No. 719,890. PATENTED FEB. 3, 1903.

A. D. SHAW.

CONVEYER.

APPLICATION FILED NOV. 29, 1902.

NO MODEL. 4 SHEETS—SHEET 1.

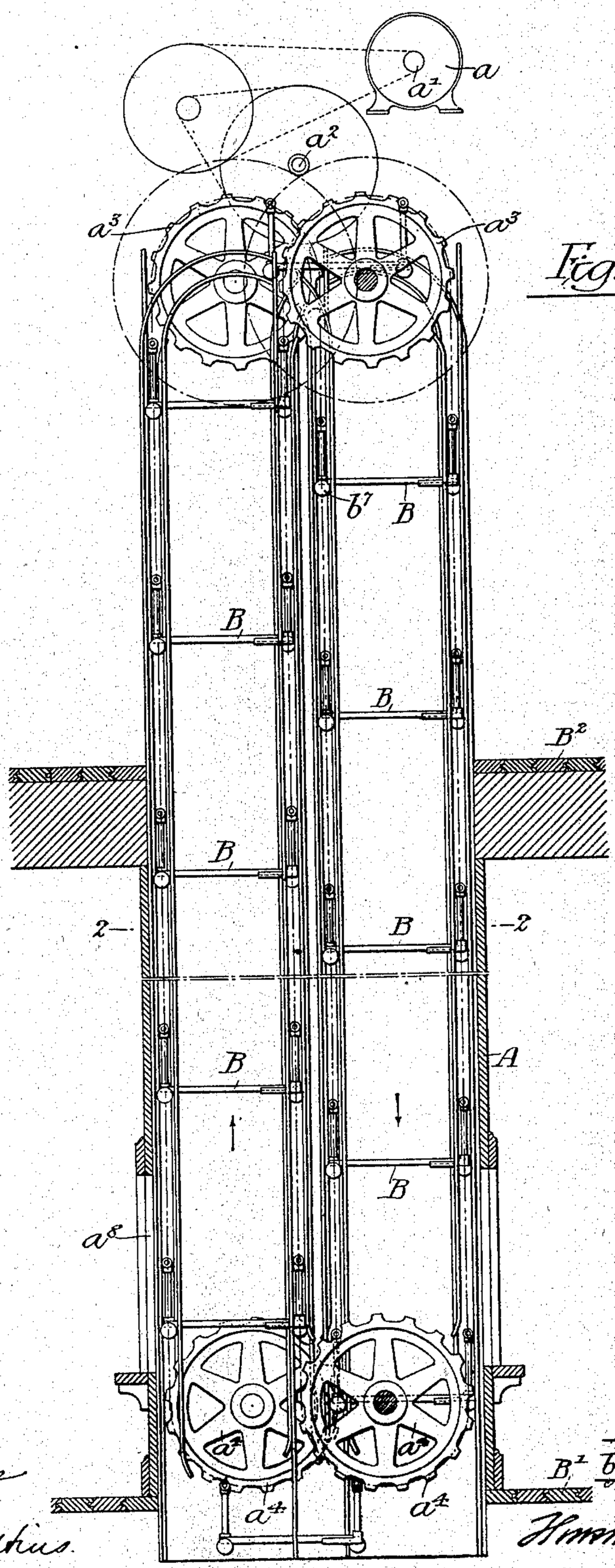


Fig. 1.

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NO MODEL. 4 SHEETS—SHEET 2.

Fig. 3.

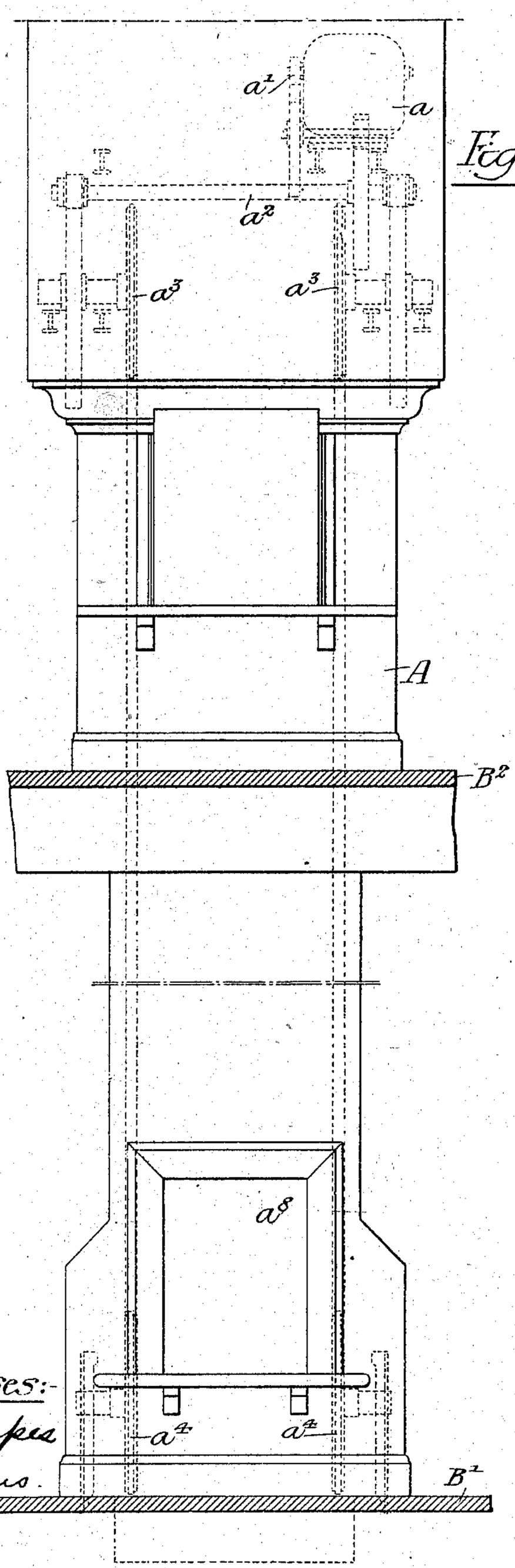
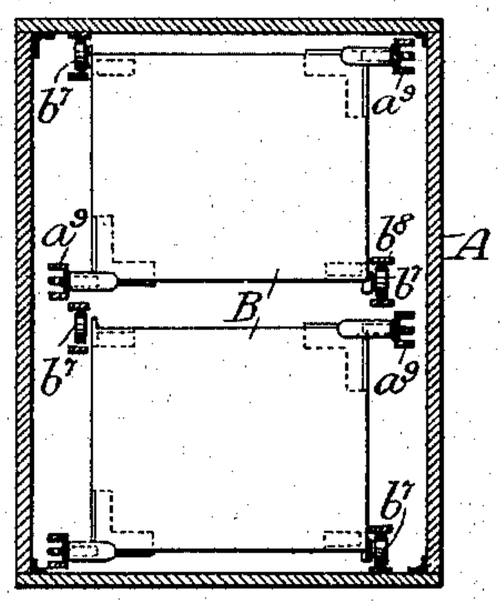



Fig. 2.




Witnesses:-
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NO MODEL. 4 SHEETS—SHEET 3.

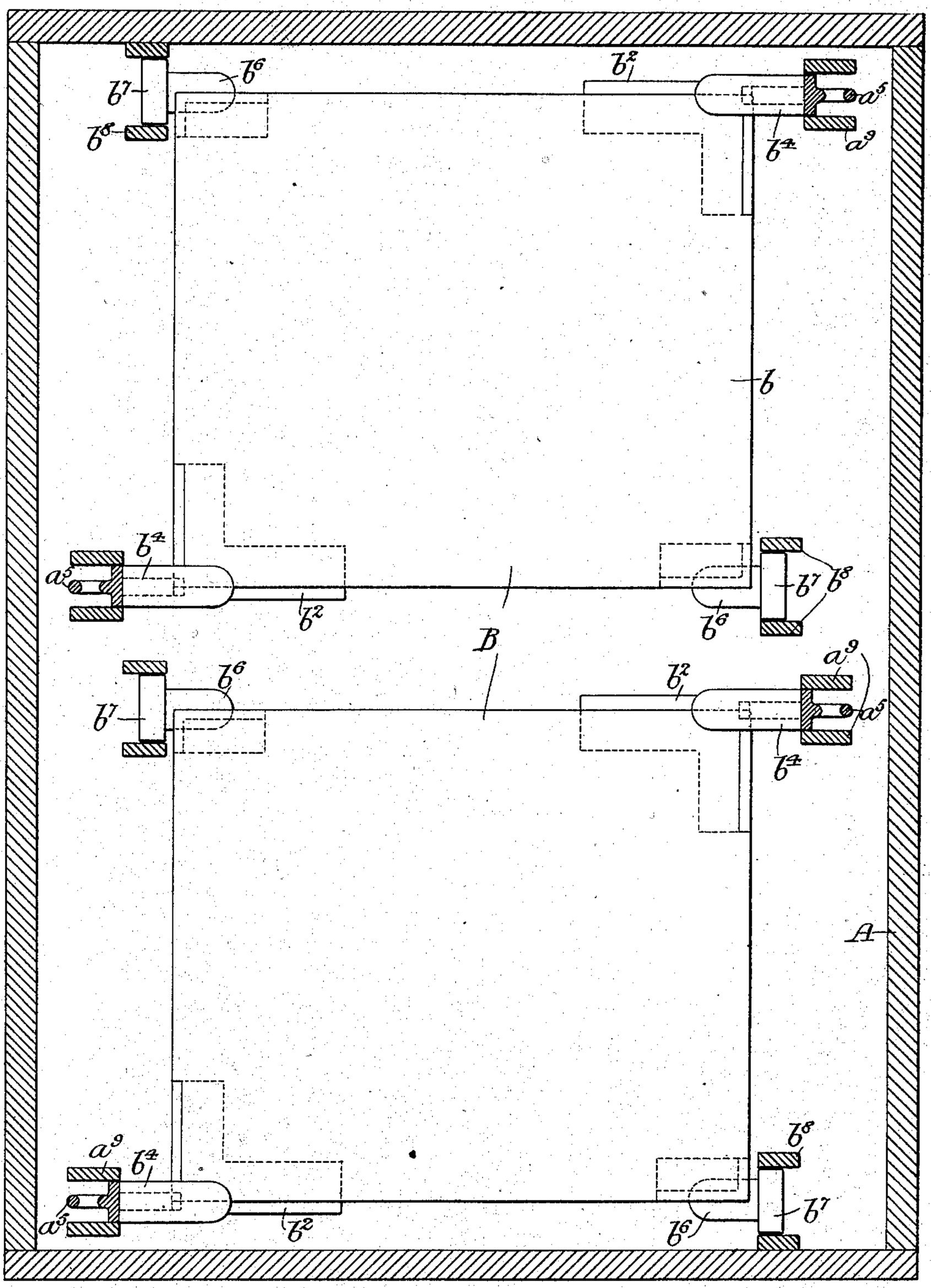


Fig. 4.

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No. 719,890. PATENTED FEB. 3, 1903.

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CONVEYER.

APPLICATION FILED NOV. 29, 1902.

NO MODEL. 4 SHEETS—SHEET 4.

Fig. 5.

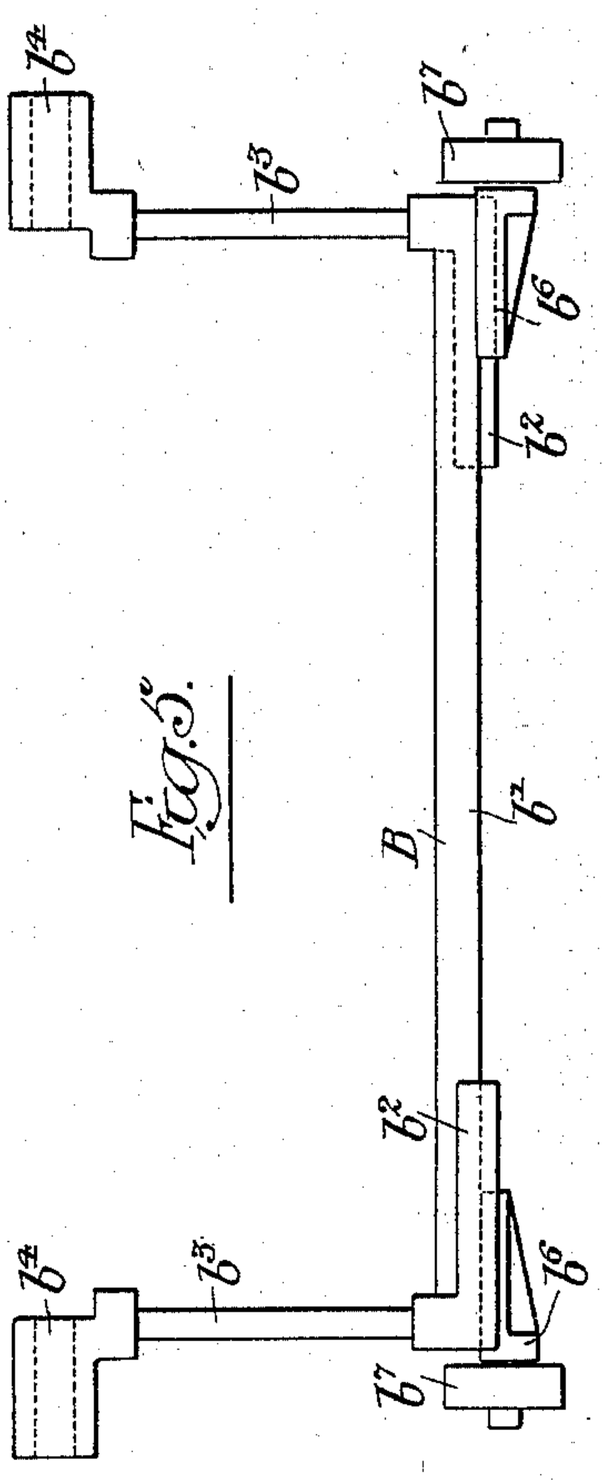
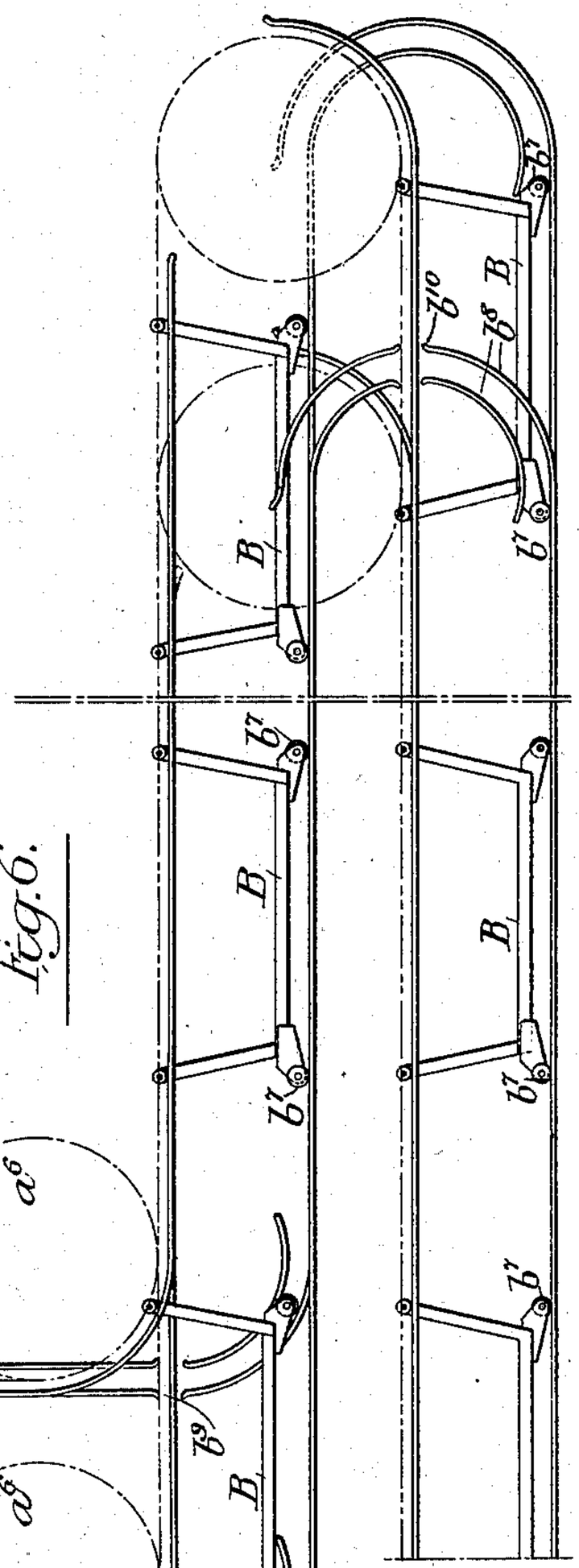



Fig. 6.




Witnesses:- A. B. Copper
Herman E. Mitchell.

Inventor:-
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# UNITED STATES PATENT OFFICE.

ARTHUR D. SHAW, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE STAIR LIFT COMPANY, OF CAMDEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## CONVEYER.

SPECIFICATION forming part of Letters Patent No. 719,890, dated February 3, 1903.

Application filed November 29, 1902. Serial No. 133,195. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR D. SHAW, a citizen of the United States, residing at Philadelphia, Pennsylvania, have invented certain Improvements in Conveyers, of which the following is a specification.

My invention relates to certain improvements in platform or tray conveying apparatus, and more particularly to an improved device for guiding and thereby preventing oscillation or objectionable movement of the trays or platforms of a conveyer. This object I attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a tray-conveyer system with my invention applied thereto. Fig. 2 is a sectional plan view of my improved device, taken on the line 2 2, Fig. 1. Fig. 3 is an exterior elevation of the casing for my improved conveyer, the positions of the driving apparatus being indicated upon the same in dotted lines. Fig. 4 is an enlarged sectional plan view similar to that shown in Fig. 2. Fig. 5 is an end elevation of a conveyer-tray employed in my improved device; and Fig. 6 is a special form of conveyer, showing the possibility of the application of its particular construction to a conveyer having both horizontal and vertical runs.

In the above drawings I have shown my invention as applied to a conveyer especially designed to convey dishes or the like from one story of a building to another. With this idea in view in Figs. 1 to 4, inclusive, the device has been illustrated as provided with an inclosing casing A, which is supported upon the floors B′ and B². Any desired form of mechanism for driving the conveyer may be employed, and it is preferably arranged as indicated in diagram at the upper portion of Fig. 3. In this figure, $a$ represents an electric motor having a pulley $a'$, which through suitable power-transmitting devices drives a shaft $a^2$, this in turn driving a pair of sprocket-wheels $a^3$, it being understood that this portion of the device forms no part of my invention, for which reason its detail construction and description has been omitted.

The sprocket-wheels $a^3$ are vertically over two other sprockets $a^4$, supported in any suitable manner in the bottom of the conveyer shaft or casing; and there are two endless link chains extending around each pair of these wheels. As shown in Fig. 1, the axes of the two pairs of wheels $a^3$ and $a^4$ are parallel, but not coincident, said axes being distant from one another a distance which must at least be greater than the length of a tray.

Hung from the two chains (indicated by dot-and-dash lines $a^5$ in the drawings) are a series of trays B, which in the present instance are of the form shown in Fig. 5 and consist of a platform or bottom section $b'$, provided at a pair of diametrically opposite corners with brackets $b^2$, from which extend rods $b^3$, having lugs $b^4$ for engagement with the chains. From Fig. 4 it will be seen that one lug $b^4$ of each tray is connected to one of the chains $a^5$, while the other lug is connected to the second chain. It will thus be seen that the tray is hung or suspended from its corners, and since the connection between the lug $b^4$ and the chain $a^5$ is a pivotal one the tray will always move parallel to itself—that is, always remain level. There are other brackets B⁶, attached to the other pair of diametrically opposite corners of the tray, to which are fixed rollers or wheels $b^7$, and I provide guideways for said wheels, formed in the present instance of two substantially parallel metallic strips $b^8$, and suitably supported within the casing A. It will be seen that these guideways are continuous except at one point in each, where a break is made to permit of the passage of the lugs $b^4$, by which the tray is hung to the chain, since it will be seen that said lugs cross the line of each set of guides at one point during the passage of the chain around the sprocket-wheel $a^3$. In the device shown in Fig. 1 the guides are dispensed with in the space below the sprocket-wheels $a^4$, since under working conditions there is no occasion to hold the trays from oscillation at this part of the run. With this construction it will be seen that the trays are always held from oscillation at at least three points, since by reference to Fig. 1 it will be seen that as one of the rollers $b^7$ passes the part of the guides

$b^8$ which is broken away the other roller at the diametrically opposite corner of the tray is kept from moving by its guides, and there is no break in this second set of guides until the first roller has again engaged the first set of guides and passed along them for some distance from the opening therein. It will be seen that by this means the trays are rigidly held from even very slight vibration or oscillation at all positions of their movement, and particularly while they are passing around the sprocket-wheels $a^3$.

In the dish-conveyer illustrated the chains move in the direction indicated by the arrows, the dishes or other bodies being placed upon the trays through an opening $a^8$ in the casing A and removed from said trays on either side of the conveyer above the floor B. It is to be understood that the direction in which the device is operated is entirely immaterial by reason of the advantageous construction above described, and, further, there is no danger in allowing a vessel containing liquid, for example, to remain on the conveyer for a number of trips, since the trays being always rigidly held at at least three of their four corners move without oscillation or tremor.

A special form of my invention is illustrated in Fig. 6, where the guides are shown as adapted to a conveyer having a horizontal as well as a vertical run. In this figure the two chains are shown as passing around a pair of guide-wheels $a^6$ and the roller-guides are broken away at $b^9$ and $b^{10}$, where, as before, the suspension-lugs $b^4$ for the trays cross the line of said guides.

Under operating conditions I find it preferable to provide guides $a^9$ for the chain, these of course being usually permissible only along straight lines. It will be understood that in Fig. 6 the upper roller-guide has been omitted in the horizontal portion of the run of the conveyer, since at this part of the device the rollers have no tendency to vertical displacement.

I claim as my invention—

1. The combination in a conveyer, of endless chains having means whereby they are driven, a tray engaged by a chain at one corner and engaged by a second chain at a diagonally opposite corner and guides engaging the two remaining corners of the tray, substantially as described.

2. The combination in a conveyer of two endless chains having means whereby they are driven, a tray engaged by said chains at diagonally opposite points, with guides engaging the tray at other diagonally opposite points, substantially as described.

3. In a conveyer, the combination of a pair of drive-chains, means for operating the same, a tray pivotally engaging each chain, and guides for the tray engaging the same at two other points, substantially as described.

4. In a conveyer, the combination of a pair of drive-chains, means for operating the same, a tray engaged by said chains at diagonally opposite points, guides for the tray and a projection from the tray engaging said guides, substantially as described.

5. The combination in a conveyer, of two endless chains, means for driving the same, a tray hung from said chains at diagonally opposite points, a guideway having a portion or portions shaped to conform to the path of the chain, and rollers carried by the tray constructed to operate in the guides, substantially as described.

6. In a conveyer, the combination of a pair of drive-chains, means for operating the same, a tray hung from said chains at diagonally opposite points, a guide for the tray lying in a plane parallel to the planes of said chains, with means on the tray for engaging the guide, said guide being cut away where the connection between the tray and the drive-chain crosses the line thereof, substantially as described.

7. In a conveyer, the combination of a pair of drive-chains, means for operating the same, a tray engaged by said chains, at diagonally opposite points, with a guide engaging said tray, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR D. SHAW.

Witnesses:
WILLIAM E. BRADLEY,
JOS. H. KLEIN.