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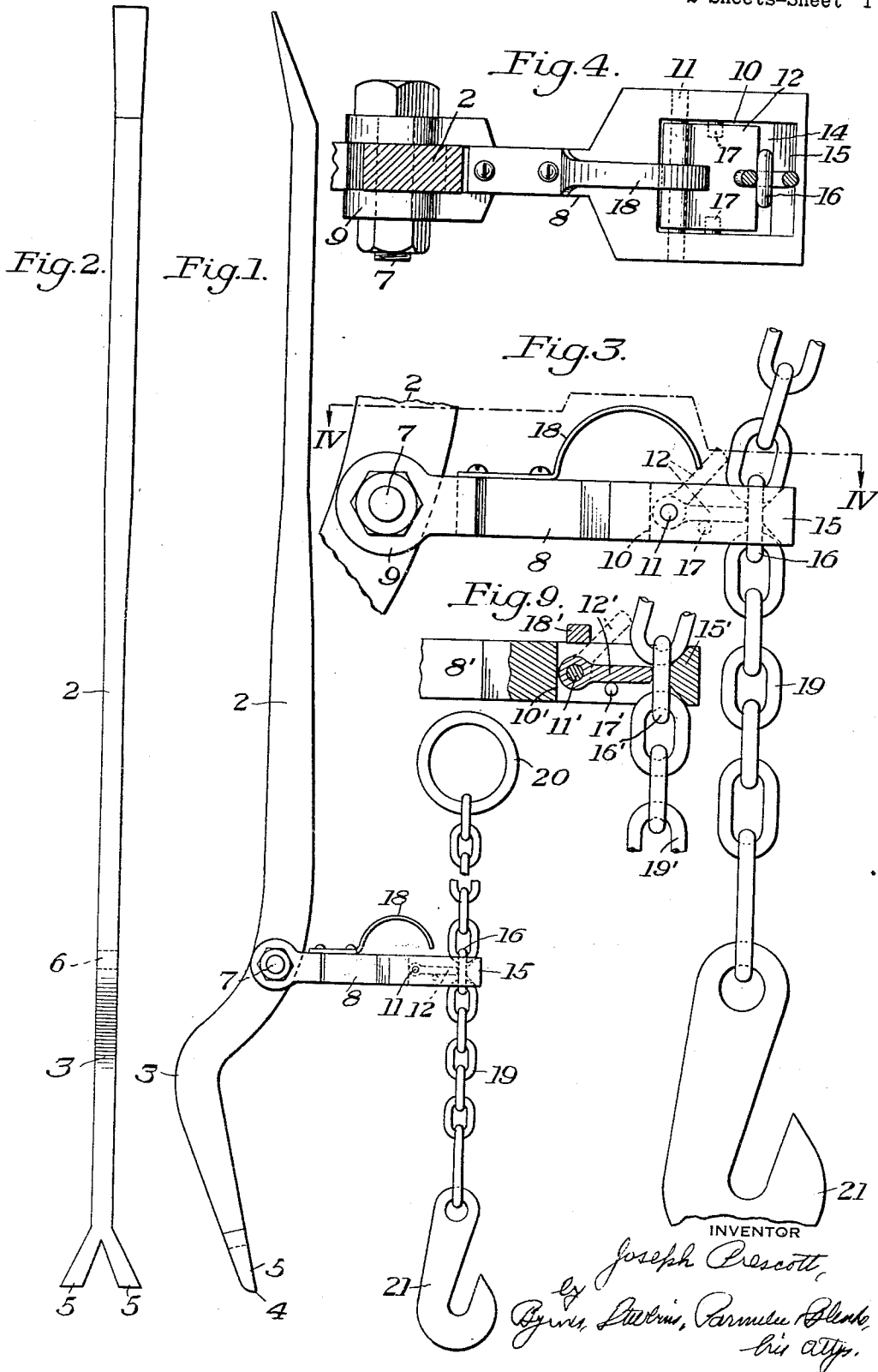
J. PRESCOTT

1,933,756

SAFETY CAR WRENCH

Filed June 28, 1932

2 Sheets-Sheet 1



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Fig. 6.

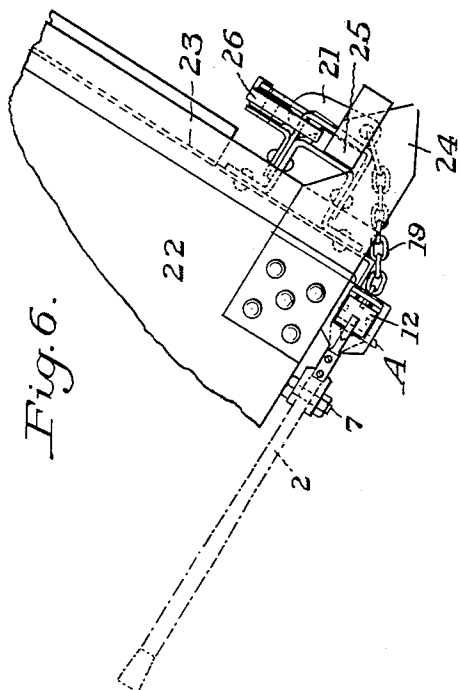


Fig. 8.

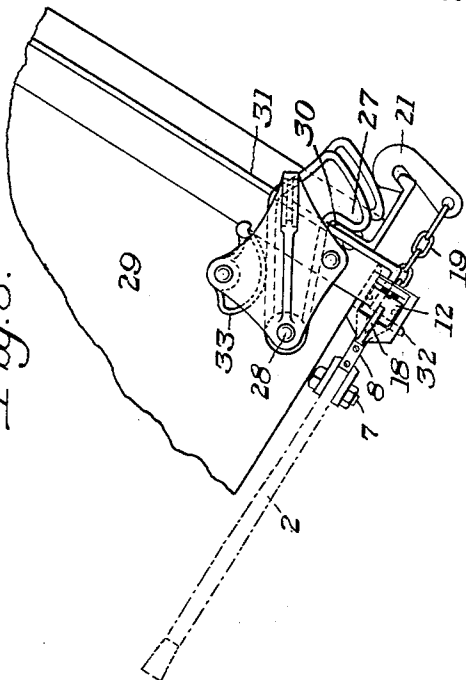


Fig. 5.

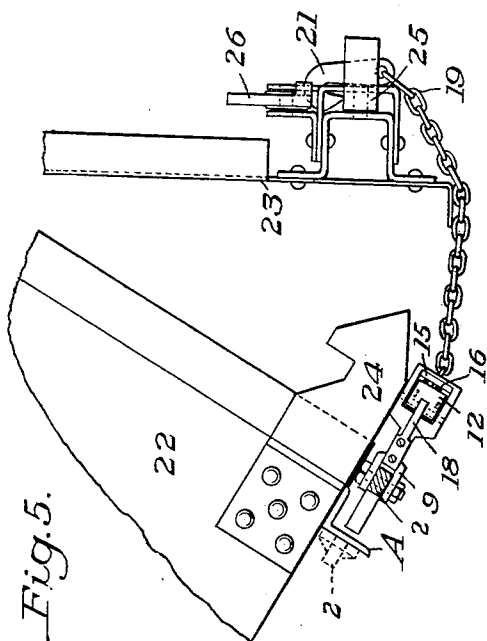
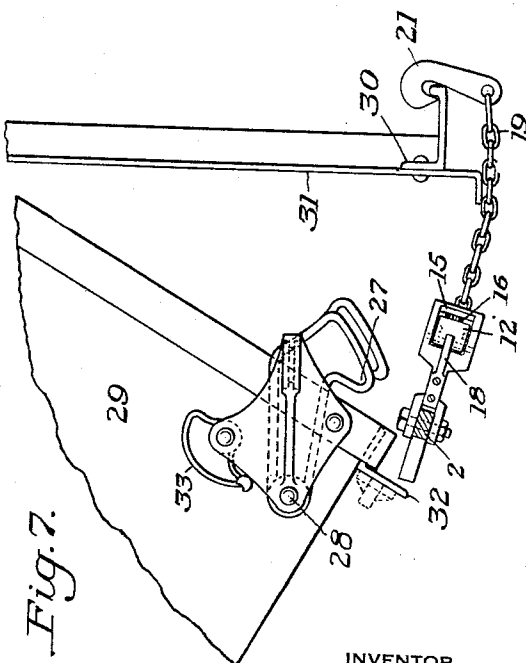


Fig. 7.



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UNITED STATES PATENT OFFICE

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SAFETY CAR WRENCH

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4 Claims. (Cl. 254—131)

The present invention relates broadly to implements for lifting or pulling, and more particularly to an improved implement of the type adapted for the closing of doors of the hopper type, and usually referred to as car wrenches.

It has been customary in the past with many cars of the hopper type to be provided with a winch and chain mechanism for closing the doors. The operation of such winches has usually been effected by the use of a long wrench rotated about the axis of the winch in a plane near the side of the gondola or car body. Not infrequently the operator utilizing such a winch would get his fingers caught between the wrench and the side of the car with resultant injury. Later, hopper cars were constructed with the so-called "Wine" lock and the so-called "B. & O." lock. Both of these locks comprise a latch at the bottom of the hopper engageable with a suitable cooperating mechanism on the door for holding the door closed. Many workmen in attempting to close hopper doors on cars using locks of this character would grasp the doors with their hands and unthinkingly have their fingers in such position that they were sheared off or severally injured when the doors closed. Other workmen, attempting to push the doors to a closed position by using their feet have not infrequently more or less seriously strained themselves by reason of the effort involved.

The present invention has for one of its objects the production of a car wrench by the use of which a workman may close a door of the character referred to, easily, quickly and without liability of injury.

In the accompanying drawings I have shown for purposes of illustration only, certain preferred embodiments of the present invention. In the drawings:—

Figure 1 is a side elevational view of a wrench constructed in accordance with the present invention;

Figure 2 is a front elevational view of the wrench shown in Figure 1 with the lifting chain and its carrying means removed from the lever;

Figure 3 is a detail view, on an enlarged scale, of a portion of the structure shown in Figure 1;

Figure 4 is a detail sectional view along the line IV—IV of Figure 3, looking in the direction of the arrows;

Figure 5 is a side elevational view of a portion of the hopper showing the hopper door in open position with my improved wrench attached thereto preparatory to closing the door;

Figure 6 is a view similar to Figure 5, but illustrating the door in closed position;

Figure 7 is a view similar to Figure 5, illustrating a modified form of latching means for hopper doors;

Figure 8 is a view similar to Figure 6 showing the door of Figure 7 in closed position; and

Figure 9 is a detail sectional view similar to Figure 3, illustrating a modification.

Referring more particularly to Figures 1 and 2 of the drawings, there is illustrated a car wrench constructed in accordance with the present invention and comprising a generally straight handle portion 2 with a generally curved backwardly and then forwardly extending offset or "doglegged" fulcrum portion 3. The extreme end 4 of the fulcrum portion 3 is conveniently of the bifurcated shape illustrated in Figure 2 to provide spaced fulcrum points 5.

Intermediate the handle 2 and the portion 3, the wrench is provided with an opening 6 through which is adapted to extend a pivot pin 7 for pivotally connecting a chain clamp 8 to the handle. The chain clamp comprises bifurcations 9 adapted to straddle the portion of the wrench adjacent the opening 6 and receive the pivot pin 7. The free end of the clamp 8 is shaped to provide a generally rectangular opening 10 through which extends a pivot 11 for a chain clamping plate 12. The plate 12 is of such dimensions as to provide a space 14 between the end of the plate and the cross bar 15 of such dimensions as to receive a chain link 16 when turned flatwise as illustrated in Figures 3 and 4. Movement of the clamping plate 12 in a clockwise direction as viewed in Figure 3 about its pivotal mounting 11 is restricted by stop pins 17, while movement in a counter-clockwise direction as viewed in Figure 3 is limited only by a spring 18 carried by the clamp and extending into overlapping relationship to the plate.

The chain 19, of which the link 16 before referred to constitutes a component part, is of any suitable length, and carries at one end thereof a ring 20 adapted to be engaged by an operator for manipulating the chain, and at the opposite end carries a door engaging hook 21. With the construction described, by grasping the ring 20 and pulling upwardly, the plate 12 may be swung in a counter-clockwise direction about its pivotal mounting 11 to provide sufficient distance between the free end of the plate 12 and the cross-piece 15 to permit the chain to move freely therebetween. The desired posi-

tioning of the chain having been effected, the plate 12 is permitted to rotate in a clockwise direction as viewed in Figure 3 until it engages the stops 17, whereupon further movement of the plate in a clockwise direction is prevented and the chain is clamped in adjusted position within the clamp 8.

In Figures 5 and 6 there is illustrated a portion of the hopper 22 of a hopper or gondola type car, with the open side of which hopper cooperates a door 23. Projecting from the hopper 22 is a latch 24 adapted to engage a suitable keeper 25 on the door 23. The latch mechanism of Figures 5 and 6 is of the type usually referred to as a "B. & O." lock attachment and requires no specific description for its understanding. Assuming the door to be in the open position illustrated in full lines in Figure 5, the hook 21 of the wrench may be engaged with the door as illustrated in this figure, and the fulcrum portion 3 of the wrench positioned upon the upper face of an angle A extending across the hopper 22 substantially parallel to the door 23.

In dotted lines in Figure 5 the wrench is illustrated in engagement with the angle. In this position the handle 2 of the wrench projects outwardly from the car body in such position that it may be freely engaged by a workman without any fear of catching his fingers or hands between the wrench handle and any portion of the car structure. Thereupon the handle portion of the wrench is swung from a substantially horizontal position into the dotted line position of Figure 6, around the fulcrum points 5.

During this movement, the chain 19 is gradually drawn upwardly in such manner that the door 23 is swung from its open position of Figure 5 into its closed position of Figure 6. At the time the closed position is reached, the chain 19 may extend substantially in alignment with the handle portion 2 of the wrench, the wrench at this time extending in substantially the position shown in Figure 1.

The door having been closed, and the keeper 25 having engaged the latch 24, the retaining cam 26 may be swung from its full line position of Figure 5 into its full line position of Figure 6 for preventing accidental unlocking of the door.

In Figures 7 and 8 there is illustrated a slightly modified form of hopper lock, the structure of these figures being of the type ordinarily referred to as a "Wine lock attachment". This attachment comprises a latch 27 having a pivotal mounting 28 on a hopper 29 and adapted to engage over an angle plate 30 on the door 31. The hook 21 of the wrench having been secured over a suitable portion of the door, as indicated in Figure 7, the door is moved to its dotted line position and the ends 5 of the fulcrum portion 3 of the wrench positioned on the angle 32 as before described, whereupon it is swung from its position at substantially right angles to the side of the car into its position of Figure 8 for moving the door 31 from its dotted line position to its closed position. The wrench having engaged the angle 30, the cam 33 is swung from its full line position of Figure 7 to its full line position of Figure 8, preventing accidental unlocking of the hopper door.

A given door of the hopper having been closed, the wrench is released therefrom and applied to the next door and the operation repeated.

As will be apparent from a comparison for example of the location of the angle A of

Figure 5 with the corresponding angle 32 of Figure 7, the location of these angles varies with different types of cars, some of the angles being more remote from the door openings than others. By reason of the adjustability of the chain 19 with respect to the clamp 8, my invention provides a wrench of universal applicability adapted to be utilized with doors of different types by proper preliminary adjustment of the position of the chain within the clamp.

Due to the fact that the handle portion 2 of the wrench normally projects freely outwardly from the side of the car, it may be easily engaged by the operator and lifted or pulled upwardly. By reason of the fact that the fulcrum portion 3 is curved or offset, as indicated more particularly in Figure 1 of the drawings, it will be apparent that by dropping the outer end of the handle portion downwardly, the fulcrum points 5 may be disposed sufficiently above the general plane of the handle portion of the lever to facilitate positioning these points behind the angle. This obviates the necessity of exerting any pre-closing influence on the door to be closed, and makes it possible to completely close a given door entirely through the use of the safety car wrench.

From the foregoing description, it will be apparent that I have provided a car wrench comprising a lever of the second class, i. e., a lever in which the resistance to movement is applied at a point intermediate the fulcrum and the point of application of the moving force.

In Figure 9 there is shown in side elevation a slightly modified embodiment of the invention, wherein parts corresponding to the parts more particularly of Figures 3 and 4 are given the same reference characters having, however a prime affixed thereto. In accordance with this embodiment the limiting spring 18 is replaced by a rigid bar 18', which is directly carried by the chain clamp so as to extend transversely thereof in such position as to limit upward swinging movement of the clamping plate 12'.

The advantages of the present invention arise from the provision of a car wrench adjustable to doors of different characteristic structures and types and effective for moving the doors to closed position with a minimum amount of danger of injury to the operator.

Further advantages arise from the provision of a wrench of comparatively simple and inexpensive construction which may be readily attached to or detached from the door to be closed and which provides a lever portion projecting freely beyond any obstructing portion of the car body in such manner that it may be easily engaged and manipulated by an operator without fear of injury.

Still further advantages arise from the provision of a car wrench wherein the fulcrum portion is generally curved or offset with respect to the handle portion in such manner that the fulcrum portion may be engaged with a stationary part of the car structure with the door to be closed substantially in its fully open position.

While I have herein illustrated and described certain preferred embodiments of the present invention, it will be understood that changes in the construction and operation of the parts may be made without departing either from the spirit of the invention or the scope of my broader claims.

I claim:

1. A tool for closing the doors of hopper-bottom cars, comprising a lever having a handle at one end, and a foot at the other end for engaging the car bottom, a chain clamp pivoted to the lever between the foot and handle, said clamp having an opening therethrough, a chain in said opening having alternately arranged links the opening being of sufficient size to permit the chain to pass freely therethrough, a pivoted stop plate arranged to swing over the opening to prevent the passage through the opening of the link of the chain above the plate, and stop means for limiting pivotal movement of the stop plate in each direction.
2. A tool for closing the doors of hopper-bottom cars, comprising a lever having a handle at one end, and a foot at the other end for engaging the car bottom, a chain clamp pivoted to the lever between the foot and handle, said clamp having an opening therethrough, a chain in said opening having alternately arranged links, the opening being of sufficient size to permit the chain to pass freely therethrough, a pivoted stop plate arranged to swing over the opening leaving only a narrow transverse slot near the outer end through which a link will pass flatwise but will prevent the passage of a link edgewise, and stop means for limiting pivotal movement of the plate in each direction.
3. A tool for closing the doors of hopper-bottom cars comprising a lever having a handle portion adapted to be grasped by the user, and a foot or fulcrum portion adapted to engage a fixed part of a car, a chain holder secured to the lever between the handle and foot, and a chain adjustably engaged by said holder, said chain having a hook adapted to engage a portion of a car door adjacent its free edge, and said lever having a substantially dog-legged portion extending rearwardly between the foot and handle, whereby swinging of the handle about the foot causes closing movement of the door before the handle approaches the body of the car.
4. A tool for closing the doors of hopper-bottom cars comprising a lever having a handle portion adapted to be grasped by the user, and a foot or fulcrum portion adapted to engage a fixed part of a car, a chain adjustably secured to said lever between the handle and foot, said chain having a hook adapted to engage a portion of a car door adjacent its free edge, and said lever having a substantially dog-legged portion extending rearwardly between the foot and handle, whereby swinging of the handle about the foot causes closing movement of the door before the handle approaches the body of the car.
- JOSEPH PRESCOTT.

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