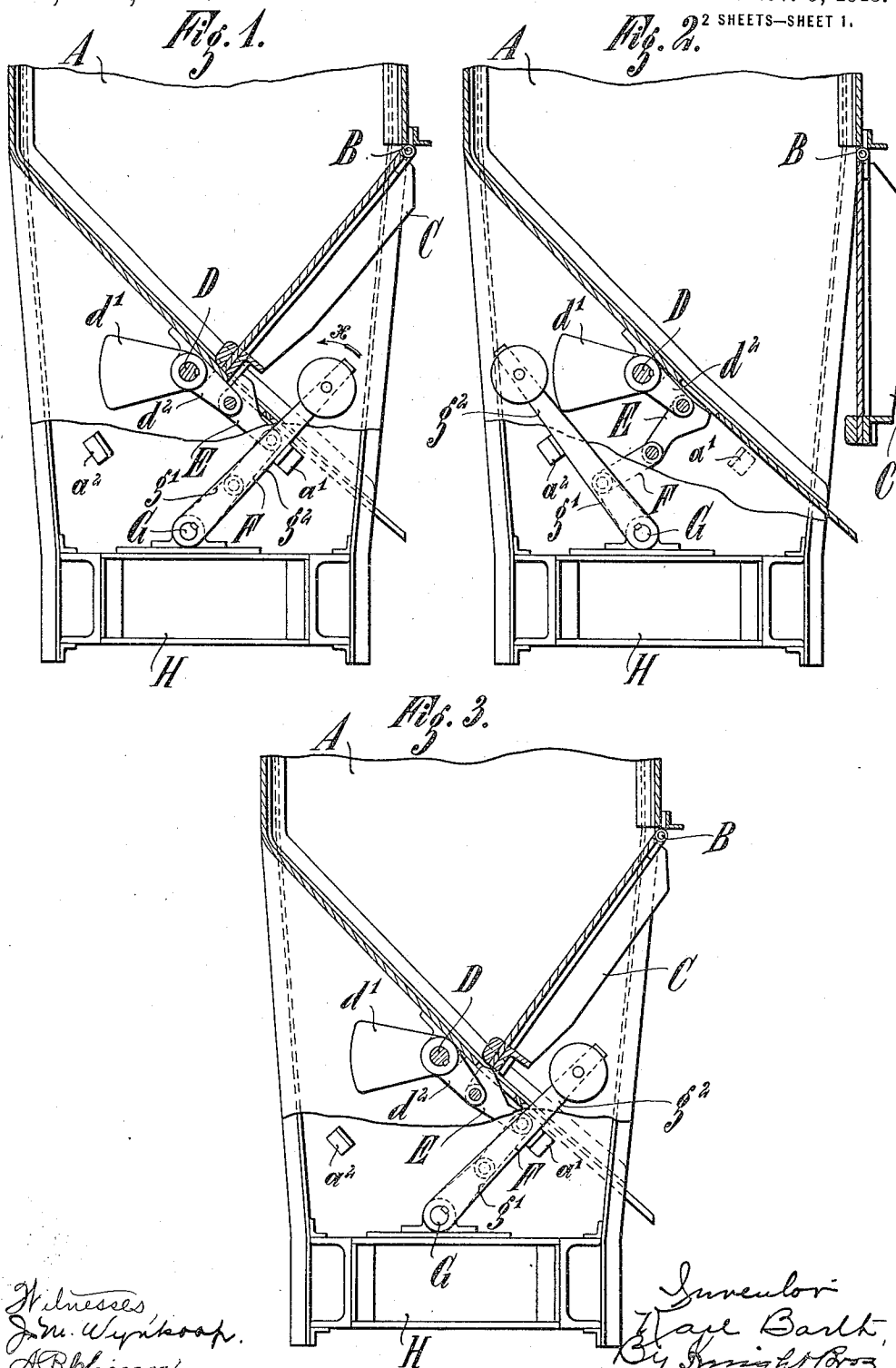


K. BARTH.
 LOCKING DEVICE FOR DUMPING DOORS OF SELF UNLOADING CARS.
 APPLICATION FILED AUG. 15, 1913.

1,159,349.

Patented Nov. 9, 1915.

2 SHEETS—SHEET 1.



Witnesses
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 A. B. Blinn

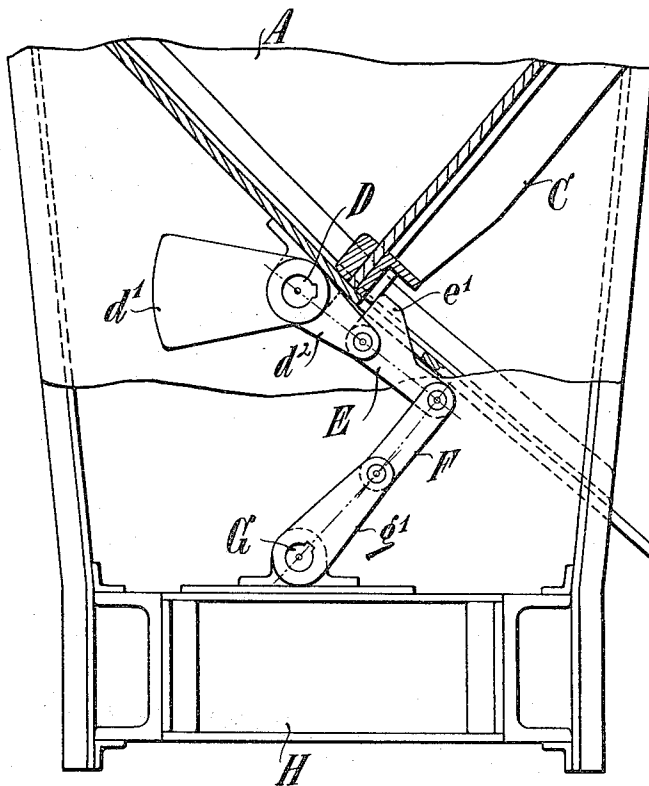
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Fig. 4.



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LOCKING DEVICE FOR DUMPING-DOORS OF SELF-UNLOADING CARS.

1,159,349.

Specification of Letters Patent.

Patented Nov. 9, 1915.

Application filed August 15, 1913. Serial No. 784,932.

To all whom it may concern:

Be it known that I, KARL BARTH, residing at Essen-on-the-Ruhr, Germany, a subject of the Emperor of Germany, have invented a certain new and useful Improvement in Locking Devices for Dumping-Doors of Self-Unloading Cars, of which the following is a specification.

The present invention relates to locking devices for dumping doors of self unloading cars in which the dumping doors are closed by hand. If a simple arresting member such as a pawl or the like which is automatically pushed away by the closing movement and thereupon automatically locks the door, were used for locking the dumping door in the closed position, considerable exertion would then be necessary to pull out the arresting member, on account of the great pressure, from the weight of the loaded material, with which the dumping door bears on the arresting member; and considerable wear of the arresting member will occur on account of the great friction. To avoid these inconveniences, an arrangement, has heretofore been known in which the dumping door, during the closing, first arrives in a preliminary closing position, and is retained only in this position by means of arresting members of the above mentioned kind, while to hold the dumping door in the ultimate closing position, a locking device has been provided, which, under the pressure from the loaded material bearing on the dumping door, tends automatically to move in the direction of unlocking, and is therefore only able to hold the dumping door, when its actuating member is secured against movement. In this manner, the above mentioned inconveniences are removed, but the disadvantage remains, that the arrangement turns out to be rather complicated, and as a consequence expensive to manufacture.

Now the object of the present invention is to provide a locking device having all the advantages of the well known arrangement, without being encumbered with its disadvantages.

In the accompanying drawing is illustrated one embodiment of the invention, applied to a self unloading car which discharges to one side; Figure 1 showing an

end view, partly in section of a car, with the dumping door closed; Fig. 2 a similar view, with the door open, Fig. 3 a similar view, with the dumping door in an intermediate position; and Fig. 4 a view of the relative positions of the lever centers with the dumping door closed.

At the upper part of the car box A, a shaft B is mounted in bearings and around this shaft the dumping door C can freely swing. At the lower part of the car box A another shaft D is also mounted in bearings, which shaft carries securely fastened thereon several counter weights d' and crank arms d^2 . At the free end of each of these crank arms d^2 , which, under the influence of the counter weights d' , tend to impinge against the under side of the car box A, is hinged a locking pawl E. These locking pawls E are each actuated by means of a link F hinged to a corresponding arm g' securely fastened on a common driving shaft G. The driving shaft G which is mounted in bearings on the frame work H of the self-unloading car, and parallel to the shafts B and D, carries at each end thereof a hand lever g^2 securely fastened thereon. For each of the hand levers g^2 are provided two stops a' and a^2 fixed on the end walls of the car box, and against which the hand levers are constructed to abut in their extreme positions. The parts are so proportioned that in the locking position of the device, illustrated in Fig. 1, with the hand levers g^2 leaning against the stops a' , the crank arms d^2 , which abut against the under side of the car box A, under the effect of the counter weights d' , are almost situated in their dead center positions and the crank arms g' are slightly beyond their dead center positions. This is clearly shown diagrammatically in Fig. 4. The pawls E are at their upper end each provided with a nose e' , against which the dumping door rests, this nose being beveled off in the direction of the lower end of the pawl E, so that on the one hand, the locking pawls, can be turned out of the path of the dumping door (see Fig. 2) by turning the hand levers g^2 in the direction of the arrow x , Fig. 1, and on the other hand, while the hand levers g^2 rest against the stops a' said pawls can be pushed out of the

said path by the dumping door, when it is swung from its opening position into its closing position, see Fig. 3.

In describing the operation of the present device we will commence with the closed position of the dumping door C as shown in Fig. 1, where the pressure of the loaded material, bearing on the dumping door, is transferred to the device in such a manner, that under the effect of pressure, the hand levers g^2 , are pressed hard against the stops a' , and the crank arms d^2 against the underside of the car box A. The dumping door C is therefore secured in a very effective manner against unintentional opening. When the dumping door C has to be swung into the open position, one of the two hand levers g^2 is turned in the direction of the arrow x , see Fig. 1, until it abuts with the stop a^2 . As soon as the crank arms g' , moving in the same direction, have passed their dead centers, just after the beginning of this movement, they automatically tend to continue turning in the direction of the arrow x , under the effect of the pressure of the loaded material bearing on the dumping door, so that the turning of the hand lever proceeds easily and is conveniently continued from position of rest. In the further progress of this turning, the locking pawls E move out of the path of the dumping door C, as shown in Fig. 2, so that the latter, actuated by its own weight and the pressure of the load, swings into the opening position, Fig. 2. When the dumping door C has again to be turned into the closed position, the mechanism is first brought from the position of Fig. 2 into the position of Fig. 1, by throwing over one of the hand levers g^2 . Thereupon, the dumping door is swung by hand into the closed position, thereby striking, with its free end, upon the rear of the locking pawls E and forces them from its path against the influence of the counter weight d' , which will be slightly raised thereby (see Fig. 3). As soon as this has taken place the locking pawls E, under the influence of the counter weights d' , swing back into the locking position and consequently secure the dumping door C in its closed position. The same condition is thus attained as that from which the delineation of operation commenced.

I claim:—

1. A locking means for the dumping doors of cars, comprising a locking member, a mounting for each end of said member, which mountings combine to present the member in position to hold the door in locked position, but each of which independently affords movement of the locking bolt to remove it from the path of the door; a means yieldingly controlling one end of the locking member for holding the member in the path of the door, and manually

operated means positively controlling the other end of the locking member for fixing it in or withdrawing it from the path of the door.

2. A locking means for the dumping doors of cars, comprising a locking member having independent mountings for its respective ends, either of which permits the member to move to and from the path of the door while the other remains stationary; a yielding means acting upon one end of the locking member to hold the member in locking position, and a fixing lever acting upon the other end of the locking member to positively resist movement of the member from locking position; said locking member being constructed to be displaced from the path of the door, in opposition to the yielding means, during the closing movement of the door and to seek to move out of the path of the door in opposition to the fixing lever, while sustaining weight of the load in the car.

3. A locking device for the dumping doors of self unloading cars, comprising a latch member, sustaining the weight of said door when closed, a crank mounted to oscillate around the fixed axis in the car, said latch member being journaled on the free end of said crank, link connections between said car and said member, said link connection adapted to have two extreme positions corresponding to the locking and unlocking positions of said latch member, and said link connection constructed to be slightly above the dead center position, when said latch member is in the locking position.

4. A locking device for the dumping door of self unloading cars, comprising a latch member, sustaining the weight of said door when closed, link connection between said car and said member, said link connection adapted to have two extreme positions corresponding to the locking and unlocking positions of said latch member, and said link connection constructed to be slightly above the dead center position, when said latch member is in the locking position; said latch member having a cam surface situated to be impinged by the edge of said door when the door is swung to, whereby said latch member will be temporarily pushed out of the path of the door.

5. A locking device for swinging dumping doors of self-unloading cars, comprising a locking pawl having a cam surface, a shaft mounted in said car parallel to the axis of the hinge of said door, an arm and a counter weight rigidly secured to said shaft, said pawl being journaled at one end on said arm, a second shaft also mounted in said car parallel to said first shaft, a crank arm on said second shaft and link connection between said crank arm and the other end of said locking pawl, means for turning

said second shaft between two extreme positions corresponding to the locking and unlocking positions of said pawl, said weight tending to bring the pawl beyond the dead center position; said cam surface, with the pawl in the locking position, being situated in the path of the door while being swung to.

The foregoing specification signed at Barren, Germany, this 25th day of July, 1913.

KARL BARTH. [L. s.]

In presence of—

HELEN NUFER,
JULIUS FESTNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."