(No Model.) 3 Sheets—Sheet 1.

G. W. McCASLIN.

CONVEYER.

No. 409,330. Patented Aug. 20, 1889.

Fig. 1.

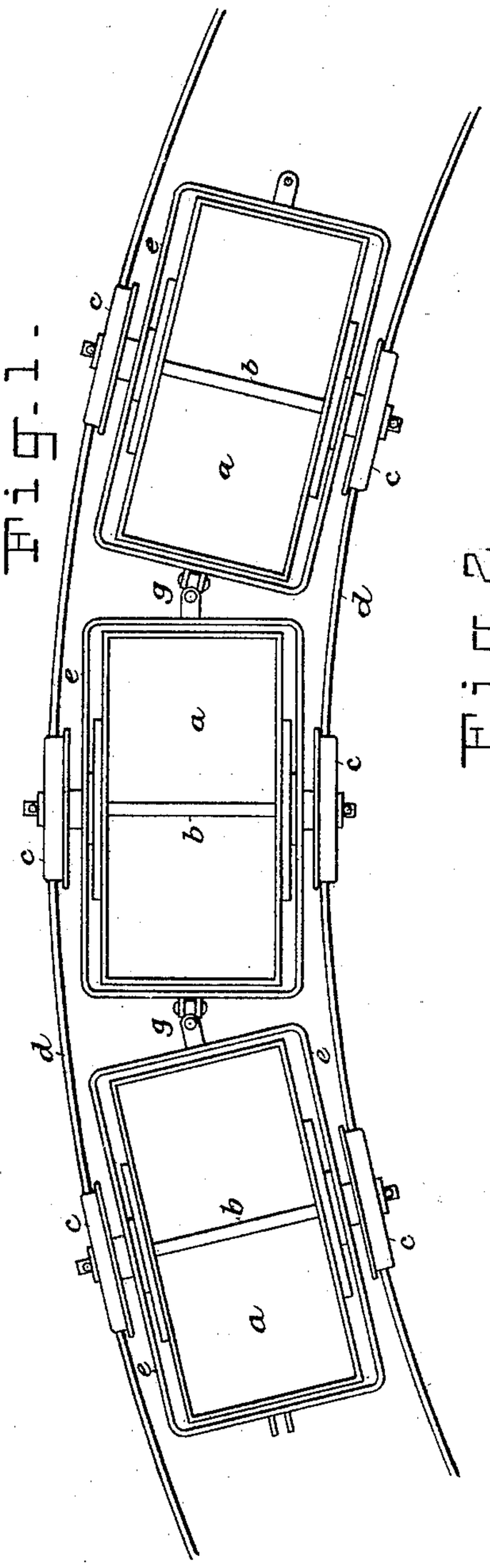

Fig. 2.

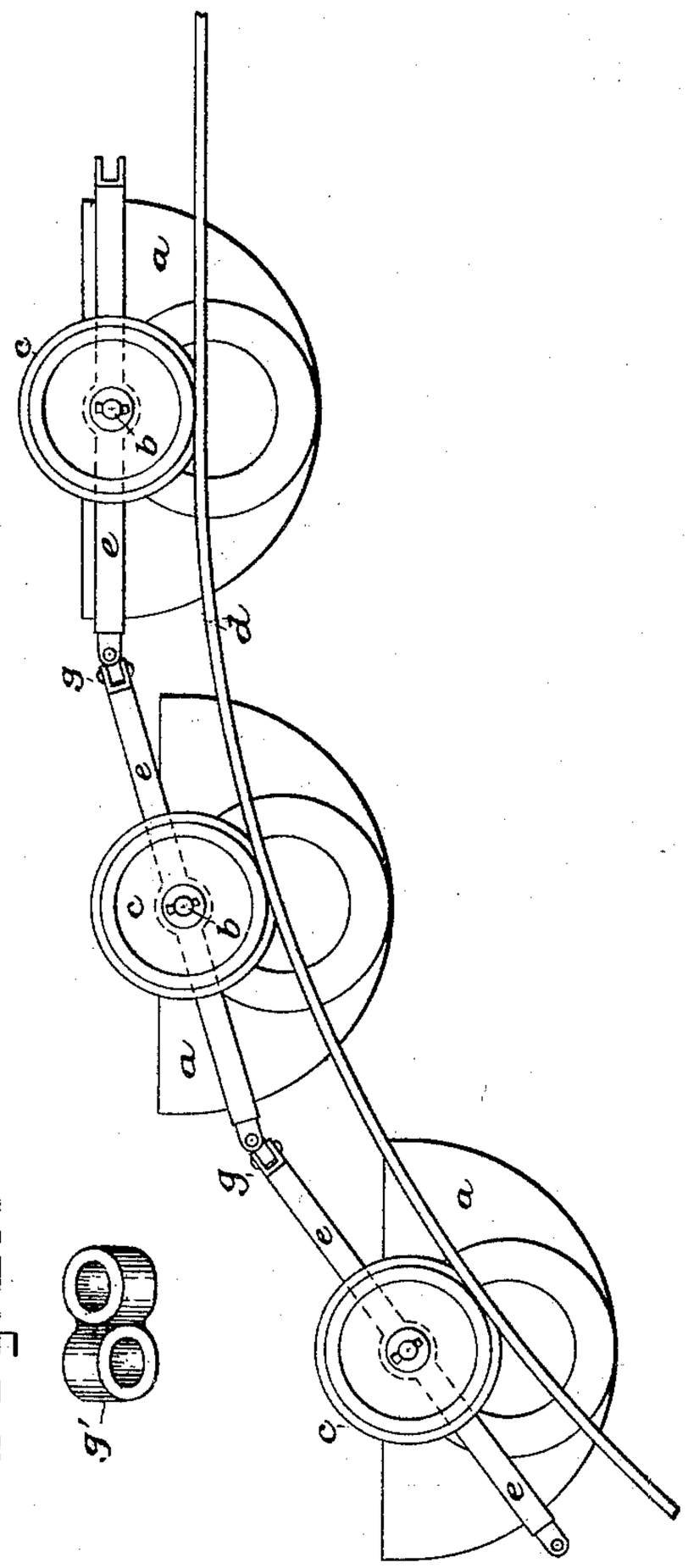

Fig. 2a.

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Fig. 3.

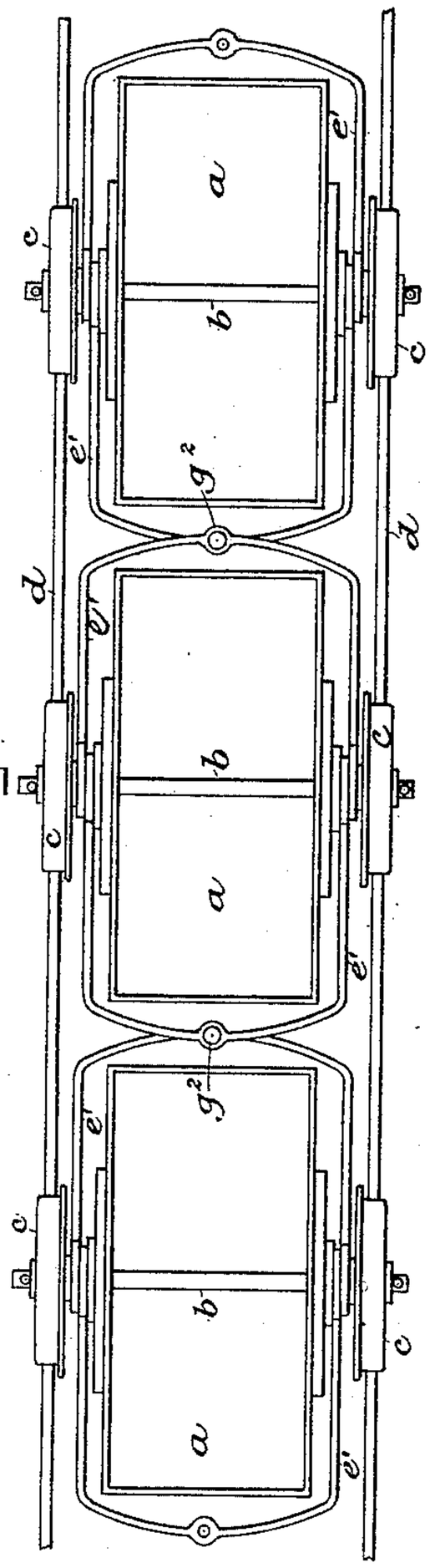

Fig. 4.

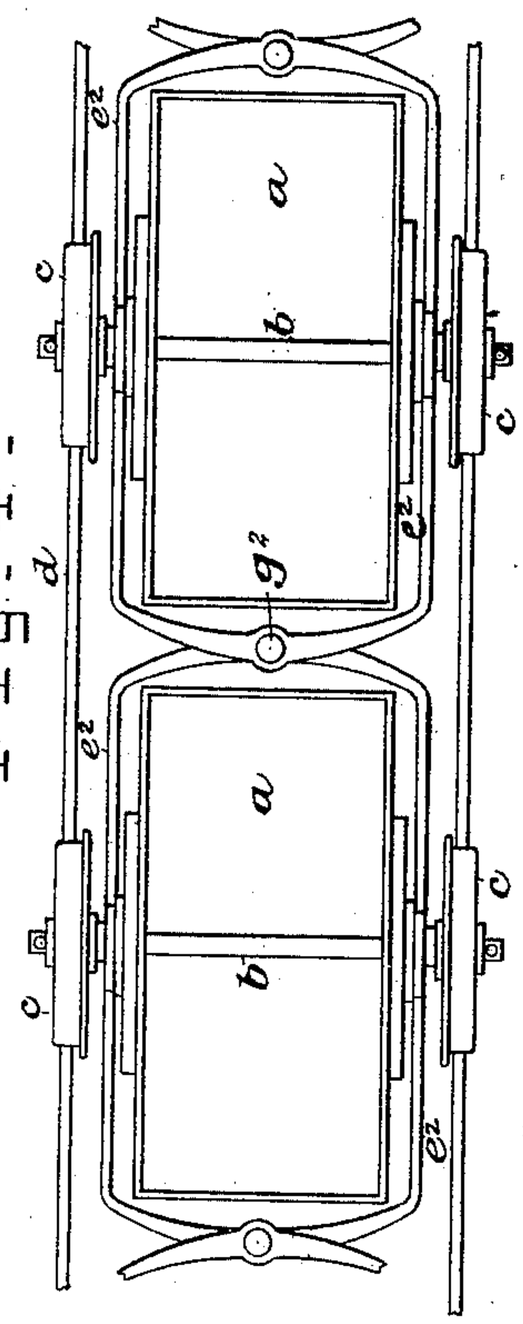

Fig. 5.

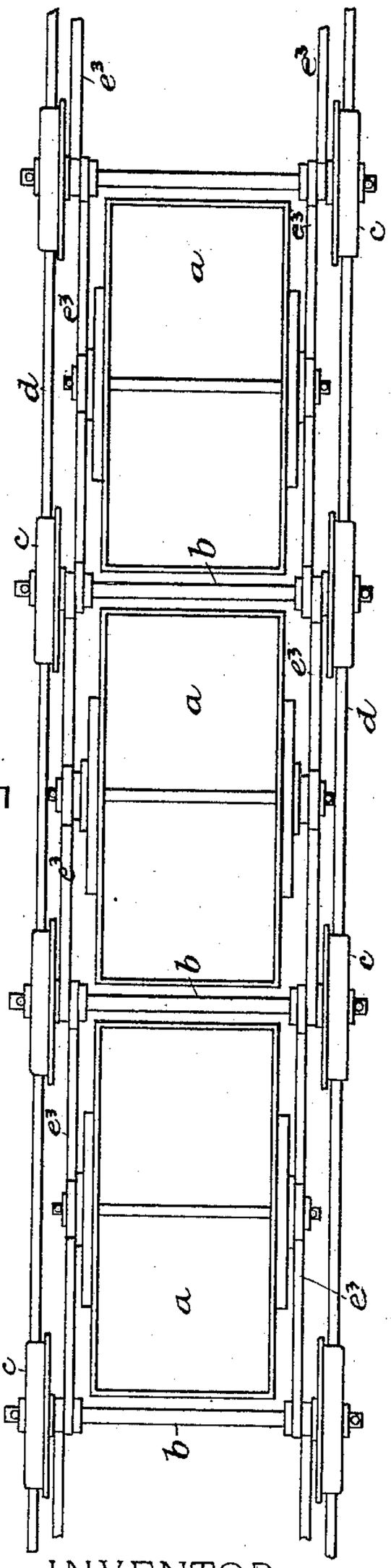

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Fig. 5.

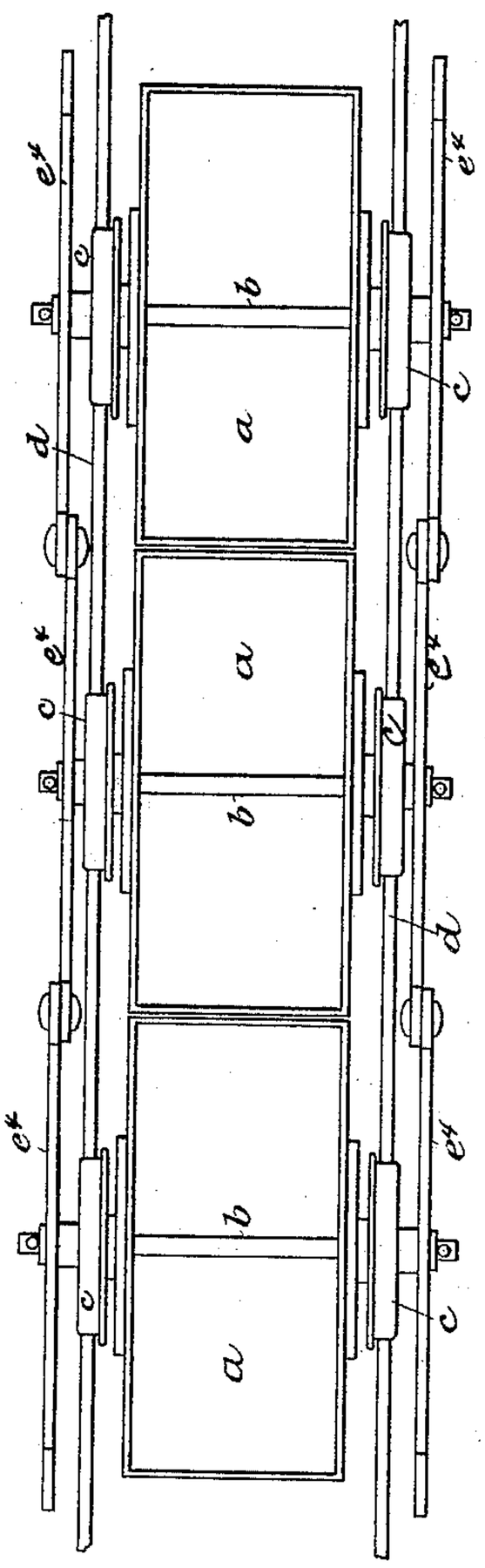
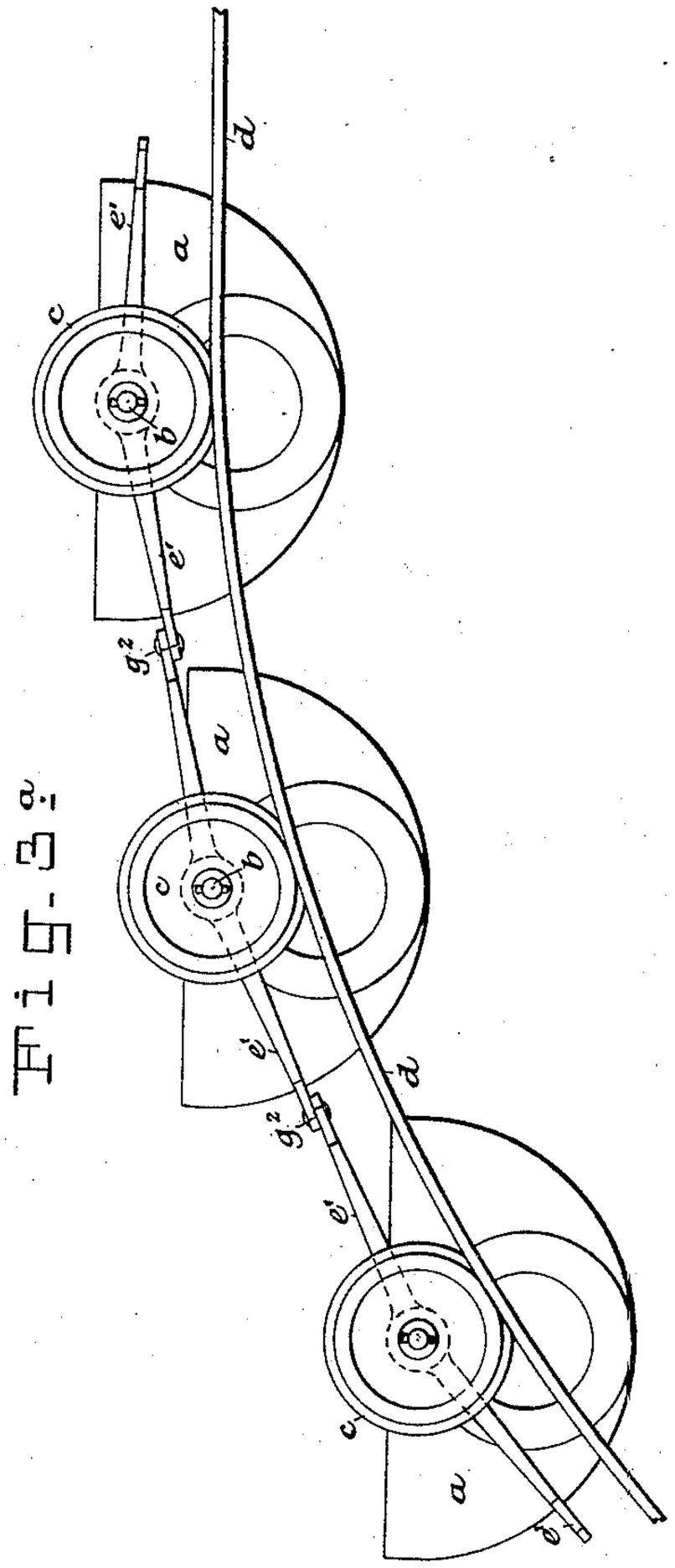


Fig. 5a.



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UNITED STATES PATENT OFFICE.

GEORGE W. McCASLIN, OF NEW YORK, ASSIGNOR TO THE McCASLIN MACHINE COMPANY, OF WEST NEW BRIGHTON, N. Y.

CONVEYER.

SPECIFICATION forming part of Letters Patent No. 409,330, dated August 20, 1889.

Application filed September 11, 1888. Serial No. 285,112. (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 the city, county, and State of New York, have invented certain Improvements in Conveyers, of which the following is a specification.

My invention relates to that class of endless conveyers adapted for receiving, conveying, and delivering coal, grain, and the like. A conveyer of this type is illustrated in my Letters Patent No. 387,241, dated August 7, 1888, and in my pending application, Serial No. 281,220.

The object of my present invention is to provide the conveyer elements with an improved coupling, which will enable the endless conveyer to move on a curved track without longitudinal extension or contraction. It will be understood by those familiar with this class of endless conveyers that there should be no looseness or "lost motion" at the couplings, such as exists necessarily in the couplings of railway-cars. This necessity for non-yielding couplings arises from the fact that the conveyer is endless and completely fills the track on which it runs. Nevertheless, while the conveyer-coupling must be non-yielding so far as extensibility is concerned and the cars should be rigidly "distanced" by the coupling-links, it is very desirable that the conveyer shall be adapted to move on curved as well as straight tracks, and that the coupling-joint should be of such a nature as to permit this. To provide such a coupling as that above described is the purpose of my present invention, which will be fully described hereinafter, and its novel features carefully defined in the claims.

In the drawings, which serve to illustrate my invention, Figure 1 is a plan of a part of an endless conveyer provided with my improved couplings, the view showing the conveyer on a laterally or horizontally curved track. Fig. 2 is a side view of the same conveyer represented as on a vertically-curved track. These views show the adjacent conveyer elements connected by a coupling-joint that will permit the endless conveyer to travel over tracks curved either horizontally or vertically. Fig. 2^a is a perspective view, on a larger scale, of one of the joint-links. Fig. 3 is a plan view illustrating a conveyer-coupling having the same characteristics as that illustrated in Figs. 1 and 2, but differently constructed; and Fig. 3^a is a side view of the same. Fig. 4 is a plan view illustrating a conveyer-coupling similar to that represented in Fig. 3, except that it is adapted for lateral curves only. Fig. 5 illustrates a conveyer-coupling adapted only for vertical curves. In this construction the bucket is not supported directly on the wheels or wheel-axles. Fig. 6 illustrates a construction of the coupling similar to that in Fig. 5, except that the buckets are mounted or hung on the wheel-axles.

I will first describe the construction illustrated in Figs. 1 and 2, premising that it is here applied to an endless conveyer composed of coupled conveyer elements, each of which comprises a dumping gravity-bucket, two track-wheels adapted to form a rolling support for the bucket, and coupling-links for connecting the elements. A conveyer having these features is illustrated in my before-mentioned patent. *a* represents the gravity-bucket, which will, by preference, be made from metal and have a semi-cylindrical form. *b* is the wheel-axle, and *c c* the wheels thereon. These run on track-rails *d d* of any kind. In these views the axle *b* is represented as passing through the bucket *a* and at the pivotal axis of the same. The bucket is surrounded by a coupling-link *e e*, which is in the form of a frame. The pivots on which the bucket is hung (which in this construction are formed by the axle *b*) pass loosely through the side bars of the coupling-link and form bearings therefor. The end bar of the link of one conveyer element is coupled to the end bar of the link next adjacent at their middle points (that is, at a point in the longitudinal axis of the conveyer) by a universal joint, designated as a whole by the reference letter *g*. Any form of universal joint that will permit of lateral and vertical flexure, but will not permit of longitudinal extension, may be employed. The joint I have shown and which I prefer for its simplicity and strength comprises a joint-link *g'*, (seen detached in Fig. 2^a,) which has two eyes to receive the two coupling-pins, the said eyes

being so arranged, respectively, that the axes of the coupling-pins stand at right angles, the one vertical and the other horizontal. The eyes in the joint-link are embraced between suitable projecting lugs on the end bars of the adjacent coupling-links *e e*. This coupling allows the conveyer to move about a horizontal curve, as represented in Fig. 1, or about a vertical curve, as represented in Fig. 2. In the former case the flexure will be about the vertical coupling-pin, and in the latter case about the horizontal coupling-pin. But there can be no extension of the conveyer, and the buckets will always be rigidly distanced.

In Figs. 3 and 3ª I have shown a construction having the same characteristics as that just described, in that the conveyer is capable of being moved about both horizontal and vertical curves, but the flexure when on a horizontal curve will be about the vertical coupling-pin g^2, between the elements, while the flexure when on a vertical curve, as in Fig. 2, will be about the wheel-axles, as the link *e' e'* in this construction is in two parts, and each is hinged separately and independently on the axle. So far as vertical flexure is concerned the link *e' e'* in this construction is rigid between the adjacent axles. This is illustrated in Fig. 3ª.

In some cases it will only be necessary to provide for lateral flexure, so that the conveyer may move about a horizontal curve. In such a case the link in the construction illustrated in Figs. 3 and 3ª may be made in one piece, as in Fig. 1. This construction is illustrated in Fig. 4, where the side bars of the link e^2 e^2 are represented as mounted on the axle precisely as seen in Fig. 1, and the adjacent links coupled by a vertical pin g^2 between the elements. In some cases, also, it will only be necessary to provide for vertical flexure, so that the conveyer may move about a vertical curve, as represented in Figs. 2 and 3ª. In that case the link may be of two straight bars, as represented by e^3 e^3 in Fig. 5, with the axes of the coupling-joints horizontal. This view shows the axles *b* as forming the coupling-pins and the buckets *a* as suspended from the middles of the side bars of the coupling-link and arranged between the adjacent axles.

Fig. 6 illustrates another arrangement well adapted for constructions where it is desirable that the buckets *a* shall be brought close together and where the curves in the track are vertical only. In this construction the link e^4 e^4 is constructed of two straight bars, and the coupling-points are midway between the axles *b*, on which the buckets *a* are hung, the bucket in this case, as in the others, being hung between the side bars of the link and at a point midway between its ends.

The word "non-yielding," as herein applied to the connecting coupling between the elements, means that these couplings will permit no extension of the conveyer longitudinally.

Having thus described my invention, I claim—

1. An endless non-extensible conveyer composed of elements consisting each of a gravity-bucket hung between the rigid side bars of a distancing and coupling link, the said link, and substantially at the middle of the same, and a suitable axle and supporting-wheels, the coupling-links of the several elements of the conveyer being connected together by non-yielding couplings.

2. An endless conveyer composed of elements consisting each of a gravity-bucket, a coupling-link surrounding said bucket and between the side bars of which the bucket is hung, and a suitable axle and wheels, the coupling-links of the adjacent elements being connected together in the longitudinal axis of the conveyer by a non-yielding coupling.

3. An endless conveyer composed of elements consisting each of a gravity-bucket, a distancing and coupling link surrounding said bucket, and between the side bars of which said bucket is hung, and a suitable axle and wheels for supporting the bucket, and a universal coupling connecting the coupling-links of adjacent elements.

4. An endless conveyer composed of a series of frame-like rigid links united by non-yielding couplings, supporting-wheels, one pair to each link, and a gravity-bucket pivotally hung in each of said links.

5. An endless conveyer composed of elements consisting each of a gravity-bucket, a rigid coupling-link, an axle, and supporting-wheels, said bucket being pivotally hung between the side bars of the link and between the points where the conveyer elements are coupled together.

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

GEORGE W. McCASLIN.

Witnesses:
HENRY CONNETT,
J. D. CAPLINGER.