

No. 648,721.

Patented May 1, 1900.

E. C. BERGHOEFER.
ELEVATOR AND CARRIER.

(Application filed Sept. 20, 1899.)

(No Model.)

Fig. 1.

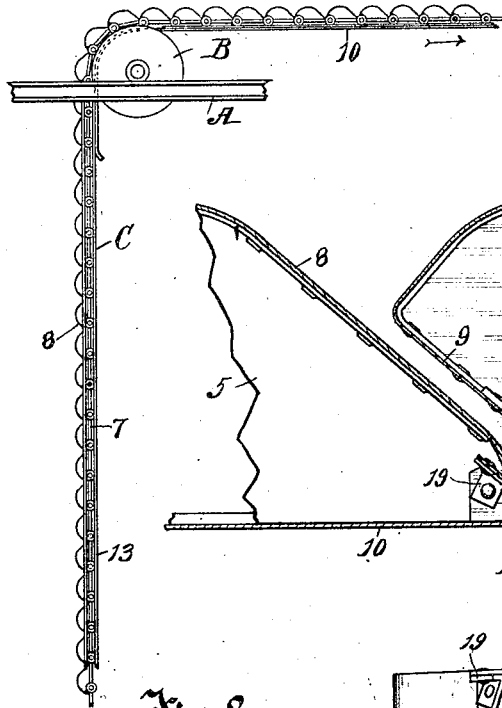


Fig. 3.

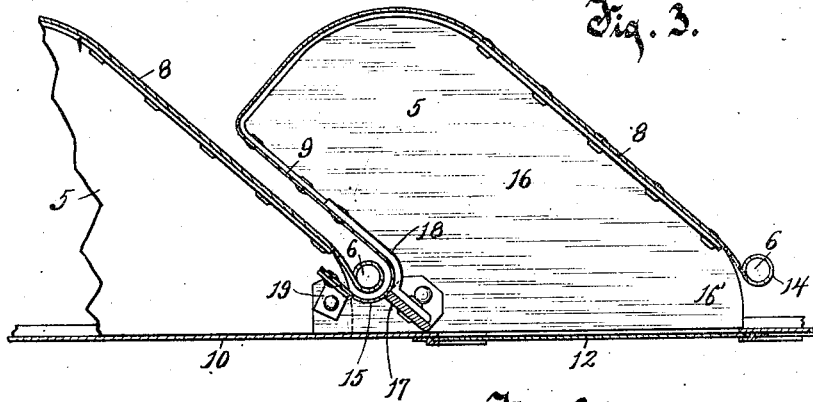


Fig. 4.

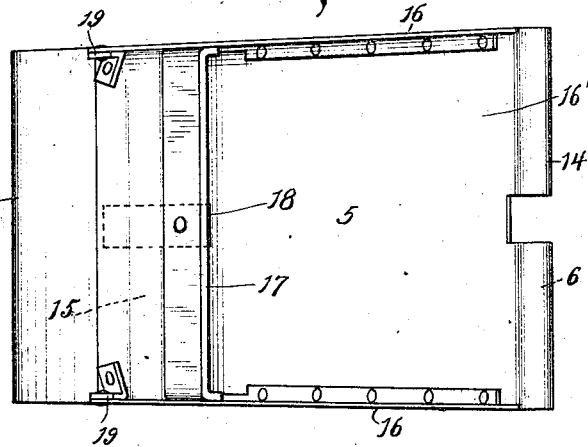
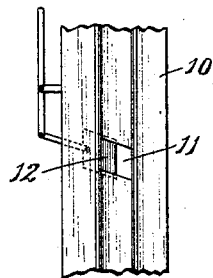


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

EDWARD C. BERGHOEFER, OF MILWAUKEE, WISCONSIN.

ELEVATOR AND CARRIER.

SPECIFICATION forming part of Letters Patent No. 648,721, dated May 1, 1900.

Application filed September 20, 1899. Serial No. 731,066. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. BERGHOEFER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Elevators and Carriers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to improvements in an elevator and carrier of the general construction and character of the "elevator and hoist" shown in Patent No. 426,531. Elevators and conveyers of this character are especially adapted for lifting and conveying coal, ore, and similar material.

The objects of the present invention are to improve the construction of the elevator and carrier, especially with reference to strengthening it, to obviate undue wear of the buckets and related parts, and to accomplish the more successful transportation of the entire load of coal in each bucket along a bed or runway therefor, especially in such successful movement of the coal or ore to prevent the escape of any part of the load in and controlled by one bucket on the runway past that bucket into the following bucket, and at the same time to secure the minimum weight and expense of construction in the elevator.

In the drawings, Figure 1 is a side elevation of a fragment of the endless elevator in which my invention is embodied. Fig. 2 is a plan view of a fragment of the bed or runway on which the flexible endless elevator and carrier travels along the upper and usually horizontal portion of its route. Fig. 3 is a longitudinal section of one bucket of the elevator and carrier and a section of a fragment of the succeeding bucket on the bed or runway, the section showing my improvement in the carrier and its relation to adjacent and related parts of the apparatus. Fig. 4 is a top plan view of a single bucket of the elevator, with its mouth or open side at the front in the drawing.

In the drawings, A is a fragment of a frame, and B is a pulley mounted on the frame, over which pulley the endless elevator C runs. The elevator C consists of a series of buckets 5, hinged to each other in an endless chain by pivot-pins 6. The flexible endless con-

veyer thus formed is preferably and usually strengthened by links 7 of steel bars pivoted on the pin 6, these links being in pairs, one at each side of each bucket and each link connecting to adjacent pins 6 6. The buckets 5 are advisably constructed of thin sheet-steel, the front side 8 of which bucket is longer than the rear side 9, and the buckets are pivoted on the adjacent pins 6 6 at the respective edges of the sides 8 and 9 in the manner and in the position shown in Figs. 1 and 3 and so that the bucket is in oblique position with reference to the line of motion of the elevator, as clearly shown in Figs. 1 and 3. Along the upper line of the travel of the elevator, which is usually in substantially a horizontal direction, the elevator travels on a bed or runway 10, which runway forms in that part of the route of the elevator a non-movable bottom for the buckets, on which runway the loads of the buckets are supported and along which the loads are pushed by means of the movement of the buckets to apertures 11 in the runway, through which the load falls by gravity. These discharging-apertures are closed when desired by sliding gates 12. In other portions of the route of travel of the elevator it is guided by ways 13 where deemed necessary. In the construction of these buckets of sheet-steel the edge of the front side 8 is formed into tube shape, and thus made to encircle and hinge upon the pin 6, as shown at 14, and the edge of the rear side 9 is curved about and made to hinge over and upon the front coiled edge 14 of the next succeeding bucket, as shown at 15. The sheet-steel ends 16 16 of the bucket are continued beyond the overturned edges 14 and 15 of the front and rear sides of the bucket, as shown at 16', forming extended or projecting parts of the bucket, which during that portion of the route of the elevator that is opposite the runway 10 rest along their edges on the surface of the runway. This construction of the buckets provides room for that portion of the links 7, which connect the pivots 6 6, that is outside of the pivots 6 6 to pass freely along above the runway 10, and these extended portions of the ends 16 16 also add strength to the elevator and conveyer between and opposite the pivotal connections of the buckets on and about the pins 6 6; but this con-

struction also locates the pivot-pins 6 6 at a distance from the runway 10, so that when the buckets are inverted on the runway 10, in the position shown in Figs. 1 and 3, there
 5 was as the buckets were heretofore constructed between the rear edge of the bucket curved and hinged about the pin 6 and the runway 10 an unclosed space, so that the load being dumped on the runway 10 and being
 10 pushed along by the moving elevator a certain portion of the load, especially if the coal or ore was in small pieces, was liable to escape from its bucket under the rear edge of the bucket, and thus failed to be pushed
 15 along on the runway to the discharge-opening 11. It was also found that if the links 7 were made very narrow and the edges of the sides 8 and 9 were extended so as to be substantially flush with the extended portion 16
 20 of the ends of the bucket, and thus bring the curved portions 14 and 15 of the sides 8 and 9 to the runway 10, those curved portions of the sides 8 and 9 were very quickly worn away and destroyed by their contact with the sur-
 25 face of the runway 10. To obviate these difficulties, while at the same time providing for the construction of the buckets of thin and comparatively-inexpensive material and protecting the parts from wear and at the
 30 same time desirably strengthening the construction at an otherwise weak point, I provide a steel shoe 17, which consists, essentially, of a flat and medium thick steel bar along the edge of the rear wall 9 of the bucket
 35 opposite the pin 6, the overturned ends of which bar are riveted to the ends of the bucket and secured medially to the rear wall 9 by the cleat or arm 18. The shoe 17 projects from the curved member 15 of the rear
 40 wall 9 in substantially the direction of the wall to the plane of the edges of the ends 16 16 of the bucket and extends from one wall 16 to the other wall 16, thus substantially closing the space between these end walls

from the edge of the rear side 9 of the bucket 45 to the runway 10 when on that part of the route of the elevator. This shoe 17, being at its free edge flush with the edges of the ends 16 16, serves also as a bearing for the bucket along its entire rear edge on the runway 10, 50 and thus properly supports the bucket and furnishes a bearing that is very slow to wear out, and thereby protects the thin edges of the ends 16, which are desirably made of lighter material. The angle-irons 19 are reinforcing- 55 pieces for strengthening the construction.

What I claim as my invention is—

1. An elevator-bucket adapted in inverted position to slide on a runway, comprising a 60 front and a rear wall each having means along the edges of these walls to hinge it to duplicate adjacent preceding and following buckets, end walls projecting beyond the front and the rear walls, and a strengthening and 65 bearing shoe extending between the projecting end walls and from the edge of the rear wall substantially to flush with the edges of the end walls.

2. In an endless elevator and carrier having buckets linked together and adapted in 70 an inverted position to travel on a runway, the combination of a series of buckets pivoted to each other so that one bucket closely follows another, each bucket having end walls 75 that project at its mouth beyond the front and the rear wall, and a shoe of hard metal projecting from the rear wall in substantially the direction of the rear wall and from end to end of the bucket to the plane of the outer 80 edges of the projections of the end walls.

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

EDWARD C. BERGHIOEFER.

Witnesses:

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 ANNA V. FAUST.