

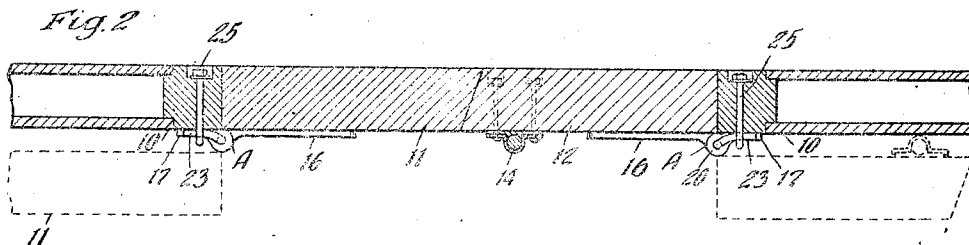
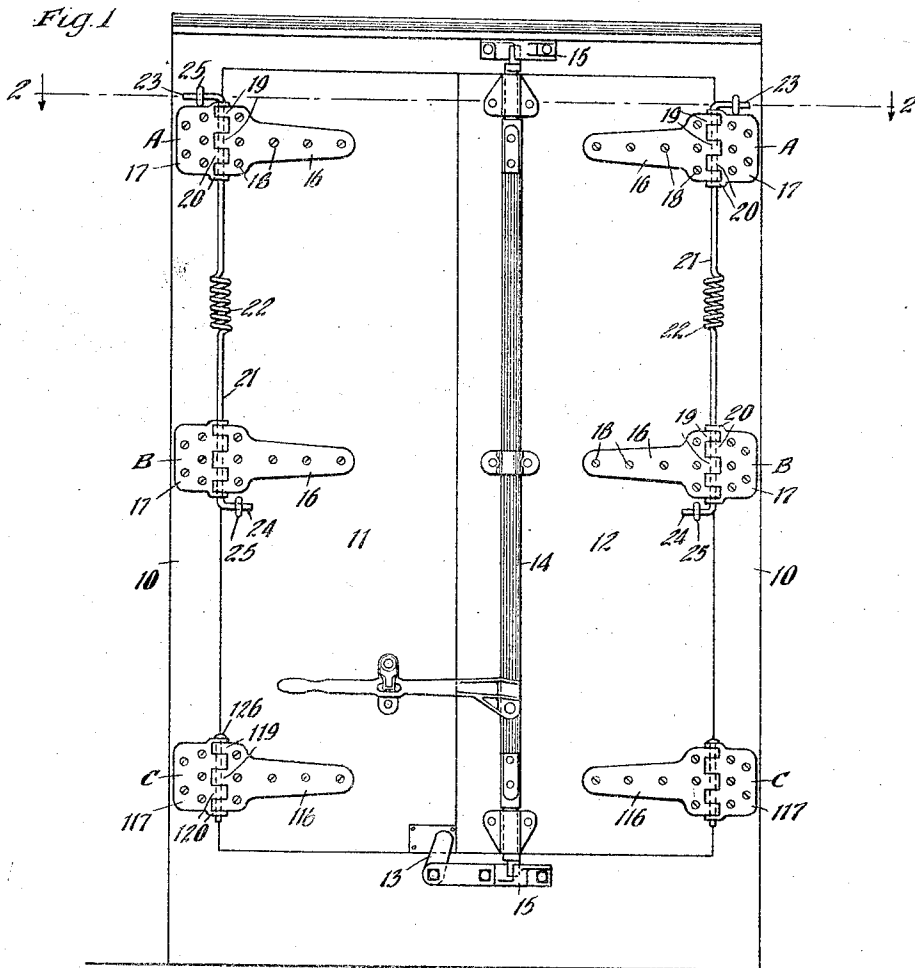
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SPRING HINGE FOR CAR DOORS

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Witnesses

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UNITED STATES PATENT OFFICE.

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SPRING HINGE FOR CAR DOORS.

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This invention relates to improvements in spring hinges for car doors.

One object of the invention is to provide a spring hinge especially adapted for refrigerator car doors, for retaining the doors in fully opened position.

Another object of the invention is to provide a hinge of the type specified, wherein the spring means is under tension when the door is closed, whereby, when the door is partly opened, the spring will act to force the door to fully opened position and retain the same in that position.

Other objects and advantages of the invention will more clearly appear from the description and claims hereinafter following.

In the drawing forming a part of this specification, Figure 1 is a side elevational view of a portion of a refrigerator car showing my improvements in connection therewith. And Figure 2 is a horizontal, sectional view corresponding substantially to the line 2-2 of Figure 1.

In said drawing, the side wall of the car is indicated at 10, the same having the usual side door opening for a pair of pivotally hung doors 11 and 12, the latter swinging about vertical axes in the usual manner and having beveled engaging faces at their meeting edges. The door 11 is closed first and retained in closed position by a pivoted latch 13. The door 12 is swung to closed position last and is held in closed position by any suitable mechanism, as for instance, the shaft 14 and brackets 15.

In carrying out my invention, I employ a plurality of hinges on each door, one or more of which are provided with spring means acting to hold the door in opened position. As shown, each of the doors 11 and 12 is preferably provided with three hinges, A, B and C, the hinges A and C being disposed at the upper and lower ends of each door and the hinges B intermediate the hinges A and C.

The hinges A and B are of like construction, each comprising a pair of hinge straps 16 and 17 respectively secured to one of the doors and the side wall of the car by any suitable means such as screws 18. Each strap 16 is shown as provided with three hinge pin receiving eyes 19 and each strap 17 is shown as provided with four hinge pin receiving eyes 20, the openings of the

eyes of the straps of each hinge member being in alinement when the hinge straps are in assembled relation and attached to the frame and respective doors.

The hinge straps of the hinges A and B of each door are preferably connected by a single vertically disposed pivot rod 21 extending through the eyes of each hinge and having a helically formed section 22 intermediate the hinge members A and B. The upper and lower ends of the rod 21 are extended beyond the respective hinges A and B and bent at right angles thereto as indicated at 23 and 24. The angularly bent portions 23 and 24 of each rod 21 extend in opposite directions and are fixed to the car wall 10 and the corresponding door respectively, the same being preferably secured by staple bolts 25 anchored in the wall 10 and the corresponding door respectively, the curved ends of which receive the respective bent ends 23 and 24. Each rod 21 is preferably formed of spring steel and the helically formed section of the same serves as spring means tending to hold the door in opened position. The parts are so arranged that the springs are under considerable tension when the doors are in opened position so that there is a tendency of the helical sections of the rods to uncoil, thereby yieldingly maintaining the doors in open position until manually swung to closed position. It will be evident that, in closing either door, due to the opposite ends of the rod 21 associated therewith being anchored to the door and car wall respectively, the rod will be twisted in a direction to draw the coils of the helical section thereof more closely together, thereby increasing the torsional tension on the rod and increasing the tendency of the same to swing the door to fully opened position when released by the operator.

The hinge C at the lower end of each door is of the usual construction, comprising a pair of hinge straps 116 and 117 secured respectively to the corresponding door and car wall 10 by screws or any other suitable means, the straps being provided with a plurality of eyes 119 and 120 respectively, receiving the hinge pin 126 by which the straps are pivotally connected.

Although each door is herein shown and described as provided with three hinges, the hinge sections of two of which are pivotally

connected by a single spring rod, it will be evident that the rod may be extended through all three hinges of each door.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In a railway car door structure, the combination with a door frame providing an opening; of a door for closing said opening; means on the outer side of said frame and door for pivotally connecting said door to the frame, said means including a plurality of spaced hinges, each hinge comprising a hinge strap secured to the door, and a hinge strap secured to the frame, said straps having interengaging knuckles for supporting said door; and a continuous rod extending through said knuckles to provide pintles for the hinge straps, said rod having a torsional, helical spring portion intermediate said hinges, and oppositely disposed angular portions outside of said hinges, one of said angular portions being secured to the frame, and the other to said door, said angular portions being urged toward each other by said helical portion to pull said door through an angle of substantially 180° from closed position to a position against the side wall of the car, said resilient means being arranged to lie beyond said door when in open position and maintain said door against said side wall.

2. In a railway car structure, the combination with a frame providing a door opening; of a door for closing said opening; means for pivotally connecting said door to the frame, said means including a hinge com-

prising hinge straps having co-operating knuckles on the outer faces of said door and frame; and spring means under tension, including a portion extending through said knuckles and providing a pintle for said hinge straps, said portion having an angular extension at one side of said hinge secured to the outer faces of said door, and another portion at the opposite side of said hinge secured to said frame, said spring means being arranged to pull said door by means of said connections from closed position to a position against the car side wall, said spring means and said hinge being arranged to be disposed behind the door when in open position; and means for locking said door in closed position.

3. In a railway car door structure, the combination with a door frame; of a door for closing an opening provided by said frame; means for pivotally mounting said door on said frame, said means including hinge straps on said door and frame having interengaging portions; and a rod extending through said interengaging portions to provide the hinge pintle, said rod having a fixed connection at one end of the door and a fixed connection at the other end with said frame, whereby swinging of said door imparts torsional twisting in opposite directions to the ends of said rod, said rod having a helical coil formed therein, the opposite ends of which are connected to the end portions of said rod, and the portions of the coils lying at an angle to said rod and adapted to be operated by the turning movement of the ends of said rod.

In witness that I claim the foregoing I have hereunto subscribed my name this 1st day of September, 1923.

CHARLES E. DATH.