

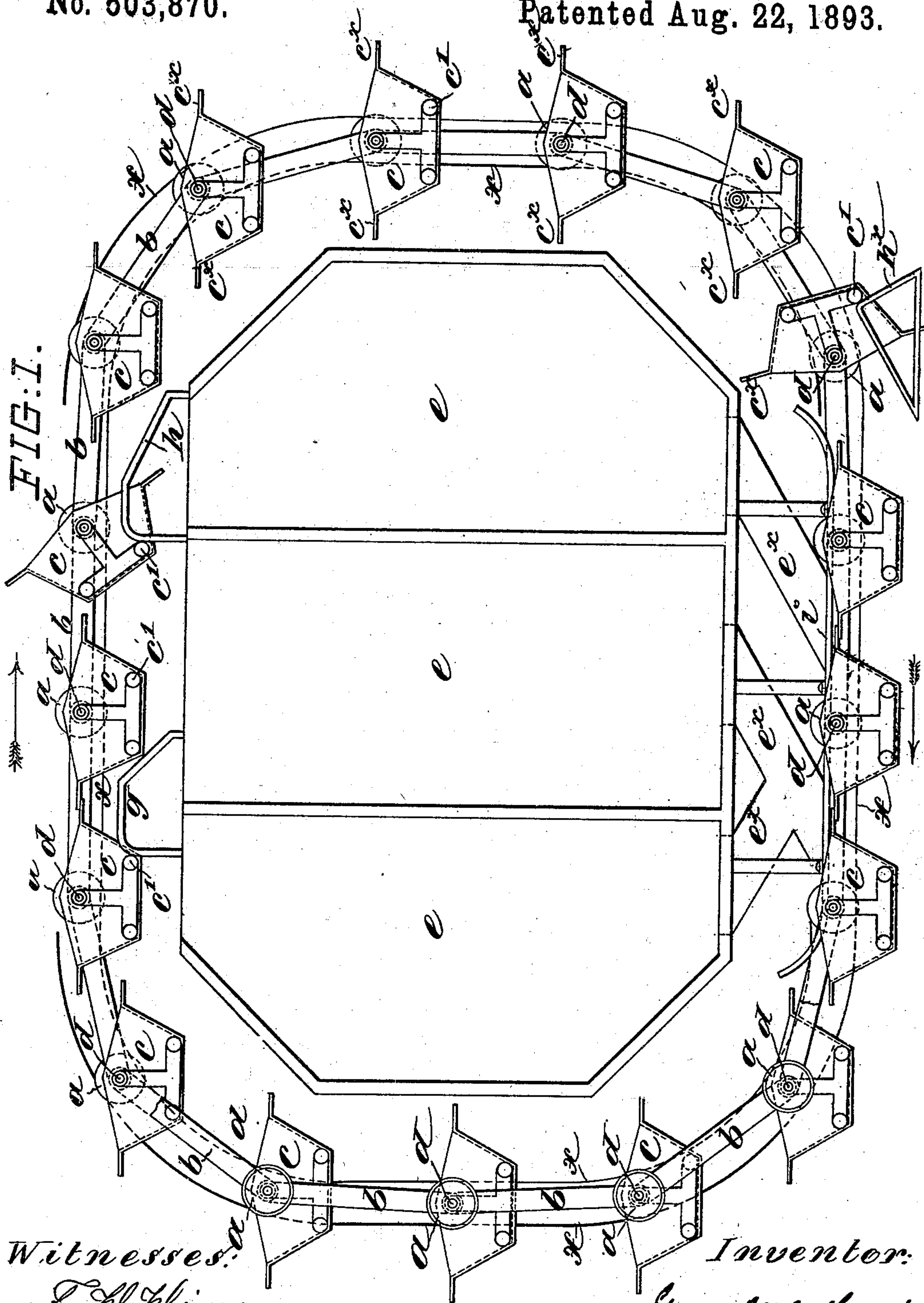
(No Model.)

3 Sheets—Sheet 1.

G. W. McCASLIN.  
ENDLESS CHAIN CONVEYER.

No. 503,870.

Patented Aug. 22, 1893.



Witnesses:  
J. H. Wiman  
Peter A. Ross

Inventor:  
George W. McCaslin  
by Henry Coward  
his Attorney

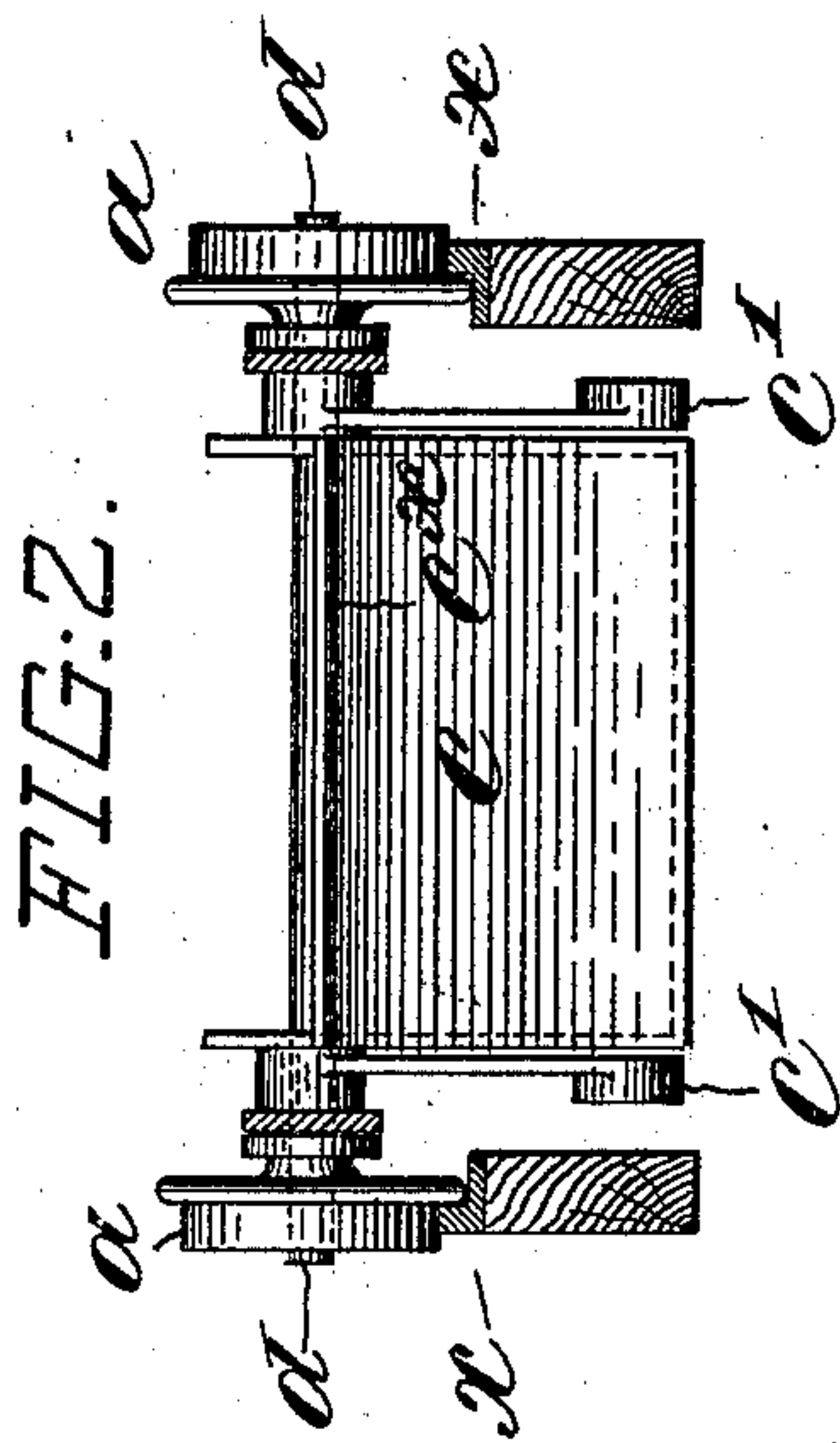
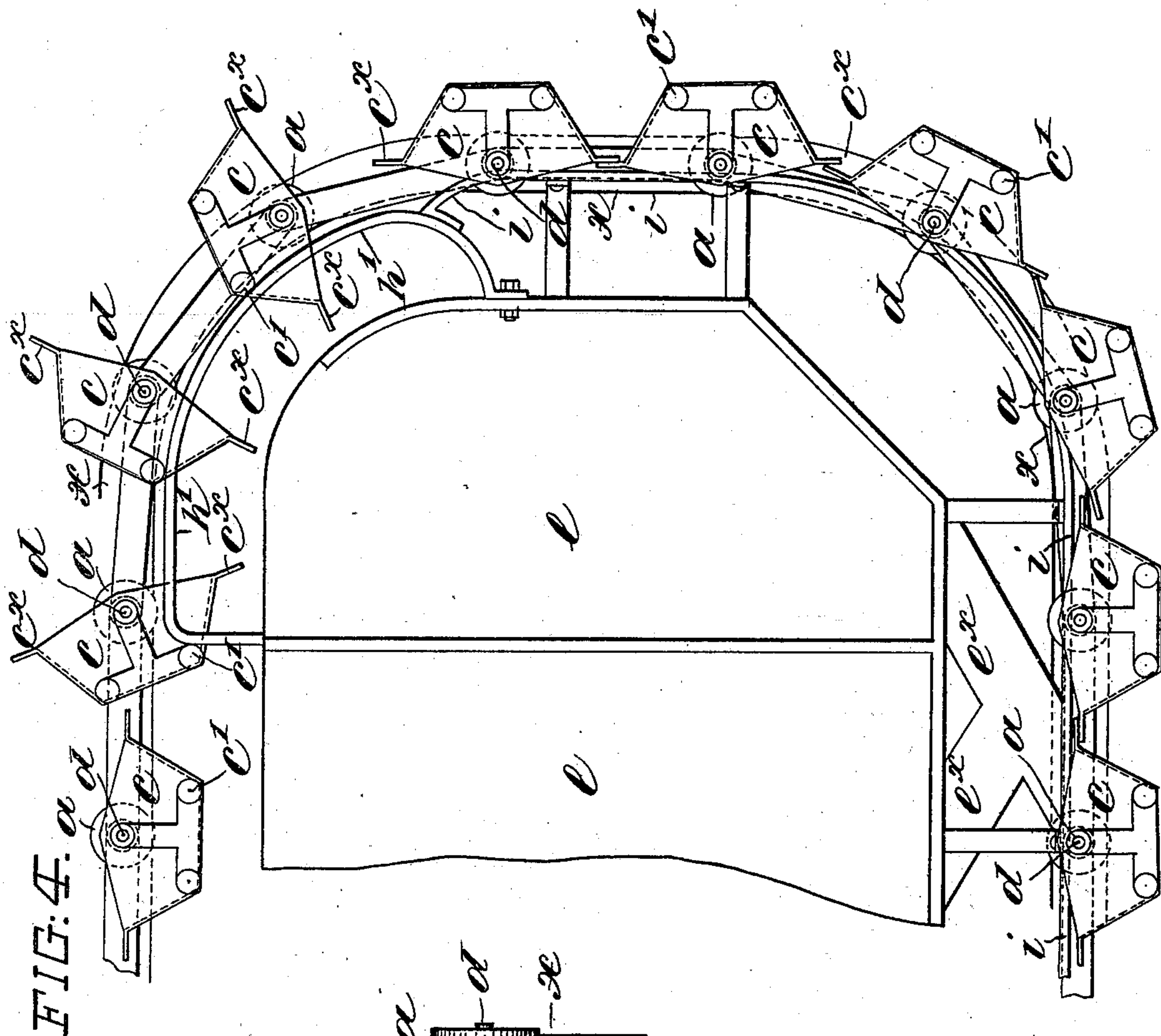
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3 Sheets—Sheet 2.

G. W. McCASLIN.  
ENDLESS CHAIN CONVEYER.

No. 503,870.

Patented Aug. 22, 1893.



Witnesses:

J. H. Hliman  
Peter H. Ross

Inventor:  
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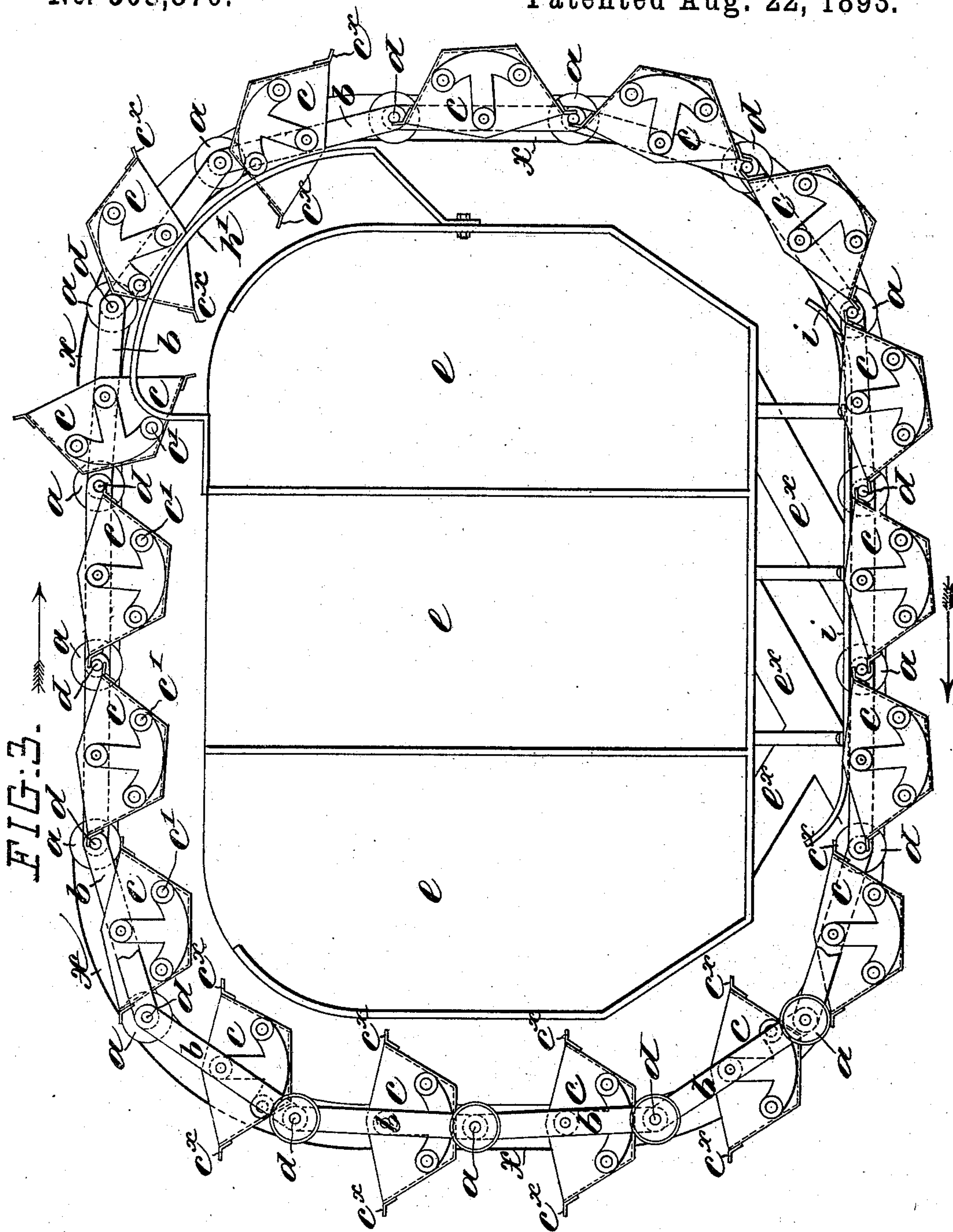
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3 Sheets—Sheet 3.

G. W. McCASLIN.  
ENDLESS CHAIN CONVEYER.

No. 503,870.

Patented Aug. 22, 1893.



Witnesses:  
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Peter A. Ross

Inventor:  
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his Attorney



# UNITED STATES PATENT OFFICE.

GEORGE W. McCASLIN, OF HOBOKEN, NEW JERSEY.

## ENDLESS-CHAIN CONVEYER.

SPECIFICATION forming part of Letters Patent No. 503,870, dated August 22, 1893.

Application filed April 8, 1893. Serial No. 469,622. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. McCASLIN, a citizen of the United States, and a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Endless-Chain Conveyers, of which the following is a specification.

My invention relates to the class of endless-chain conveyers wherein gravity buckets are pivotally hung in a chain which has wheels running on a track; and the object of the invention is, in the main, to provide the buckets of the conveyer with plates or lips which project out and overlap in such a manner that the lip on one bucket overlaps the lip on that next adjacent, whereby, when the buckets are moving along a horizontal or slightly inclined track at the loading point, the coal, or other material running into the conveyer from a chute, will not fall between the buckets. Means have before been devised and employed to attain this desirable end, but I find it important to confine the means used to the buckets themselves for the sake of economy in construction, in space occupied, and in power; and in order also to increase the durability of the conveyer. But in order that such a conveyer may be adapted for general purposes and not be confined simply for use as an elevator, it is essential that means be provided for turning the empty buckets on their return so that the lips or plates thereon may properly overlap, and my present invention includes such means.

In the accompanying drawings serving to illustrate the invention, Figure 1 is a somewhat diagrammatic elevation of a conveyer plant embodying my improvements; and Fig. 2 is a cross-section of a part of the same. Figs. 3 and 4 are views similar to Fig. 1, illustrating slightly different embodiments of the invention.

My improvements are herein illustrated as applied to a conveyer plant of simple and well known form, wherein there is a lower horizontal track, an upright or ascending track, an upper horizontal track and a descending track. These tracks are connected or continuous, and the endless elevator chain is mounted on wheels which run on the tracks. Various forms of drivers are employed with

this class of conveyers, and as my present invention has nothing to do with the driver, I have omitted this feature from the drawings. The driver illustrated in my Letters Patent No. 486,789, granted November 22, 1892, may be employed, or indeed any other.

I have shown the conveyer arranged to receive coal or other material from the bottoms of bins or pockets around which the endless track extends in a vertical plane, to carry the coal up to a higher level, and dump it into more elevated pockets or chutes.

Referring to Figs. 1 and 2,  $x$  represents the usual endless track on which the wheels,  $a$ , of the conveyer run.  $b$ , are the links which form the chain, and  $c$ , are the buckets. These are pivotally suspended, gravity buckets. The buckets are hung between the pairs of links of the chain, their pivotal journals,  $d$ , forming the axles for the wheels  $a$ . The buckets are so distanced by the links that a space is left between them when they are on a horizontal track, and each bucket is provided with two lips,  $c^x$ , one at each end, which, when the buckets are coupled together on the level, extend out more than half the distance to the next bucket, whereby the lips on the adjacent buckets must, of necessity, overlap and thus jointly cover the space between the buckets. As shown in Fig. 1, the conveyer is adapted to move in the direction of the arrows: that is, they ascend at the left and descend at the right; and the lip  $c^x$  at the rear end of one bucket overlaps that on the front end of the next following bucket. This enables the buckets to assume the proper position, by gravity, to retain their loads, when they begin the ascent, as clearly seen at the left lower corner in Fig. 1.

The material from the bins or pockets,  $e$ , is delivered into the moving buckets on the lower horizontal track through suitable chutes,  $e^x$ . There may, of course be one or more of these pockets, arranged in the usual way, and the conveyer plant may be of any length and any height. When the buckets reach the upper track with their loads, they may be dumped at any point by means of a suitably placed dumping cam, as  $g$ , placed on the track at the proper point and in position to encounter a dumping lug,  $c'$ , on the end of the bucket. As this dumping mech-



anism is not broadly new, I have not deemed it necessary to minutely illustrate and describe it.

As the lips on the empty buckets would collide as the buckets start to descend, I provide a cam,  $h$ , placed on the upper track near the point where the buckets pass onto the descending track. This cam engages the dumping lug  $c'$  on the bucket, turns its advancing end down and holds it down until the next bucket ahead has got down on the descending track far enough to permit the tilted bucket behind it to right itself by gravity without collision.

When the empty buckets reach the lower track the lips thereon will not overlap properly unless means are provided for again tilting the advancing bucket just as it passes onto the lower track, so as to cause the lip on the rear end of the tilted bucket to take over that on the front end of the next following bucket. This is effected by means of a cam  $h^x$  on the lower track.

To prevent the buckets from oscillating at the loading point and thereby forming a space between the overlapping lips for the passage of fine coal or other material, I provide a guard rail,  $i$ , which extends lengthwise of the track over two or more buckets. This rail is fixed in position so that the buckets move under it, and it is arranged just above the overlapping lips  $c^x$ . In Fig. 3 I have shown the application of my gravity bucket provided with a lip  $c^x$  at each end, to a conveyer wherein the bucket is hung from the middles of the links, the wheel-axes being between the buckets. As in this construction the buckets cannot make a complete rotation on their pivots, for the reason that the lips on the buckets will not pass the wheel-axes, I provide means for turning the buckets which compels each empty bucket to turn completely over at the point where it starts to descend to the lower level. This is rendered necessary for the reasons before explained. A long cam,  $h'$  having a curve concentric with that of the track, is fixed on the latter at the point where the buckets start on their descent. The buckets are turned in succession, and after passing down onto the straight portion of the descending track they leave the cam and are held in the position seen at the right in Fig. 3 by the lips at the ends of the bucket bearing on or against the axle, gravity serving to hold the bucket in this position. This means for turning the buckets may be employed with the construction seen in Fig. 1, where the wheel-axes are not placed between the buckets; this is represented in Fig. 4, in which case the buckets are held in position in their descent along the descending track by gravity, the overlapping lips on adjacent buckets being pressed in opposite directions and into contact by that force. In this construction of Fig. 4, which is preferred over that of Fig. 1 for the reason that it obviates the necessity of using two cams,  $h$  and  $h^x$ , I employ as an

auxiliary means for steadying the buckets in their descent, a guard rail  $i$  which extends up along the descending track to prevent the rocking or displacement of the buckets.

It will be observed that the bucket has two symmetrically placed dumping lugs  $c'$ . This is mainly for the purpose of enabling the buckets to be turned end for end, indifferently, or run in either direction at will. In the construction of Fig. 1, also, both lugs come into play, one at the cam  $h$  and the other at the cam  $h^x$ .

The guard rail  $i$  performs a special function in the construction of Fig. 1. If there were no device for preventing the tilting of the buckets, in case two adjacent buckets were unequally loaded, there would be a collision at the point where the buckets leave the lower horizontal track and pass onto the ascending track.

As I have stated, the plant may be of any length, and the buckets on the upper track may be re-loaded after dumping for carrying material along between points on the upper track.

One advantage of my device of overlapping lips is that it avoids all special loading mechanisms, and enables the buckets to be loaded at any number of points without adding to the cost of construction and without adding to the power required. The two lips on the bucket need not be of exactly the same length, of course, but it is preferable to make them so.

Having thus described my invention, I claim—

1. An endless chain conveyer having a chain, with gravity buckets suspended pivotally therein and provided each with a lip at each end, the lips on adjacent buckets overlapping as set forth, and means, situated at the point where the buckets approach the descending track, for tilting the buckets, the construction and arrangement of said means being such that the overlapping of the lips thereon will be changed, for the reasons specified.

2. In an endless chain conveyer, the combination with the track, track-wheels and endless chain, of the gravity buckets suspended at intervals in the chain and provided with overlapping lips as described, and means substantially as described for preventing the collision of the loaded buckets at the point where they pass from the lower track to the ascending track, as set forth.

3. In an endless-chain conveyer, the combination with the track, track-wheels and chain, of the gravity buckets pivotally suspended at equal intervals in the chain and each having a projecting lip at each end, the lips on adjacent buckets overlapping as described, a bucket-tilting cam on the track near the point where the buckets pass onto the descending track, and a guard rail extending up along the descending track and in position to prevent the empty buckets from



rocking on their pivots while descending, as set forth.

4. In a conveyer, the combination with an endless track, the track-wheels thereon for  
5 carrying the chain, and the endless chain, of gravity buckets *c*, pivotally suspended at equal intervals in the chain, and each provided with dumping lugs, and lips *c*<sup>x</sup>, one at each end, the lip on the rear end of a bucket  
10 overlapping the lip on the front end of the following bucket when the buckets are moving along a horizontal track, and means sub-

stantially as described for tilting the buckets and shifting the lap of said lips when the buckets move onto the descending track, as 15 set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE W. McCASLIN.

Witnesses:

HENRY CONNETT,  
HERBERT BLOSSOM.