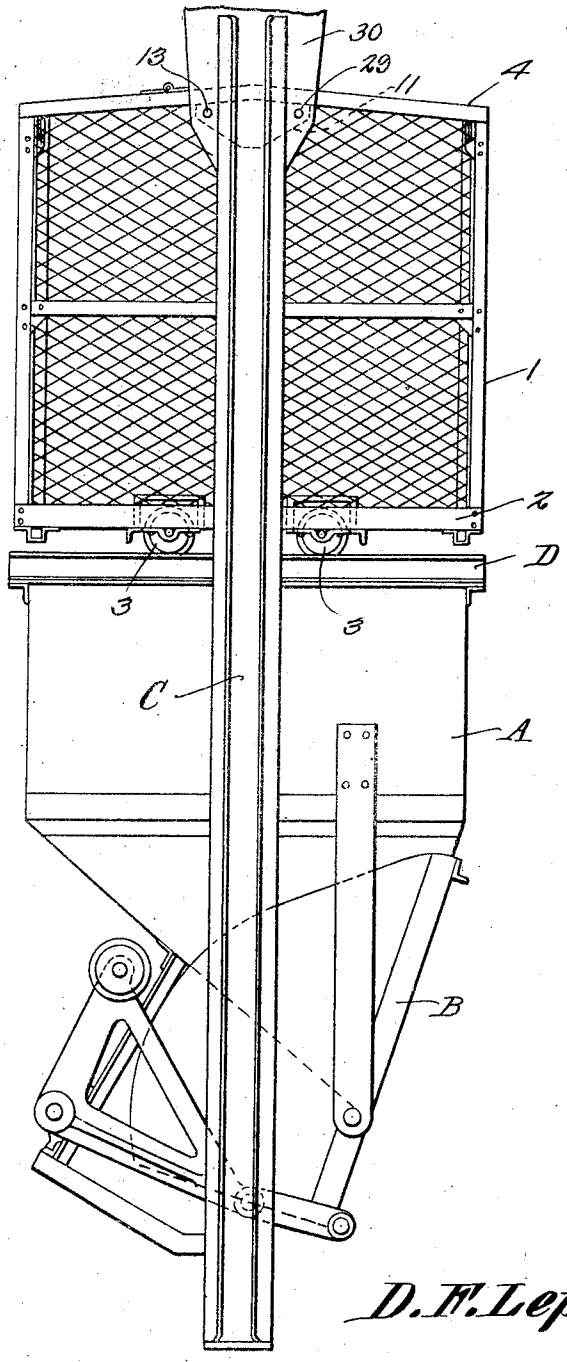
April 13, 1926. 1,580,310

D. F. LEPLEY

REMOVABLE ELEVATOR CAGE

Filed Sept. 17, 1924 3 Sheets-Sheet 1

Fig. 1.



Inventor
D. F. Lepley

By C. A. Snow & Co.
Attorneys.

April 13, 1926. 1,580,310

D. F. LEPLEY

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Filed Sept. 17, 1924 3 Sheets-Sheet 2

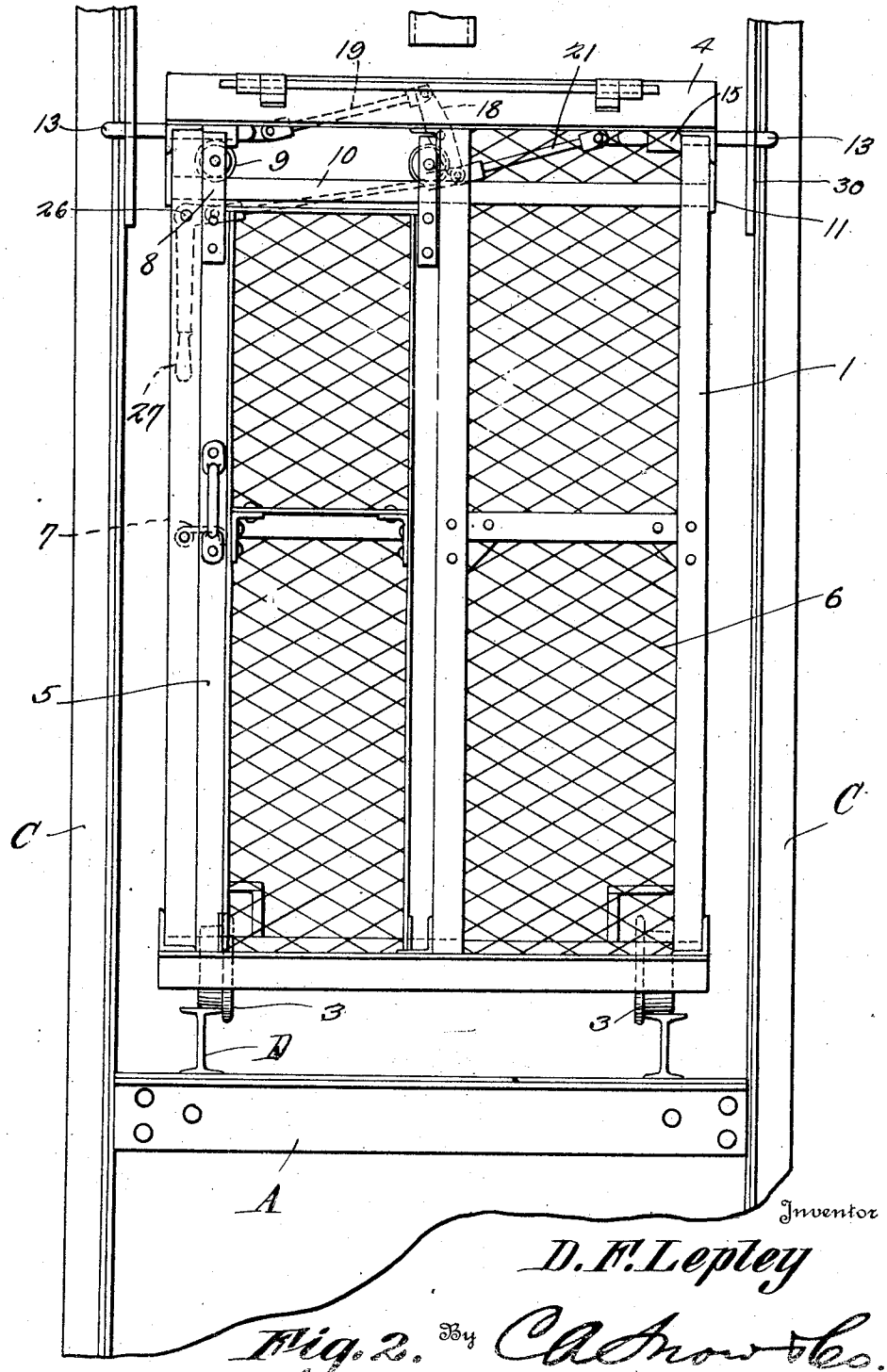


Fig. 2.

Inventor
D. F. Lepley
By C. A. Snow & Co.
Attorneys.

April 13, 1926. 1,580,310

D. F. LEPLEY

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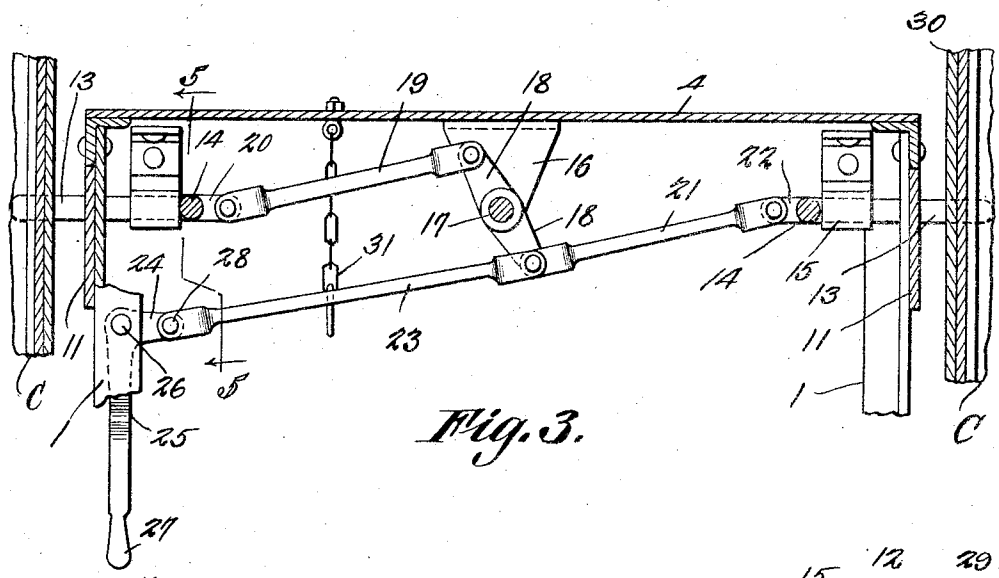


Fig. 3.

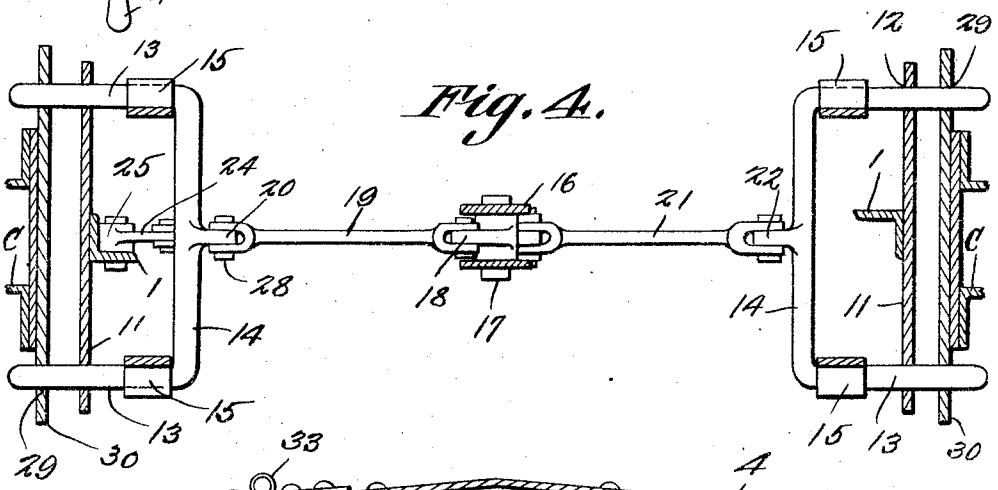


Fig. 4.

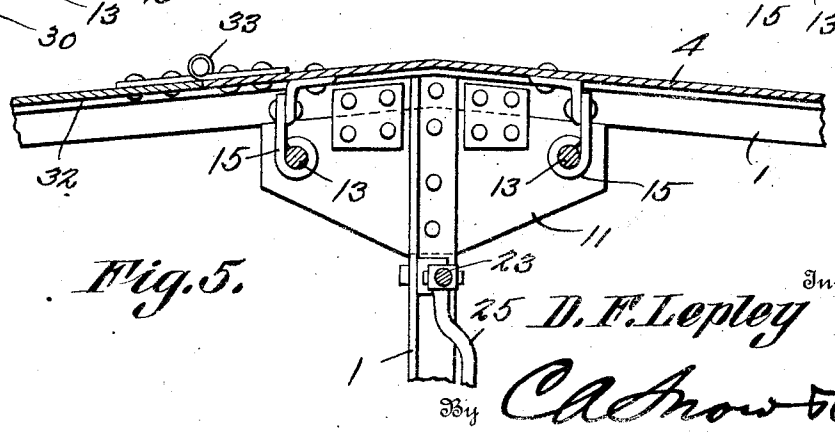


Fig. 5.

Inventor

D. F. Lepley

By C. A. Snow & Co.

Attorneys.

Patented Apr. 13, 1926. 1,580,310

UNITED STATES PATENT OFFICE.

DANIEL F. LEPLEY, OF CONNELLSVILLE, PENNSYLVANIA.

REMOVABLE ELEVATOR CAGE.

Application filed September 17, 1924. Serial No. 738,306.

To all whom it may concern:

Be it known that I, DANIEL F. LEPLEY, a citizen of the United States, residing at Connellsville, in the county of Fayette and State of Pennsylvania, have invented a new and useful Removable Elevator Cage, of which the following is a specification.

This invention relates to a hoist unit designed primarily for use in hoisting materials from mines and for like purposes, one of the objects of the invention being to provide the unit with a removable cage which can easily be placed in or removed from position upon the platform of the hoist unit, thereby rendering the unit suitable for use as a man hoist. In some mines where a single hoist unit is employed considerable time is lost during changes in shifts of men due to the preparation, loading and unloading of the cages employed for raising and lowering the men.

The present invention is designed as a means whereby the ordinary hoist unit can be operated throughout the greater portion of the work period and whenever it is desired to raise or lower men it becomes merely necessary to move onto the ordinary hoist unit a cage which has previously filled with men who are thus ready to ascend or descend. In this way the loss of time due to change of shifts is reduced to the minimum and the output of the mine can consequently be materially increased.

A further object is to provide a cage having simple and efficient means for locking it to the hoist unit so as to prevent displacement of the cage while in transit.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings

Figure 1 is a side elevation of a hoist skip having combined therewith a cage such as constitutes the present invention.

Fig. 2 is a front elevation of the cage and a portion of the skip.

Fig. 3 is a vertical transverse section through a portion of the cage and the bail of the skip showing the locking mechanism.

Fig. 4 is a horizontal section through a portion of the cage and bail and showing the locking mechanism in plan.

Fig. 5 is a section on line 5—5, Fig. 3.

It is not new to provide a mine skip with a platform, one type of a skip of this kind having already been patented by me as disclosed in Patent #1,379,869 of May 31, 1921. In the present instance the skip, indicated generally at A and which is provided with a dump chute B at the bottom thereof, has the usual supporting bail C and track rails D are extended across the open top of the skip where they will not interfere with the loading of the skip but where they will be brought into proper alinement with the ends of the track rails at the different landings to which the skip is to be brought. The cage, which is designed to hold men to be transported comprises a skeleton frame 1 suitably secured to a platform 2 which, in turn, is mounted on supporting wheels 3. The frame 1 is provided with a closed top 4 and a door 5 is movably connected to the frame. The frame 1 and the door 5 of the cage are provided with panels 6 of heavy open mesh and any suitable form of latch 7 can be provided for fastening the door in closed position. This door is preferably supported by hangers 8 carrying wheels 9 which travel along a rail 10 secured to the frame 1.

Secured to each side of the frame is a guide plate 11 having spaced openings 12 and slidable in the openings in each plate are parallel locking fingers 13 extending from a cross head 14 and cooperating with the cross head to form a locking yoke. These fingers are also slidable within guide hangers 15 depending from the closed top 4 of the cage. Hangers 16 are connected to the top 4 and journaled within them is a shaft 17 provided with oppositely extending arms 18. To one of these arms is pivotally connected a link 19 and this link is also pivotally attached to a lug 20 extending from one of the cross heads 14.

The other arm 18 is connected by a link 21 to a lug 22 extending from the other cross head 14. To this last named arm 18 is pivotally connected a rod 23 one end of which is attached to the short arm 24 of a bell crank 25. This bell crank is connected

to the frame 1 as shown at 26 and the long depending arm thereof may be provided with a handle 27.

By referring particularly to Fig. 3, it will be seen that when the handle 27 is hanging downwardly the point of connection between the rod 23 and arm 24 of the bell crank and which point of connection has been indicated at 28, is below the dead center so that shaft 17 cannot be rotated in a clockwise direction. Consequently the locking fingers 13 will be held projected through the openings 12 in plates 11 and into corresponding openings 29 provided in plates 30 attached to the bail C. By pulling the handle 27 inwardly and upwardly arm 24 will be caused to pull on rod 23 so as to rotate shaft 17 in a clockwise direction and thus retract the fingers 13 from engagement with the plates 30. The handle 27 can be supported in raised position by a chain 31 or the like.

It will be understood that under normal conditions a cage such as described is arranged on the track at the landing where the skip is to be loaded with men. Before the skip arrives at the landing the men are placed in the cage and the door 5 is closed. As soon as the skip arrives at the landing the cage is pushed onto the rails D and when it becomes properly centered on the skip the handle 27 is released from chain 31 and swung downwardly and laterally. This will cause the fingers 13 to move outwardly into the openings 29 and astride the sides of the bail C. Consequently the cage is thus fastened securely to the skip and cannot become displaced. Thus the skip can be raised or lowered without danger to the passengers in the cage and when it arrives at the point of unloading the lever 25 is swung upwardly to place the handle 27 in engagement with chain 23 and retract the fingers 13 from engagement with the bail. The cage can then be pushed off of the skip and into the adjacent track whereupon said cage can be opened and unloaded.

It has been found in practice that by utilizing a cage such as described a considerable saving of time can be affected in transporting men when shifts are changed. Consequently the maximum output of the mine by the use of a single hoist can be greatly increased.

As shown in the drawings, the top 4 of the cage can be provided with a trap door 32 hingedly mounted as at 33. Thus under some conditions the trap door can be opened to accommodate long objects such as timbers, rails or the like placed on end in the cage for transportation with the loaded skip.

It might be stated that the use of the cage herein described will not interfere with the use of the skip for its primary purpose of hoisting bulk material because after the skip has been loaded the cage containing the men can be brought to position on the skip and both loads can thus be elevated.

What is claimed is:—

1. The combination with a hoist skip having track rails extending across the open top thereof, of a man holding cage movable onto the track rails, and means within the cage for locking it to the skip.

2. The combination with a hoist skip and track rails extending across the open top thereof, of a wheel supported man cage movable onto and off of the rails, and means within the cage for locking it to the skip.

3. The combination with a hoist skip having an open top and track rails extending across said top, of a wheel supported man cage removably mounted on the rails, means carried by the cage for holding it against movement relative to the rails, and means within the cage for actuating said holding means to secure or to release the cage from the skip.

4. The combination with a hoist skip having an open top and track rails extending across said top, of a wheel supported man cage removably mounted on the rails, means carried by the cage for holding it against movement relative to the rails, means within the cage for actuating said holding means to secure or release the cage from the skip, said means including slidable skip engaging members, a rotatable shaft, means operated by the shaft for simultaneously shifting said members into or out of engagement with the skip, and means for rotating the shaft.

5. The combination with a hoist skip and track rails upon the skip, of a wheel supported man cage removably mounted on the rails, and means actuated from within the cage for fastening the cage to or unfastening it from the skip.

6. The combination with a hoist skip and track rails thereon, said skip including a bail, of a wheel supported man cage removably mounted on the rails, of bail engaging members carried by the cage, and means actuated from within the cage for moving the members into or out of engagement with the bail.

7. The combination with a hoist skip and track rails thereon, said skip including a bail, of a wheel supported man cage removably mounted on the rails, of yokes slidably mounted in the cage and means operated from within the cage for simultaneously shifting the yokes to straddle or to withdraw from the sides of the bail.

8. The combination with a hoist skip and rails thereon, said skip including a bail, of a wheel supported man cage removably mounted on the rails, slidable bail engaging members carried by the cage, a rotatable shaft, connections between the shaft and the slidable members for simultaneously shifting said members into or out of engage-

ment with the bail, an actuating lever, and a connection between the lever and shaft, said connection and lever cooperating to provide a gravity lock for the slidable members when projected to bail engaging positions.

9. A man cage for skip hoists including a wheel supported structure, a door therefor, locking elements movably connected to opposed portions of the cage, and means within the cage for simultaneously actuating said elements to move them into or out of locking positions.

10. The combination with a hoist skip having an open top and track rails extending across said top, of a wheel supported man cage removably mounted on the rails, means carried by the cage for holding it against movement relative to the rails, means carried by the cage for actuating said holding means to secure the cage to or release it from the skip, said means including slidable skip engaging members, a rotatable shaft, means operated by the shaft for simultaneously shifting said members into or out of engagement with the skip, and means for rotating the shaft.

11. The combination with a hoist skip and track rails thereon, said skip including a bail, of a wheel supported man cage removably mounted on the rails, and yokes slidably mounted in the cage and means for simultaneously shifting the yokes to straddle or to withdraw from the sides of the bail.

12. A man cage for skip hoists including a wheel supported structure, a door therefor, locking elements movably connected to opposed portions of the cage, and means carried by the cage for simultaneously actuating said elements to move them into or out of locking positions.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

DANIEL F. LEPLEY.