

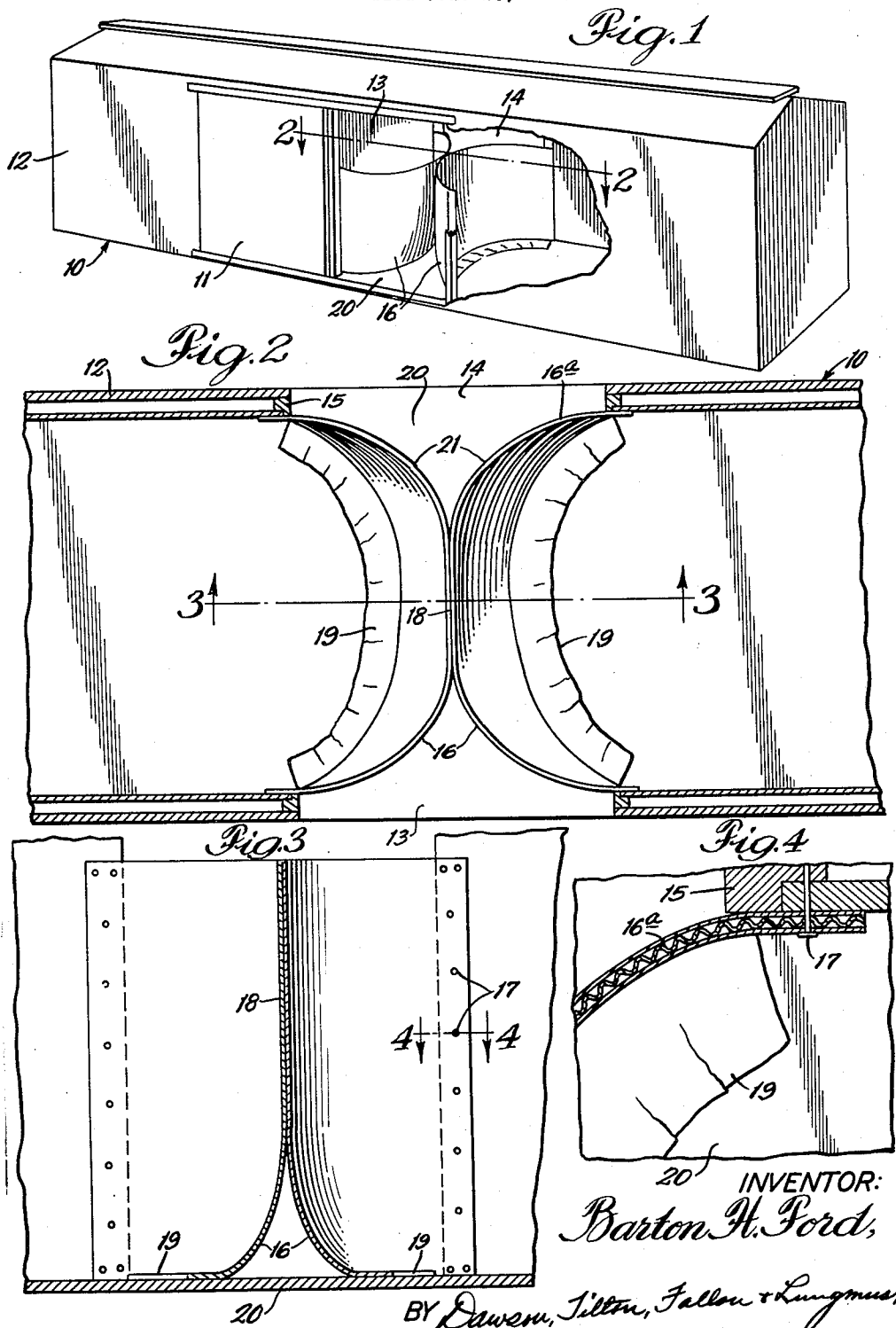
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FREIGHT CAR BULKHEAD

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FREIGHT CAR BULKHEAD

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2 Claims. (Cl. 105—369)

This invention relates to a bulkhead for a freight car and more particularly for a freight car used for carrying granular material.

In the transportation of grain or other like materials in a freight car it has been considered desirable to provide temporary closures to confine the grain to the car. Ordinarily, these closures have taken the form of temporary doors applied to the door opening framework of the freight car itself. In many instances, the temporary doors are constructed from corrugated paper panels which are nailed in place. Since these temporary doors or panels are intended to be used for only short period of time, they are considered disposable and the freight car provided with new panels for subsequent grain shipments. This results in the framework of the grain car door being weakened through the various nailing operations brought about by installation of successive temporary doors. In some instances, the framework about the grain car doors has become so weakened that the pressure of the cargo on the temporary closure has resulted in loosening the nails from their positions of securement.

Not only do the temporary doors currently employed tend to unduly weaken the door framework, but even in unweakened framework pose a distinct problem. It is to be appreciated that all temporary closures employed for confining grain "belly" to a certain extent. In recent years this has become a significant problem since most temporary closures are now constructed of paperboard reinforced by metal straps. Such paperboard doors have replaced to a large extent the built-up timbers once employed. Reinforced paperboard doors "belly" to such a degree that on occasions they have either sprung or totally disengaged the storm doors with which the freight cars are equipped. When a storm door falls off, generally due to an unexpectedly large surge of grain because of sudden car movement, it may fall across an adjoining track with consequent possibility of causing a train wreck.

The pressure exerted on storm doors has caused grain unloaders to employ mechanical door opening devices since a man is not strong enough to slide a door which ordinarily is very easily opened. It is to be appreciated that such difficulty in opening the sliding doors could rupture the paperboard closure and result in an expensive loss of grain.

The "bellying of paperboard closures also deflects the storm door outwardly to such an extent that permits rain to enter the car and ruin a portion of the grain.

Another problem exists with respect to the type of door closure described above in that it is impossible for the removal means for the grain such as a payload to gain entry into the car. It is to be appreciated that with the closure extending across the door opening itself, the removal device must operate from outside the car. It would, therefore, be desirable to provide a confinement structure for grain or analogous materials transported in

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a freight car that would not be subject to the disadvantages and limitations outlined above.

It is, therefore, a general object of this invention to provide a grain confining structure that overcomes the foregoing disadvantages and limitations. Another object is to provide a new type of bulkhead structure for a freight car. Yet another object is to provide a bulkhead structure for a freight car, particularly the type of freight car employed for transporting grain which eliminates the need for door closures. Still another object is to provide a grain confining structure which permits entry into the car of means for removal of the grain after shipment. A further object is to provide a grain confining bulkhead that is securable on partially weakened doorframes. A still further object is to provide a simplified readily installable confinement structure for granular materials placed in a freight car. Other objects and advantages of this invention can be seen as this specification proceeds.

This invention will be explained in conjunction with the accompanying drawing in which—

Fig. 1 is a fragmentary perspective view of a freight car partially broken away to show a bulkhead structure mounted therein and embodying teachings of this invention; Fig. 2 is an enlarged fragmentary cross-sectional view taken along the line 2—2 of Fig. 1; Fig. 3 is a view taken along the line 3—3 of Fig. 2 and Fig. 4 is an enlarged cross-sectional view taken along the line 4—4 of Fig. 3.

In the illustration given, the numeral 10 designates generally a freight car such as may be employed for the transportation of grain. Car 10 is shown in a skeleton form (the trucks being omitted) since the details of construction of a freight car are not considered essential to the understanding of this invention. Freight car 10 is provided with conventional storm doors 11 slidably mounted on the side walls 12 of freight car 10. It is to be appreciated that a similar storm door arrangement is provided on the side not shown in Fig. 1. Car 10 is provided with a pair of door openings 13 and 14 disposed in opposite side walls 12. Openings 13 and 14 are each defined by door framework 15, the vertical portions of which can be seen in Fig. 2. Extending between corresponding vertical portions of the framework 15 of opposite openings 13 and 14 are transverse bulkheads 16.

Each bulkhead 16 has side portions 16a which are secured to framework 15 as by nails 17 (best seen in Fig. 4). The central portions of each bulkhead 16 are in abutting relation as at 18. Bulkheads 16 are conveniently provided in an arcuate shape to provide the abutting relation seen at 18.

When doorway framework 15 is partially weakened as having been the subject of numerous nailings, a grain car closure extending across a doorway opening (i.e., parallel with the length of a car) has a tendency under the pressure of the grain confined by the closure to pull nails out of the weakened framework. This is especially true where a relatively rigid panel is used to provide the door closure so that its secured ends are under a moment tending to retract the nails or other securing means from position of securement within framework 15. However, with the structure illustrated, the pressure of grain on bulkheads 16 exerts a sidewise pressure on nails 17 causing them to find positions of additional securement in the event that framework 15 is weakened.

Panels or bulkheads 16 can be conveniently constructed of corrugated paper board to provide a relatively stiff transverse grain confinement structure. If additional stiffening is desirable, straps can be incorporated into panels 16 and also secured to framework 15. Also shown as a part of panels 16 are bottom flaps 19 which abut floor 20 of freight car 10 and thereby prevent the escape of grain from under panels 16.

Through the abutting relation as at 18 of panels 16, the thrust of grain in one end of the car is substantially absorbed by grain in the other end of the car. The mutual support of the separate grain loads through the cooperation of panels 16 permits the employment of a much simpler and lighter panel design than was heretofore possible when such panels extended across door openings and had to be self-supporting. The abutment of panels 16 along their central portions substantially minimizes the unsupported length of panel 16 to a rather small area such as is designated 21 in Fig. 2. However, the unsupported area 21 still is such as to permit access of grain removal equipment into freight car 10.

Where bulkheads have been employed in the past, massive reinforcement structures were considered necessary. Even heavy timbers extending across the car were insufficient in themselves to withstand the tremendous forces applied to them by surging grain such as might result from "humping" freight cars. Where, for example, two transverse bulkheads of timber were employed, a number of longitudinally disposed bracing members were also used. This was not only expensive but also limited the accessibility for a payloader or the like. Thus, the advantages of using transverse bulkheads were essentially overshadowed by greater disadvantages. With the structure described herein, however, the advantages are readily available without the above-mentioned disadvantages.

The advantages of the freight car bulkhead structure illustrated herein can be achieved through the employment of various materials of construction for panels 16. For example, in the illustration given, panel 16 is constructed of corrugated paper board as can be appreciated from a consideration of Fig. 4. Alternatively paper board or other cellulosic material can be employed, so also can various plastic materials. As pointed out above, vertically spaced metal reinforcement bands can be combined with panels 16 to afford additional support. However, because of the mutual support given each panel 16 through the central abutting relation, the strapping employed, if desired, can be considerably less than that heretofore deemed necessary; for adequate reinforcement of self-supporting door closures.

While in the foregoing specification a specific embodiment of this invention has been set forth in detail, it is to be appreciated that variations in the details thereof may be made by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. In combination with a grain-carrying freight car

having a pair of longitudinally extending side walls and transversely extending end walls, a doorway in each side wall centrally of the length thereof to provide opposite, aligned doorways, a pair of bulkheads extending transversely of said car and being arcuate in the dimension thereof extending transversely of the car, each bulkhead comprising a generally rectangular panel having opposite vertical edges secured to said side walls adjacent said doorways, one of said panels being secured on one side of said doorways and the other panel being secured on the other side of said doorways, and a granular load confined between each panel and its adjacent end wall whereby each of said panels is subjected to a pressure tending to transversely bow the panel away from its adjacent end wall, each of said panels having a length between the secured portions greater than the width of the car and sufficient to position the central portions of said panels in abutting relation.

2. In combination with a grain-carrying freight car having a floor, a pair of longitudinally extending side walls, and transversely extending end walls, a doorway in each side wall centrally of the length thereof to provide opposite, aligned doorways, the said side walls providing a framework about each doorway, a pair of bulkheads extending transversely of said car and being arcuate in the dimension thereof extending transversely of the car, each bulkhead comprising a generally rectangular, paperboard panel having opposite vertical edges, nailing means extending through each of said panels adjacent said vertical edges and into the framework of each doorway, one of said panels being secured on one side of said doorways and the other panel being secured on the other side of said doorways, and a granular load confined between each panel and its adjacent end wall whereby each of said panels is subjected to a pressure tending to transversely bow the panel away from its adjacent end wall, each of said panels having a length between the secured portions greater than the width of the car and sufficient to position the central portions of said panels in abutting relation, each of said panels having a horizontally extending flat portion on the bottom edge thereof positioned against the floor of said car and extending toward the adjacent end wall.

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