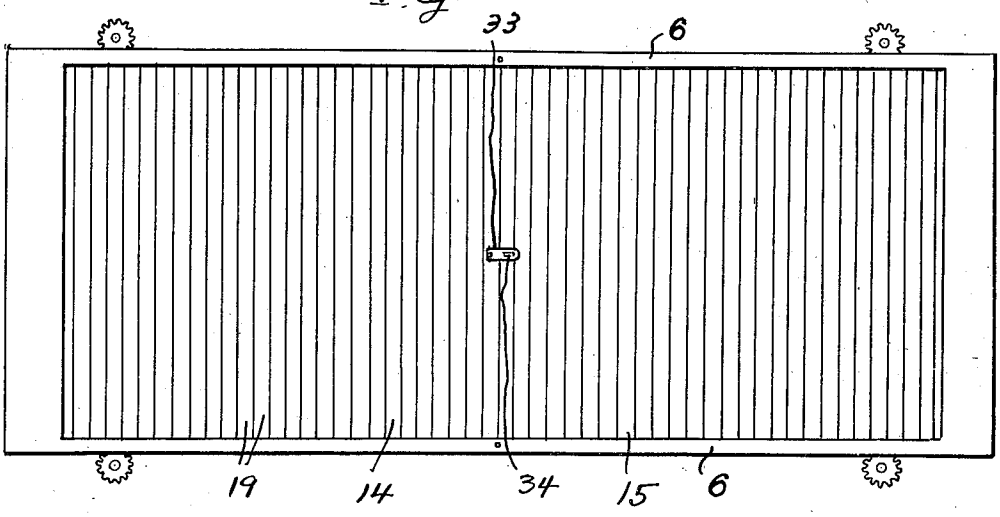
July 25, 1939. H. KUNDERT 2,167,306

CLOSURE FOR COAL CARS

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Fig. 1.



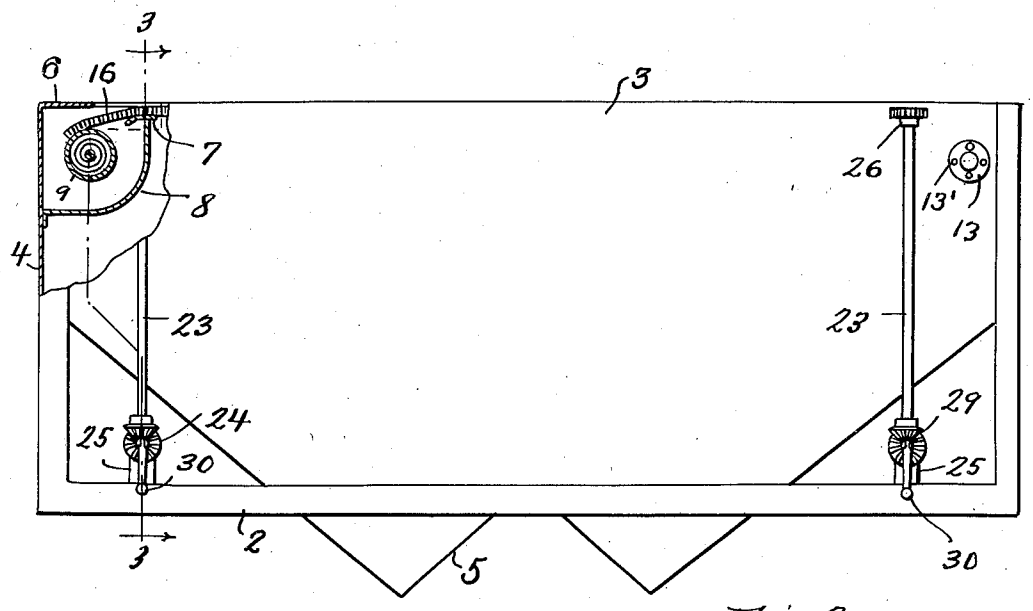


Fig. 2.

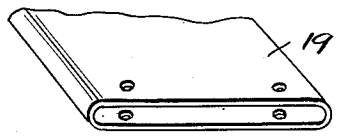


Fig. 6.

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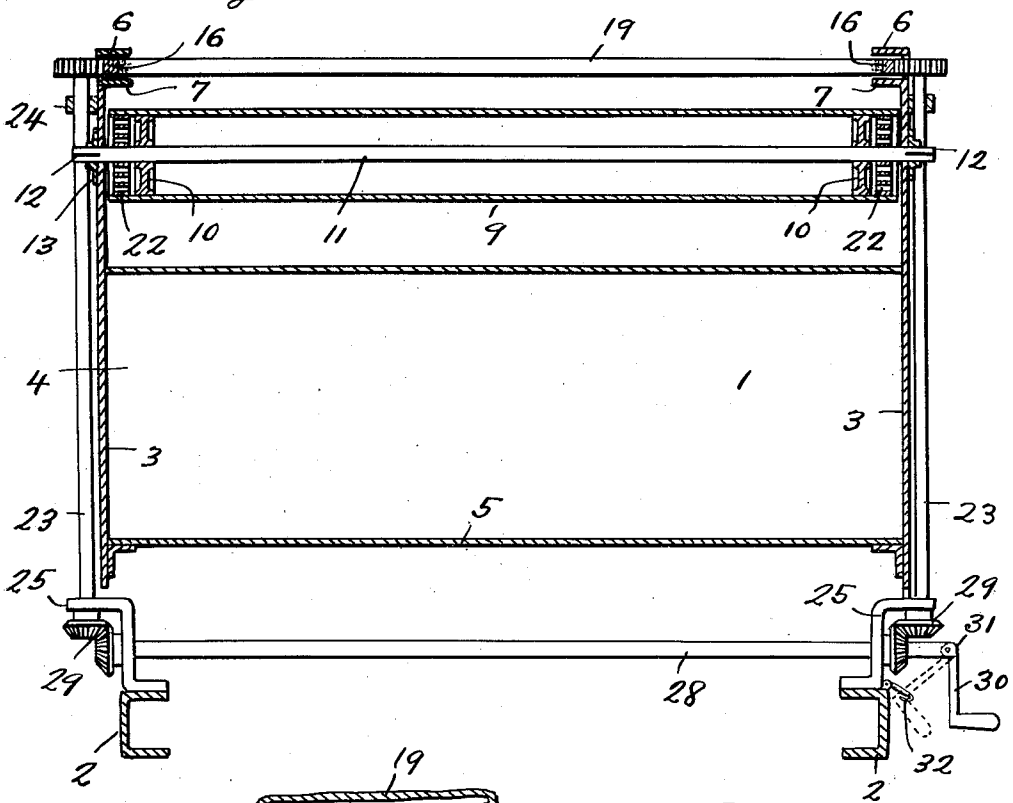
Attorneys

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Fig. 3.



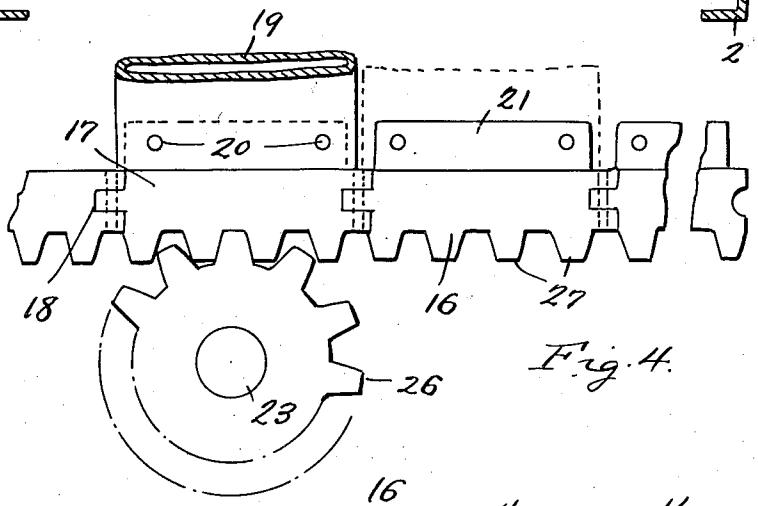


Fig. 4.

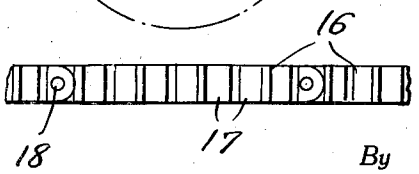


Fig. 5.

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UNITED STATES PATENT OFFICE

2,167,306

CLOSURE FOR COAL CARS

Herman Kundert, Lima, Ohio

Application September 27, 1938, Serial No. 231,969

2 Claims. (Cl. 105—377)

My invention relates to improvement in closures for railway cars such as are used in transporting coal.

The principal object of my invention is to equip standard type hopper bottom coal cars inexpensively with a shutter assembly for closing the top thereof so that coal cannot be lost in transit, cars overloaded, or coal stolen therefrom.

Another object is to provide in conjunction with the above efficient means for easily opening and closing the shutter assembly at will.

To the accomplishment of the above, and subordinate objects presently appearing, a preferred embodiment of my invention has been illustrated in the accompanying drawings, set forth in detail in the succeeding description, and defined in the claims appended hereto.

In said drawings:

Figure 1 is a view in top plan of a coal car equipped with my improved shutter assembly, the shutters being closed,

Figure 2 is a view in side elevation partly broken away and shown in section,

Figure 3 is a view in vertical transverse section taken on the line 3—3 of Figure 2 looking in the direction indicated by the arrows,

Figure 4 is a fragmentary view in top plan of one of the shutter guide chains, the chain driving gear therefor and one of the slats of said shutter,

Figure 5 is a fragmentary view in side elevation of said guide chains, and

Figure 6 is a fragmentary view in perspective of one of the shutter slats.

Referring to the drawings by numerals, 1 designates a coal car of the usual type including side frames 2, side walls 3, end walls 4, and a hopper bottom 5. The side and end walls 3 and 4 are provided with inwardly extending upper edge flanges 6. Extending along the side walls 3 below and spaced from the flanges 6 thereof are inwardly extending flanges 7 terminating short of the end walls 4 and forming together with the flanges 6, guides extending along the top of the car. Extending across each end of the car 1 and upper portion thereof is a bin-like housing 8 into the upper portion of which the flanges 7 extend for a short distance whereby the guides formed by the flanges 6 and 7 open into said housings 8.

Within each housing 8 is a transversely extending roller 9 rotatably mounted by means of end spiders 10 upon a shaft 11 having its opposite ends rotatably mounted in the side walls 3 and terminating in squared portions 12. The portions 12 of the shaft 11 are fitted against rotation in collars 13 secured to the outer faces of the side walls 3 by screws or bolts 13' for rotary adjustment into different set positions and for a purpose presently described.

The rollers 9 are designed to wind thereon a pair of shutter assemblies 14 and 15 endwise movable in opposite directions into opening and closing positions, respectively, and to be wound upon said rollers during opening movement.

Each shutter assembly 14, 15, comprises a pair of side chains 16 formed of flat links 17 pivoted together, as at 18, the chains of each pair fitting between the guides on opposite sides of the car formed by the flanges 6 and 7 and the links 17 of the chains in each pair being arranged in opposite relation. Flat hollow slats 19 connect opposite links 17 of each pair of chains 16, said slats being riveted, as at 20, to ledges 21 extending from said links 17 as shown in Figure 4. The chains 16 of each pair are connected at one end to the appropriate roller 19 in any suitable manner for winding on said roller. The rollers 19 are operated in a proper direction to wind up the shutter assemblies 14 and 15 by means of convolute springs 22, a pair of such springs being housed in the ends of each roller 19 and suitably connected to said roller and the shaft 11 thereof to wind the roller in the proper direction. In this connection, the described collars 13 are for use in varying the tension on the springs 22. This may be accomplished by removing the screws 13' or bolts, rotating the collars in the proper direction to rotate the corresponding shaft 11 and increase the tension on the springs connected thereto and again screwing, or bolting, the collars 13 to the side walls 3.

The shutter assemblies 14 and 15 are operated by means of the following. A pair of vertically disposed shutter operating shafts are provided adjacent each end of the car 1 upon opposite sides thereof, respectively, said shafts being journaled in upper and lower bearing brackets 24 and 25 suitably secured to the car 1, said pairs of shafts being arranged intermediate the rollers 9 and closely adjacent thereto. A pair of gear pinions are fixed on the upper ends of each pair of shafts 23, respectively, said pinions 26 meshing with teeth 27 provided on the outer sides of the chain links 17 as shown in Figure 4. The shafts 23 of each pair are operative in unison by means of a cross shaft 28 journaled in the lower bearing brackets 25 and operatively connected to said shafts 23 by beveled gearing 29, said gearing being arranged to operate said shafts 23 in

opposite directions for a purpose which will be understood. Each shaft 28 is provided on one end thereof with a hand crank 30 preferably pivoted thereto as at 31 to be swung in an out-of-the-way position when not in use, as shown by dotted lines in Figure 3 and held in such position by a hook 32 suitably secured to the car.

Referring to the use and operation, when it is desired to close the top of the car 1, the shutter assemblies 14 and 15 are unwound from the drums 9, either singly or in unison, by operation of the cranks 30 and until the free ends of said assemblies are in abutting relation as shown in Figure 1. A hasp 33 and staple 34 are provided on said ends of the assemblies 14 and 15, respectively, for locking said ends in such relation through the medium of a padlock, not shown. When it is desired to open the top of the car 1 the assemblies 14 and 15 are operated in a separative direction through the medium of hand cranks 30 to be wound up on the drums 9 through the medium of the springs 22, all as will be understood from the previous description.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly, the invention as described, is susceptible of modification without departing from the inventive concept and right is herein reserved to such modifications as fall within the scope of the subjoined claims.

What is claimed is:

1. The combination with an open top car having side and end walls, of closing means for said top comprising a pair of upper and lower guide flanges extending inwardly from each side wall adjacent the upper edge thereof, a pair of flexible shutter assemblies slidably mounted at the side edges thereof between the upper and lower guide flanges for endwise movement in opposite directions longitudinally of said car into opening and closing positions, and means to move said shutter assemblies independently comprising a pair of rollers mounted at opposite ends of the car transversely thereof and operatively connected to said assemblies, respectively, for rotation in opposite directions to roll up said assemblies thereon and unroll the same therefrom, spring means operatively connected to each roller to rotate the same in a direction to roll up said assemblies, and a crank operated drive for each assembly operatively connected to the side edges thereof to unroll the same from the related roller.

2. The combination with an open top car having side and end walls, of closing means for said top comprising a pair of upper and lower guide flanges extending inwardly from each side wall adjacent the upper edge thereof, a pair of flexible shutter assemblies slidably mounted at the side edges thereof between the upper and lower guide flanges for endwise movement in opposite directions longitudinally of said car into opening and closing positions, and means to move said shutter assemblies independently comprising a pair of rollers mounted at opposite ends of the car transversely thereof and operatively connected to said assemblies, respectively, for rotation in opposite directions to roll up said assemblies thereon and unroll the same therefrom, spring means operatively connected to each roller to rotate the same in a direction to roll up said assemblies, and a crank operated drive for each assembly operatively connected to the side edges thereof to unroll the same from the related roller, each drive comprising a pair of vertical driven shafts upon opposite sides of the car adjacent an end of the latter, a driving shaft extending across the bottom of the car and geared to the lower ends of said driven shafts, and a pair of gear pinions fast on the upper ends of said driven shafts, respectively, and operatively connected to the side edges of the related assemblies, respectively.

HERMAN KUNDERT.