No. 855,784. PATENTED JUNE 4, 1907.

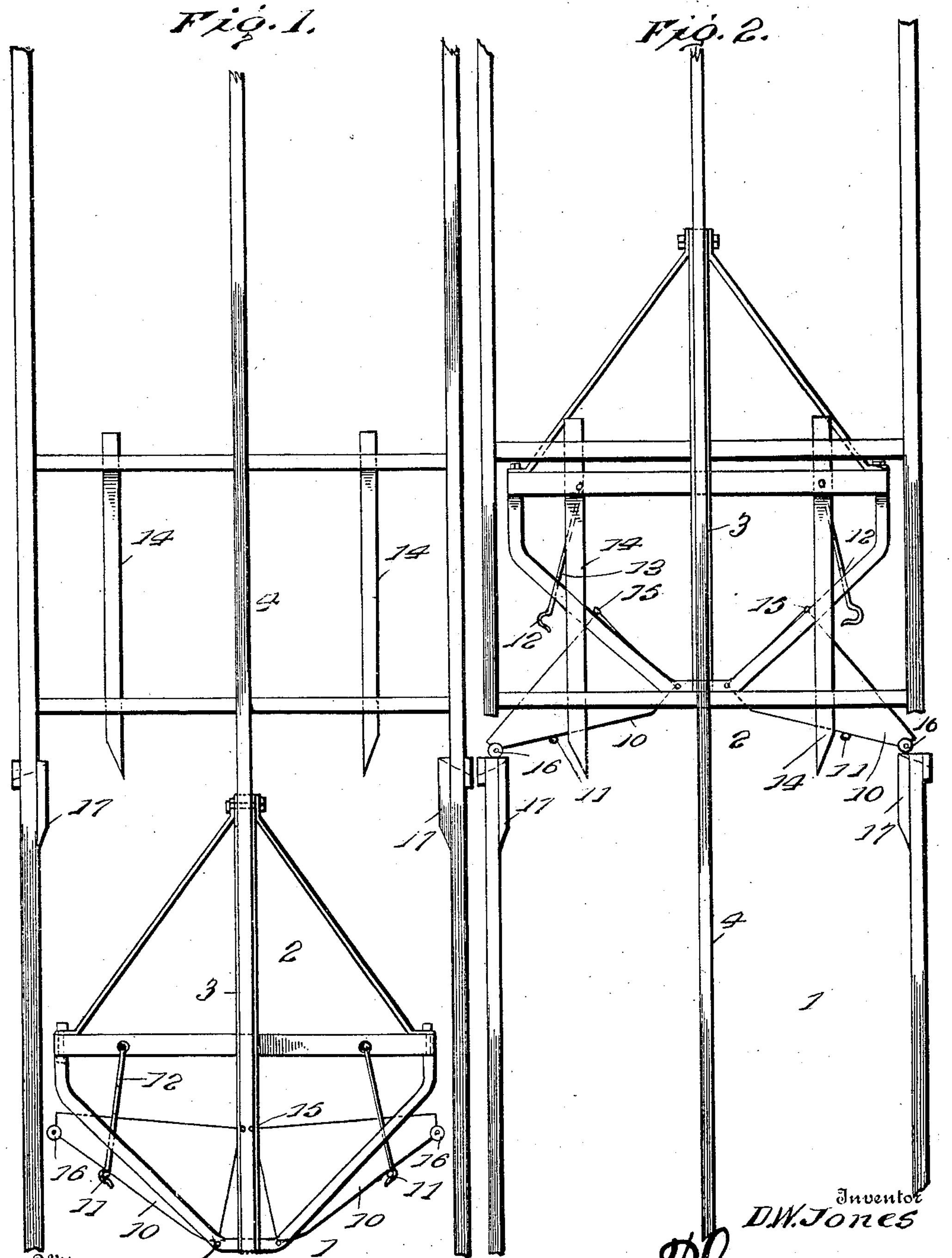
D. W. JONES.

CAGE.

APPLICATION FILED SEPT. 12, 1906.

2 SHEETS—SHEET 1.

Fig. 1. Fig. 2.



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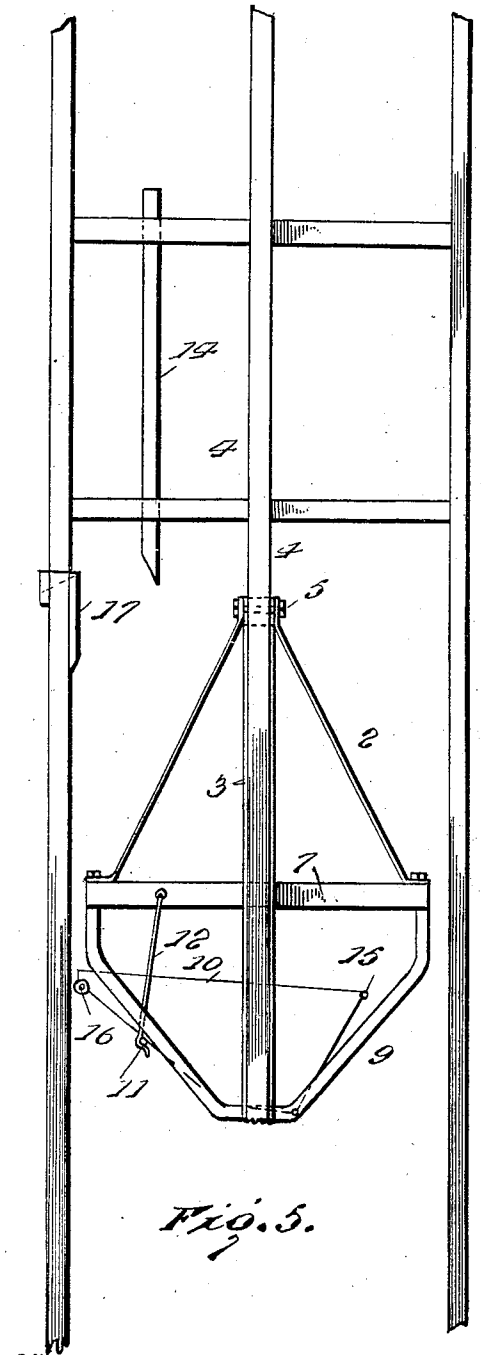

Fig. 5.

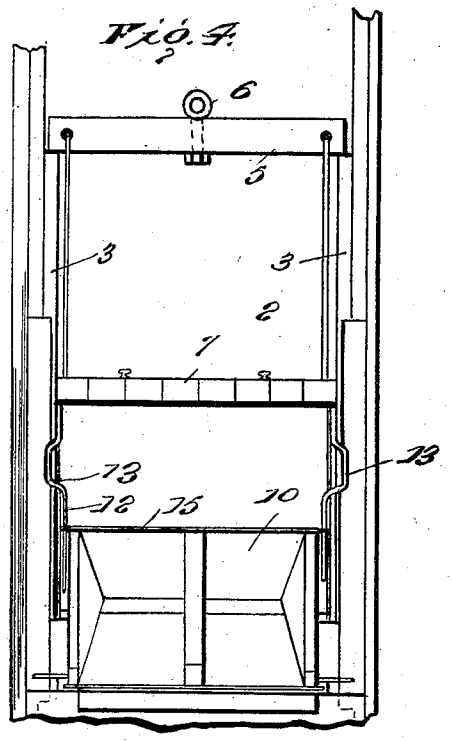

Fig. 4.

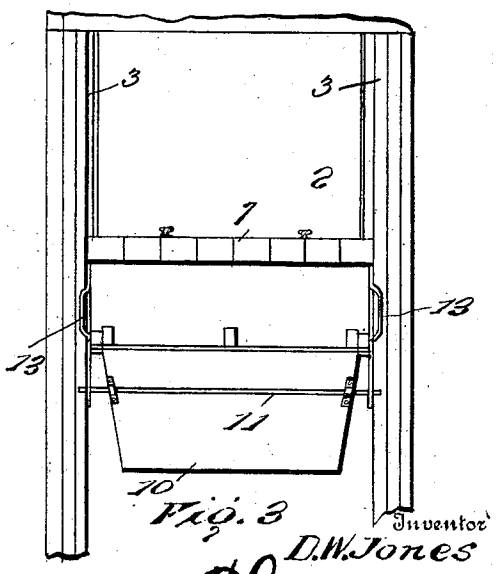

Fig. 3.

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DAVID W. JONES, OF ATHENS, OHIO.

CAGE.

No. 855,784. Specification of Letters Patent. Patented June 4, 1907.

Application filed September 12, 1906. Serial No. 334,345.

To all whom it may concern:

Be it known that I, DAVID W. JONES, a citizen of the United States, residing at Athens, in the county of Athens and State of Ohio, have invented certain new and useful Improvements in Cages, of which the following is a specification.

This invention comprises novel improvements particularly in cages such as are ordinarily employed in connection with mine shafts for hoisting coal or other material, such as stone, gravel, grain, etc.

A cage embodying the invention consists essentially of a platform adapted to support cars containing loads of material or the like, and movable vertically in the mine shaft, a scoop or scoops being arranged beneath the platform for conveying material and automatically dumping the same.

The invention contemplates the provision of peculiar mechanism for effecting automatic operation of the scoop or scoops which are carried by the platform or support.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a view showing a mine shaft in section and illustrating a cage embodying the invention arranged therein. Fig. 2 is a view similar to Fig. 1, the cage, however, being in such a position that the scoops carried thereby are in the positions assumed thereby in the operation of automatically dumping the material contained therein. Fig. 3 is a front elevation showing the scoops arranged in upright operative condition. Fig. 4 is a view similar to Fig. 3, the scoop being illustrated in dumped position. Fig. 5 is a view embodying a modification of the invention.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Specifically describing the invention, and referring to the drawings, the numeral 1 indicates the shaft which is of the usual form and the numeral 2 designates the cage which is mounted for vertical movement in said shaft. In general construction the cage is of substantially the same form as those most commonly in use including sides 3 which cooperate with the shaft guides 4 to direct the vertical movement of the cage. A cross head 5 at the upper end of the cage will be connected with a suitable operating cable or rope secured at 6 and by which the cage will be lowered and raised by hoisting mechanism. The cage embodies the usual platform 7 which may have rails thereon so that cars may be readily moved into position on the cage preparatory to being hoisted thereby, and pendent from each end of the platform 7 are brackets 9, the lower ends of which are reinforced by being secured to the sides 3 of the cage. A pair of scoops 10 is arranged beneath the platform 7 the lower inner portions of said scoops being pivotally connected with the lower ends of the brackets 9. Rods 11 are attached to the front portions of the scoops 10 which portions slope upwardly and outwardly, and the opposite ends of the rods 11 project laterally from the opposite ends of each of said scoops and are adapted to be engaged by hooks 12, the upper ends of which are pivoted to the platform 7. The hooks 12 when connected with the rods 11 are adapted to hold the scoops 10 in upright positions but each of these hooks 12 is formed with a lateral offset 13 intermediate of its ends which is adapted to be engaged by a trip bar 14 at the upper end of the shaft 1, when the cage reaches this portion of the shaft.

The lower ends of the trip bars 14 are beveled off from the outer sides thereof and form cams adapted to engage the offsets 13 to force the hooks 12 outwardly and disengage the same from the rods 11, permitting the scoops or buckets 10 to dump by downward movement thereof. The downward movement of the scoops or buckets 10 is limited by the projecting end portions of rods 15 which are attached to the rear sides of the scoops in such a way as to engage the inner edges of the brackets 9 when the scoops or buckets 10 have been dumped. In other words, the projecting end portions of the rods 15 constitute stops for coöperation with the brackets 9 to limit the dumping movement of the scoops 10.

Generally describing the operation of the invention it will be apparent that when the cage 2 reaches the limit of its upward movement in the shaft 1, the trip bars 14 will be engaged with the hooks 12 and force the latter outwardly away from the rods 11. The scoops or buckets 10 are adapted to move outwardly when they reach the upper end portion of the shaft and when the hooks 12 have been disengaged from the rods 11, as

shown most clearly in Fig. 2 of the drawing, said scoops or buckets are not confined by the sides of the shaft 1. The downward or dumping movement of the scoops or buckets 10 is not only limited by the members 15, but rollers 16 attached to the upper outer ends of the scoops are adapted for contact with the top of the walls of the shaft and perform the function of stops to a certain extent. When the cage lowers after the scoops or buckets 10 have been dumped, the rollers 16 moving into contact with the walls of the shaft 1, will force the outer ends of the buckets or scoops upwardly and at a predetermined time the offsets 13 of the hooks 12 will be disengaged from the trip bars 14 and will automatically engage with the rods 11 so as to hold the scoops or buckets in upright position preparatory to being refilled when they reach the lower end of the shaft. Restoration of the scoops or buckets to their upright positions may be facilitated by the provision of cams 17 at opposite upper portions of the walls of the shaft 1, said cams being adapted to contact with the rollers 16 in an evident manner. The outer inwardly sloping sides of the scoops or buckets 10 virtually form chutes to facilitate delivery of the contents thereof when the same are dumped.

The modification of the invention in Fig. 5 of the drawing is substantially the same in structure as the preferred form first illustrated except that the cage or support 2 is provided with a single scoop or bucket 10 instead of a pair of such buckets.

The operating mechanism used for the scoops or buckets 10 is particularly advantageous by reason of its simplicity and effectiveness under actual conditions of service.

Having thus described the invention, what is claimed as new is:

1. In combination with a shaft, a support mounted for vertical movement therein, scoops pivoted at the inner portions thereof to said support, hook members pivoted at the upper ends thereof to the support and normally coöperating with the scoops to hold the latter in upright positions, said hooks being provided in the length thereof with lateral offset portions, trip bars arranged in the upper portion of the shaft and adapted to engage the lateral offset portions of the hooks above mentioned to throw the latter out of engaging coöperation with the scoops and permit said scoops to dump, and means for restoring the scoops to their normal positions after the dumping operation.

2. In combination with a shaft, a support mounted therein and adapted to be raised and lowered, brackets attached to said support, a pair of scoops pivoted to said brackets, stop means carried by said scoops for limiting the dumping movement thereof, members for holding the scoops in upright position, and means for tripping the said members to effect automatic dumping of the scoops.

3. In combination with a shaft, a support or cage adapted to be lowered and raised therein, scoops pivoted at the inner portions thereof to said support or cage, means for holding the said scoops in upright positions, means for effecting automatic dumping of the scoops, and members at the outer portions of the scoops arranged to coöperate with the walls of the shaft to effect automatic restoration of the scoops to upright positions when the cage or support moves downwardly in the shaft.

4. In combination with a shaft, a cage or support adapted to be lowered and raised therein, a scoop pivoted at its inner portion to said cage or support, hook members for connection with the scoop to hold the same in an upright position, trip members in the path of movement of the cage or support for tripping the hook members to effect automatic dumping of the scoop, means for limiting the dumping movement of the scoop, and members at the outer portion of the scoop arranged for contact with one of the walls of the shaft to restore the scoop automatically to an upright position when the cage or support lowers after the scoop has been dumped.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID W. his × mark JONES. [L. S.]

Witnesses:
L. A. KOONS,
FRANCES ANGELL.