Aug. 7, 1951 S. M. NAMPA 2,563,799

FREIGHT BRACING

Filed Sept. 8, 1945 2 Sheets-Sheet 1

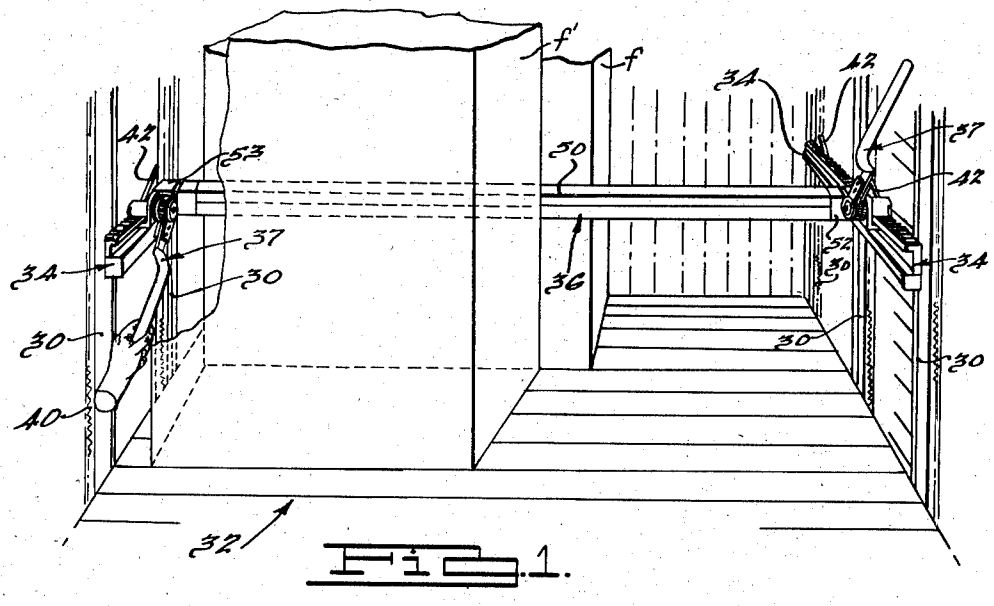

Fig. 1.

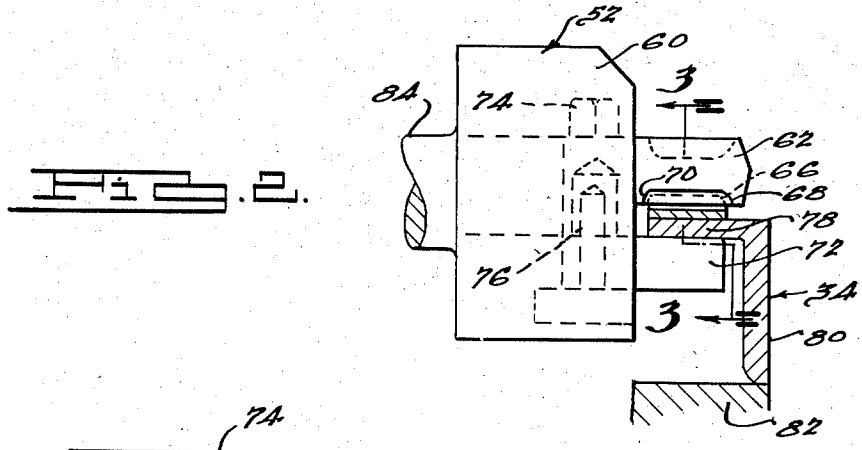

Fig. 2.

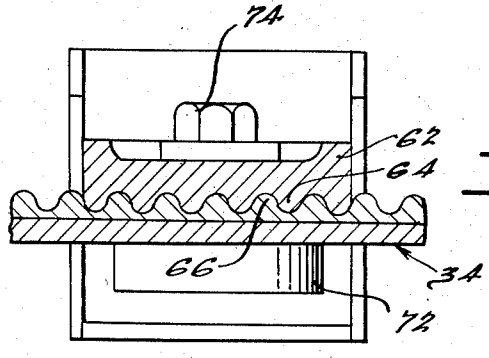

Fig. 3.

INVENTOR.
Sulo M. Nampa.
BY
Harness, Dickey & Pierce.
ATTORNEYS.

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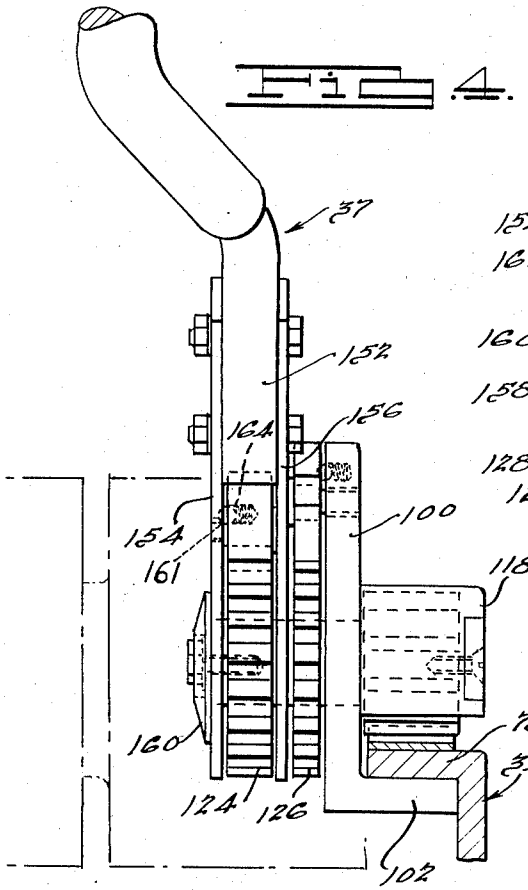
FIG. 4.



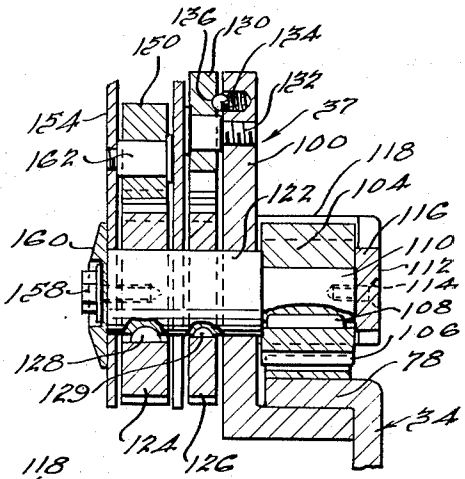
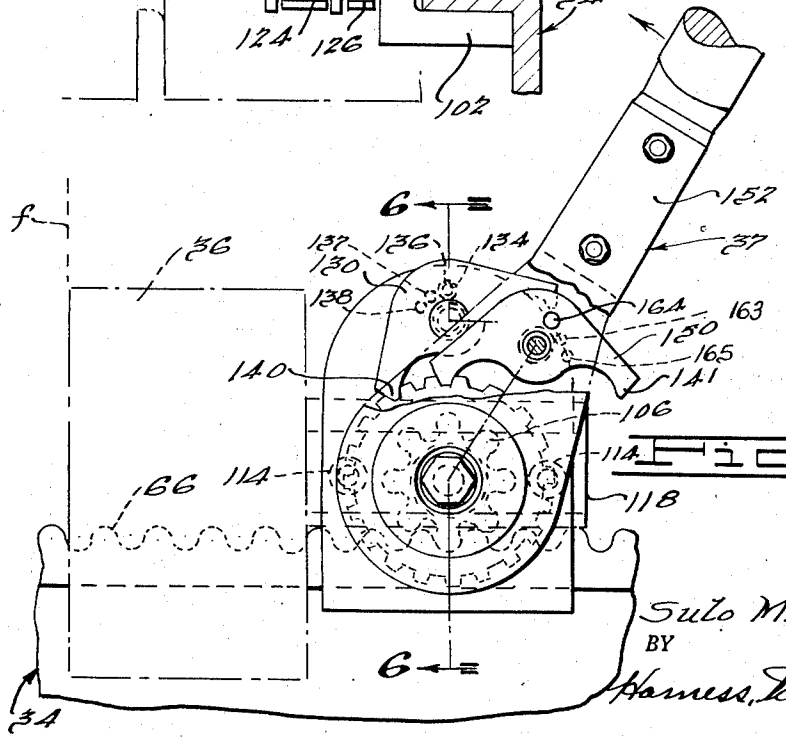


FIG. 5.



INVENTOR.
Sulo M. Nampa.
BY
Harness, Dickey & Pierce
ATTORNEYS.

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UNITED STATES PATENT OFFICE

2,563,799

FREIGHT BRACING

Sulo Michael Nampa, Detroit, Mich., assignor to Evans Products Company, Detroit, Mich., a corporation of Delaware

Application September 8, 1945, Serial No. 615,196

26 Claims. (Cl. 105—369)

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The present invention relates to improved loading apparatus for freight articles of different types, and for use in vehicles or other storage spaces, and more particularly, to improved equipment of this nature having certain parts which are built into or combined with a vehicle, such as a railway freight car, or other storage space, and having certain other parts which are adjustably and variously cooperable with the built-in parts, the several parts of the equipment cooperating to hold (that is, for example, to brace, support or carry, space wedge or provide shelves, partitions or bins for) a wide variety of feright articles. The invention is particularly directed to improved methods of and apparatus for moving freight articles to, or wedging or bracing such articles in, a desired position in a storage space.

Applicant's copending application Serial No. 469,719, filed December 21, 1942, as a continuation of applicant's copending but now abandoned application Serial No. 434,357, filed March 12, 1942, discloses and claims certain features of a loading organization which, as specifically disclosed, comprises two series of upright supporting members arranged at the respectively opposite sides of, and permanently secured to, a freight car; wall members which are adjustably and removably supported by the uprights; and cross members which are disposed to be supported at their ends by wall members at the opposite sides of the car, so that the cross members extend across the car. The cross members may be used to form or to support bulkheads, to form or support decking arrangements, to support cooperating upright and horizontal members utilized to sub-divide the storage space longitudinally, as well as for a variety of other purposes, all as set forth with greater particularity in the above-identified copending application.

The present method and apparatus are particularly concerned with the application to the freight, of bulkheads or other holding members, which serve to secure the freight articles in proper position on the floor of the car on decks, or the like, so as to prevent them from shifting movements in response, for example, to road shocks or shocks which are incidental to switching operations; and constitute improvements upon and modifications of the method and apparatus disclosed and claimed in applicant's copending application Serial No. 475,082, filed February 8, 1943, now Patent No. 2,466,728, April 16, 1949, as a division of said application Serial No. 434,357.

In common with the above-identified divisional application, the present improvement comprises

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the use of a tool having load engaging and anchor portions between which a force may be applied and which tool may be anchored to a fixed part of the storage space at any of a plurality of points therein, so that the application of the just-mentioned force advances the load engaging portion relative to the anchor point whereby to wedgingly advance the load engaging portion. In the present improvement, however, the arrangement is such that the application of the just-mentioned force is also effective to cause the tool to advance from one anchor point to a succeeding anchor point. With this relation, the operation of the force applying member causes the tool to automatically advance along the fixed supporting part associated with the storage space, during which advance the tool forces the freight holding member to correspondingly advance. This feature relieves the operator of the otherwise existing necessity of, in certain cases, initially applying and thereafter repeatedly removing and re-applying the tool to successive anchor points.

A particular feature of the present construction is its flexibility and its adaptability for use in confined quarters. It may be expected that the freight articles to which the adjusting force is to be applied will be stacked, in many cases, relatively close to the walls which carry the supporting loading members. The present tool is one in which the operating handle may be swung, in any desired quadrant, or portion of a quadrant, in a plane substantially parallel to and immediately adjacent the wall which carries the supporting loading structure. Proper use of the tool, accordingly, is not interfered with by flat articles positioned immediately adjacent such wall.

With the above as well as other considerations in view, the principal objects of the present invention are to provide an improved method and apparatus, as outlined above, which are simple and which may be economically and efficiently utilized; to provide such arrangements embodying an improved construction of wedging tool; to provide such arrangements including an improved combination of a wedging tool with additional freight loading elements; to provide an improved wedging tool which is generically useful; and to generally improve and simplify freight loading systems.

Other and more detailed objects of the invention appear in the following description and in the appended claims.

In the drawings which show a preferred but illustrative embodiment of the invention and

throughout the several views of which corresponding reference characters are used to designate corresponding parts;

Figure 1 is a general view in perspective of a freight holding arrangement in combination or in conjunction with which the improved tool of the present invention may be utilized;

Fig. 2 is a fragmentary view showing the holding relation which obtains between a freight holding bar and its associated supporting structure, in the arrangement of Fig. 1;

Fig. 3 is a view in vertical section, taken along the line 3—3 of Fig. 2;

Fig. 4 is a view in end elevation of the present improved wedging tool, showing the manner in which it may be utilized in connection with the structure of Figs. 1, 2 and 3;

Fig. 5 is a view in side elevation of the structure of Fig. 4; and

Fig. 6 is a view in vertical section, taken along the line 6—6 of Fig. 5.

It will be appreciated from a complete understanding of the inventive features to be claimed in this application, that in a generic sense they may be embodied in or used with a wide variety of freight loading or other material handling systems. The disclosure of these features in particular forms, and as embodied in or used with particular types of loading apparatus, is, consequently, to be regarded in an illustrative and not in a limiting sense.

Referring first to Figs. 1, 2 and 3, the illustrated arrangement comprises generally corresponding series of upright supporting members 30 arranged in aligned relationship at the opposite sides of a freight car 32; a series of wall members 34, which are disposed at opposite sides of the car and are adjustably supported by and between adjacent pairs of uprights 30, and a cross member 36, which extends across the car and is supported at its ends upon a pair of wall members 34. As shown, the car 32 is partially occupied by a freight article *f*, which is wedgingly held in place at the end of the car by the cross member 36. In the herein disclosed embodiment of the invention, the hereinafter described wedging tool 37 is initially applied to one or the other of the engaged wall members 34 and is thereafter advanced therealong so as to force the cross member 36 into desired wedging relation to the freight article *f*. In Fig. 1, two such tools 37 are indicated in different operating positions, although in the preferred practice of the invention each tool may be interchangeably used at both sides of the freight chamber, so that a single tool may be, in many cases, sufficient. In Fig. 1, also, an additional freight article *f'* is positioned near one side of the car and in advance of the cross bar to illustrate a freight loading situation (discussed below) which is frequently met in practice, and to the solution of which the present tool is admirably adapted.

As is described in more detail in the aforesaid copending applications, the uprights 30 are provided along their outer surfaces with continuous rows of rounded, regularly spaced tooth-like projections 40, which cooperate with complemental tooth-like projections (not shown) provided on the hangers 42, which are secured to the respectively opposite ends of the wall members 34. These cooperating series of tooth-like projections enable the individual members 34 to be readily removed from and applied to desired pairs of uprights 30, at any desired position of adjustment vertically thereof. The wall members 34 at one side of the car may thus be arranged at the same or different elevations relative to each other and any desired number of such wall members may be applied to a particular bay (the space between adjacent uprights). Reference is here made to the disclosure of the aforesaid copending applications for further details of the supporting relation between the wall members 34 and the uprights 30.

A shown, the cross member 36 is provided with a body portion 50, adapted to engage the freight article *f*, and with end heads 52 and 53, which are adapted to interlockingly engage the associated supporting members 34. In accordance with the disclosures of said copending applications, one or both of the heads 52 and 53 may be arranged so that the length of the bar is adjustable, whereby to accommodate the bar to different car widths and in addition, if desired, the body of the bar may be made rockable with respect to the heads, whereby to accommodate the structure to angled freight surfaces. In addition, as disclosed and claimed in applicant's copending application, Serial No. 121,424, filed October 14, 1949, and Patent No. 2,513,348, both assigned to the assignee of the present invention, the heads 52 and 53 may be swiveled to the body 50 so as to permit the bar 36 to be disposed with the ends thereof at substantially different elevations and/or with one end substantially nearer the end of the car than the other.

Referring particularly to Figs. 2 and 3, the right-hand head 52 is illustrated as embodying one of the constructions described in detail in the aforesaid copending applications Serial Nos. 434,357 and 475,082, to which reference is made for a disclosure of such details as are not included herein. As shown, the head 52 comprises a body 60, from one side of which a jaw 62 projects. The underside of this jaw is provided with a series of rounded, evenly spaced, tooth-like projections 64, which are complemental to and normally mesh with corresponding tooth-like projections 66, which are either formed integrally with or are secured to the upper surfaces of the wall members 34. The ends of the interdental spaces between the projections 64 are closed by the jaw portions 68 and 70, which cooperate with the ends of the projections 66 to limit movement of the jaw relative to the wall member in a direction parallel to the axis of the bar 36. The spacing between the portions 68 and 70, however, accommodates some slight movement in the justmentioned direction. The body 60 also supports a latch member 72, which is fixed to a control stud 74. Rotation of the stud 74 is effective to retract the latch 72 from the projected position, shown in Fig. 2, to a position within the body 60, in which it does not interfere with a vertical separating movement between the head 52 and the associated wall member 34. Suitable means indicated generally by the reference character 76 are provided to limit the range of movement of the latch 72 and to also yieldingly restrain it in either its projected or retracted position.

When projected, the latch 72 lies beneath the horizontal flange 78 of an angle member 80, which, with a buffer bar 82, constitutes the main body of the wall member 34. When so positioned, the latch 72 holds the teeth 64 and 66 in meshing relation, as shown in Fig. 3.

Assuming very close tolerances, it will be appreciated that the holding relation thus afforded would positively require that the bar 36 project at right angles from the associated wall member 34, in which event the heads 52 and 53 would be required to be engaged with corresponding

projections 66 at opposite sides of the car. Manufacturing tolerances permit some little departure from the just-mentioned 90° relationship, which fact is advantageous for certain loading purposes. For example, as shown in Fig. 1, the freight article *f* does not extend entirely across the car 32. To enable the bar 36 to serve as a bulkhead which positively prevents the freight article from moving lengthwise of the car and also prevents it from moving crosswise of the car, it is usual in the practice of the invention to lock the head 52 at a point somewhat nearer the end of the car than the point at which the head 53 is locked. This angled wedging action is permitted by the just-mentioned manufacturing tolerances.

The left-hand face of the body 60 is provided with a shank 84, which cooperates with means in the bar body 50, as described in the aforesaid applications, to allow a controlled amount of expansion or contraction of the length of the bar. The shank 84 may also cooperate with the just-mentioned means in the bar body to permit a controlled rocking action of the bar body about its own axis relative to the head 52.

The head 53 may and preferably does duplicate the head 52, with the exception that the associated shank 84 need not be arranged to permit the above-mentioned controlled change in length of the bar, since all of the necessary change in length can be afforded at one end thereof.

As thus far described, it will be appreciated that the bar 36 may be applied to a pair of oppositely positioned wall members 34 with the latches 72 retracted. Thereafter and while the bar is supported by the wall members, it may be advanced lengthwise of the car, during which movement the rounded teeth 64 ride over the rounded teeth 66. In accomplishing this movement, the ends may be advanced simultaneously, or they may be advanced in alternate step-by-step fashion. When the final desired bar position is reached, the latches 72 may be turned into locking position.

The improved wedging tool 37 of the present invention is shown in detail in Figs. 4, 5 and 6 and is utilized, as will be understood, to apply a wedging or advancing force to the bar 36 to consequently tightly wedge or secure the latter in place relative to the freight article. Referring to these figures, the improved tool comprises generally a plate-like body member 100, having at its lower edge an outwardly turned flange 102, which in normal use slidably engages the under surface of the previously mentioned flange 78, associated with the wall member 34. The body 100 carries a pinion 104, provided with rounded teeth 106, which are suitably shaped and spaced to mate with the teeth 66 carried by the wall member 34. The pinion 104 is keyed, by a key 108, to the reduced portion 110 of a trunnion. A plate 112 is secured, as by a screw 114, to the outer end of the portion 110, and this plate is rotatably journalled in a bearing opening 116 provided in a hood 118, which projects outwardly from the body 100 in vertically aligned relation with the flange 102. The enlarged portion 122 of the trunnion is journalled in a bearing opening provided therefor in the body 100.

The enlarged portion of the trunnion also carries a pair of toothed ratchet wheels 124 and 126, which are keyed thereto by the respective keys 128 and 129. The number of teeth on the wheels 124 and 126 is preferably equal, and this number preferably is in excess of the number of teeth on the pinion 104. This facilitates the operation of the tool in crowded quarters, since it enables the advance of the pinion 104 from one tooth 66 to the next tooth 66 to be effected in a plurality of steps.

The ratchet wheel 126 is provided to prevent retrograde movements of the tool and has associated therewith a holding pawl 130, which is pivotally mounted upon the body 100 by means of a headed pin 132. A spring-biased detent 134 is carried by the body 100 and is cooperative with any one of three depressions 136, 137 and 138 in the pawl 130 to yieldingly hold the pawl in either the position of Fig. 5, a central position, or an opposite position. In the illustrated position, the pawl tooth 140 engages the teeth of the ratchet wheel 126 in such relation as to permit a counterclockwise rotation thereof, but to prevent a clockwise rotation thereof. In its opposite position, the pawl tooth 141 engages the teeth of the ratchet wheel 126 in such relation as to permit clockwise rotation thereof, but to prevent counterclockwise rotation. In its central position the pawl does not interfere with rotation of the wheel 126.

The advancing ratchet 124 is disposed for actuation by an advancing pawl 150, which is carried by the handle 152. More particularly, the lower end of the handle 152 is defined by a pair of spaced legs 154 and 156, which are freely journalled on the enlarged portion of the previously mentioned trunnion, and are held in place thereon by the associated screw 158 and washer 160. The ratchet wheel 124 is disposed between the just-mentioned legs. The pawl 150 is rotatably secured to the leg 154 by means of a headed pin 162. The pawl 150 carries a spring-pressed detent 164, which is cooperative with spaced recesses 161, 163, and 165 in the leg 154, to yieldingly hold the pawl 150 in the rotative position shown in Fig. 5, in a central position, or in an opposite position displaced therefrom, in a clockwise direction. In the illustrated position, the pawl 150 cooperates with the teeth of the ratchet wheel 124 to cause counterclockwise movement of the latter in response to counterclockwise movement of the handle 152. During clockwise movement of the handle 152, the pawl 150 rides out of the ratchet wheel teeth, as will be understood. It will further be understood that the detent 164 has sufficient play in its recesses to allow the just-mentioned movement of the pawl 150 past the ratchet wheel teeth. In the opposite position, the pawl 150 cooperates with the ratchet wheel 124 to cause clockwise rotation of the latter in response to clockwise movements of the handle 152.

Considering now the use of the tool, it will be appreciated that it may be fitted onto a particular wall member from the side thereof, during which movement the flange 102 slides underneath the associated flange 78, and the lowermost tooth or teeth of the pinion 104 cooperatively engages one or more of the teeth 66. Usually the tool would be so applied as to bring the leading end of the housing 118 into engagement with or immediately adjacent the face of the associated bar 36. When so positioned, the holding pawl 130 prevents a rotation of pinion 104 in a clockwise direction, as viewed in Fig. 5, thereby preventing a retrograde movement of the tool and bar 36 relative to the engaged freight article *f*. When so positioned, also, the handle may be rocked counterclockwise from either the initial position shown in Fig. 5, or a starting position which is considerably displaced

therefrom in a clockwise direction. It will be understood that the starting point of the handle will depend upon the amount of space in which the operator can work. Each counterclockwise movement of the handle **152** causes a corresponding counterclockwise rotation of the pinion **104**, thereby causing it to roll along the rack-like teeth **66** and correspondingly advance the bar. During this movement, the holding pawl **130** snaps out of and into engagement with successive teeth of its ratchet wheel **126**, its detent **134** having sufficient play to accommodate these snapping movements. Release of pressure on the handle **152** at the end of the just-mentioned counterclockwise advance renders the pawl **130** effective to hold the tool in the advanced position corresponding to the then engaged tooth of the ratchet wheel **126**. This holding relation is also operative during the clockwise movement of the handle **152** to a new starting position. During the return movement of handle **152**, its pawl **150** rides over the teeth of wheel **124**, its detent **164** having sufficient play to accommodate this movement.

It will be noticed that at the beginning of each clockwise or advancing movement of the handle **152**, at least one pinion tooth **106** is anchored against at least one rack tooth **66**. The handle movement applies a force to the tool body which advances the latter relative to this anchor point. In addition, it will be noted that the advancing movement of the handle also carries the pinion **104** into anchored relationship to a succeeding rack tooth **66**. In addition, therefore, to afford the wedging action which characterizes the invention of said copending application Serial No. 475,082, the present structure may be characterized in that actuation of the handle also causes the anchor point to automatically advance from one tooth to another.

It will be noted that the axis of the pinion **104** lies well within and immediately adjacent the center of the area of the hood **118**, which engages the bar **36**. With this relation, the rotative force applied to the tool by the handle **152** does not subject the former to any substantial tendency to rotate bodily. Consequently, the flange **102** of the tool readily slides along the underside of the flange **78** carried by the wall member **34**.

It will be noted, also, that by throwing the pawls **130** and **150** to their opposite positions, they condition the tool to effect advancing movements to the right, as viewed in Fig. 5, in response to successive clockwise movements of the handle **152**. Such reversal would correspond to the action needed in advancing the other end of the bar **36**. The present tool can thus be used in both left-handed and right-handed positions.

It is to be noted, also, that the handle **152** is rotatable, subject to the action of its pawl, through a full 360°. Depending upon the character of the freight article, therefore, the handle movements may take place in the region either above or below the level of the associated bar **36**. It is to be particularly noted also that all handle movements take place in a plane which is substantially parallel to and immediately adjacent the walls which carry the loading members between which the tool cooperates. This relationship makes it possible to freely use the tool in crowded quarters. For example, the tool may be used in a very confined space between such a wall and a flat article. The ready adaptability of the present tool to working in close quarters makes it possible to provide it with a longer handle than would otherwise be possible, thereby providing a very high mechanical advantage, which mechanical advantage, it will be noticed, is uniform, and does not vary with the rotative position of the handle with respect to the body of the tool.

The ability of the tool to work in a relatively narrow slot between the wall of the car and the adjacent freight articles particularly adapts it to the solution of freight loading problems which are illustrated by a previously mentioned freight article *f'* in Fig. 1. Ordinarily, a freight article such as *f'* would not be moved into position near the cross bar **36** until the latter had been properly wedged in place against the associated freight article such as *f*. From time to time, however, the workmen who are delivering crates to the workman who is doing the wedging, gets slightly ahead of the latter, making it necessary for the latter to complete the wedging of the bar **36** by working in the relatively narrow slot between the freight article *f'* and the wall of the car. Again, it may happen that a workman will fail to wedge certain of the bars tightly enough in place, so that a final inspection before transit would indicate that further take-up movements should be effected. It is not customary to load freight to the full height of the car. Consequently, a workman is enabled to get on top of the freight and by reaching down into the slots at the respectively opposite sides of the car, he is enabled to properly position the tool and apply additional wedging force to such cross bars as may need attention.

With respect to the required width of the slot, it is noted that it is generally considered good practice to leave a slot at each side of the car which is at least as wide as the heads **52** associated with the cross bars. These heads are usually metallic whereas the central body portions of the bar are usually provided with buffer surfaces formed of wood or the like. By leaving the slots at either side, so that the freight articles engage only the wooden body portions of the bars, the freight is better protected, as will be understood. These heads **52** may be of such a width as to require, for the just-mentioned reasons, slots which are perhaps three to four inches wide. It will be noticed, particularly from Figure 4, that the over all thickness of the tool is considerably less than the width of the heads **52**. Thus, the tool can be lowered into one of the aforementioned slots, and then laterally moved in the slot to fit it over the corresponding bay member **34**. The handle portion of the tool is slightly offset from the end thereof at which it is connected to the body of the tool, so as to give clearance between the operator's hand and any other bay members **34** which may be located within the arcuate swing of the handle. Such offset is not sufficient to interfere with the introduction of the tool into the aforementioned slot.

Although only a single embodiment of the invention has been described in detail, it will be appreciated that varous modifications in the form, number, and arrangement of parts may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. In a freight loading system for bracing a freight load, the combination of a loading member, means including a support for supporting the loading member, the member and the support having co-engaging interlocking means which enable the loading member to interlock-

ingly engage the support at any of a plurality of points along the support so as to oppose movement of the member along the support, and an adjusting member having means engageable respectively with the said support and with the loading member and including means whereby a force may be applied through it between said loading member and said support so as to force said loading member along said support from one said point to another, said adjusting member further including means to cause said force to also cause the entire adjusting member to advance along the support.

2. In a freight loading system for bracing a freight load, the combination of a loading member, means including a support for supporting the loading member, the member and the support having co-engaging interlocking means which enable the loading member to interlockingly engage the support at any of a plurality of points along the support, an adjusting member having means engageable respectively with the said support and with the loading member and including means whereby a force may be applied through it between said loading member and said support so as to force said loading member along said support from one said point to another, said adjusting member further including means to cause said force to also cause the adjusting member to advance as a whole along the support, and means for preventing retrograde movement of the adjusting member relative to the support.

3. In a freight loading system for bracing a freight load, the combination of a loading member, supporting structure including a support for the loading member, the loading member and the support having co-engaging interlocking means which enable the loading member to interlockingly engage the support at any of a plurality of points along the support so as to oppose movement of the member along the support, and an adjusting member having means engageable respectively with the supporting structure and with the loading member, and including means whereby a force may be applied through it to the loading member so as to force said loading member along the support from one said point to another, said adjusting member further including means to cause said force to also cause the entire said adjusting member to advance along the support.

4. In a freight loading system for bracing a freight load, the combination of a loading member, supporting structure including a support for the loading member, the loading member and the support having co-engaging interlocking means which enable the loading member to interlockingly engage the support at any of a plurality of points along the support, an adjusting member having means engageable respectively with the supporting structure and with the loading member and including means whereby a force may be applied through it to the loading member so as to force said loading member along the support from one said point to another, said adjusting member further including rotary means to cause said force to also cause said entire adjusting member to advance along the support, and means for preventng retrograde movement of the adjusting member relative to the support.

5. In a freight loading system for bracing a freight load, the combination of a loading member, supporting structure including a support for the loading member, the loading member and the support having co-engaging interlocking means which enable the loading member to interlock-

ingly engage the support at any of a plurality of points along the support so as to oppose movement of the member along the support, and an adjusting member disposed to engage the supporting structure, said adjusting member having means operable to apply a force between it and the supporting structure for causing it as a whole to advance therealong, and said adjusting member further having means engageable with the loading member whereby said advance causes a corresponding advance of the loading member.

6. In a freight loading system for bracing a freight load, the combination of a loading member, supporting structure including a support for the loading member, the loading member and the support having co-engaging interlocking means which enable the loading member to interlockingly engage the support at any of a plurality of points along the support, an adjusting member disposed to engage the supporting structure, said adjusting member having means operable to apply a force between it and the supporting structure for causing it as a whole to advance therealong, said adjusting member further having means engageable with the loading member whereby said advance causes a corresponding advance of the loading member, and means for preventing retrograde movement of the adjusting member relative to the support.

7. In a freight loading system for bracing a freight load, the combination of a loading member, means including a support for supporting the loading member, the member and the support having co-engaging interlocking means which enable the loading member to interlockingly engage the support at any of a plurality of points along the support so as to oppose movement of the member along the support, and an adjusting member disposed to engage the support, said adjusting member having means operable to apply a force between it and the support for causing it as a whole to advance therealong, and said adjusting member further having means engageable with the loading member whereby said advance causes a corresponding advance of the loading member.

8. In a freight loading system for bracing a freight load, the combination of a loading member, means including a support for supporting the loading member, the member and the support having co-engaging interlocking means which enable the loading member to interlockingly engage the support at any of a plurality of points along the support, and an adjusting member disposed to engage the support, said adjusting member having rotary means operable to apply a force between it and the support for causing it to advance therealong as a whole, said adjusting member further having means engageable with the loading member whereby said advance causes a corresponding advance of the loading member, and means for preventing retrograde movement of the adjusting member relative to the support.

9. In a freight loading system for applying a force to and adjustably moving a freight loading member, the combination of a support having a plurality of interlocking surface means distributed thereover for direct supporting engagement by the loading member and an adjusting member having means coperable with the loading member and having additional means engageable with any of the said surface means so that when a said force is applied to the adjusting member the

said engaged surface means act as an anchor point for the adjusting member and cause said force to be transmitted to and move the loading member, said adjusting member also including means to cause said force to cause the said additional means to advance along said surface means whereby said anchor point is advanced.

10. In a freight loading system for applying a force to and adjustably moving a freight loading member, the combination of a support having a plurality of interlocking surface means distributed thereover for direct supporting engagement by the loading member and an adjusting member having means cooperable with the loading member and having additional means engageable with any of the said surface means so that when a said force is aplied to the adjusting member the said engaged surface means act as an anchor point for the adjusting member and cause said force to be transmitted to and move the loading member, said adjusting member also including means to cause said force to cause the said additional means to advance along said surface means whereby said anchor point is advanced, and means for preventing retrograde movement of the adjusting member relative to the support.

11. In a freight loading system for applying a force to and adjustably moving a freight loading member, the combination of a support having a plurality of interlocking surface means distributed thereover for direct supporting engagement by the loading member, and an adjusting member having means interlockingly engageable with any of said surface means and having means operable to apply a force between it and the support whereby to cause it to advance as a whole along the support, said adjusting member further including means engageable with the loading member whereby said advance causes a corresponding advance of the loading member.

12. In a freight loading system for applying a force to and adjustably moving a freight loading member, the combination of a support having a plurality of interlocking surface means distributed thereover for direct supporting engagement by the loading member, an adjusting member having means interlockingly engageable with any of said surface means and having means operable to apply a force between it and the support whereby to cause it to advance along the support, said adjusting member further including means engageable with the loading member whereby said advance causes a corresponding advance of the loading member, and means for preventing retrograde movement of the adjusting member relative to the support.

13. The combination of claim 5 including means actuable to secure the loading member in selected advanced positions and further including releasable means acting between the supporting structure and the adjusting member for preventing retrograde movement of the latter pending actuation of said securing means.

14. The combination of claim 7 including means actuable to secure the loading member in selected advanced positions and further including releasable means acting between the support and the adjusting member for preventing retrograde movement of the latter pending actuation of said securing means.

15. The combination of claim 11 including means actuable to secure the loading member in selected advanced positions and further including releasable means acting between the support and the adjusting member for preventing retrograde movement of the latter pending actuation of said securing means.

16. The combination of claim 11 wherein the surface means comprise a succession of tooth-like projections and said interlockingly engageable means includes a rotatable toothed element having gearlike cooperation with said projections.

17. In a freight loading system for applying a force to and adjustably moving a freight loading member, the combination of a support having a plurality of interlocking surface means distributed lengthwise thereof for direct supporting engagement by the loading member, and an adjusting member having a pair of relatively movable elements, one of said elements being slidably guided on said support for movement lengthwise thereof and being cooperable with the loading member, the other element being movably mounted and cooperable with any of said surface means to afford a movably advancing anchor for said adjusting member, and means for applying a force to said adjusting member in a direction tending to cause at least said one element and said anchor to advance relative to said support to thereby apply a force to said loading member in a direction lengthwise of said support.

18. In a system for applying a force to freight to urge it along a wall adjacent to which it is positioned, the combination of an elongated support on the wall extending therealong in the direction said freight is to be urged, and a force applying member having a plurality of relatively movable elements, one of said elements having means adapting it to anchoringly engage said support, the other said element being cooperable with the freight to apply said force thereto, in response to the application of a force to said force applying member tending to cause relative movement therebetween, and lever means movable in a plane which is immediately adjacent and substantially parallel to the plane of the wall for applying a said force to said force applying member.

19. The combination of claim 18 wherein said force applied to the force applying member is applied to said one element and tends to bodily advance said force applying member along the support.

20. The combination of claim 18 wherein said support is provided with a succession of interlocking means, and said one element is cooperable with any of said interlocking means.

21. In a freight loading system for applying a force to and adjustably moving a freight loading member, the combination of a support having a plurality of interlocking surface means distributed lengthwise thereof for direct supporting engagement by the loading member, and an adjusting member having a pair of relatively movable elements, one of said elements having means adapting it to cooperate with any of said surface means to afford an anchor for said adjusting member, the other said element having a portion engageable with said loading member and effective to apply force thereto in response to the application of a force to the adjusting member tending to cause relative movement between said elements, and means for applying a said force to said adjusting member, said adjusting member including separately movable means to prevent a relative movement between said elements in a direction to reduce the force applied to the loading member.

22. In a system for applying a force to freight

to urge it along a wall adjacent to which it is positioned, there being a slot-like space between the freight and the wall, a force applying member having a plurality of relatively movable elements, one of said elements having means adapting it for anchoring engagement with the wall, the other said element being cooperable with the freight to apply the force thereto, in response to the application of a force to said force applying member tending to cause relative movement between said elements, said force applying member being insertable into said slot-like space and having actuating lever means which are movable in said space and in a plane which is substantially parallel to the plane of the wall.

23. The system of claim 18 wherein said slot-like space has a width which is of the order of magnitude of six inches or less, and wherein said force applying member has an over all thickness, measured in a direction normal to the plane of said slot, which is less than the width of the slot, so that the force applying member, including its lever means, can be operated entirely within said slot-like space.

24. In an adjusting tool cooperable with but structually separate from a member to which a bracing force is applied and engageable with a cooperating support having interlocking surface means distributed therealong, the combination of a first part engageable with the surface means and a second part engageable with the member, and means for causing the first part to advance along the surface means to thereby advance the second part, said first part being a rotatable gearlike element which may be rolled along the surface means.

25. In an adjusting tool cooperable with but structurally separate from a member to which a bracing force is applied and engageable with a cooperating support having interlocking surface means distributed therealong, the combination of a first part engageable with the surface means and a second part engageable with the member, means for causing the first part to advance along the surface means to thereby advance the second part, said first part being a rotatable gearlike element which may be rolled along the surface means, and pawl and ratchet elements for respectively advancing said gearlike element and for preventing retrograde movement thereof.

26. In an adjusting tool cooperable with an elongated support for applying a force, lengthwise of the support, to an associated load, said support having a plurality of toothlike projections distributed therealong, the combination of a pair of elements, one said element being slidably guided on said support for sliding movement therealong, the other element being a gearlike element adapted to have rolling engagement with said projections, and lever means for applying a force to said other element in a direction tending to cause it to roll along said support and to cause said one element to slide along the support.

SULO MICHAEL NAMPA.

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