention is particularly advantageous in the shipping of goods carried in cartons or drums in which it is desired to prevent excessive shifting of the cartons or drums during the shocks and jars to which the cars are inevitably subjected from time to time during movement from one point to another. The straps alone can likewise be used to cross the door openings in place of the doors in transporting packaged goods, the straps serving the purpose of preventing the packages from engaging the main doors of the car and jamming them so that they cannot be opened for inspection or unloading without a great deal of difficulty.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth together with other advantages which are obvious and which are inherent to the structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

Since many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. A transport vehicle having a side door opening and equipped with apparatus for mounting a flexible reinforced closure across said opening, the closure including straps formed of bendable material and positioned parallel with one another and adapted to extend across the door opening, said apparatus comprising a pair of parallel shafts, one shaft on each side of the opening, means secured to the vehicle and supporting said shafts for rotation about their respective longitudinal axes, each shaft provided with strap guiding surfaces defining openings through which the opposite end portions of the straps are adapted to be loosely inserted with the respective ends of the straps spaced laterally away from the shafts on the opposite sides of the shafts from the closure, stationary means positioned adjacent each shaft and presenting strap engaging surfaces operable, in cooperation with said guiding surfaces and upon rotation of said shafts in one direction, to laterally engage said straps between said ends and the adjacent shaft and simultaneously crimp said straps on said opposite sides of the shaft to prevent longitudinal withdrawal of the strap end portions from the openings whereby to cause the straps to wind upon themselves upon the shafts as rotation of the shafts continue, and releasable locking means connected with each shaft normally operable to permit step by step rotation of each shaft in one direction only whereby as said straps are tightened, they will be retained under tension until such time as at least one locking mechanism is released.

2. Apparatus as in claim 1 wherein said openings are formed as a plurality of slots in said shaft, the slots spaced longitudinally along the shaft and parallel with the axes of the shafts and of a width sufficient to receive portions of the straps therethrough.

3. Apparatus as in claim 1 wherein said openings are defined by a plurality of loops formed on the outside of the shaft, each loop of greater width than a strap and spaced to permit passage of a strap end through the loop.

4. Apparatus as in claim 1 wherein said openings are defined by a plurality of L-shaped members secured to and spaced longitudinally along the shaft, one leg of each L lying parallel with and spaced from the shaft, said one leg of a length at least equal to the width of a strap.

5. Apparatus as in claim 1 wherein the openings on one shaft are formed as a plurality of slots provided in said shaft, the slots parallel with the axis of the shaft and of a width to receive portions of the straps therethrough, and on the other shaft are defined by a plurality of loops formed on the outside of the shaft, each loop having a bight portion parallel with the shaft and spaced from the shaft sufficiently to permit passage of a strap end through the loop between the bight and shaft.

6. Apparatus as in claim 1 wherein the openings on one shaft are formed as a plurality of slots formed in said shaft, the slots parallel with the axes of the shaft and of a width to receive portions of the straps therethrough, and on the other shaft are defined by a plurality of L-shaped members secured to and spaced longitudinally along the shaft, one leg of each L lying parallel with and spaced from the shaft, said one leg of a length at least equal to the width of a strap.

7. Apparatus as in claim 1 wherein the openings on one shaft are defined by a plurality of loops formed on the outside of the shaft, each loop having a bight portion parallel with the shaft and spaced from the shaft sufficiently to permit passage of a strap through the loop between the bight and the shaft, and on the other shaft by a plurality of L-shaped members secured to and spaced longitudinally along the shaft, one leg of each L lying

parallel with and spaced from the shaft, said one leg of a length at least equal to the width of a strap.

8. Apparatus as in claim 1 wherein said shafts include means at the upper end manually operable to rotate said shafts about their axes in said one direction.

9. Apparatus as in claim 8 wherein said last mentioned means includes an operating member, and a releasable drive connection for said operating member including a drive member movably supported relative said operating member and having a first position in which it is drivingly connected with said operating member and a second position in which it is freely rotatable relative the operating member.

10. For use in combination with a reinforced closure for a door opening of a transport vehicle, said closure of the type which includes spaced parallel reinforcing straps of bendable material having oppositely extending free end portions, apparatus for mounting said closure across the door opening comprising a pair of parallel shafts, one on each side of said opening, means secured to the vehicle and supporting said shafts for rotation about their respective longitudinal axes, each shaft including strap receiving means positioned to receive therethrough the respective free end portions of the straps with the ends of straps projecting beyond the shafts and arranged to loosely confine said straps against sidewise movement away from said shaft, stationary abutment means positioned adjacent each shaft and having strap engaging surfaces which cooperate with the strap receiving means, upon rotation of the shaft in one direction, to form a sharp bend in each strap at a location which, unless the bend is removed, prevents longitudinal withdrawal of the strap end portions from the strap receiving means whereby to cause the straps to be wound upon themselves on the shaft as rotation in said one direction continues, and a releasable locking means connected with each shaft and manually operable to permit step by step rotation of each shaft in said one direction only whereby as said straps are drawn up they will be retained under tension until such time as at least one locking means is released.

11. Apparatus for mounting a reinforced closure across the door opening of a transport vehicle, the closure being of the type having a plurality of parallel free strap end portions of bendable material at one side edge thereof, said apparatus including means for fixedly securing the other side edge of the closure to the vehicle at one side of said opening, a shaft at the other side of said opening, means secured to said vehicle and supporting said shaft for rotation about its longitudinal axis, said shaft including strap receiving means positioned to receive therethrough the strap end portions with the strap ends projecting beyond the shaft and arranged to loosely confine said portions against sidewise movement away from the shaft, stationary abutment means positioned near the shaft having strap engaging surfaces which cooperate with the strap receiving means, upon rotation of the shaft in one direction, to form a sharp bend in each strap end portion at a location which, unless the bend is removed, prevents longitudinal withdrawal of the strap end portions from the strap receiving means whereby to cause the straps to be wound upon themselves as rotation in said one direction continues.

12. Apparatus as in claim 11 wherein said strap receiving means comprises a plurality of slots formed in said shaft, the slots spaced longitudinally along the shaft and parallel with the axes of the shafts and of a width sufficient to receive portions of the straps therethrough.

13. Apparatus as in claim 11 wherein said strap receiving means comprises a plurality of loops formed on the outside of the shaft, each loop of greater width than a strap and spaced to permit passage of a strap end through the loop.

14. Apparatus as in claim 11 wherein said strap receiving means comprises a plurality of L-shaped members secured to and spaced longitudinally along the shaft, one leg of each L lying parallel with and spaced from the shaft, said one leg of a length at least equal to the width of a strap.

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