(No Model.) 2 Sheets—Sheet 1.

# D. C. BOYCE.

## CRADLE DUMP.

No. 560,567. Patented May 19, 1896.

Fig. 1.

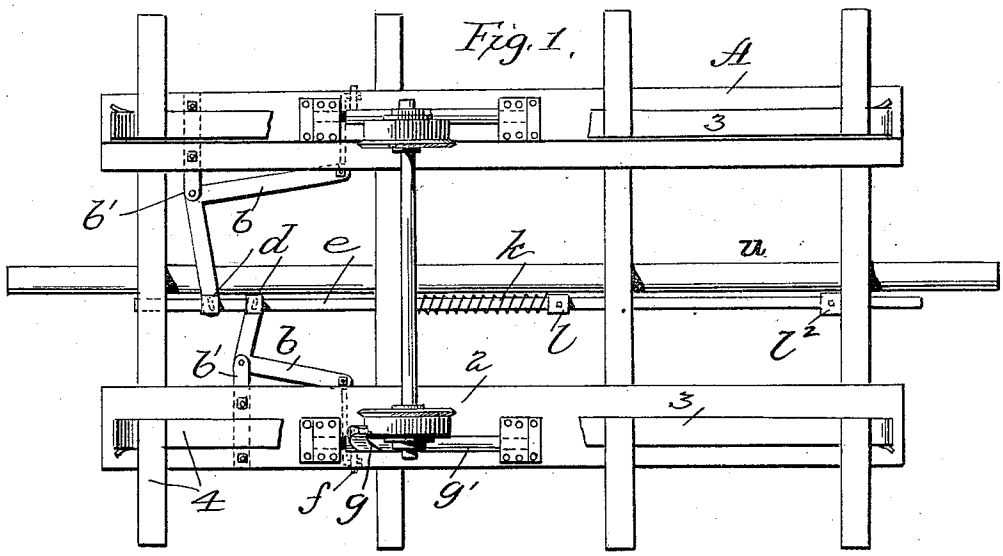



Fig. 2.

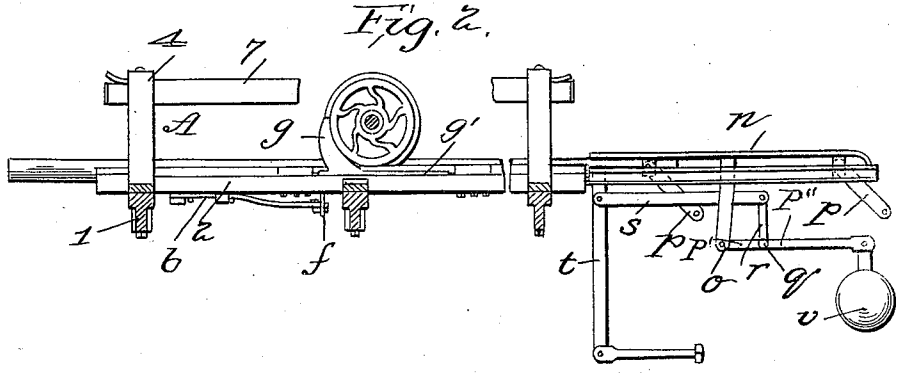
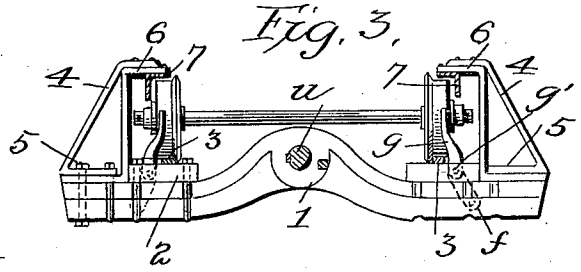



Fig. 3.




Attest
Walter Dawes
C. S. Middleton

Inventor
Darwin C. Boyce
by Ellis Spear
Atty.

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

(No Model.) 2 Sheets—Sheet 2.

# D. C. BOYCE.

## CRADLE DUMP.

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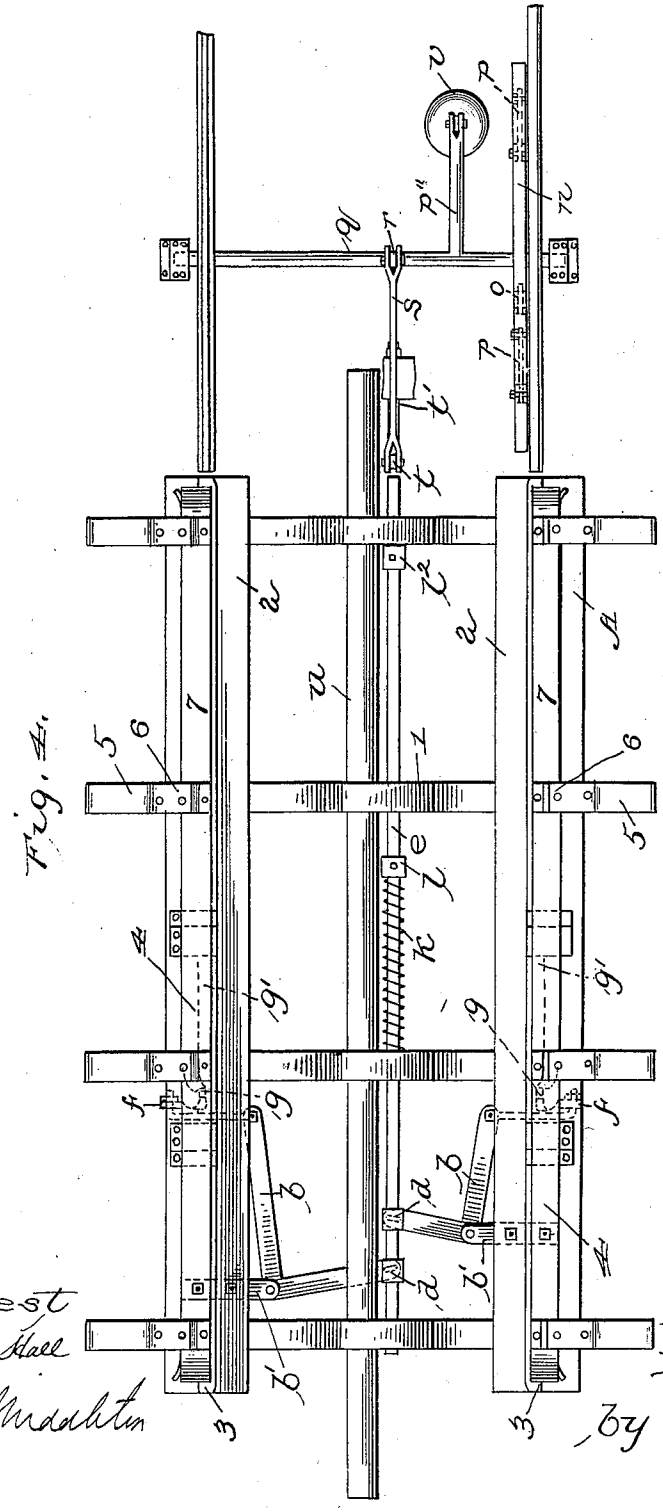

Fig. 4.

Attest
W. F. Hall
F. L. Middleton

Inventor
D. C. Boyce
By Geo. Lyon
Atty

ANDREW B GRAHAM. PHOTO-LITHO. WASHINGTON. D.C.

# UNITED STATES PATENT OFFICE.

DARWIN C. BOYCE, OF QUINNIMONT, WEST VIRGINIA, ASSIGNOR OF ONE-HALF TO J. M. CLARK, OF SAME PLACE.

## CRADLE-DUMP.

SPECIFICATION forming part of Letters Patent No. 560,567, dated May 19, 1896.

Application filed August 16, 1895. Serial No. 559,517. (No model.)

*To all whom it may concern:*

Be it known that I, DARWIN C. BOYCE, a citizen of the United States, residing at Quinnimont, in the county of Fayette and State of West Virginia, have invented certain new and useful Improvements in Cradle-Dumps, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in cradle-dumps, and includes automatic means for stopping and releasing cars.

The invention consists in the improved devices and combination of devices hereinafter more fully described and particularly claimed.

In the accompanying drawings, Figure 1 is a plan view of the dump, showing one set of the wheels of a car in position against the stop-bars. Fig. 2 is a side elevation of the same, showing at the right-hand side the means operated by the approaching car for releasing the car already on the dump. Fig. 3 is an end elevation, partly in section, of Fig. 1. Fig. 4 is a plan view of the treadle and dump.

In the accompanying drawings the frame of the dump is shown at A, and consists of a series of cross-beams connected to each other at the ends, these cross-beams being arched in the center, as shown at 1, and their ends being connected by beams 2. Centrally through these beams passes a rocking shaft $u$, by which the frame is tilted and the load dumped. The frame carries tracks 3, on which the wheels of the cars run, and a protecting-frame 4 (shown clearly in Figs. 2 and 3) extends up above the position of the car-wheels, so as to hold the same securely during the dumping of the car. This frame is composed of angular metal plates bolted to the cross-beams at the ends thereof, as shown at 5, Fig. 3, and the upper parts of these plates overhang the tread of the wheels, as shown at 6, a supplemental angle-plate 7 depending from the overhanging part 6, so as to prevent any undue lateral movement of the car.

In order to limit the movement of the incoming car and to stop it at the proper point on the dump and in exactly the same place each time, I provide stop-arms $g$, projecting from a rock-shaft $g'$, which has its bearings in blocks on the frame, as shown in Figs. 1 and 2. These stop-arms project into the path of the wheels of the car, and are provided with curved faces, as shown in Fig. 2, which conform to the periphery of the wheels, and when these arms are in position the car is stopped by them. After the car has been dumped it is necessary, however, to release it and to allow it to proceed on for another load, and to provide for this it is necessary to remove the stop-arms from the path of the wheels. To this end the rocking shaft $g'$ on each side has a depending arm $f$, and from each of these arms extends a bell-crank lever $b$, pivoted at the angle to brackets $b'$, projecting from the frame, as shown in Fig. 1. The movement of these bell-crank levers in one direction or the other will operate the shafts $g'$, with the effect of moving the stop-arms into or out of line with the wheels of the car. The ends $d$ of the bell-crank levers are connected to a central rod $e$, which carries a collar fixed to it, as shown at $l$, and encircling the rod $e$, and between the collar and one of the cross-beams is a spiral spring $k$, which has the tendency to keep the rod $e$ pressed to the right, as in Fig. 1, which, through the connections described, keeps the stop-arms normally in the path of the wheels.

As the cars are constantly going and coming it is desirable that some provision be made for the automatic operation of these stop-arms, so that at the proper time they will be moved out of line to release the car on the dump and to make room for the incoming car, and I have provided for such automatic action by the means now to be described and clearly shown in the right of Fig. 2. In proximity to the rails at the entrance to the dump-frame I arrange a treadle-plate $n$ on one side, this being adapted to receive the flanges of the wheels and to be operated thereby. This plate is supported by links $p$ $p$, pivoted at their lower ends to the framework supporting the rails, (not shown,) so as to have movement under pressure, and the plate is kept elevated by means of a link $o$, connected at one end to the plates, and connected at the opposite end to an arm $p'$, projecting from the shaft $q$. This shaft has an arm $p''$ projecting in a direction opposite to

the arm $p'$, and this arm is weighted, as at $v$. The tendency is to keep the plate $n$ pressed up. A lever $r$ projects vertically from the shaft $q$ and is connected by a link $s$ to a lever $t$. This lever $t$ bears directly against the end of the rod $e$, to which the bell-cranks are connected for operating the stop-arms, and the effect is that as soon as the incoming car reaches the treadle-plate $n$ this plate is depressed, depressing the link $o$ against the pressure of the weight $v$, which rocks the lever $r$ and forces the lever $t$ forward through the link $s$. The lever $t$, contacting with the rod $e$, forces the rod forward against the tension of the spring $k$, and through the bell-cranks throws the stop-arms to one side, thus leaving the first car free to be pushed forward by the second as it enters the dump. Before the rear wheels of the second car have left the treadle-plate $n$ the rear wheels of the first car will have passed beyond the position of the stop-arms, and as soon as the rear wheels of the second car leave the treadle-plate $n$ the weight $v$ restores the parts to normal position, the spring $k$ forces the rod $e$ outward, and the stop-arms are thrown into position to stop the second car. The rod $e$ has a collar $l^2$, which limits its outward movement, and this serves to also limit the inward movement of the stop-arms. The arching of the cross-beams intermediate of their length places the fulcrum on which the platform tilts the minimum distance from the center of the load, and thereby decreases the leverage necessary to dump the car, and also makes possible the use of unusually light counterbalances.

What I claim is—

1. In combination, a dump-frame comprising the longitudinal beams supporting the rails, the cross-beams having the arched central portions, and the rocking shaft supported in said arched portions, whereby said shaft, which forms the fulcrum of said frame, will be in juxtaposition to the load, said load comprising a car adapted to be emptied parallel to said cross-beams, thereby reducing the leverage necessary to tilt said frame to a minimum, substantially as described.

2. In combination, the dump-frame, the track leading thereto, the stop-arms, the sliding rod for operating the same, the treadle-plate arranged on the inner side of said track, the rocking shaft, the connection between said plate and shaft for operating the same, the weighted arm extending from said shaft, a vertical lever pivotally supported at its lower end, a lever extending from said shaft parallel to the first lever and the link connection between the upper ends of said levers whereby said rod is operated on the depression of said treadle, substantially as described.

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

DARWIN C. BOYCE.

Witnesses:

C. W. ROSS,

W. V. CONARD.