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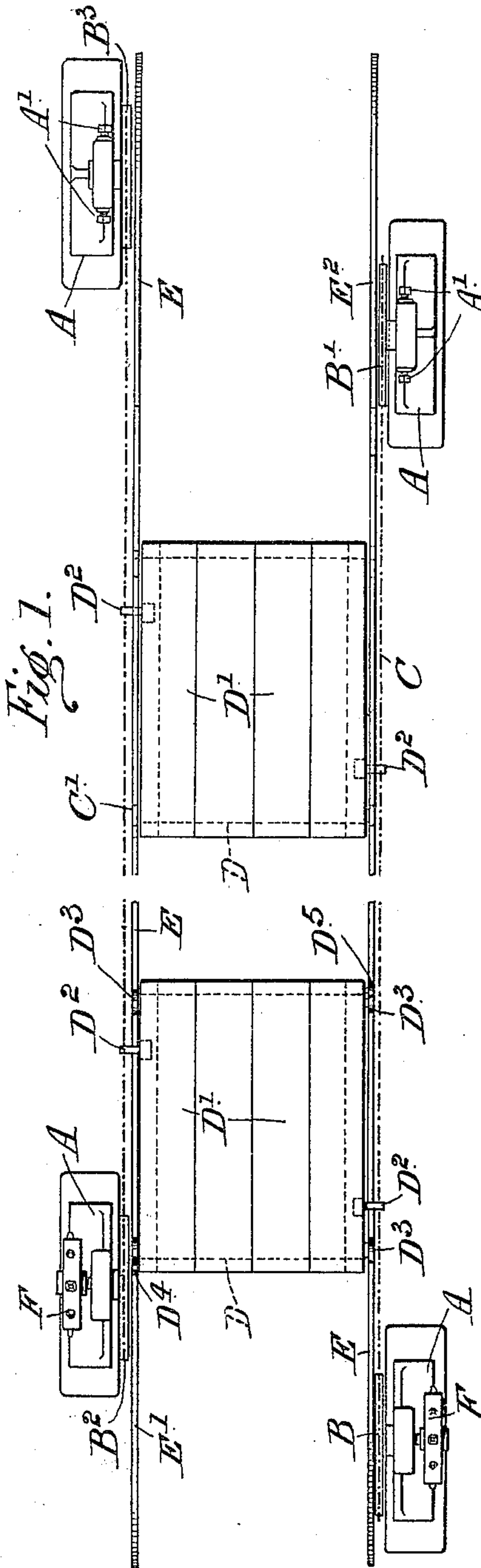
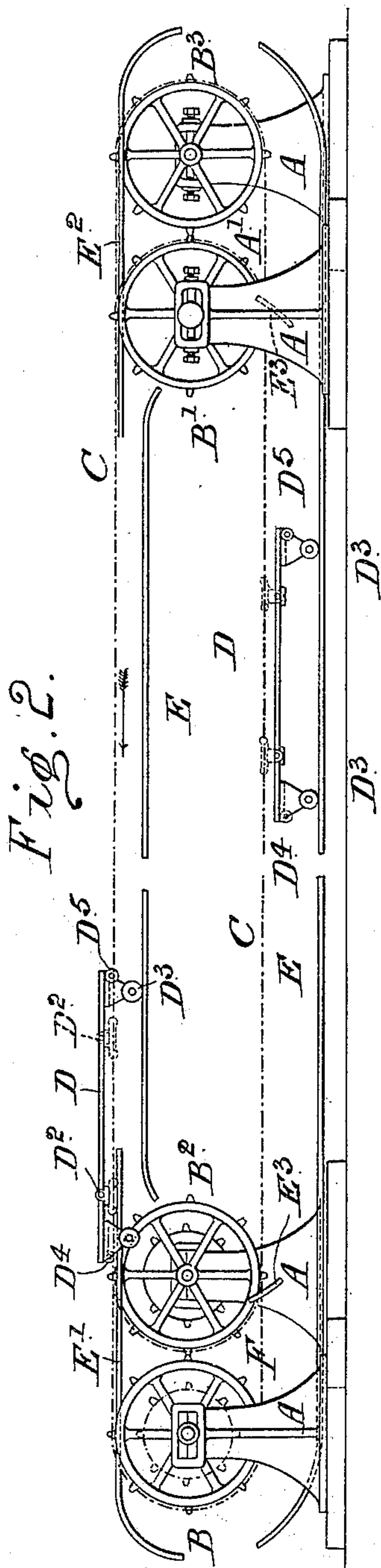
Patented Nov. 27, 1900.

A. C. CLAY.  
CONVEYER.

(Application filed Sept. 11, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses  
Oscar O. Seyfert  
Frederick W. Langfellow

Arthur Cecil Clay Inventor  
By his attorney H. MacKay

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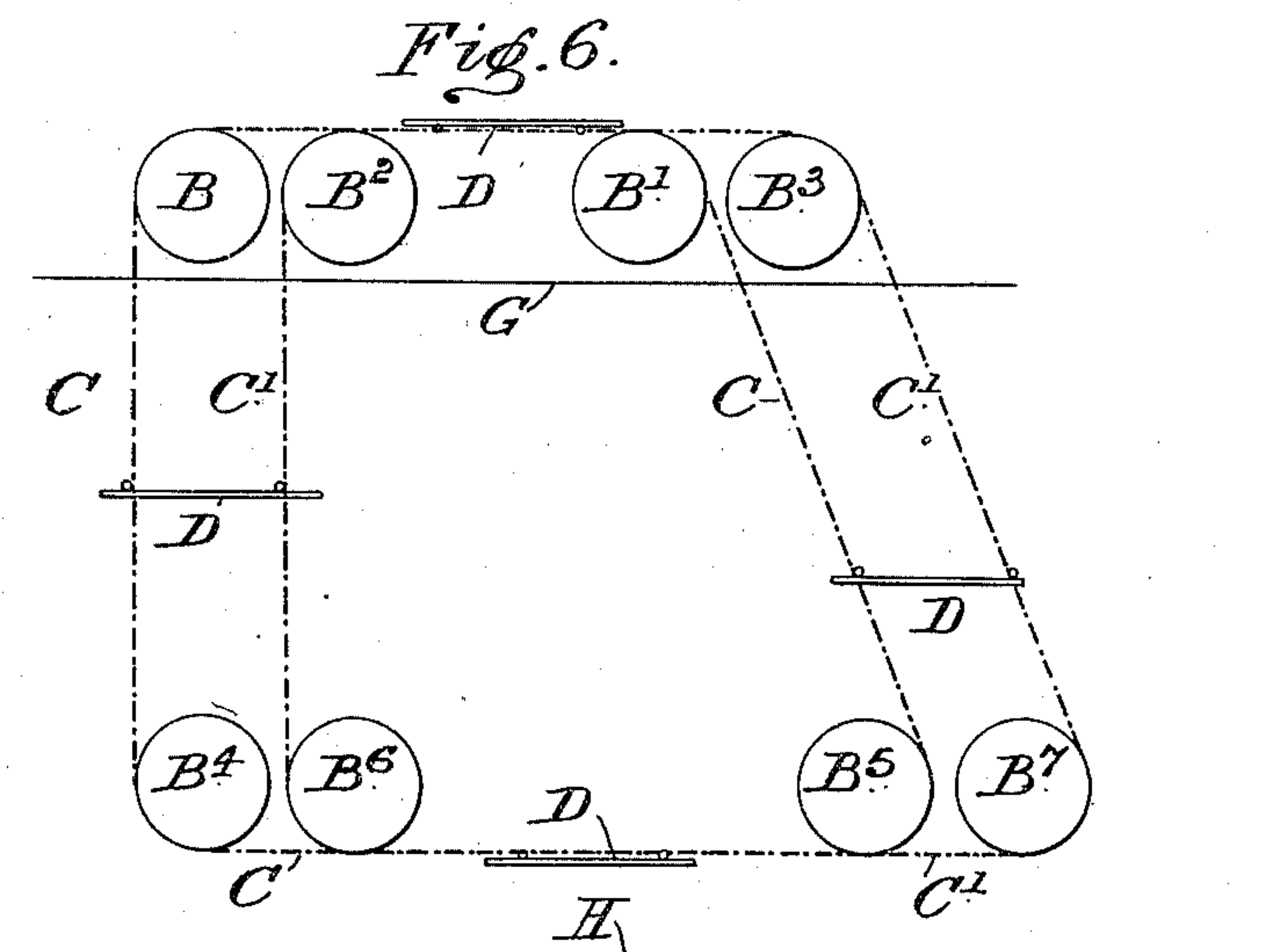
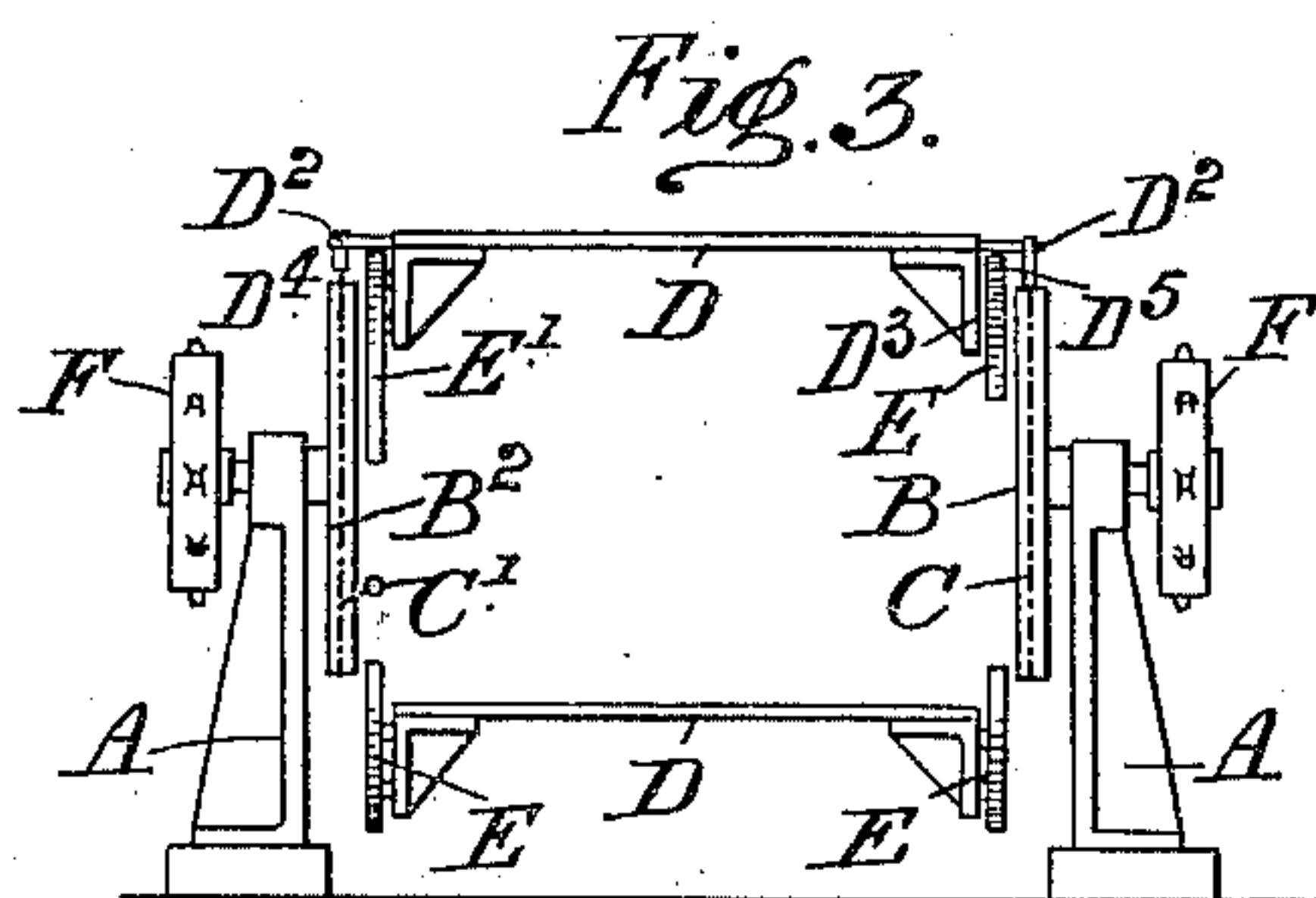
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3 Sheets—Sheet 2.



Witnesses.

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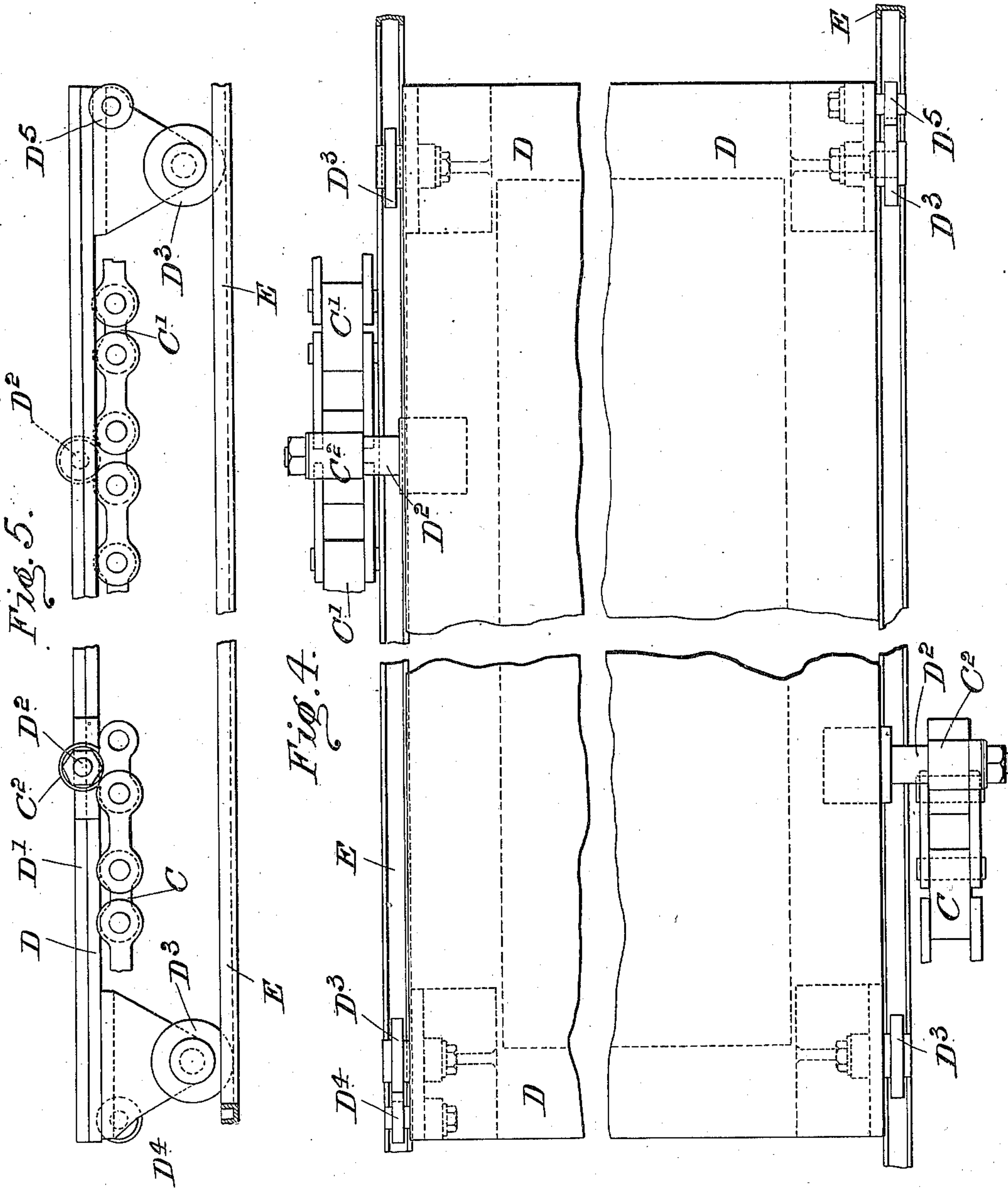
H. MacKay

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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

ARTHUR CECIL CLAY, OF LONDON, ENGLAND.

## CONVEYER.

SPECIFICATION forming part of Letters Patent No. 662,709, dated November 27, 1900.

Application filed September 11, 1900. Serial No. 29,652. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR CECIL CLAY, a subject of the Queen of England, residing at London, England, have invented certain new and useful Improvements in or Relating to Conveyers, (for which I have made application for patent in Great Britain under No. 1,241, dated January 19, 1900,) of which the following is a specification.

10 This invention relates to conveyers, its object being to construct one in which a series of tables or the like is carried in an endless path in such a manner that the tables are always horizontal and are held in this position while changing their direction of travel at 15 each end of the apparatus. Such a conveyer is peculiarly adapted for use in collecting together the various sheets in which a book is printed, similar sheets being arranged on the same table and the collector taking one from 20 each heap as it passes. It may, however, be used for other purposes.

According to this invention two endless chains or the like, preferably equal in length, 25 are arranged parallel with one another, their distance apart corresponding with the desired width of the traveling tables. Each chain runs on two chain-wheels, preferably all four being of the same size, and the wheels are 30 mounted upon suitable supports in such a manner that there is a clear space between the faces of the end wheels. Moreover, the wheels are not placed coaxially, but are so arranged with reference to one another that the 35 turning-point of one chain is in advance of that of the other. Rails may be arranged in proximity to the top and bottom runs of each chain. Preferably the lower pair of rails extends beyond the upper pair at each end and 40 for a distance corresponding to the lengths of the tables. A series of tables or trays is adapted to move around with the endless chains. They are preferably rectangular in shape and provided with wheels or rollers ar- 45 ranged to bear upon the rails. Each table is connected to the chains by means of a pin on each side engaging with sockets formed in or upon the chains. The positions of these pins at the side of the tray to which they are at- 50 tached are such that they both pass around their respective chain-wheels at the same time. In other words, the projected distance

between the pins of each table is equal to the advance of one chain beyond the other. On rotating one or both chains the various tables 55 attached thereto by their pins will move in an endless path. As each table of the upper row arrives toward the end its front wheels leave the rails, and the pins engaging with the sockets on the chain arrive simultaneously 60 at the circumference of their corresponding chain-wheels and are carried around therewith. As the rearmost wheels of the table leave the rails the table is carried around the chain-wheels supported by its pins, being pre- 65 vented from assuming an inclined position by the non-central arrangement of the latter. As the table commences to move backward in the lower row its wheels come into contact with the lower rails. A similar turning opera- 70 tion takes place at the other end of the apparatus.

If desired, the ends of the upper pair of rails may be curved downward and the ends of the lower pair upward in order to guide 75 and support the tables during their change of direction. The upper rails may also be continued as far as the lower pair, suitable "points" being arranged to allow the rear wheels of the table to descend and the front 80 wheels to ascend at the other end. Curved guide-pieces may also be arranged at each end in addition to the bent ends of the rails, if necessary suitable points being provided.

Among other advantages possessed by ap- 85 paratus constructed according to this invention is the fact that the upper surfaces of the tables are free of any attachment or mechanism, thus facilitating the operations of loading and unloading. If desired, the chains, 90 wheels, and rails may be cased in, so as to guard against accidents.

As a modification, four or more chain-wheels may be provided for each chain in order to allow the lower run of the chain to 95 be utilized equally with the upper. In this case four wheels may conveniently be arranged, as described in an upper room and the chains carried down to a lower room, where they pass around four similarly-ar- 100 ranged chain-wheels. The length of run in one room need have no relation to that in the other, the points to be observed being equality of advance in both cases and the same dis-



tance between the chains throughout the apparatus.

If desired, the ascending and descending portions of the conveyer may be utilized as well as those moving horizontally.

In the accompanying drawings, which illustrate, diagrammatically, one construction of conveyer according to this invention, Figure 1 is a plan; Fig. 2, a side elevation and Fig. 3 an end elevation, looking in the direction of the arrow in Fig. 3. Figs. 4 and 5 are respectively a plan and a side elevation of part of the conveyer drawn to a larger scale than Figs. 1, 2, and 3; and Fig. 6 is a diagram illustrating an alternative construction of conveyer, also according to this invention.

Like letters indicate like parts throughout the drawings.

With reference first to Figs. 1, 2, and 3, upon standards A chain-wheels B, B', B<sup>2</sup>, and B<sup>3</sup> are mounted free to revolve in suitable bearings. The chain-wheels B B' are connected by a chain C, and a similar chain C' connects the wheels B<sup>2</sup> B<sup>3</sup>, the two chains being parallel to each other. The distance between the wheels B and B' is equal to that between the wheels B<sup>2</sup> and B<sup>3</sup>; but the wheels B and B' are set in advance of the other pair, so that the wheels at either end of the apparatus are not abreast of each other. Carried upon the chains C and C' are frames D, upon which are secured strips D', each frame, with its strips, forming a table or platform which travels with the chains. Secured to the frames D are pins D<sup>2</sup>, one on each side of each frame, the longitudinal distance between the two pins on one frame being equal to that between the centers of the chain-wheels B and B<sup>2</sup>—that is, to the advance of the chain C as compared with the chain C'. The pins D<sup>2</sup> are journaled in sockets C<sup>2</sup>, which are attached at the proper points to the chains C and C'. At or near each corner of the frames D a small wheel or roller D<sup>3</sup> is provided which runs in a guide-rail E, which may be channeled, as shown, two such rails being placed near the top runs of the chains C and C' and two near the bottom runs. Two auxiliary guide-rails E' E<sup>2</sup> are provided above the rails E, near the chain-wheels B' and B<sup>2</sup>, and a short curved guide-rail may be secured, as at E<sup>3</sup>. The guide-rails E' E<sup>2</sup> overlap the rails E and are placed a sufficient distance above them to allow of the passage of the rollers D<sup>3</sup> between them. Additional rollers D<sup>4</sup> D<sup>5</sup> are secured to the edges of the tables D D' and are adapted to bear upon the guide-rails E' E<sup>2</sup>, preferably just before the rollers D<sup>3</sup> leave the rails E. The ends of the guide-rails E E' E<sup>2</sup> are curved, as shown, in order to facilitate the passage of the tables D D' from the upper to the lower rails. The guide-rails may be carried by the standards A or by separate supports provided for the purpose. Such separate supports are, however, not shown in the drawings. Either or both of the chains C C' may be driven to operate

a conveyer, and chain-wheels F are provided on the shafts carrying the wheels B and B<sup>2</sup> to take driving-chains. The standards A, carrying the wheels B' and B<sup>3</sup>, are furnished with screws, as A', in order that the tightness of the chains C and C' may be adjusted.

In order to insure both sides of the machine being driven at an equal rate, it is preferred to use chains rather than belts.

The operation of the conveyer is as follows: When either of the wheels F is rotated, the chains C and C' travel so that the tables D D' upon the top runs of the chains are carried, say, from right to left in Fig. 2. When the foremost wheels D<sup>3</sup> approach the clearance between the rails E and E', they will pass beneath the latter, the tables being supported by the rollers D<sup>4</sup>, which will have engaged the rail E' before the front wheels D<sup>3</sup> leave the rails E. The table will continue to be supported by the roller D<sup>4</sup> on the rail E' until both the pins D<sup>2</sup> are on the chain-wheels B B<sup>2</sup>, when such support will no longer be necessary. As before mentioned, the longitudinal distance between the pins D<sup>2</sup> is made equal to that between the wheels B and B<sup>2</sup>, and consequently the pins reach the wheels together and remain in the same horizontal plane as they descend around them. The guide-rails E, E', and E<sup>2</sup> are so situated relatively to the pins D<sup>2</sup>, wheels D<sup>3</sup>, D<sup>4</sup>, and D<sup>5</sup>, and the chain-wheels that they guide the wheels D<sup>3</sup>, D<sup>4</sup>, and D<sup>5</sup> as the pins are carried around the chain-wheels. As each table travels along the lower run of chains and rails from left to right and reaches the chain-wheels B' B<sup>3</sup> it will be lifted up onto the upper run in a similar manner. Each table will be supported by the roller D<sup>5</sup>, bearing on the upper rail E<sup>2</sup>, until the four wheels D<sup>3</sup> are all on the rails E.

In Fig. 6 an arrangement is shown diagrammatically whereby the endless chains C C' are made to serve two floors at different levels. The top runs of the chains supported on the chain-wheels B B' and B<sup>2</sup> B<sup>3</sup>, respectively, carry the tables along and serve a floor, (indicated by the line G,) and the chains C C' instead of returning by way of the under side of their respective chain-wheels are carried down to a lower floor, (indicated by the line H,) where they pass around other chain-wheels B<sup>4</sup> B<sup>5</sup> B<sup>6</sup> B<sup>7</sup>. In an arrangement of this kind it is of course possible to allow the horizontal travel of the tables to be greater on one floor than on the other, and this feature is also shown diagrammatically in Fig. 6. Obviously the tables D D' may, if desired, be utilized during their passage from one level to the other as well as when they are traveling in an approximately horizontal direction. Guide-rails may be fitted to an arrangement such as that illustrated in Fig. 6, but are omitted from that figure for the sake of clearness.

Although it is preferred to use guide-rails, yet conveyers according to this invention



need not have them, but may rely solely upon the chains to support and guide the traveling tables.

5 It is to be understood that although the terms "chain" and "chain-wheels" are used throughout this specification other similar or equivalent devices—such as ropes, belts, and pulleys—may be used and are considered to be included in the terms mentioned.

10 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a conveyer the combination of parallel endless chains, supporting and driving wheels for the chains the wheels for one chain being 15 in advance of those for the other chain and a traveling table attached to the chains the points of attachment being on opposite sides of the table and separated by a longitudinal distance equal to the advance between the 20 two sets of wheels substantially as set forth.

2. In a conveyer the combination of parallel endless chains, supporting and driving wheels for the chains the wheels for one chain being in advance of those for the other chain, a trav- 25 eling table attached to the chains the points of attachment being on opposite sides of the table and separated by a longitudinal distance equal to the advance between the two sets of wheels, runner-wheels upon the table and 30 guide-rails for the runner-wheels substantially as set forth.

3. In a conveyer the combination of parallel

endless chains, supporting and driving wheels for the chains the wheels for one chain being in advance of those for the other chain, a trav- 35 eling table attached to the chains the points of attachment being on opposite sides of the table and separated by a longitudinal distance equal to the advance between the two sets of wheels, runner-wheels upon the table, guide- 40 rails for the runner-wheels, auxiliary guide-rails near the turning-points of the chains and rollers on the table to bear upon the auxiliary guide-rails substantially as set forth.

4. In a conveyer the combination of parallel 45 endless chains, supporting and driving wheels for the top runs of the chains and similar wheels on a lower level for the bottom runs of the chains, the wheels for one chain being in advance of those for the other chain, a trav- 50 eling table attached to the chains the points of attachment being on opposite sides of the table and separated by a longitudinal distance equal to the advance between the two sets of wheels, runner-wheels upon the table and guide-rails 55 for the runner-wheels substantially as set forth.

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

ARTHUR CECIL CLAY.

Witnesses:

A. L. N. MCKENZIE,  
W. M. HARRIS.