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H. J. CRAGUN

GRAIN CAR DOOR LIFTING MECHANISM

Filed July 14, 1922

Fig. 1.

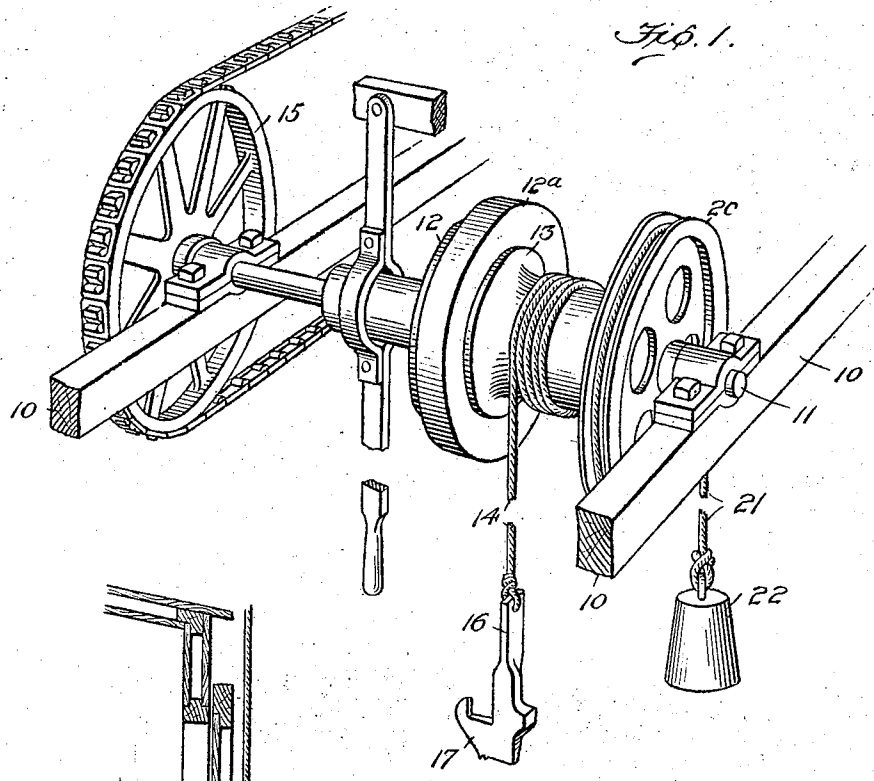


Fig. 3.

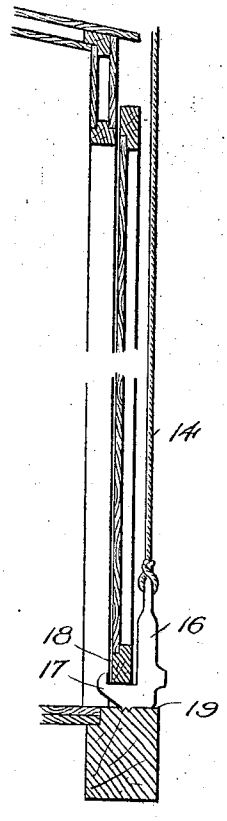
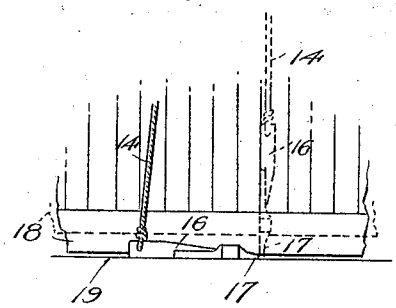


Fig. 2.



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UNITED STATES PATENT OFFICE.

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GRAIN-CAR-DOOR-LIFTING MECHANISM.

Application filed July 14, 1922. Serial No. 574,934.

To all whom it may concern:

Be it known that I, HYRUM J. CRAGUN, a citizen of the United States, residing at Ogden, in the county of Weber and State of Utah, have invented certain new and useful Improvements in Grain-Car-Door-Lifting Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in mechanism for loosening and elevating the doors of grain cars.

It is well understood that the contents of a filled grain car exert a tremendous pressure on the car door and because of this fact considerable power is necessary to open or lift the door. It is also the general practice to nail up the car door and in opening the door no attempt is made to extract the nails or other fastening elements but they are simply broken out or otherwise unloosened. This also necessitates quite a bit of power and the primary object of the present invention is to provide a power operated mechanism that will unfasten and then elevate the car door.

Another object is to provide the lifting mechanism with means that will automatically elevate the car door engaging member when the latter is not in use whereby said member will normally occupy a position well above any cars beneath it.

A further object is to simplify the construction of the mechanism while not detracting from its durability or effectiveness.

With these and other objects in view the invention consists in certain novel details of construction, arrangements and combinations of parts, all as will be hereinafter more fully described and the novel features thereof pointed out in the appended claim.

In the accompanying drawings—

Figure 1 is a perspective view illustrating the preferred form of the present invention; and

Figs. 2 and 3 are detail views illustrating the manner in which the door is unfastened and lifted.

Broadly stated, this invention contemplates the provision of a car door loosening and lifting member which is first applied under the car door and then rotated or turned to rupture the door fastenings after which it, together with the door, is elevated by lifting mechanism that may be varied in the construction of its several parts except that, in accordance with this invention, said mechanism preferably has embodied therein means for insuring that said car door engaging member will always be raised to a point clear of the cars when it is not in use.

In the preferred construction illustrated in the drawings the hoisting mechanism comprises a suitable frame 10 having journaled thereon a shaft 11 which is driven from any suitable source of power through operating connections embodying a sprocket 15 mounted adjacent one end of the shaft. Adjacent the opposite end of said shaft 10 there is loosely mounted a drum 13 for a cable 14 and keyed on the shaft is a clutch mechanism 12 adapted to be moved into and out of engagement with a clutch band 12^a connected to said drum 13.

As will be understood the cable 14 is adapted to be unwound from and wound upon the drum 13 and at its free end, depending from the drum, said cable is provided with a car door engaging member in the form of a broad, flat L-shaped hook, one arm 16 of which is connected to the cable. The other arm 17 of said car door engaging member is wedge shaped to permit its being driven flatwise in between the bottom edge of the car door 18 and the car floor 19, as shown in Figs. 2 and 3.

After the arm 17 of the car door engaging member has been thus positioned, clutch 12 is actuated to engage clutch band 12^a whereby drum 13 will be rotated and the cable 14 taken up upon power being transmitted to shaft 11. The initial take up of the cable will result in the car door engaging member being rotated or turned on a horizontal axis until it assumes an upright position at which time it will be standing on the edge of arm 17 as shown in Fig. 3. This movement of the car door engaging member will rupture the car door fastenings and upon continuing the rotation of shaft 11 and drum 13, arm 17 will be bodily elevated as high as desired and will carry the car door with it, after which clutch 12 may be disengaged. The grain will then be free to escape or to be removed from the car.

The drum 13 being loosely mounted on the shaft 11 and normally free to rotate thereon, and the weight of the car door engaging member being such that it is capa-

ble of descending to its lowermost position by gravity, means are provided for rotating said drum when the clutch 12 is disengaged to wind up cable 14 and maintain the car door engaging member in its uppermost position where it will be clear of any cars beneath it. As a convenient arrangement for accomplishing this result there is provided a loosely mounted drum 20 on the shaft 11. Said drum 20 is connected with the drum 13 and suspended from said drum 20 by a cable 21 is a counterbalance weight 22, of greater weight than the car door engaging member, whereby the latter will always be elevated when the clutch 12 is disengaged. Drum 13 and the car door engaging member are, of course, located adjacent the car beneath them but drum 20 and weight 22 are spaced somewhat to the side of drum 13 so that said weight, when lowered, will not be in line with the cars

What is claimed is:

In a grain car door lifting mechanism, the combination of a shaft, a drum loosely mounted on said shaft, a car door engaging member carried on said drum and adapted to be raised and lowered, means for connecting the drum and shaft for simultaneous rotation, means for rotating the shaft to elevate the car door engaging member, and means spaced transversely of the shaft for rotating said drum to elevate said car door engaging member, said last mentioned means being loosely mounted on the shaft and connected to the drum.

HYRUM J. CRAGUN.