

No. 709,202.

Patented Sept. 16, 1902.

P. B. CLARKE.
SAFETY STOP FOR CONVEYERS.

(Application filed Jan. 4, 1901.)

(No Model.)

3 Sheets—Sheet 1.

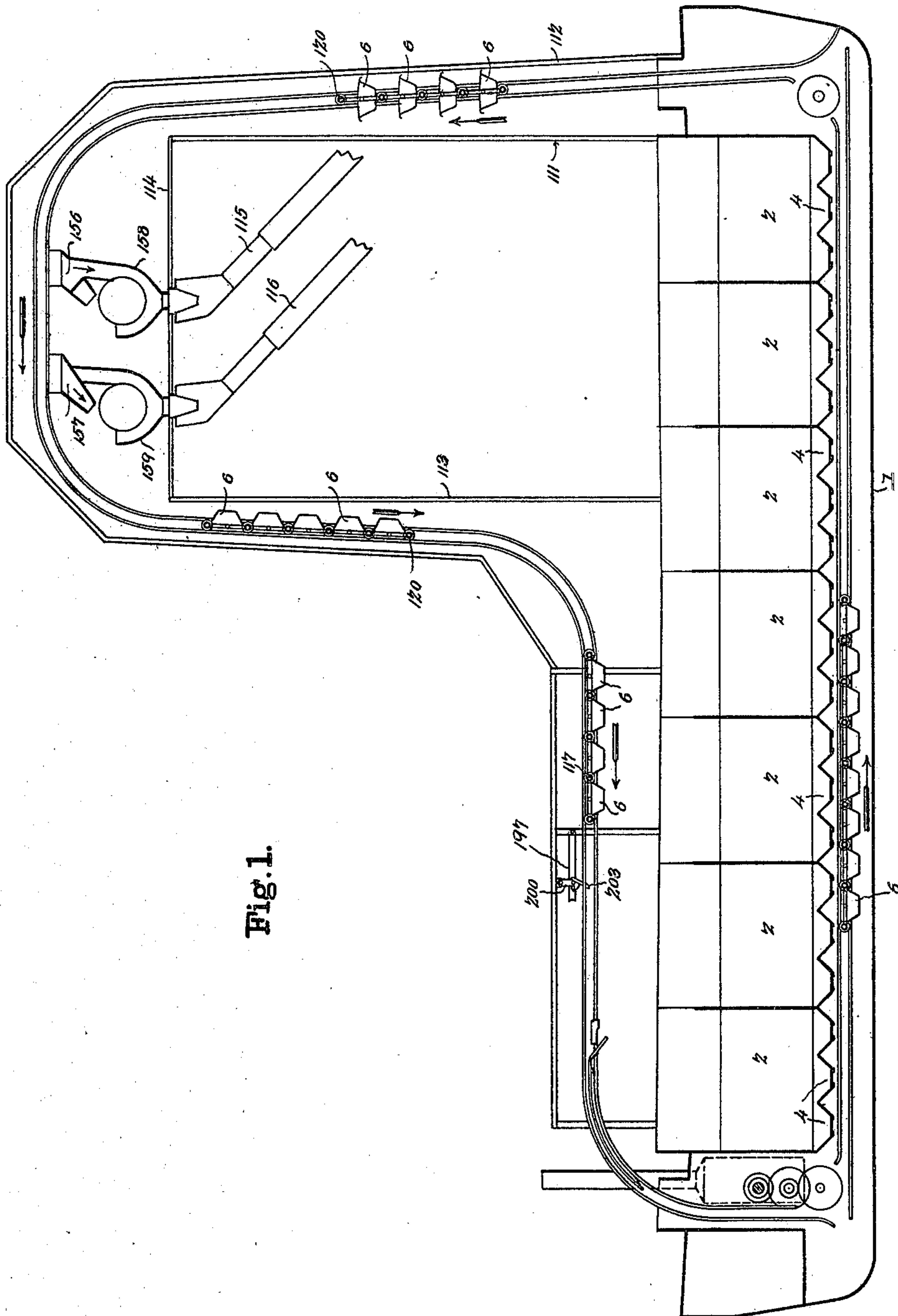


Fig. 1.

Witnesses

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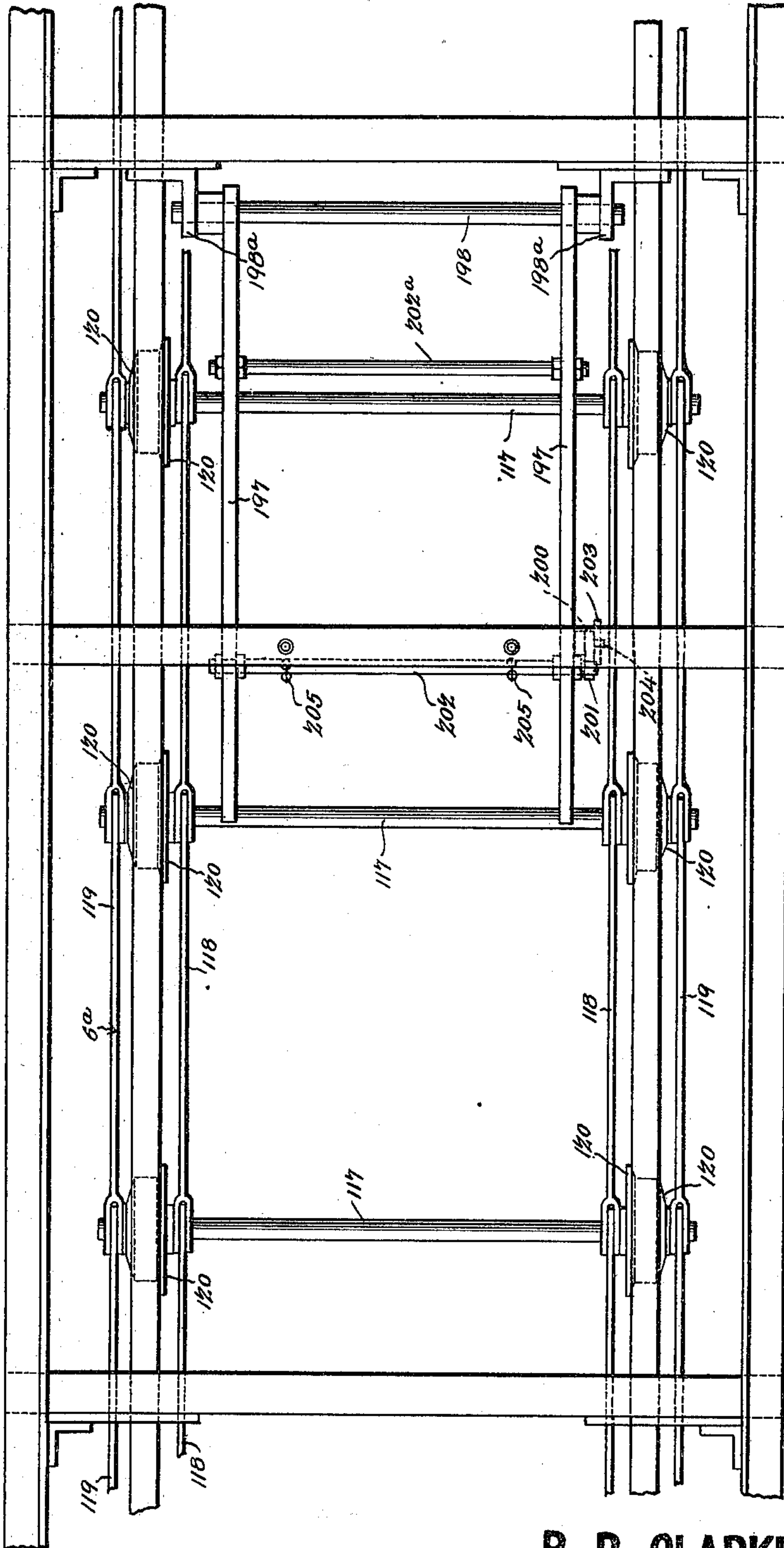
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3 Sheets—Sheet 2.

Fig. 2.



Witnesses

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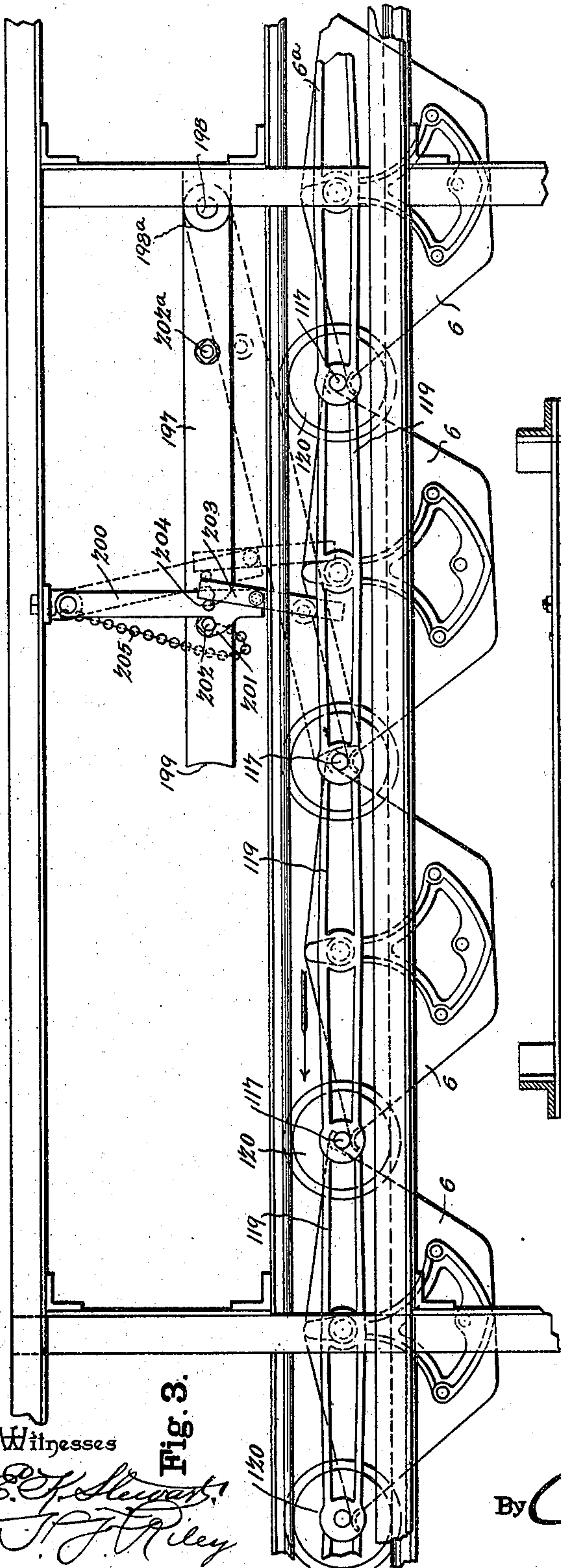


Fig. 3.

Witnesses

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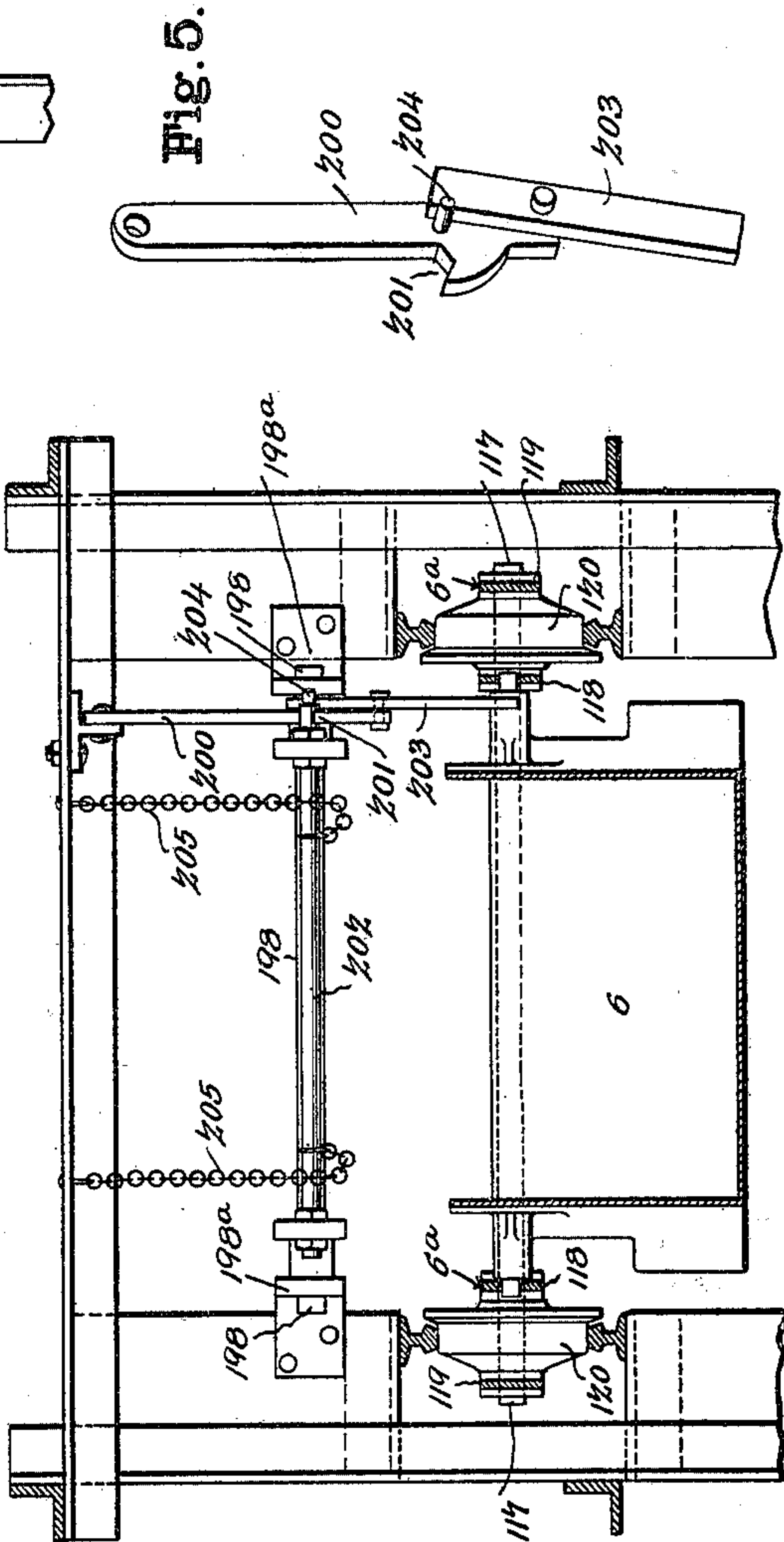


Fig. 4.

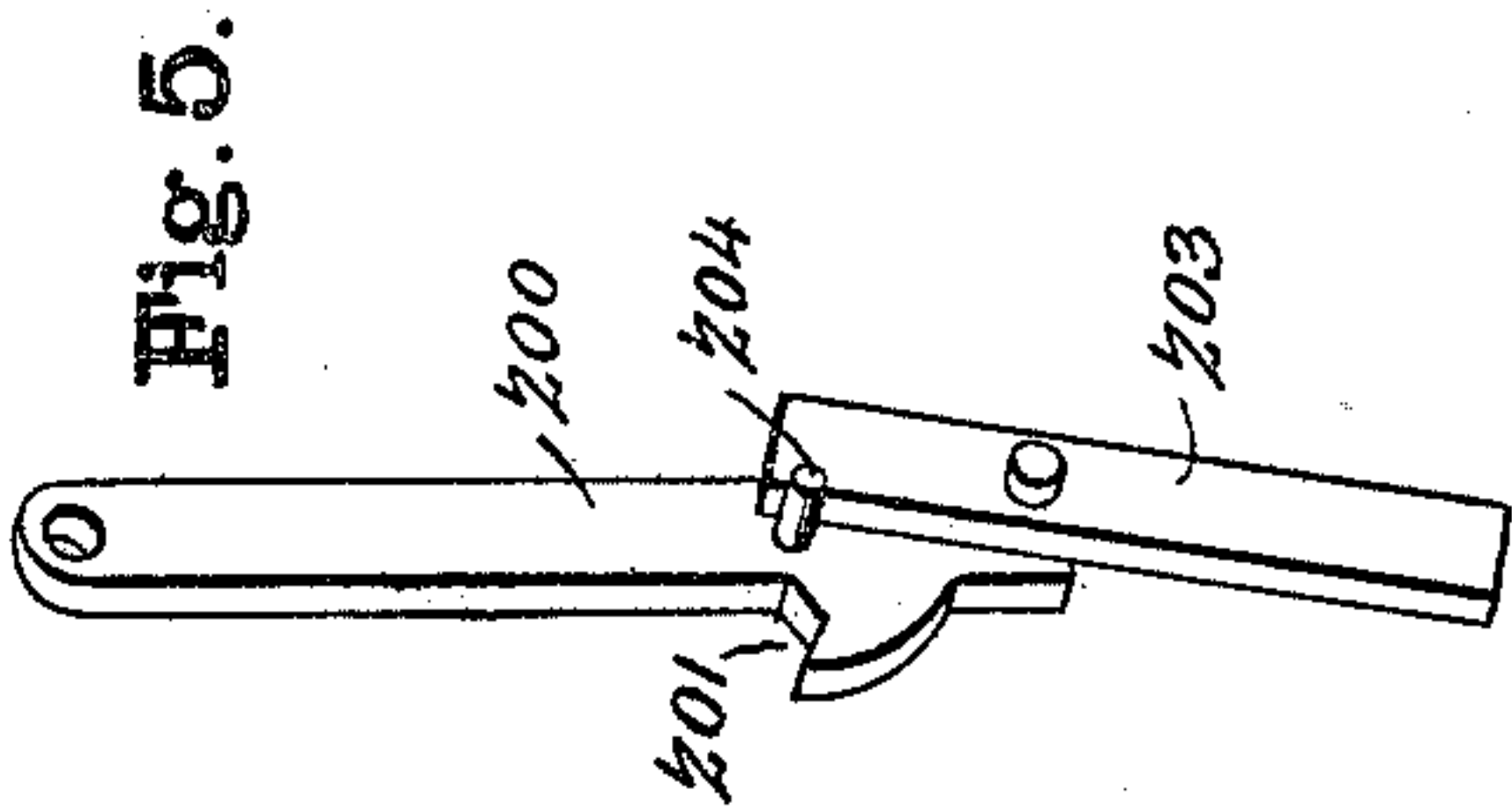


Fig. 5.

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UNITED STATES PATENT OFFICE.

PEETE B. CLARKE, OF NEW YORK, N. Y.

SAFETY-STOP FOR CONVEYERS.

SPECIFICATION forming part of Letters Patent No. 709,202, dated September 16, 1902.

Application filed January 4, 1901. Serial No. 42,120. (No model.)

To all whom it may concern:

Be it known that I, PEETE B. CLARKE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Safety-Stop for Conveyers, of which the following is a specification.

The invention relates to improvements in safety-stops for conveyers.

10 The object of the present invention is to improve the construction of safety-stops for conveyers and to provide a simple, inexpensive, and efficient device designed for use in connection with endless conveyers having a
15 loaded or weighted ascending flight and adapted to operate automatically for locking such a conveyer against backward movement to prevent the loaded flight of the conveyer in event of breakage from moving backward
20 under the influence of its load and injuring the apparatus of which it is a part.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated
25 in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a diagrammatic longitudinal sectional view of a barge having a conveyer and provided with a safety-stop
30 constructed in accordance with this invention. Fig. 2 is a plan view of the safety-stop and a portion of the endless conveyer. Fig. 3 is a side elevation of the same. Fig. 4 is a transverse sectional view. Fig. 5 is a detail view
35 of the hanger or support and the trip-lever.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a barge provided with a longitudinal series of bins or compartments 2, having depending hoppers 4 and designed to be provided with suitable sliding doors or cut-offs adapted to be opened to permit coal or other material to be discharged from the bins
45 or compartments into buckets 6 of an endless conveyer 6^a. The barge is provided at its front portion with a tower 111, composed of front and rear sides 112 and 113, spaced apart and connected by a horizontal top portion 114.
50 The front side or leg 112 of the tower is located at the bow of the barge and the rear side or leg is located at a point slightly in advance

of the center of the same, space being provided between the sides or legs to permit a pair of extensible telescoping chutes 115 and 116 to swing from one side of the barge to the other. The endless conveyer 6^a is composed of a horizontal flight located at the bottom of the barge beneath the bins or compartments, an ascending upright flight located at the front side or leg of the tower, a descending upright flight supported by the rear side or leg of the tower, a top horizontal flight extending across the top of the tower, and an intermediate horizontal flight extending from the descending upright flight rearward over the rear portion of the barge to the rear end of the bottom horizontal flight, which travels beneath the bins or compartments. The endless conveyer is provided at intervals with transverse shafts 117, which are connected by inner and outer links 118 and 119, arranged in pairs at opposite sides of the conveyer, as clearly illustrated in Fig. 2 of the accompanying drawings. The shafts 117, which support the buckets 6, are provided at their ends with suitable spindles or journals for the reception of wheels 120, provided at their inner faces with peripheral flanges and arranged to run on suitable rails. The loaded buckets ascend the front side of the tower, and in their passage across the top of the latter the buckets are dumped by suitable mechanism (not shown) to discharge their contents into hoppers 156 and 157 of scale-casings 158 and 159, located above and communicating with the said chutes 115 and 116.

In order to prevent the apparatus from being injured by the backward movement of the conveyer caused by the loaded buckets of the ascending upright flight at the front of the tower in the event of the breakage of the conveyer at any point, a safety-stop 197 is employed. The safety-stop 197, which is preferably arranged at the intermediate horizontal flight of the conveyer, consists of an approximately rectangular frame hinged at one end and normally supported in an elevated position above the adjacent portion of the endless conveyer and adapted to be instantly tripped by the backward movement of the same, whereby the latter will be securely locked against backward movement to prevent the injury which would necessarily

result should the weighted buckets of the ascending upright flight at the front of the tower be permitted to fall and drive the endless conveyer backward. The rectangular frame is composed of two side bars connected between their ends by transverse rods 202 and 202^a and provided at one end of the frame with openings for the reception of a horizontal pintle-rod 198. The other ends of the side bars are provided with recesses or seats 199, adapted to engage one of the transverse shafts of the endless conveyer or the pivots of one of the buckets. The pintle 198 has its ends arranged in perforations of brackets 198^a, secured to a suitable support and located above the adjacent flight of the endless conveyer. The safety-stop is normally supported in an elevated position by a pivoted or hinged hanger or support 200, located at one side of the rectangular frame of the stop and provided with a suitable shoulder 201, forming a seat for the adjacent transverse rod 202. The support or hanger is tripped by means of a lever 203, pivoted between its ends to the lower portion of the support or hanger and having its upper end located adjacent to a projection or lug 204, extending from the support or hanger and limiting the forward swing of the upper arm of the trip-lever. The lower arm of the trip-lever is arranged in the path of the transverse shafts and the pivots or trunnions at one side of the buckets, and as the endless conveyer moves forward in the direction of the arrow in Fig. 3 of the drawings the lower arm of the said trip-lever will be swung in the same direction, and its upper arm will thereby be carried away from the upper stop 204. Should, however, the conveyer break at any point, the weight of the loaded buckets of the front ascending flight will force the conveyer backward, and the adjacent transverse shaft or pivot will engage the trip-lever and move the same backward. As the backward movement of the trip-lever from the position illustrated in Fig. 3 of the drawings independently of the support of the hanger is prevented by the lug projection or stop 204, the support or hanger will be carried backward and the safety-stop 197 will be caused to fall by the withdrawal of the shoulder 201 from beneath the transverse rod 202. The recessed ends of the side bars of the safety-stop will then drop into the path of the transverse shafts and the pivots of the buckets and will engage the adjacent one, as illustrated in dotted lines in Fig. 3 of the drawings.

The safety-stop is supported, when tripped, in position to engage the shafts or the pivots by a pair of chains 205 or other suitable flexible connections secured at their lower ends to the rod 202 and having their upper ends attached to a suitable support. By this construction the endless conveyer in event of breakage of any part of the same will be prevented from moving backward a greater distance than approximately the length of one

of the buckets, and the safety-stop will be tripped before the endless conveyer has moved backward the distance of a half of a bucket. The side bars of the rectangular frame of the safety-stop are arranged over the spaces between the buckets and the rails, whereby they are adapted to engage either the pivots of the buckets or the shafts of the endless conveyer and are capable of stopping the backward movement of the latter before the same has gained any headway. These side bars may be located above the space between the sides of the buckets, so as to engage only the transverse shafts of the endless conveyer, so that the strain incident to stopping or checking the backward movement of the conveyer will be sustained by both the inner and outer links to prevent the slightest liability of the conveyer receiving any injury from its engagement with the automatically-operating safety-stop. The same result, however, may be accomplished by locating the side bars of the rectangular frame of the safety-stop above the planes of the wheels, so as to engage the latter. As these changes involve only varying the distance between the side bars of the rectangular frame of the safety-stop, it is thought that illustration thereof is entirely unnecessary. When, however, the side bars of the safety-stop are arranged to engage the wheels of the endless conveyer, the upper rails will of course be cut away to permit the side bars of the safety-stop to drop into engagement with the said wheels.

It will be seen that the safety-stop is exceedingly simple and inexpensive in construction, that it possesses great strength and durability, and that it is capable of checking and holding the endless conveyer and of readily sustaining the strain incident to the weight of the loaded ascending flight of the endless conveyer. It will also be apparent that the safety-stop, which may be located at a variety of points, is automatic in its operation and is capable of instantly engaging the conveyer and of absolutely preventing the backward movement gaining any headway. Furthermore, it will be clear that by the use of the automatically-operating safety-stop an endless conveyer having a long ascending weighted flight may be employed in apparatus for handling material of all kinds in bulk without liability of the said weighted flight destroying or otherwise injuring the apparatus or any of its parts should such endless conveyer break at any point.

What I claim is—

1. In a device of the class described, the combination with an endless conveyer, of a stop arranged to lock the conveyer against backward movement, a support for holding the stop normally out of engagement with the conveyer, and a tripping device adapted to release the stop and arranged to be operated by the backward movement of the conveyer, substantially as described.

2. In a device of the class described, the combination with an endless conveyer, of a safety-stop arranged to engage the endless conveyer to lock the same against backward movement, said stop being located above the conveyer and normally held out of engagement with the same, and means operated by the backward movement of the conveyer for causing the safety-stop to engage the same, substantially as described.

3. In a device of the class described, the combination with an endless conveyer, of a movable frame arranged to engage the endless conveyer to lock the same against backward movement, a support for holding the frame normally out of engagement with the conveyer, and a tripping device for releasing the frame, substantially as described.

4. In a device of the class described, the combination with an endless conveyer, of a safety-stop located above and adapted to fall into engagement with the endless conveyer to lock the same against backward movement, means for supporting the safety-stop for holding the same normally out of engagement with the endless conveyer, and a tripping device arranged to release the safety-stop, substantially as described.

5. In a device of the class described, the combination with an endless conveyer, of a safety-stop located above and adapted to engage the endless conveyer to lock the same against backward movement, a support for holding the safety-stop normally elevated, and a tripping-lever mounted on the support and arranged in the path of the endless conveyer and adapted to be operated by the backward movement of the same, whereby the support is withdrawn from the safety-stop, substantially as described.

6. In a device of the class described, the combination with a conveyer, of a safety-stop located above and adapted to drop into engagement with the said conveyer, flexible connections for limiting the movement of the safety-stop to hold the same in proper position for engaging the conveyer, a support for holding the safety-stop normally in an elevated position, and a tripping-lever for releasing the safety-stop, substantially as described.

7. In a device of the class described, the combination with a conveyer, of a safety-stop located above and adapted to engage the conveyer, a support for holding the safety-stop normally out of engagement with the conveyer, said support being movable and provided with a projection, and a tripping-lever fulcrumed between its ends on the support and arranged to be carried into engagement with the said projection by the backward

movement of the conveyer, whereby the support is withdrawn from the safety-stop, substantially as described.

8. In a device of the class described, the combination with a conveyer, of a safety-stop adapted to engage the conveyer, a support for holding the safety-stop normally out of engagement with the conveyer, and a tripping-lever fulcrumed between its ends and having one of its arms arranged within the path of the conveyer, its other arm being arranged to engage the support, whereby the safety-stop will be released when the conveyer moves backward, substantially as described.

9. In a device of the class described, the combination with a conveyer, of a safety-stop consisting of an approximately rectangular frame hinged at one end and adapted to engage the conveyer, a movable hanger or support having a seat and arranged to receive the safety-stop, and a lever fulcrumed between its ends on the hanger or support and having one end arranged in the path of the conveyer, the other end of the lever being adapted to engage the support, substantially as and for the purpose described.

10. In a device of the class described, the combination with a conveyer, of a safety-stop consisting of an approximately rectangular frame hinged at one end at a point above the conveyer and adapted to swing downward to engage the said conveyer to lock the same against backward movement, and means for supporting and tripping the safety-stop, substantially as described.

11. In a device of the class described, the combination with a conveyer, of a safety-stop hinged at one end above the conveyer and provided with side bars and having a connecting-rod, a movable support provided with a seat arranged to receive the said rod, whereby the safety-stop is normally held out of engagement with the conveyer, a flexible connection for limiting the downward movement of the safety-stop, and a tripping-lever pivoted between its ends on the support and having one end arranged in the path of the conveyer its other end being adapted to engage the support and being swung away from the same by the forward movement of the conveyer and toward the support by the backward movement of the conveyer, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PEETE B. CLARKE.

Witnesses:

JOHN FRENCH,
CHARLES ENGEL.