

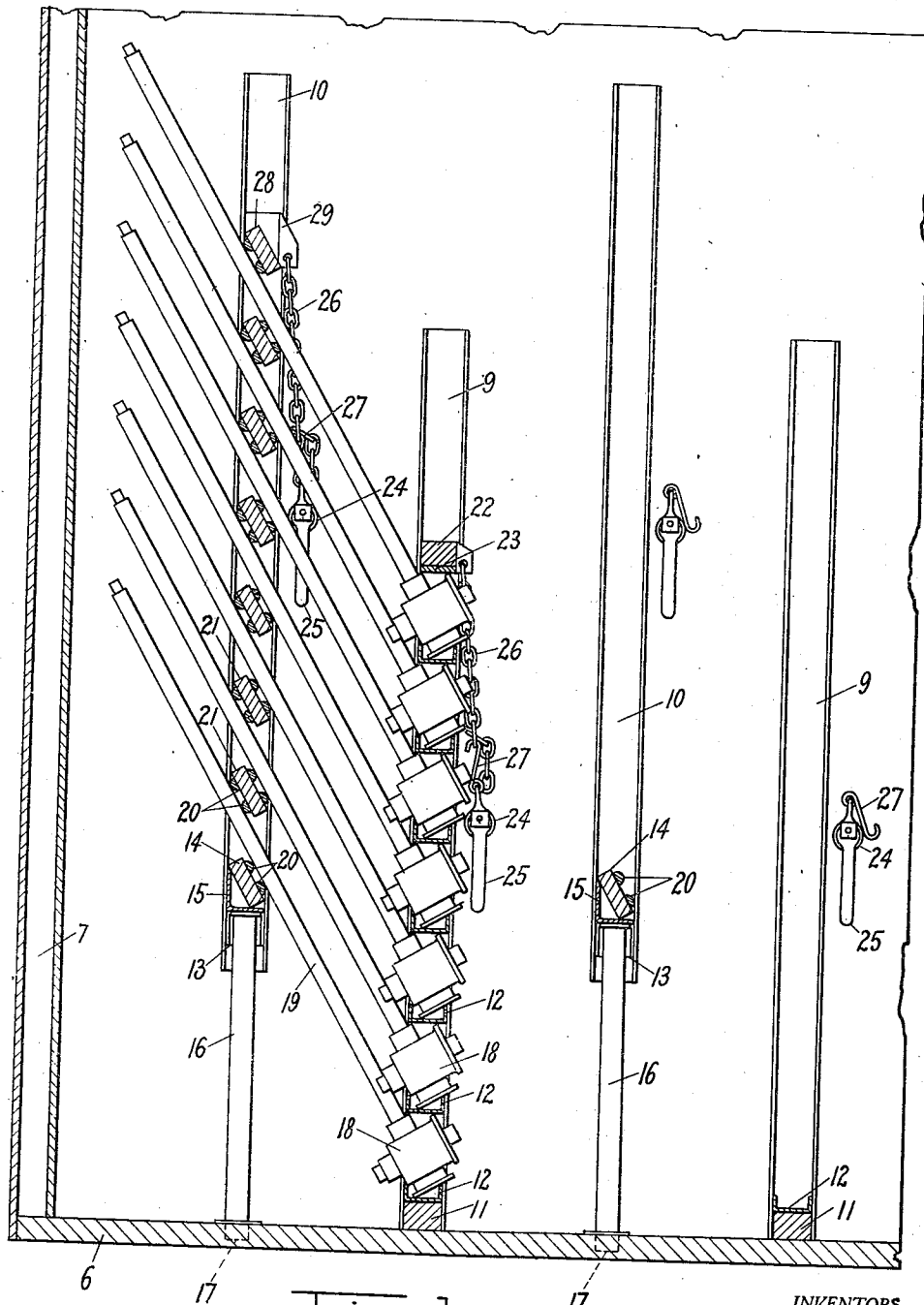
May 19, 1942.

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CARGO STOWING APPARATUS

2,283,309

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

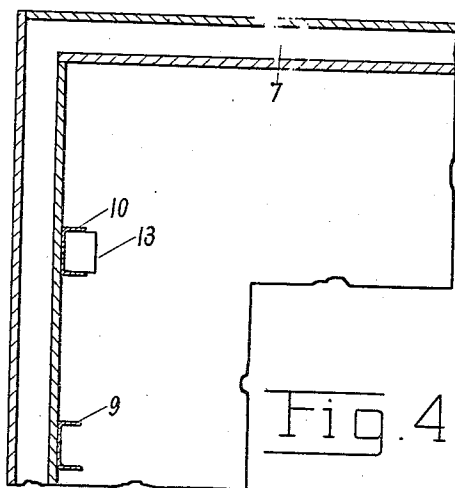


Fig. 4

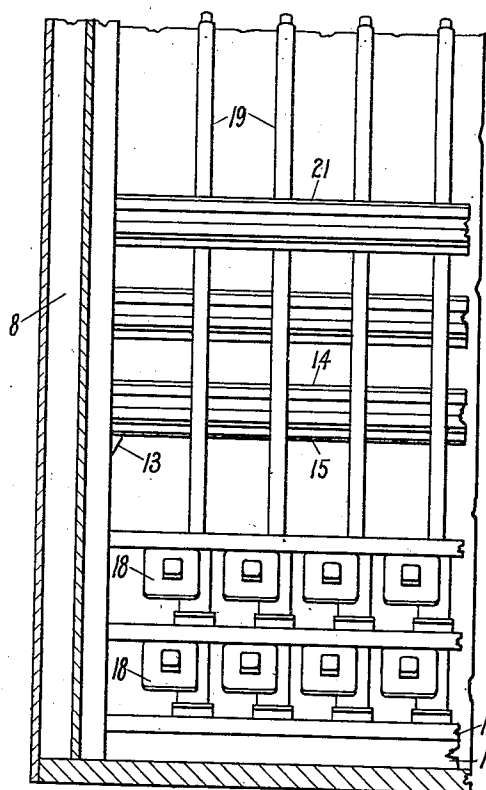


Fig. 2

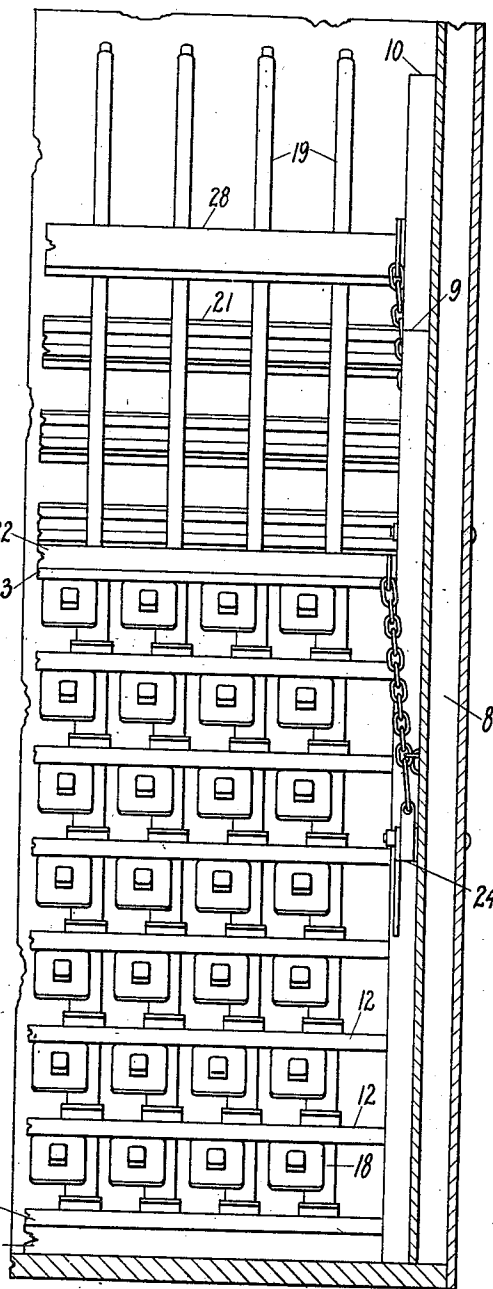


Fig. 3

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CARGO STOWING APPARATUS

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8 Claims. (Cl. 105-367)

The present invention relates to apparatus for packing or stowing objects of irregular shape in containers for shipment, and constitutes an improvement on the shipping apparatus forming the subject matter of pending application Serial No. 325,727, filed March 25, 1940. The embodiment of the invention herein described and illustrated is designed particularly for packing certain parts of automobiles in box cars for railway shipment, although it may also be used without essential change for the packing of other objects of generally similar shape in other shipping vehicles or containers.

The principal objects of the invention are to provide means for stowing the greatest possible number of objects in a given space; to hold each object securely and rigidly in order to prevent shifting and damage during transportation; to provide apparatus which can be quickly and easily installed in a car during the loading of the articles to be shipped; and to provide apparatus which can be adapted to the stowing and holding of articles of different sizes. Other objects and advantages of the invention will become apparent from the following description of a preferred embodiment thereof, which should be read with the understanding that changes within the limit of the claims hereto appended may be made in the form, construction and arrangement of the various parts, without departing from the spirit of the invention.

In the automobile industry, it is customary to ship large numbers of parts or assemblies of parts from the factory to assembly plants. One item which is handled in this manner is the steering gear assembly consisting of a housing containing the worm gear and a comparatively long shaft extending from said housing and rigidly connected with the worm therein. Because of the length of the long shaft and the necessity for preserving accurate alignment of the various parts these steering gear assemblies are awkward and difficult to ship successfully. It is for this purpose that the apparatus herein described has been designed.

The housing or body portion of the steering gear assembly is relatively heavy, and the shaft, although much lighter, is subject to damage through bending unless it is properly supported. The present invention contemplates the stowing of the steering gear assemblies in banks, the housings or body portions being piled in a tier of horizontal rows extending across the car or container, each row supported by the row next below, with a suitable spacer and retainer bar

between said rows to prevent shifting longitudinally toward the ends of the container. The shafts of the steering gears are positioned at a steep incline, directed upwardly and toward the end of the container. By thus steeply inclining the shafts, the bending forces acting upon them are reduced, and they can be supported adequately, each row by the row next below, with a spacer bar between said rows. The weight of the shafts is borne partly by the gear housings and partly by the tier of spacer bars.

In the accompanying drawings:

Fig. 1 is a longitudinal section of a portion of a freight car, showing one bank of steering gears stowed therein, and supporting members in position to begin the stowing of a second bank.

Fig. 2 is a transverse section of a portion of the car, showing two rows of steering gears stowed in one bank.

Fig. 3 is a transverse section of a portion of the car showing one complete bank of steering gears stowed therein.

Fig. 4 is a sectional plan of a corner portion of the car, showing the vertical guides for one bank.

In the drawings, the reference numeral 6 designates the floor of a freight car or other shipping vehicle or container, 7 is an end wall thereof, and 8 are side walls. Secured to the side walls are plurality of channel guides 9 and 10, preferably vertical but not necessarily so, as they may be slightly inclined. Alternate guides 9 extend from the floor upwardly, and the intervening guides 10 extend downwardly from near the roof (not shown). This arrangement of the vertical guides, however, is merely for the purpose of saving material and weight, and if desired, all said guides can be of the same length, extending from the floor upwardly nearly to the roof. The vertical channel guides 9 and 10 on opposite side walls are preferably directly opposite each other.

A cross bar 11 is laid on the floor, extending between two opposite channel guides 9, with its ends engaging said guides. A transverse channel member 12 is laid upon said cross bar with its channel side up. The width of the channel cross member 12 is such that its ends fit into the vertical channel guides 9, by which it is held against movement longitudinally of the car.

Near the bottom of the vertical guides 10 are fixed brackets or stops, one of which is shown at 13. A bar 14 is placed across between opposite vertical guides 10, its ends fitting into the channels thereof. A reinforcing angle bar 15 is

secured to the lower side of the bar 14 and supports it in inclined position as shown, the ends of said angle bar 15 resting upon the brackets 13. A column 16, removably mounted in a socket 17 in the floor 6, supports the central portion of the bars 14 and 15.

With one channel bar 12 and one bar 14 in position in their respective guides 9 and 10, as shown at the right in Fig. 1, a row of steering gears is stowed. Each gear assembly, as shipped, has an irregular housing or body portion 18 and a long shaft 19 extending therefrom. The gear housings 18 are placed side by side upon the channel bar 12, and the shafts 19 are inclined upwardly and rearwardly toward the end of the car and rest against the inclined bar 14, as shown at the left of Fig. 1 and in Figs. 2 and 3. The upper side of the bar 14 is provided with cushions 20, preferably two in number, one near each edge, and formed of continuous strips of rubber, half-round in cross section.

When one row of steering gears has been stowed, extending all the way across the car, a second channel bar 12 is placed between the guides 9, resting directly upon the gear housings 18 of said first row. A spacer bar 21 is placed between the guides 10, resting upon the shafts 19. The spacer bar 21 is similar to the bar 14 except that it has cushions 20 on both sides, and does not have the reinforcing angle bar 15. The bars 14 and 21 are preferably made of wood, rectangular in cross section, with metal shoes (not shown) at their ends where they engage the guides 10.

A second row of steering gears is then placed on the second bars 12 and 21, their housings 18 resting in the channel 12 and their shafts 19 resting upon the spacer bar 21. The same stowing is repeated, row upon row, until the bank is full. Each row of gear housings 18 is separated from the adjacent rows by a channel bar 12, and each row of shafts 19 is separated from the adjacent rows by a spacer bar 21, but the weight of the entire bank of gear housings 18 is supported by the cross bar 11 resting directly upon the floor of the car, and the weight of the entire bank of shafts 19, or rather the vertical component thereof, is supported by the lowermost bar 14. That is to say, each row of steering gears is supported by the next lower row, the bars 12 and 21 acting merely as spacers, and in the case of the bars 12, to prevent shifting movement of the housings 18 toward the ends of the car.

At the top of the bank of gear housings 18, a hold-down bar 22 is placed across between the guides 9. Said hold-down bar 22 is preferably rectangular, and preferably has a pad 23 of resilient material, such as rubber, on its lower surface which is in contact with the gear housings 18 of the topmost row. Similar cushioning pads (not shown) may be secured to the lower surfaces of the bars 12. The hold-down bar 22 is drawn down and held tightly against the top row of steering gears 18 by any suitable means, herein illustrated as eccentrics 24 secured to the side walls of the car, operated by hand levers 25, and connected with the bar 22 by chains 26 and adjustable hooks 27. By connecting the hooks 27 in the proper links of the chains, and moving the levers 25 down to the position shown, the bar 22 is drawn down tight, thereby locking the entire bank of gear housings 18 solidly.

Resilience may be introduced into the hold-down feature either by providing all the bars 12 with rubber cushions 23 as described above, or by

inserting a suitable spring (not shown) in each of the chains 26.

The bank of shafts 19 is similarly held down solidly by a hold-down bar 28 placed between the guides 10 and resting upon the top row of shafts 19. Said bar 28 is provided with shoes at each end which fit slidably into the channel guides 10 and hold the bar at the proper inclination, one of said shoes being shown at 29. Chain 10 and eccentric pull-down devices, similar to those described above, are provided for the bars 28.

In stowing freight of the character described in railway cars or other vehicles having side doors, the banks at the ends of the vehicles will be stowed first, then the next banks, and so on until the doors are reached. When the vehicle is to be used for other kinds of freight, the transverse bars 11, 12, 14, 21, 22 and 28, and the center supporting columns 16, can be either removed or stored at the ends of the vehicle where they occupy little space.

We claim:

1. Apparatus for stowing irregular objects in containers, each of said objects having a body portion and a long portion extending therefrom, comprising means for supporting a plurality of horizontal rows of said body portions in vertical tiers, the objects being placed with their long portions parallel and inclined upwardly away from said tiers, and a plurality of horizontal bars arranged in a tier remote from said tiers of body portions, the long portions of each row of objects resting upon one of said bars, each of said bars being positioned at a higher level than the row of body portions whose long portions rest upon it.

2. Apparatus for stowing irregular objects in containers, each of said objects having a body portion and a long portion extending therefrom, comprising a plurality of horizontal bars extending across the container, said bars being arranged in a vertical tier with a row of said body portions positioned between each two bars, said body portions resting on said bars and their long portions being mutually parallel and inclined upwardly away from said tier, a second tier of horizontal bars extending across the container remote from the first mentioned tier of bars, said long portions resting upon the bars of said second tier, each bar of said second tier being positioned at a higher level than the corresponding bar of the first tier, and members at the sides of the container engaging the ends of the bars of both said tiers.

3. Apparatus for stowing irregular objects in containers, each of said objects having a body portion and a long portion extending therefrom, comprising a plurality of horizontal bars extending across the container, said bars being arranged in a vertical tier with a row of said body portions positioned between each two bars, said body portions resting on said bars and their long portions being mutually parallel and inclined upwardly away from said tier, a second tier of horizontal bars extending across the container remote from the first mentioned tier of bars, said long portions resting upon the bars of said second tier, each bar of said second tier being positioned at a higher level than the corresponding bar of the first tier, and vertical guide members fixed to the sides of the container, the ends of said bars engaging said guide members for vertical sliding movement.

4. Apparatus for stowing irregular objects in containers, each of said objects having a body

portion and a long portion extending therefrom, comprising a plurality of horizontal bars extending across the container, said bars being arranged in a vertical tier with a row of said body portions positioned between each two bars, said body portions resting on said bars and their long portions being mutually parallel and inclined upwardly away from said tier, a second tier of horizontal bars extending across the container remote from the first mentioned tier of bars, said long portions resting upon the bars of said second tier, each bar of said second tier being positioned at a higher level than the corresponding bar of the first tier, vertical guide members fixed to the sides of the container, the ends of said bars engaging said guide members for vertical sliding movement, means for supporting the lowermost bar of each tier, and hold-down means connected with the top-most bar of each tier to prevent upward movement thereof.

5. Apparatus for stowing irregular objects in containers, each of said objects having a body portion and a long portion extending therefrom, comprising a plurality of horizontal bars extending across the container, said bars being arranged in a vertical tier with a row of said body portions positioned between each two bars, said body portions resting on said bars and their long portions being mutually parallel and inclined upwardly away from said tier, upwardly directed flanges on said bars engaging said body portions to prevent shifting thereof lengthwise of the container, a second tier of horizontal bars extending across the container remote from the first mentioned tier of bars, said long portions resting upon the bars of said second tier, each bar of said second tier being positioned at a higher level than the corresponding bar of the first tier, and members at the sides of the container engaging the ends of the bars of both said tiers.

6. Apparatus for stowing irregular objects in containers, each of said objects having a body portion and a long portion extending therefrom, comprising a plurality of horizontal bars extending across the container, said bars being arranged in a vertical tier with a row of said body portions positioned between each two bars, said body portions resting on said bars and their long portions being mutually parallel and directed away from said tier, a second tier of horizontal bars extending across the container remote from the first mentioned tier of bars, said long portions resting upon the bars of said second

tier, and vertical guide members fixed to the sides of the container, the ends of said bars engaging said guide members and being slidable vertically therein.

7. Apparatus for stowing irregular objects in containers, each of said objects having a body portion and a long portion extending therefrom, comprising substantially vertical guide members secured to the opposite sides of the container, said guide members being arranged in two pairs with one member of each pair secured to one side of the container and the other member of said pair secured to the other side opposite the first member, a tier of substantially horizontal spacer bars extending across the container between each pair of guides, the ends of said bars being slidable vertically in said guides, the objects being placed in tiers of horizontal rows with their body portions between one pair of said guides and their long portions inclined upwardly and positioned between the other pair of guides, each row in the tiers of body portions being separated from the next row in the same tiers by a spacer bar in one pair of guides, and each row in the tiers of long portions being separated from the next row in the same tiers by a spacer bar in the other pair of guides.

8. Apparatus for stowing irregular objects in containers, each of said objects having a body portion and a long portion extending therefrom, comprising substantially vertical guide members secured to the opposite sides of the container, said guide members being arranged in two pairs with one member of each pair secured to one side of the container and the other member of said pair secured to the other side opposite the first member, a tier of substantially horizontal spacer bars extending across the container between each pair of guides, the ends of said bars being slidable vertically in said guides, the bars in one pair of guides being channel shaped in cross section and positioned with their channeled sides uppermost, the objects being placed in tiers of horizontal rows, each row of body portions resting upon one of said channel bars and the next higher channel bar resting upon said row of body portions, the long portions of said objects being mutually parallel and directed away from the tiers of body portions to lie in rows between the other pair of guides, said rows of long portions being supported and spaced by the bars of said other pair of guides.

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