

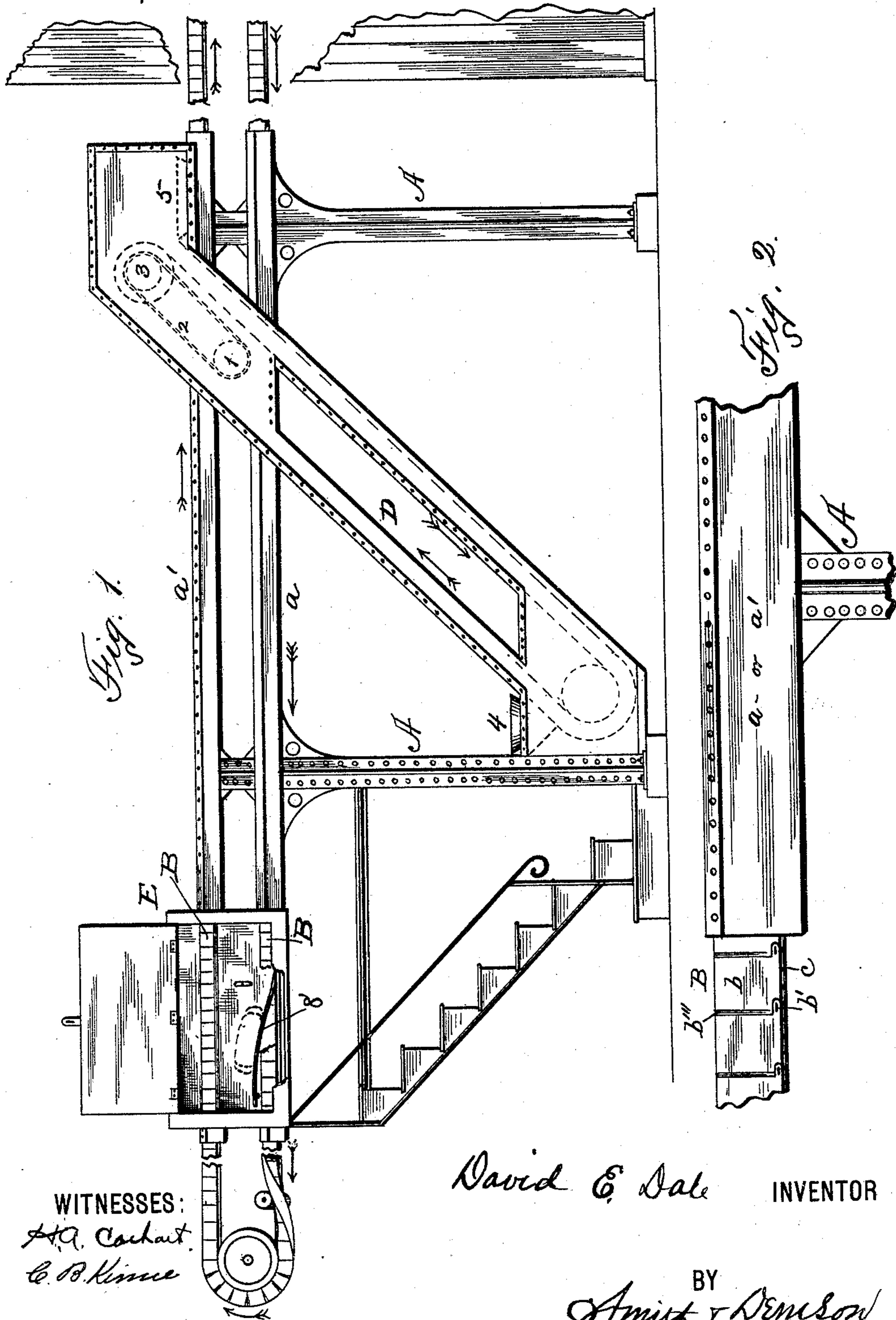
(No Model.)

3 Sheets—Sheet 1.

D. E. DALE.
DEVICE FOR TRANSPORTING MATERIALS.

No. 476,787.

Patented June 14, 1892.



WITNESSES:
H. A. Cochran
C. B. Kinne

David E. Dale INVENTOR

BY
Smith & Benson
his ATTORNEYS

(No Model.)

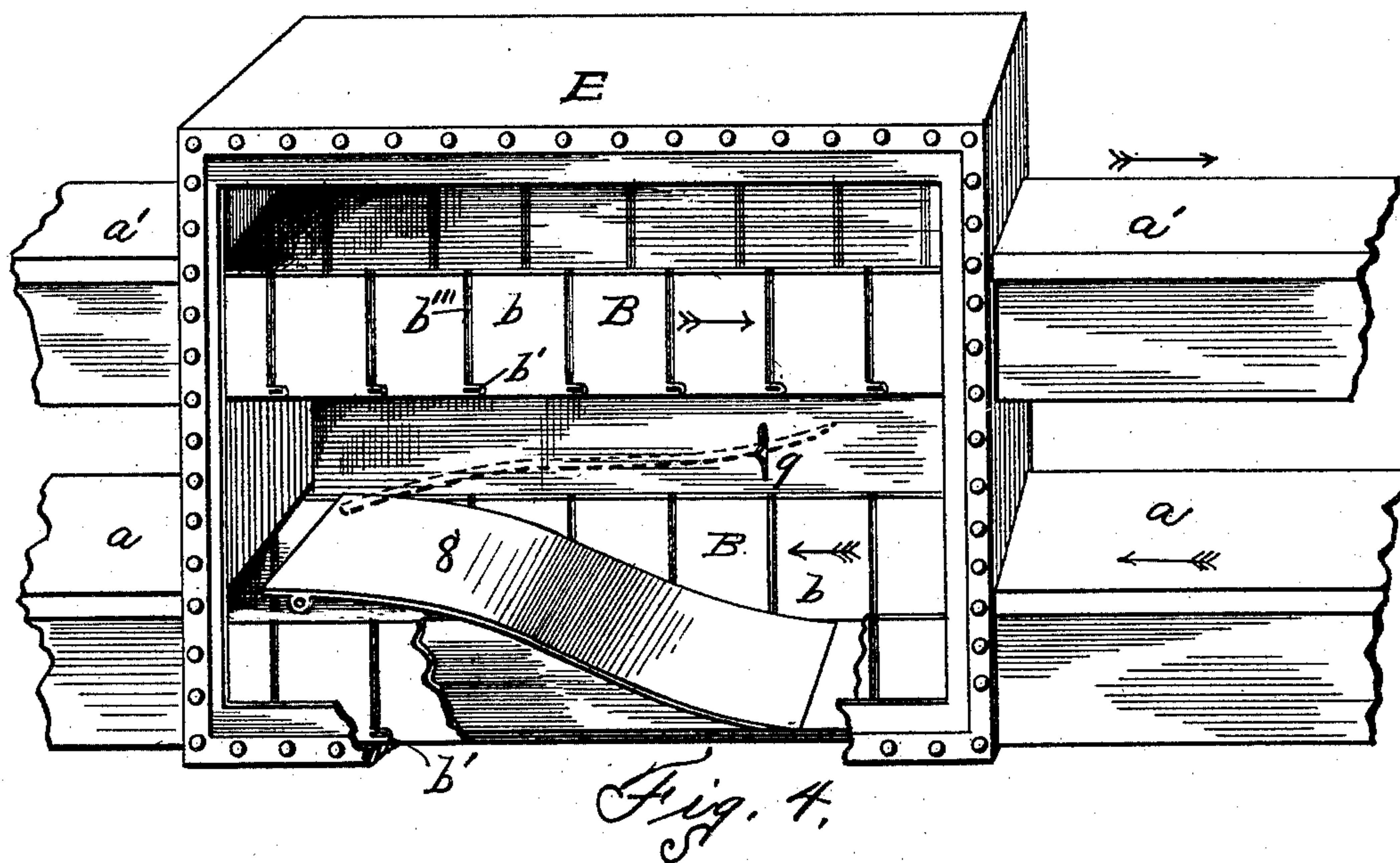
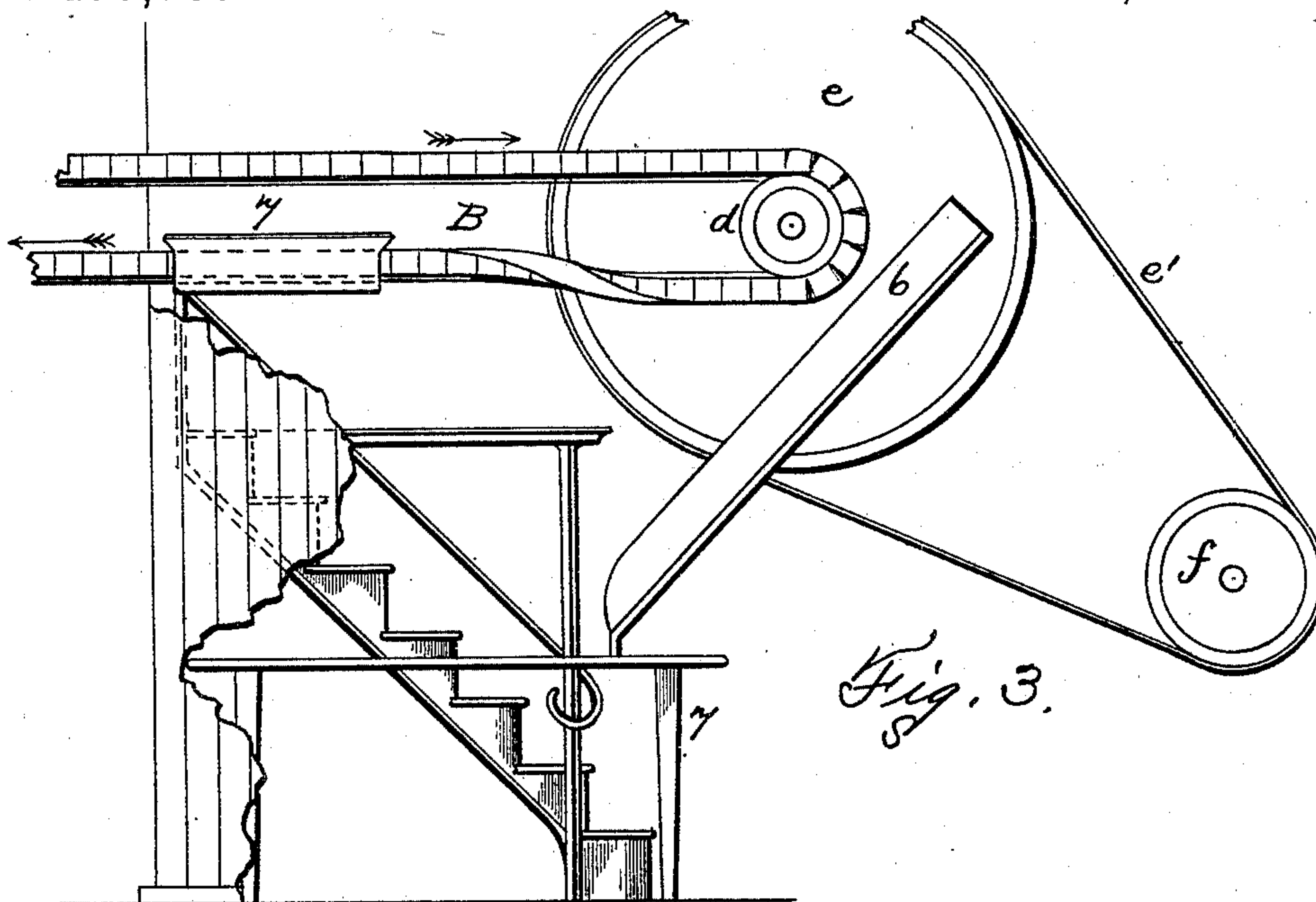
3 Sheets—Sheet 2.

D. E. DALE.

DEVICE FOR TRANSPORTING MATERIALS.

No. 476,787.

Patented June 14, 1892.



WITNESSES:

H. A. Carhart
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David E. Dale INVENTOR

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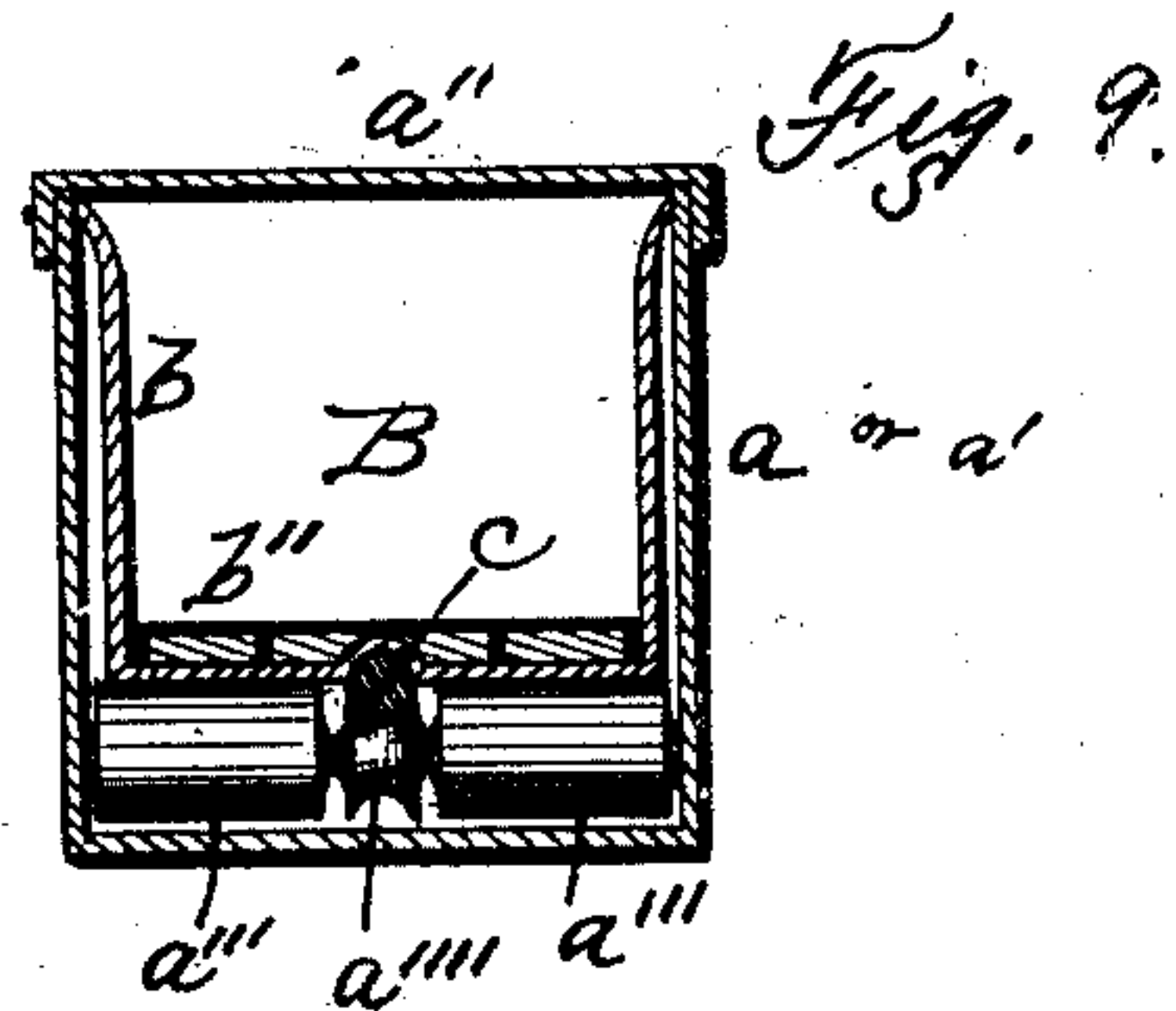
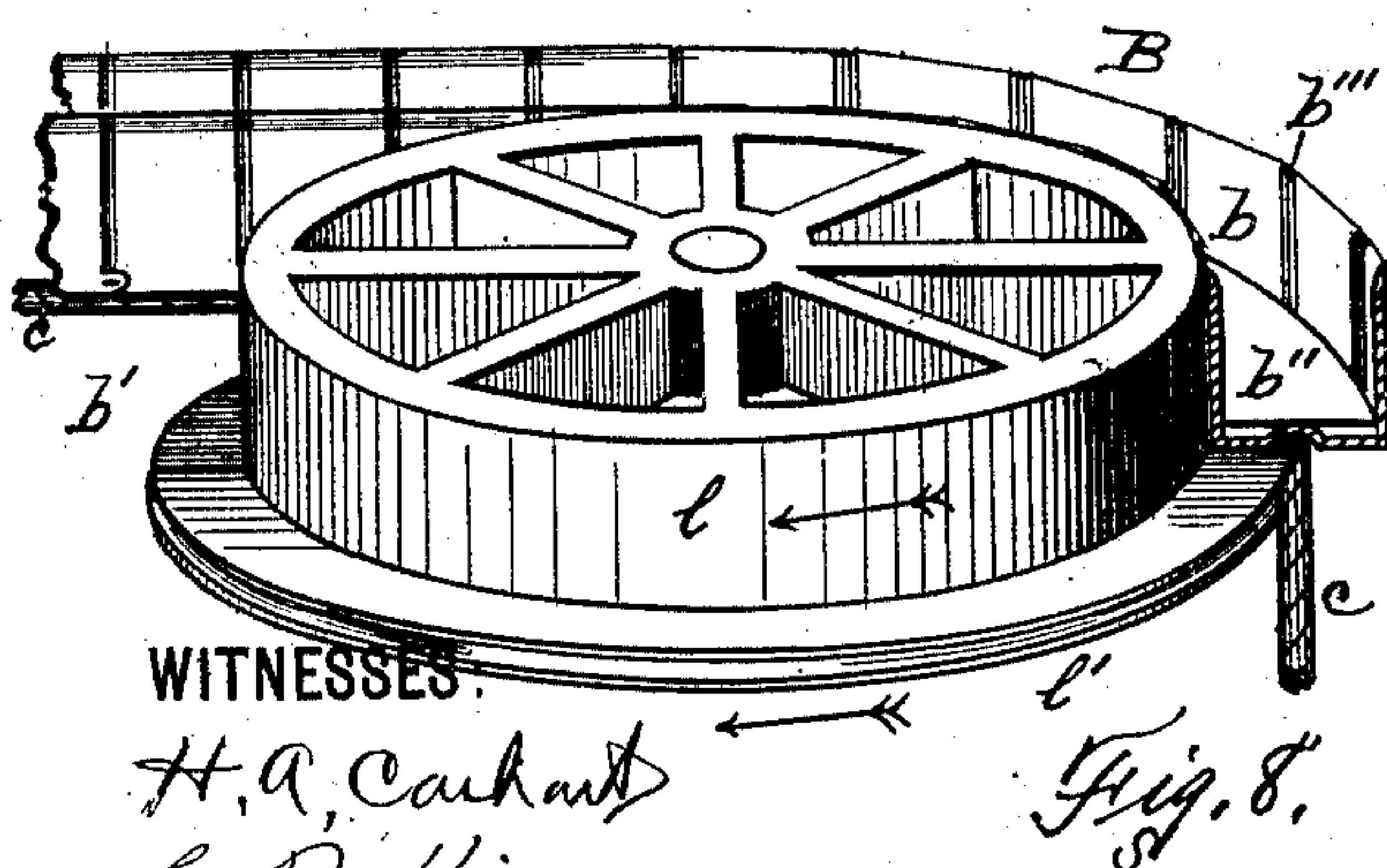
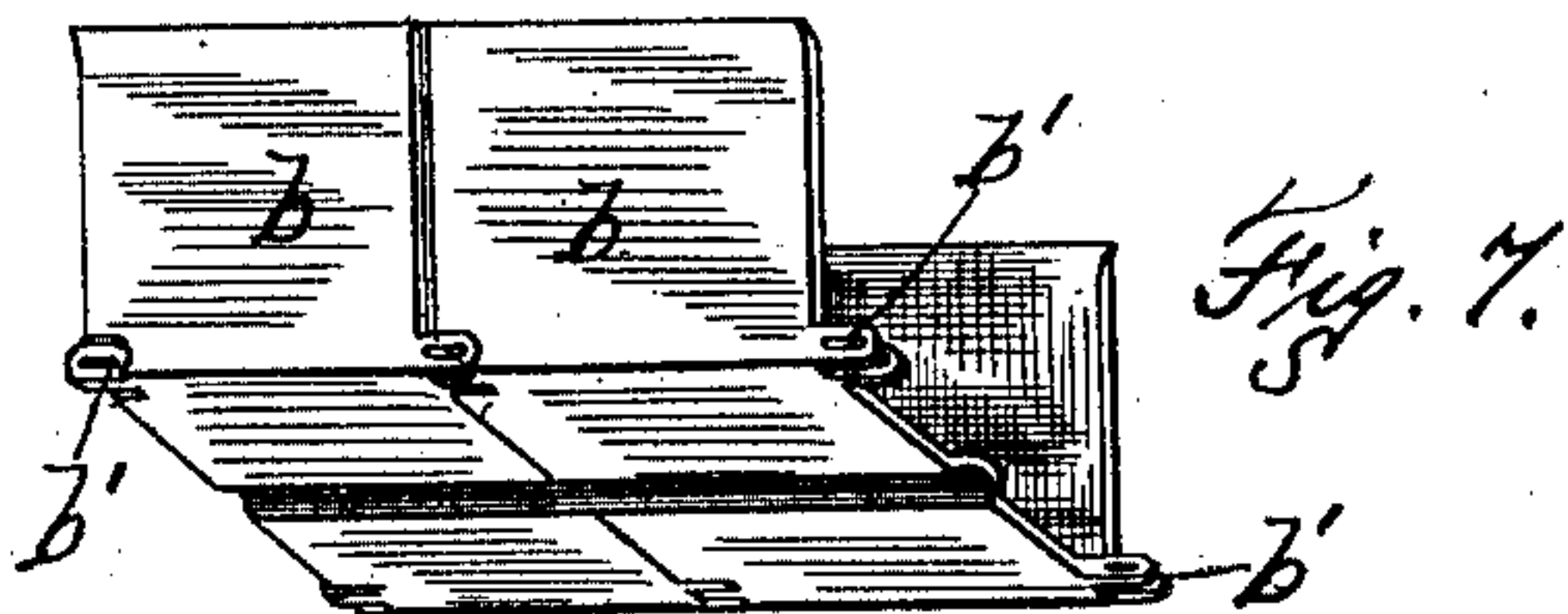
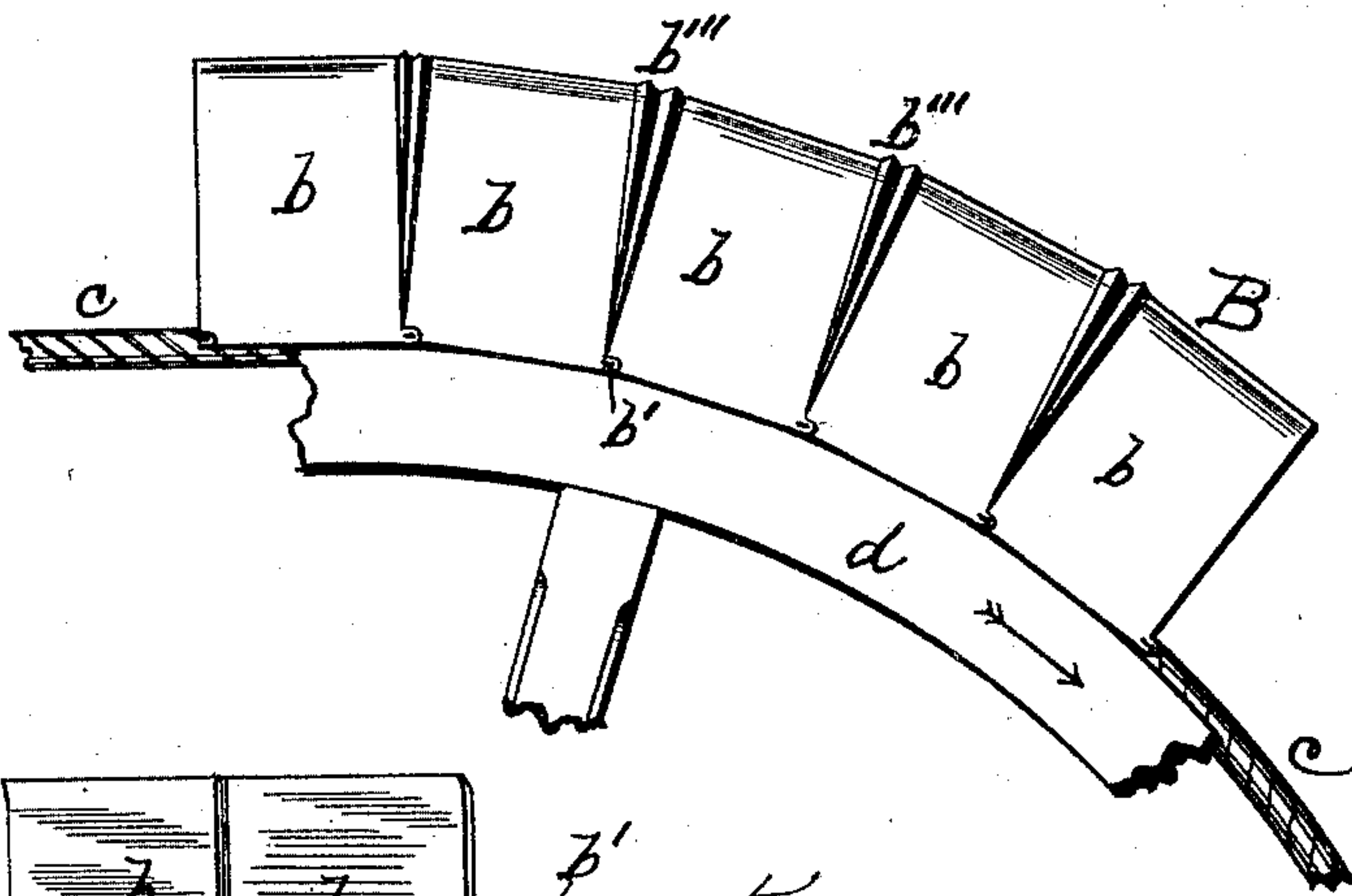
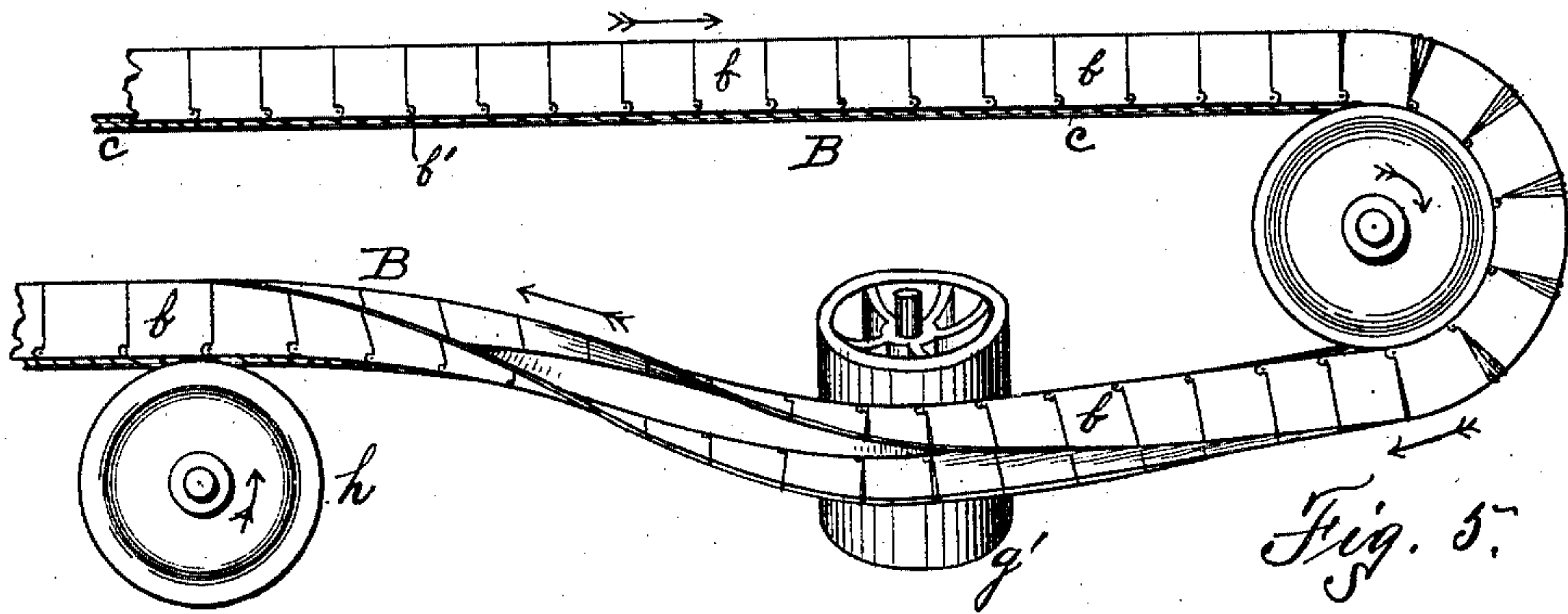
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3 Sheets—Sheet 3.

D. E. DALE.
DEVICE FOR TRANSPORTING MATERIALS.

No. 476,787.

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WITNESSES:

H. A. Calkins
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UNITED STATES PATENT OFFICE.

DAVID E. DALE, OF SYRACUSE, NEW YORK.

DEVICE FOR TRANSPORTING MATERIALS.

SPECIFICATION forming part of Letters Patent No. 476,787, dated June 14, 1892.

Application filed June 20, 1891. Serial No. 397,006. (No model.)

To all whom it may concern:

Be it known that I, DAVID E. DALE, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful
5 Improvements in Devices for Transporting Materials, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to conveyers for receiving and transporting materials, packages, or parcels from one place to another and depositing them in or upon a receptacle provided for them at the desired point, comprising a trackway and an endless and jointed
15 conveyer, which is adapted to be carried around the rim of either a vertical or a horizontal wheel and also to be twisted so as to either dump or to reverse it. It may be adapted to many uses and purposes; but my
20 principal object is to produce a mail-conveying apparatus for receiving letters from the street-boxes and conveying them to the post-office, for conveying mail-matter for distribution to the carriers at predetermined points
25 in their respective districts, and for conveying to the main office all matter collected by the carriers, thus saving time, labor, and expense, facilitating the delivery and collection of mail-matter, leaving no letters in the mail-boxes in the streets or elsewhere exposed to
30 danger, and, in fact, by which a letter cannot be handled by any person between the deposit-box and the main office, for the reason that it is actually deposited in a closed and
35 constantly-moving conveyer and whisked away quickly to the office, such apparatus comprising, primarily, a trackway, a sectional endless conveyer, suitable horizontal or vertical pulleys around which the conveyer
40 travels, idlers for inverting the conveyer, elevators from the deposit-boxes dumping into the conveyers, receptacles to receive bags or pouches sent out to the carriers, and such other necessary adjuncts to carry out the
45 spirit of my invention.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims hereunto annexed.

50 It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a short length of my apparatus, showing the supports, one end wheel, a receiving and delivery box, a deposit-box, and an elevator there- 55 from. Fig. 2 is an enlarged side elevation of a piece of the conveyer and the trackway inclosing it. Fig. 3 is a side elevation of the end of the apparatus which is in the main office, the chute receiving the matter dumped 60 from the conveyer, a driving mechanism, and a box through which bags or pouches or packages are placed in the conveyer to be delivered to predetermined points. Fig. 4 is an enlarged perspective elevation of parts of the 65 double trackway and the box open on one side or receiving matter from or delivering matter to a carrier, showing the conveyer passing through it, and the drop for catching the matter to be delivered to the carrier. 70 Fig. 5 is a side elevation of one end of the conveyer, the wheel around which it is carried, the idler for inverting it, and a supporting-wheel. Fig. 6 is a side elevation showing part of a vertical wheel and part of the conveyer 75 passing around its rim, showing also the accordion-plaiting between and connecting the ends of the sections of the conveyer and the cable. Fig. 7 is a perspective of two of the conveyer-sections as when moving upon a 80 horizontal trackway. Fig. 8 is a like view of a horizontal wheel, the conveyer passing around its rim, as when a corner is being turned by it. Fig. 9 is a vertical transverse section of a trackway and the conveyer within 85 it and the inclosing cover.

In the drawings I show posts A, carrying the trackways $a a'$; but it is evident that they can be supported or carried by other means and appliances and may even be laid under- 90 ground, either in a conduit or themselves forming the conduit. Each trackway consists of a casing of proper length having a cover a'' , and in its bottom the rollers a''' are mounted upon transverse axles, Fig. 9, (not shown,) and 95 between them on each axle I mount a concaved roller a'''' . These axles and rollers are located at suitable distances from each other in the casing and with it constitute the trackway, of which two are used parallel to each 100 other.

B is the conveyer, consisting of a number

of sections *b*, of substantially the same form as the casing, connected together by means of slotted ears *b'*, projecting beyond the sides of one end of each section at the bottom and bent outward, so as to receive the plain end of the adjoining section between them, and by means of pins or bolts inserted loosely through the slots in said ears of one section into the sides of the adjoining section, said pins being free to play longitudinally in said slots, so that I thus impart sufficient pliability to the conveyer to enable it to be carried around horizontal or vertical wheels or drums, as seen in Figs. 6 and 8. The vertical edges of the side walls of the conveyer-sections are connected by some pliable material *b''*, accordion-plaited, secured to said walls, and thus creating a flexible connection between the sections which will keep the joints closed, whether the conveyer is straight or curved around horizontal or vertical drums.

A cable *c* is secured to or in the bottom of the conveyer and carries it along when power is applied thereto—as, for instance, in Fig. 3. *d* is a horizontal drum, around which the conveyer passes. *e* is a balance-wheel on the same shaft as said drum. *e'* is a driving-belt, and *f* is the drive-pulley; but any other means can be employed which are adapted to the purpose.

Upon the bottom of the conveyer I place a continuous piece of pliable material, as rubber *b''* or canvas, fitting closely against the side walls and covering all of the transverse joints or openings in the bottom between the sections and preventing any of the matter in the conveyer from catching in them.

Inasmuch as my conveyer is designed to carry matter in opposite directions to and from the main office it is necessary to invert the conveyer, and in Fig. 5 I show a means for doing it, consisting of an idler-drum *g'*, mounted upon a substantially vertical or inclined shaft, rotated by the frictional contact of the bottom of the conveyer with it and which turns the conveyer over one-half way, bringing the open top uppermost. This turning or inversion of the conveyer is necessary at each end of it, and *h* is a flanged guide-drum which holds the conveyer straight after it is turned.

In Fig. 8 I show the conveyer passing around a horizontal drum *l*, resting upon a flange *l'*, as when turning a corner, or such a drum can be used in place of the drum *d*, in which case no turning or inverting of the conveyer is necessary, because the trackways are in a horizontal plane, while in Fig. 5 they are vertically one above the other. In this horizontal turning the conveyer bears against the vertical wall of the drum-face and rests upon the flange for substantially one-half of the width of the conveyer, and the rope or cable bears more or less upon the edge of the flange, but cannot actually enter a groove in said edge, though it may partially, as appears

in Fig. 8. In both cases when the conveyer is passing around the vertical or horizontal drums the trackways end contiguous to them and are not actually carried around the drums. This flange *l'* should be wide enough to support the weight of the conveyer, and for that purpose it should be broad enough to at least permit the rope to lie and be carried on top thereof.

In Fig. 1 I show an elevator D, of ordinary construction, driven by the frictional contact of the pulley 1 with the bottom of the conveyer B, through an opening in the casing and the belt 2 and the pulley 3, (shown in dotted lines,) which together actuate the endless-belt conveyer in the elevator-leg. A hopper 4 receives the matter, and from this a chute discharges it onto the elevator-belt, which carries it up and dumps it into the hopper 5, through which it passes into the conveyer B and is carried to the office.

At the office, Fig. 3, as the conveyer passes around the drum *d* it empties all of the matter into the chute 6, which conducts it to a suitable receptacle 7.

At E, Figs. 1 and 4, I show a box inclosing both trackways and conveyer, and when the door is opened a carrier or collector deposits the matter collected by him in the conveyer in the upper trackway and it is carried to and delivered in the office; also, when a carrier is to deliver mail he opens this box, signals the office that he has arrived, (by means of a telephone or other signaling mechanism, not shown,) and thereupon the matter to be delivered by this carrier is deposited in the conveyer in the lower trackway, through the box 7, Fig. 3, and a signal is given to the carrier that the matter has started. Thereupon the carrier drops the catcher 8, Fig. 4, down into the conveyer. This catcher consists of a piece of sheet metal pivotally mounted at one end above the conveyer, normally supported by a catch 9, and when it is let down the matter for the carrier will slide up onto it from the conveyer, whereupon the carrier removes it, raises up the catcher, signals the office that he has received the matter, and locks the box and goes his way.

Although I am aware that some of the parts of my apparatus are old and that my invention really consists in novel combinations of old elements of great utility and value, yet I do claim that I have made a novel invention which is a clean departure from anything which has before been patented, especially in its adaptation to the mail service, and I do not, therefore, limit myself to the precise forms shown of the parts composing the operating mechanism; but I do claim the benefit of the use of all equivalents and mechanical substitutes, and also to more or less vary the forms of construction shown.

As relating to the mail service, the principle of my invention is the receiving, the transmission, and the delivery of mail-matter to

and from the main office by means of a traveling conveyer provided with mechanisms for facilitating the deposit of the matter in the conveyer and its delivery at the main office or at any other predetermined point.

It will be readily seen that one great advantage of my apparatus is that it automatically collects all matter deposited in the street-boxes along the line of the structure and immediately transmits it to the main office, thereby saving, substantially, all of the time and all of the labor required under the present system for its collection by a carrier and its carriage by him to the office; that a carrier or collector in the outside territory can deposit the matter collected by him in the conveyer and it will be transmitted to the office without requiring his carriage of it to it; that all matter to be delivered by the carriers can be sent out to them in their respective districts without requiring their presence at the main office, and thus saving the time now required for each carrier to reach his district from the office. By arranging such a carrier-station in each carrier's district the delivery of matter from the office to the carrier and of matter collected by him to the office will be greatly facilitated and a great amount of time saved, and its value to business men along the line is incalculable, in that letters will be delivered in the main office in a few minutes without lying in the street-boxes exposed to the danger of robbery, and also that mail can be delivered much quicker after its receipt at the main office. It will also be apparent that, although I have not shown them, I can use transverse partitions in part or all of the conveyer-sections, especially where the conveyer is operated upon an ascending or descending grade, in order that the matter cannot slide into heaps or bunches, which might be large enough to clog the apparatus and cause great damage.

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

1. An endless conveyer comprising sections, each consisting of a bottom and vertical sides connected flexibly and longitudinally by an endless cable secured to each section and connected vertically and flexibly by an accordion plaited or folded connection secured to and lying between the ends of the vertical sides.

2. An endless conveyer comprising sections, each consisting of a bottom and vertical sides connected flexibly and longitudinally by an endless cable secured to each section and connected vertically and flexibly by an accordion plaited or folded connection secured to and lying between the ends of the vertical sides, and an endless bottom of pliable material lying upon the bottom of the conveyer.

3. An endless conveyer comprising sections, each consisting of a bottom and vertical sides connected flexibly and longitudi-

nally by an endless cable secured to each section and connected vertically and flexibly by a plaited or folded connection secured to and lying between the ends of the vertical sides, in combination with trackways provided with anti-friction rollers supporting the conveyer.

4. An endless conveyer comprising sections, each consisting of a bottom and vertical sides connected flexibly and longitudinally by an endless cable secured to the sections and connected vertically and flexibly by a plaited or folded connection secured to and lying between the ends of the vertical sides, and an endless bottom of pliable material within the conveyer, in combination with trackways provided with anti-friction rollers supporting the conveyer.

5. An endless conveyer comprising sections flexibly connected, trackways provided with anti-friction supports for the conveyer, drums around which the conveyer passes, and means for twisting the conveyer to invert it.

6. The combination, with the endless conveyer and its trackway, of receiving-boxes below the conveyer and an auxiliary elevator, and a pulley rotated by its frictional contact with the conveyer and actuating said elevator to elevate matter from the boxes and discharge it into said conveyer.

7. The combination, with the endless conveyer and its trackways, of the station-boxes inclosing them and through which they pass both ways and provided with doors through which access is had to the conveyer to deposit matter in it for transmission or to remove it from the conveyer in transit.

8. The combination, with the endless conveyer and its trackways, of the station-boxes inclosing them and through which they pass both ways and provided with doors through which access is had to the conveyer to deposit matter in it for transmission, and the catcher pivoted above the conveyer and adapted to be dropped into the conveyer and onto its bottom to remove matter therefrom while in transit.

9. A receiving and delivering apparatus comprising an endless flexible conveyer, trackways therefor, means to actuate the conveyer, elevators for picking up the matter deposited in the boxes and depositing it in the conveyer, and stations along the line at which matter can be directly deposited in the conveyer and caught and removed therefrom, in combination.

10. An endless conveyer consisting of sections, each consisting of a bottom and vertical sides connected to an endless cable and connected to each other by means of rearwardly-projecting slotted ears upon one section overlapping the end of the adjoining section, and bolts or pins through said slots.

11. An endless conveyer consisting of sections, each consisting of a bottom and vertical sides connected to an endless cable and connected to each other by rearwardly-pro-

jecting ears upon one section overlapping the
end of the adjoining section and bolts through
said slots, and said sections vertically con-
nected by a folding connection secured to the
5 ends of the vertical sides, in combination with
trackways provided with anti-friction rollers
supporting the conveyer.

In witness whereof I have hereunto set my
hand this 12th day of June, 1891.

DAVID E. DALE.

In presence of—

HOWARD P. DENISON,
C. B. KINNIE.