

(No Model.)

5 Sheets—Sheet 1.

D. H. RICE.

CASH CARRYING APPARATUS.

No. 318,032.

Patented May 19, 1885.

Fig. 2

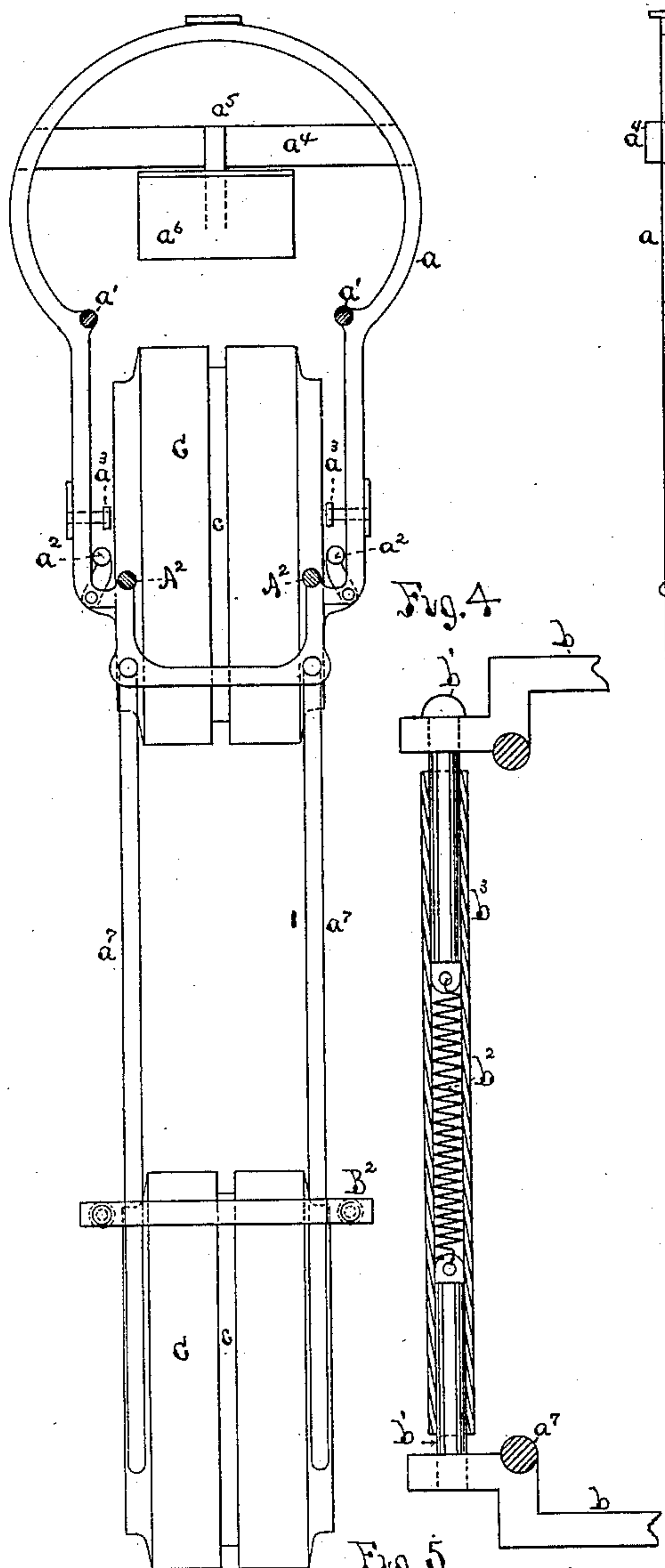
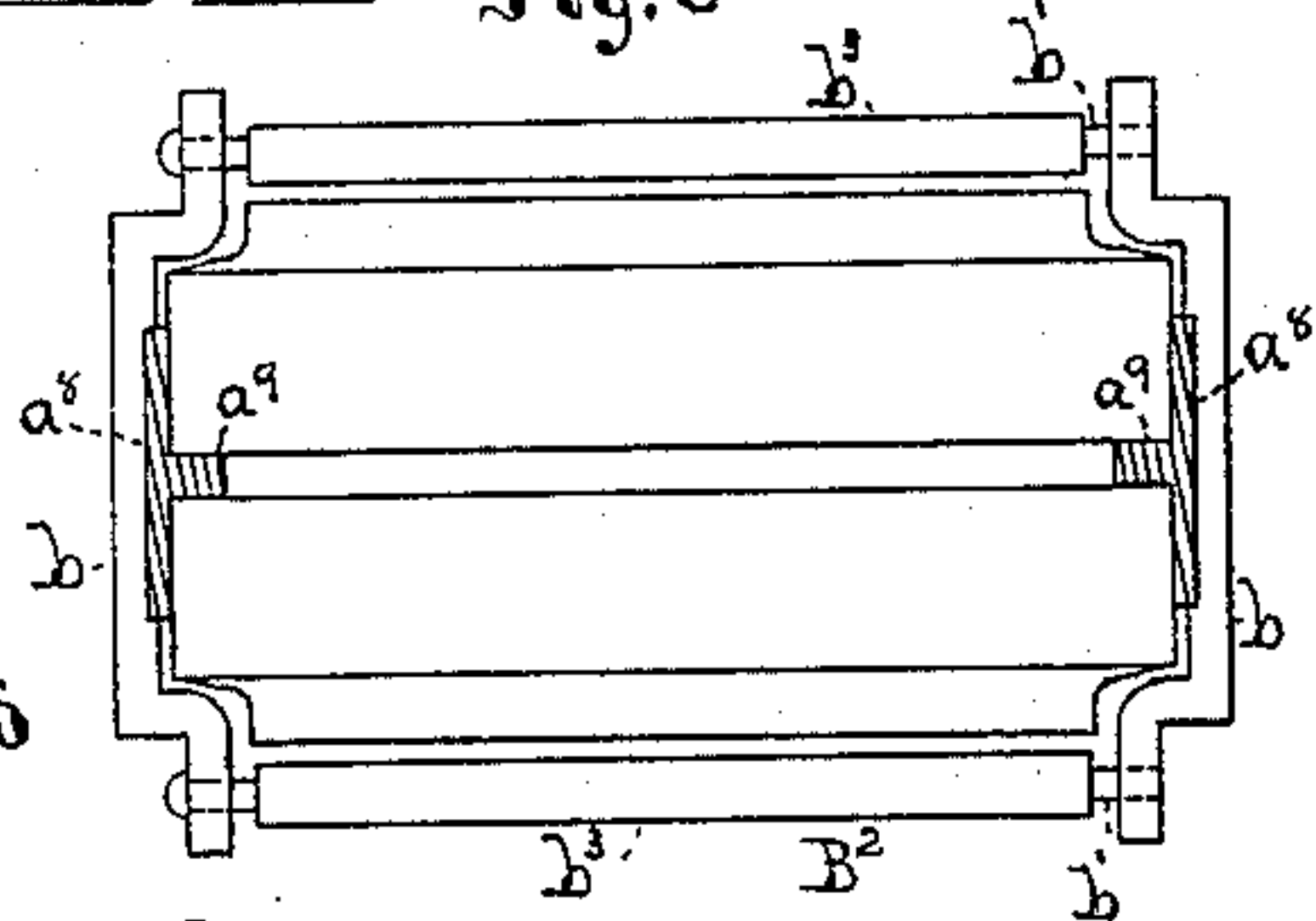


Fig. 5



Witnesses

Wm. O. Brown

A. P. Ockington

Fig. 1

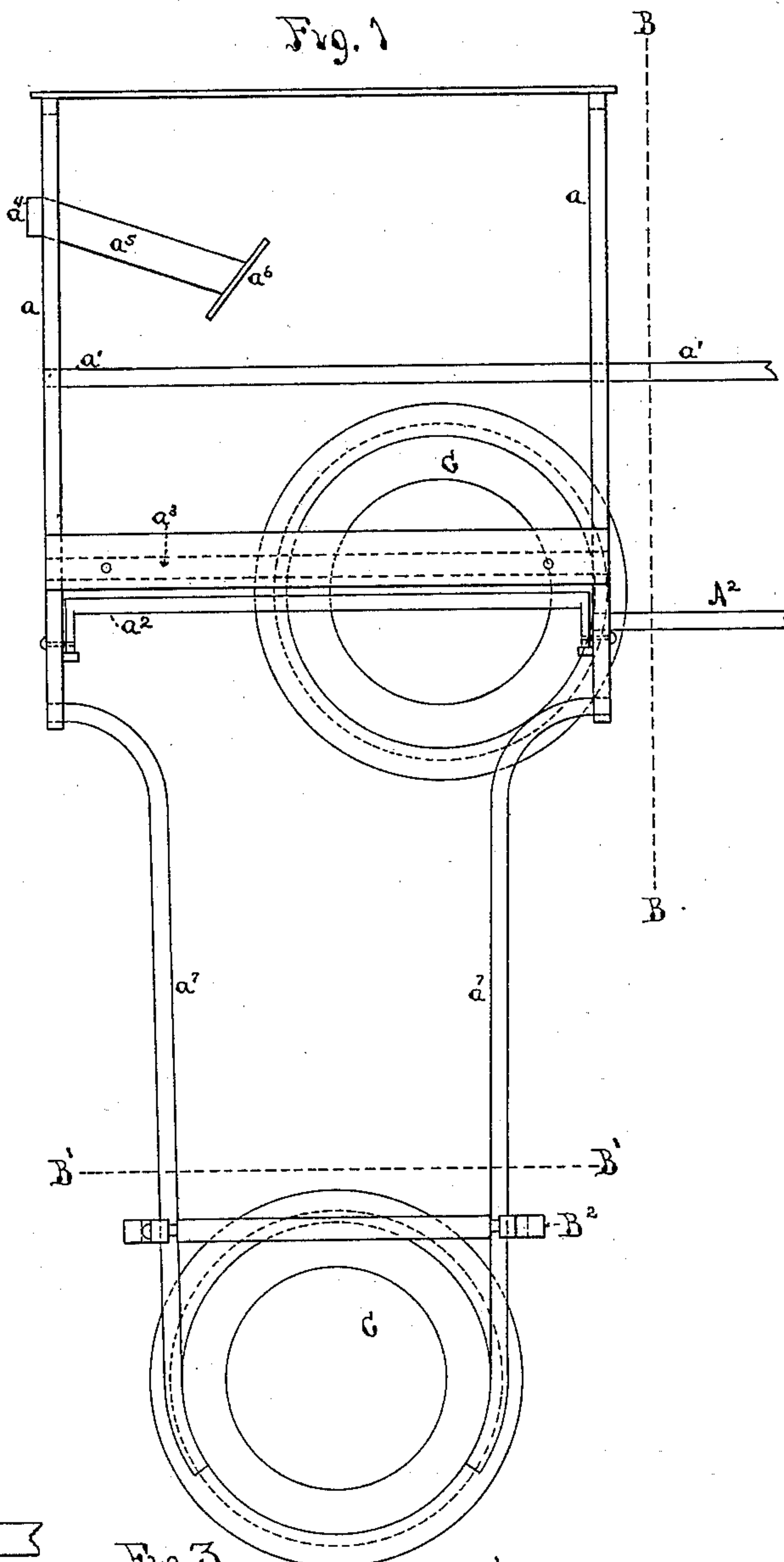
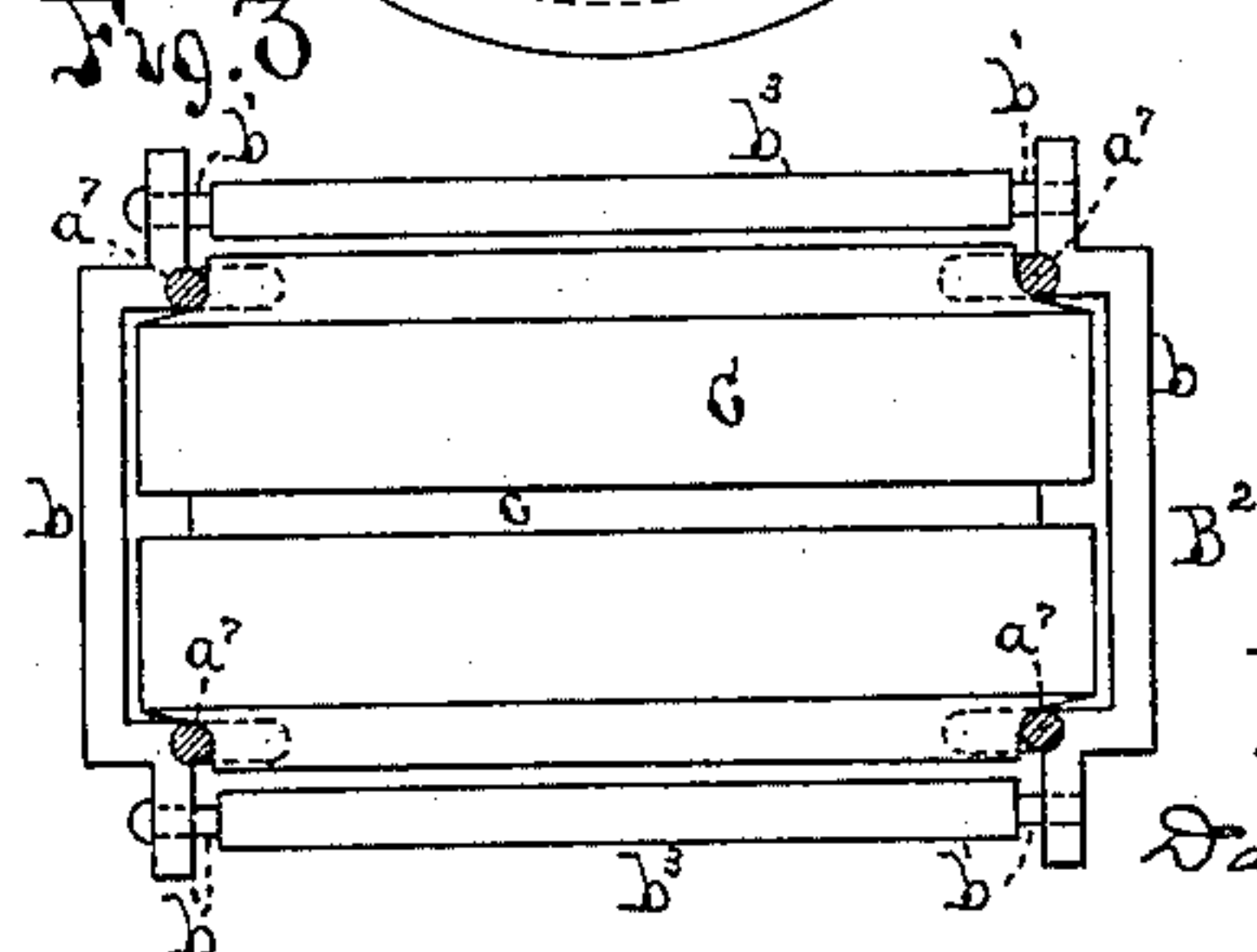


Fig. 3



Inventor

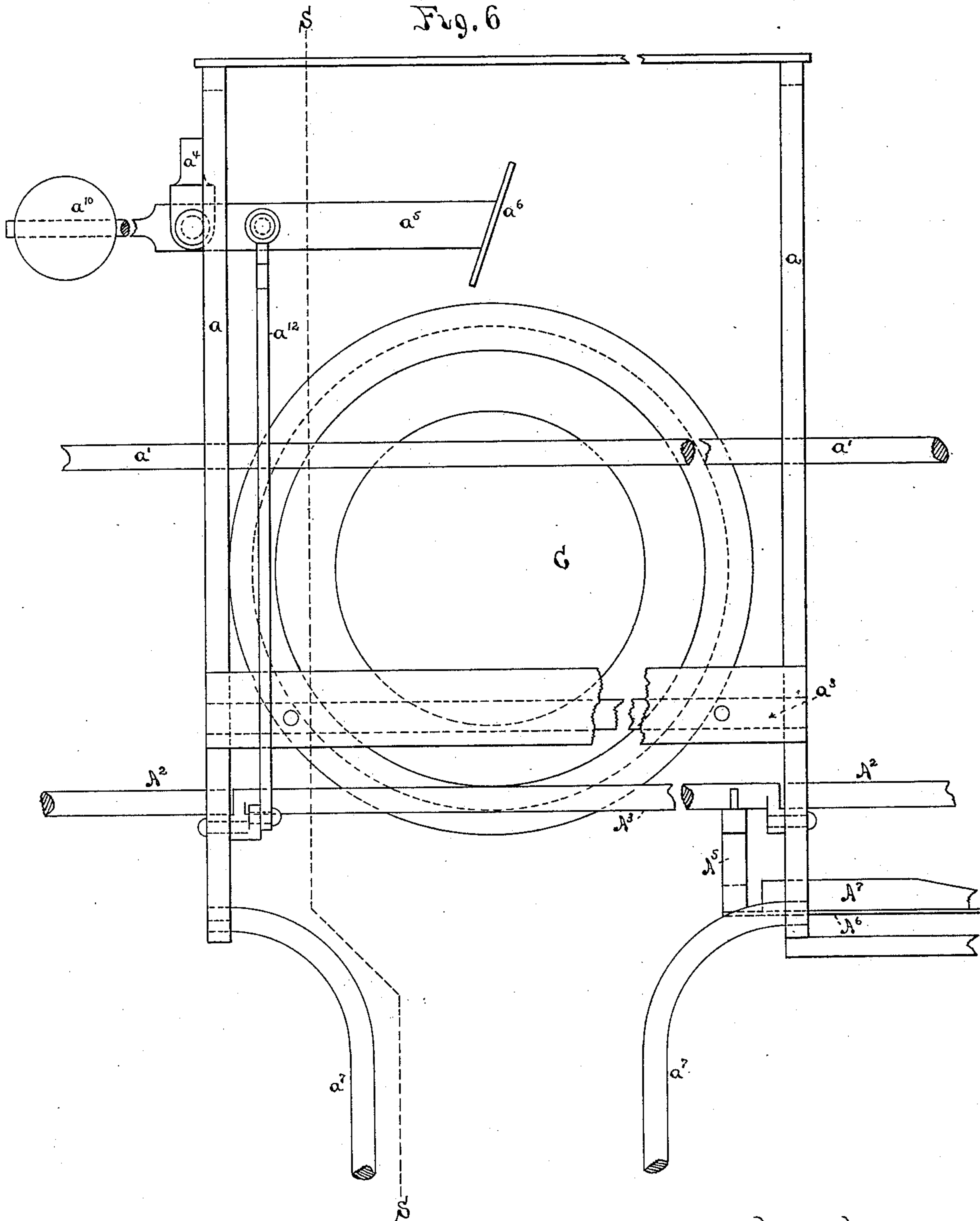
David Hall Lane

5 Sheets—Sheet 2.

CASH CARRYING APPARATUS.

Patented May 19, 1885.

Fig. 6



Inventor

Amos Brown
N. P. Ockington.

David Hackett Rice

(No Model.)

5 Sheets—Sheet 3.

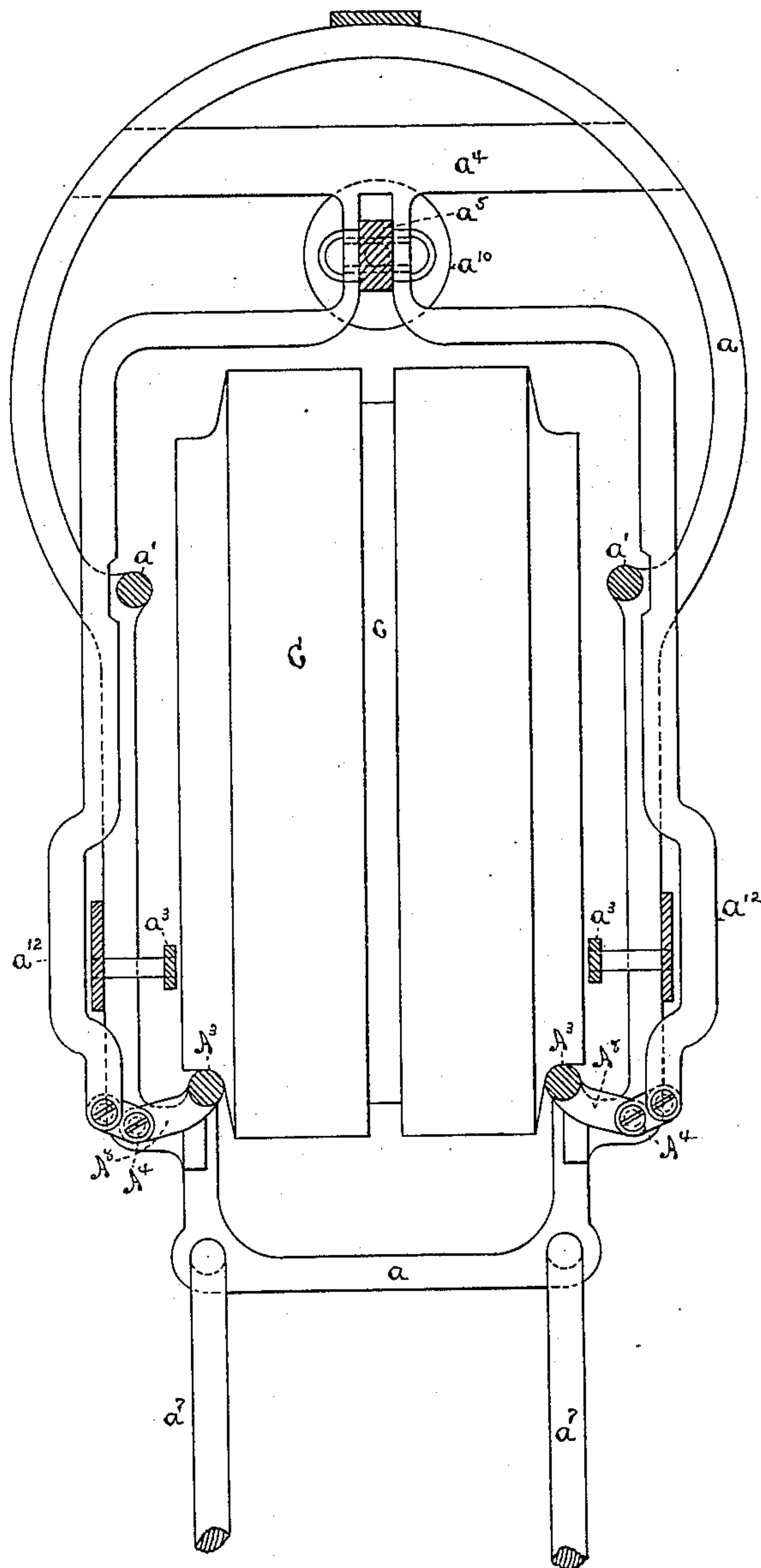
D. H. RICE.

CASH CARRYING APPARATUS.

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Patented May 19, 1885.

Fig. 7



Witnesses

Wm. B. Brown

H. P. Dickinson

Inventor

David Hall Rice

(No Model.)

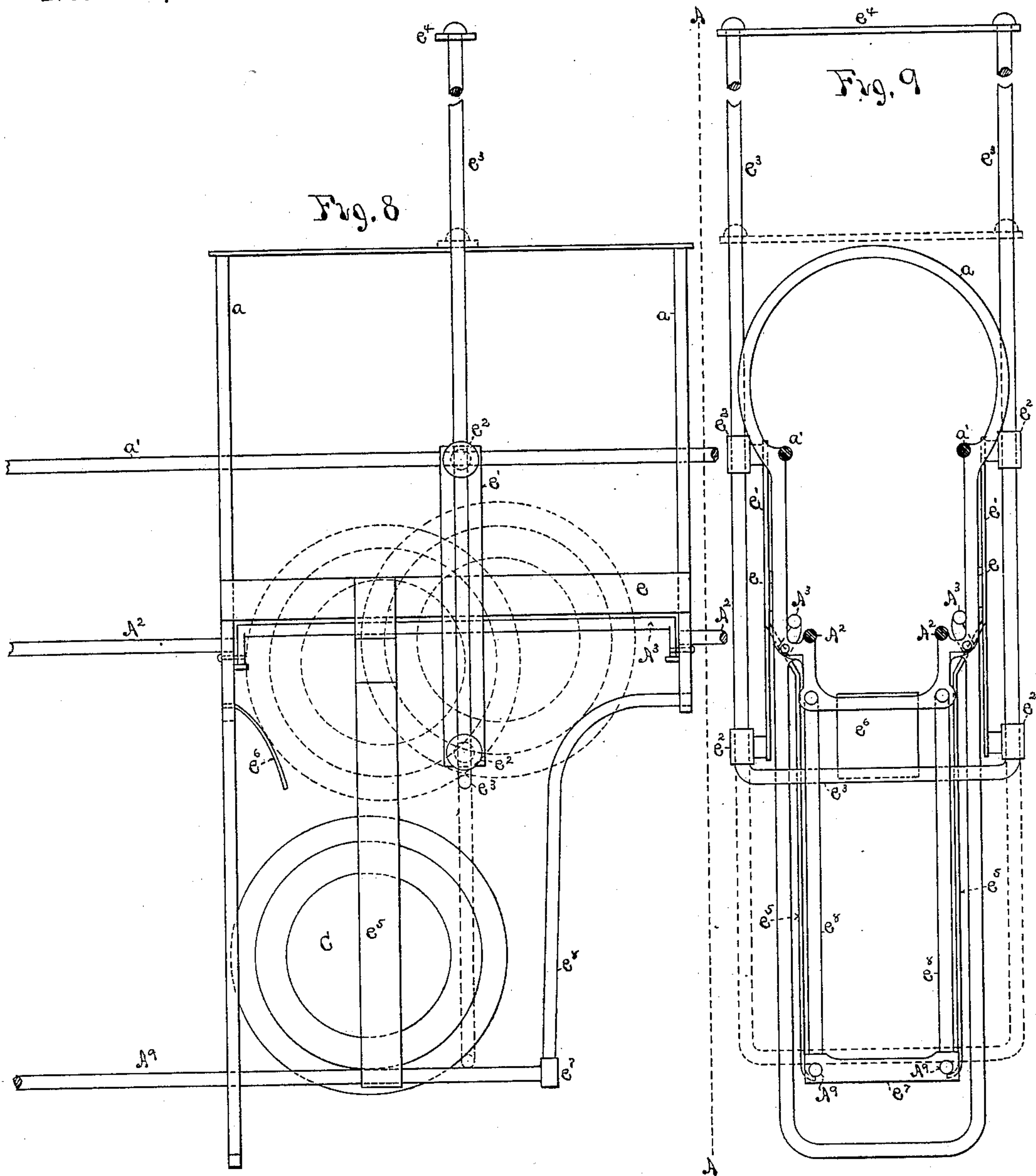
5 Sheets—Sheet 4.

D. H. RICE.

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Witnesses

Wm. B. Brown

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(No Model.)

5 Sheets—Sheet 5.

D. H. RICE.

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Fig. 10

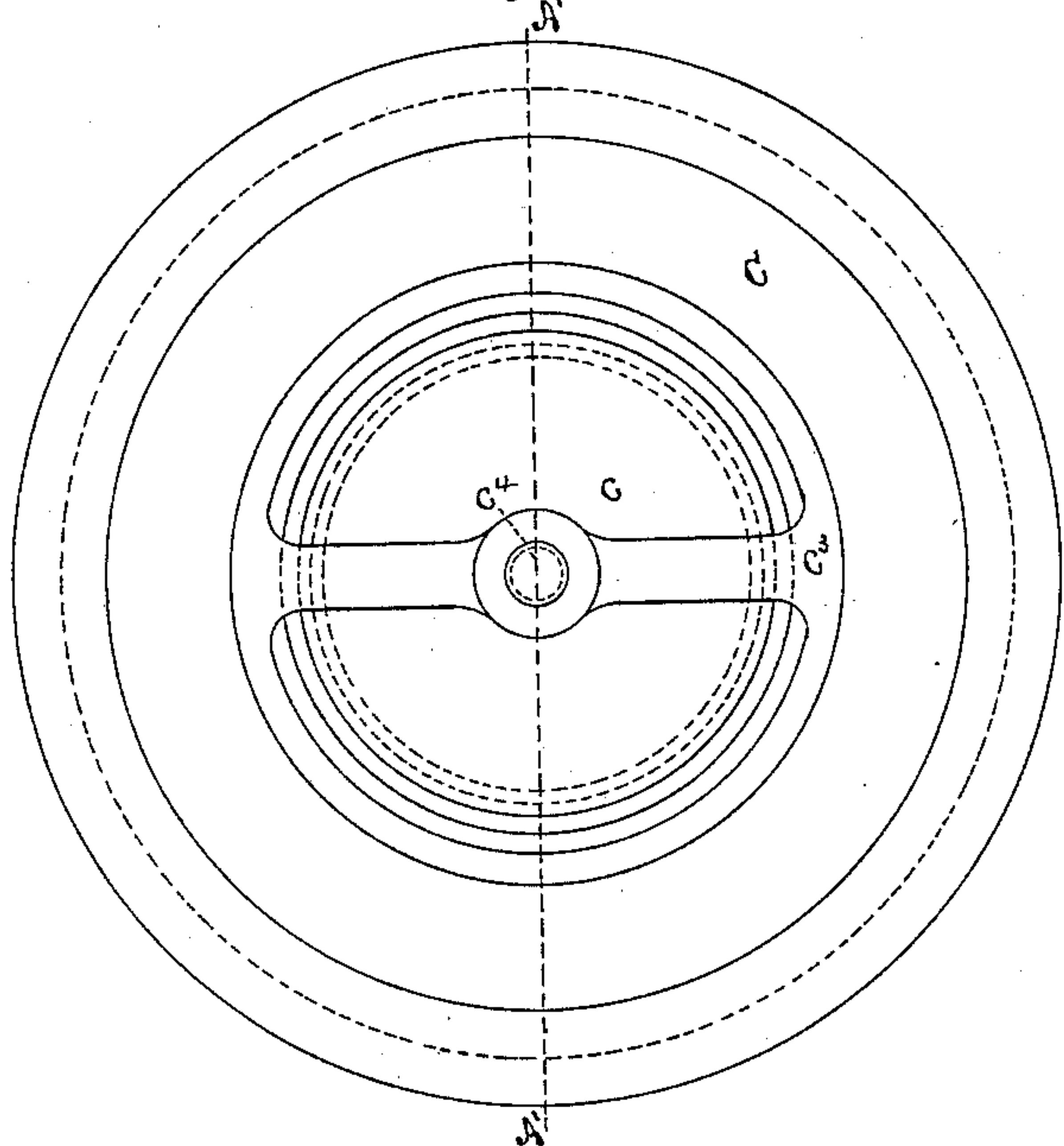


Fig. 12

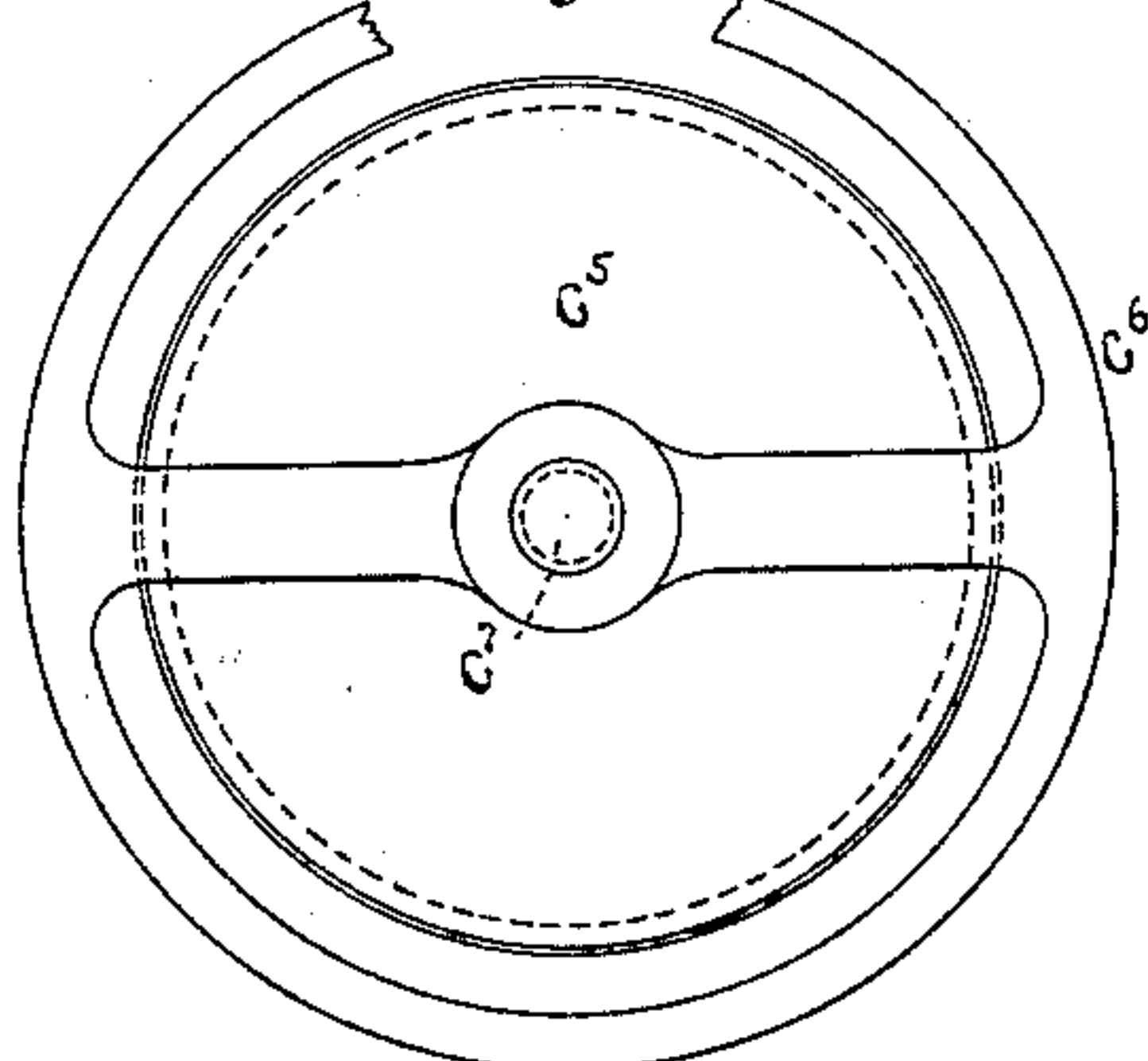
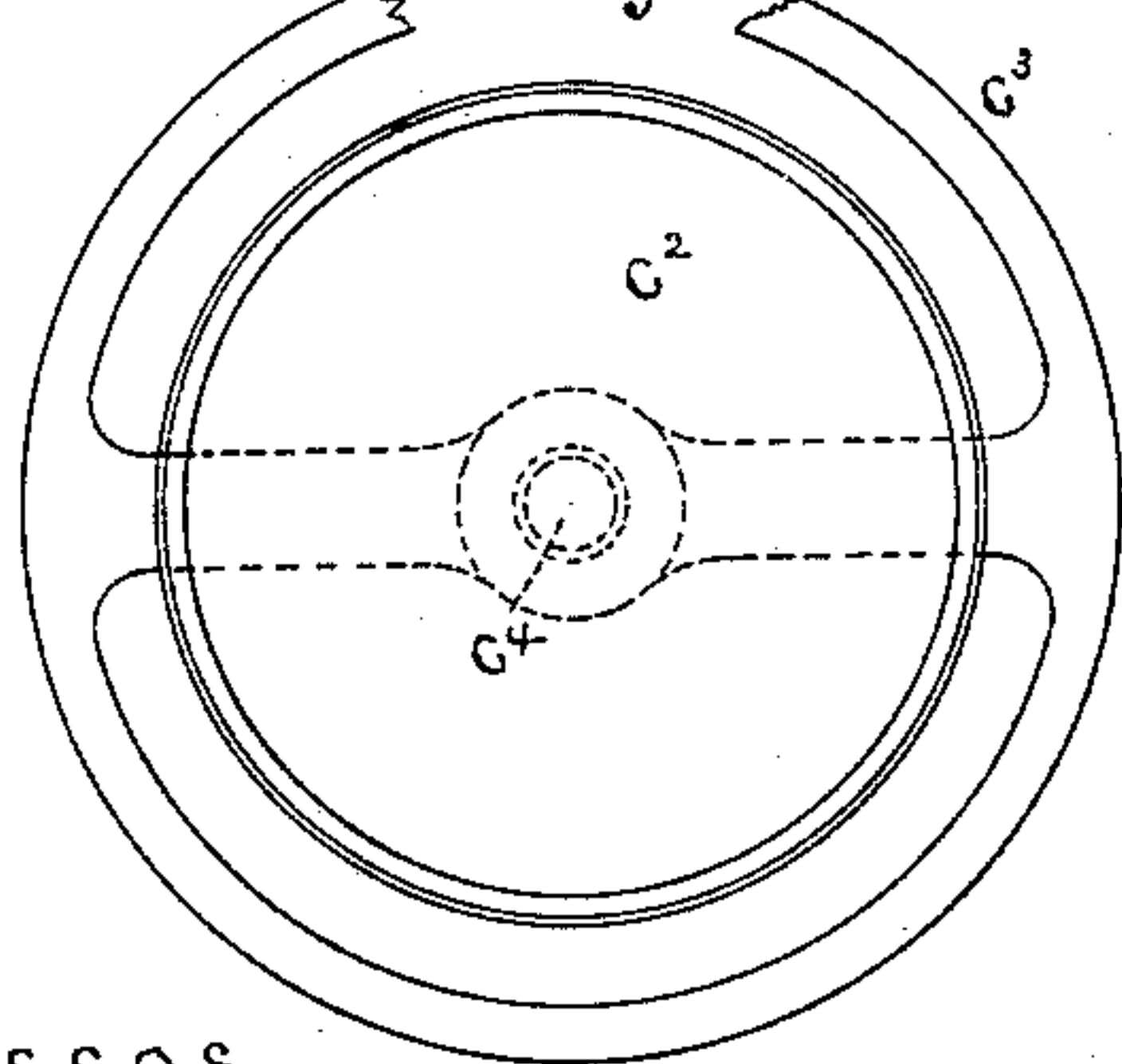


Fig. 14



Witnesses

Wm. C. Brown

N. P. Ockington.

Fig. 11

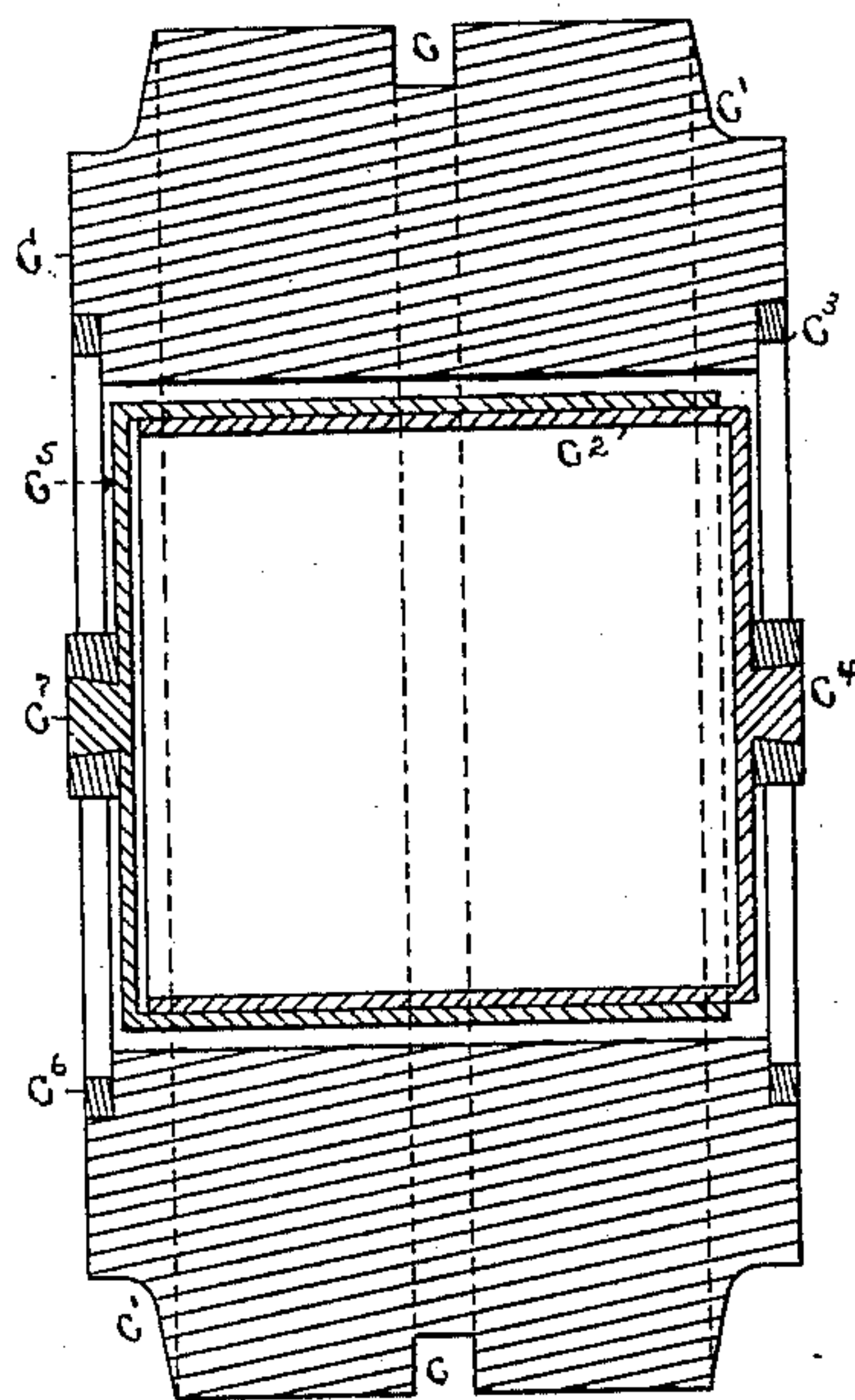


Fig. 13

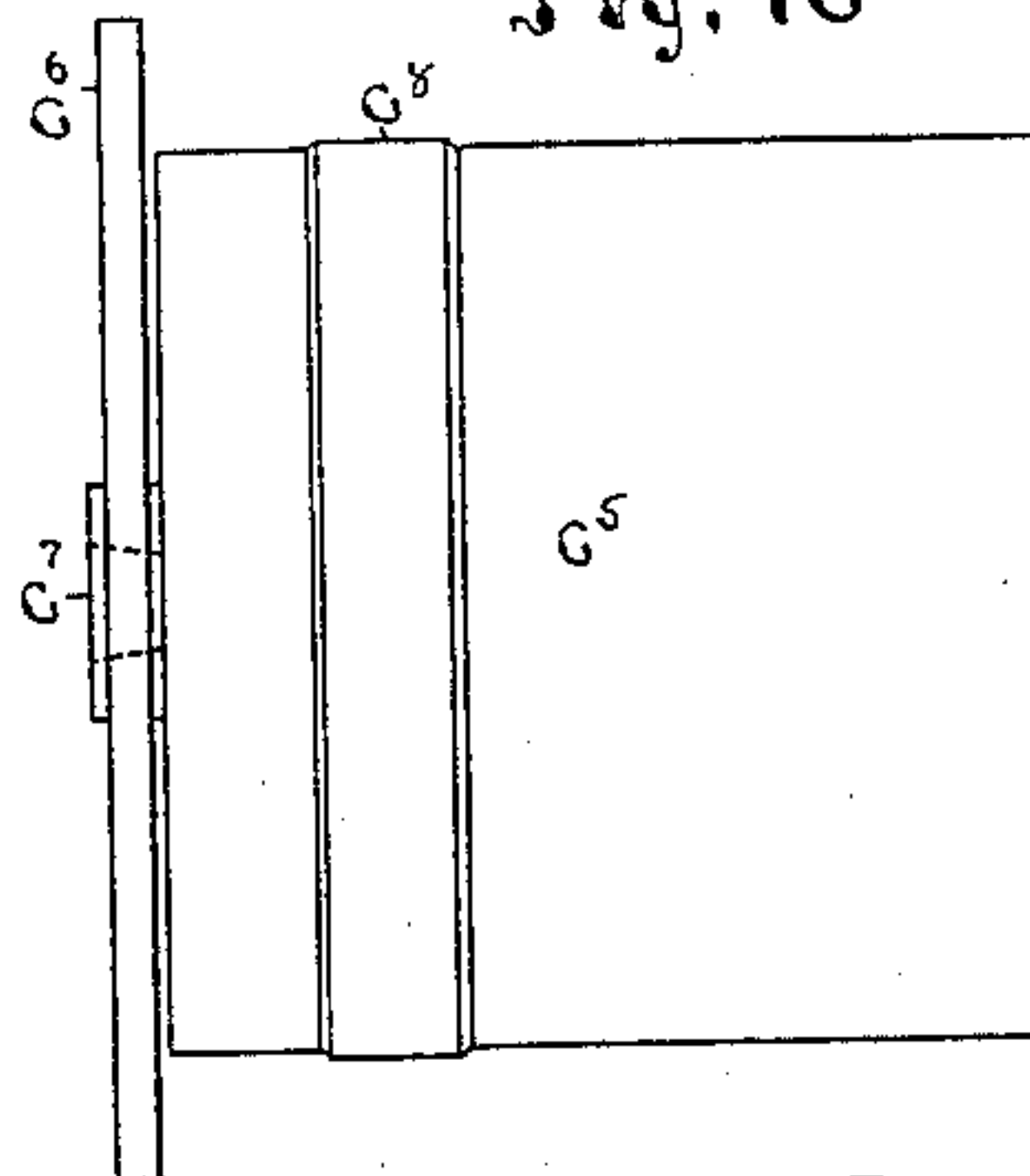
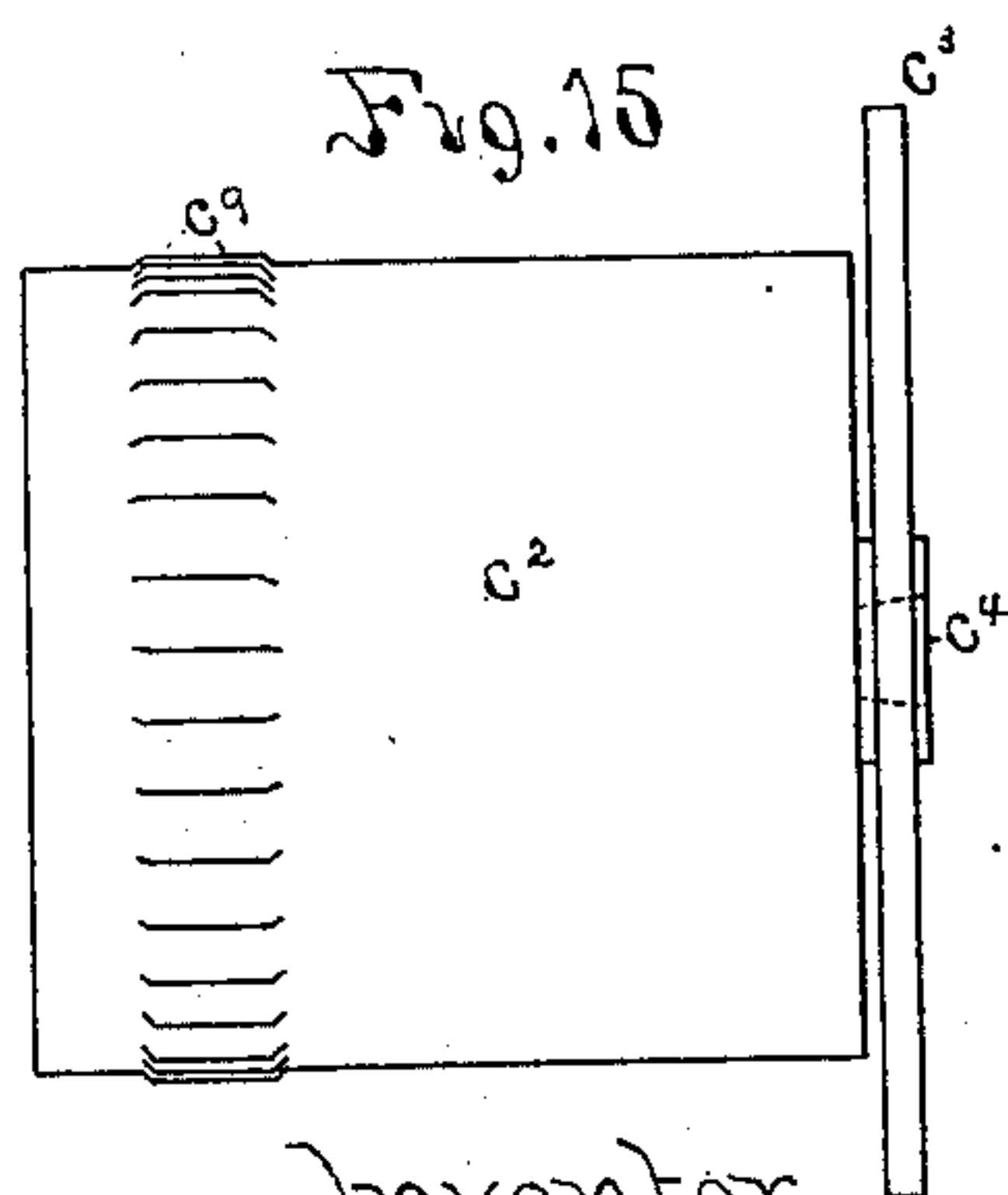


Fig. 15



Inventor

David Hall Rice

UNITED STATES PATENT OFFICE.

DAVID HALL RICE, OF LOWELL, MASSACHUSETTS.

CASH-CARRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 318,032, dated May 19, 1885.

Application filed April 3, 1885. (No model.)

To all whom it may concern:

Be it known that I, DAVID HALL RICE, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Improvement in Cash-Carrying Apparatus, of which the following is a specification.

My invention relates to systems for carrying cash and small parcels; and it consists in certain improvements in the appliances for switching and delivering the carriers used upon such tracks and in the carriers used thereon, substantially as hereinafter described and claimed.

In the drawings, Figure 1 is a side view of the end of the track provided with my improved receiver for receiving the ball and conveying it to the attendant at a station. Fig. 2 is a transverse vertical sectional view of the same on the line B B of Fig. 1. Fig. 3 is a transverse horizontal section on the line B' B' of Fig. 1. Fig. 4 is an enlarged view of part of Fig. 3, partly in section, showing details of construction. Fig. 5 is a similar view to Fig. 3, showing a modification in the guiding-surfaces of the receiver. Fig. 6 is a side view of part of a similar carrier-receiver as is shown in Fig. 1, located in the middle instead of at the end of the track, and with a movable buffer. Fig. 7 is a vertical transverse section of Fig. 6 on the dotted line S S. Fig. 8 is a side view of an improvement in the switch mechanism. Fig. 9 is a vertical transverse section of the same on the dotted line A A. Fig. 10 is a side view of the carrier provided with my improvements. Fig. 11 is a vertical transverse section of the same through the dotted line A' A' of Fig. 10. Fig. 12 is an end view of one of the cups removed from the carrier. Fig. 13 is a side view of the same. Fig. 14 is an end view of the other cup removed from the carrier. Fig. 15 is a side view of the same.

A² A² is the track, supported by frames *a a*, which are suspended or supported in any of the well-known ways. Stay-pieces *a' a'* hold the frames together above the track. Between the frames *a a* (shown in Fig. 1) the rails A² are omitted, and side guides, *a² a² a³ a³*, are so placed that the carrier will pass between them as it runs off the track. These guides are for the purpose of holding the carrier upright as it falls downward between them.

C is the carrier.

To a bar, *a⁴*, attached to one of the frames *a*, is fixed an arm, *a⁵*, inclining downward, and upon its end is attached the inclined plate *a⁶* at such an angle and height that when the carrier comes down the inclined track A² A² with a considerable speed and jumps across the space between the frames *a a* it will strike this plate and be deflected almost directly downward.

To the lower ends of the frames *a a* are attached four elastic rods, *a⁷ a⁷*, extending downward in a vertical direction and forming a receiver in such a position that as the carrier drops down as described it will be received between them, they pressing against the treads which travel upon the track with the proper friction to check the descent of the carrier as it falls downward, without stopping it entirely, until it reaches the bottom of the receiver. This is easily accomplished by the elasticity of the rods alone, and by bending them so as to produce a slight corrugation on their inside faces the carrier may be checked at any desired point in its descent before reaching the lower ends of the rods. At their lower ends the rods are curved inward toward each other, so as to check the carrier entirely and hold it between them, as shown. When the attendant wishes to remove the carrier, he simply grasps it and pulls it downward from between the rods. Two or more carriers can be allowed to drop into this receiver one after the other without injury or jar to each other, because the checking of the one falling upon the other in the receiver at the proper point, as described, prevents this. If the rods *a⁷* are of considerable length, a band, B², may be used around the rods near their lower ends, and by bending the rods so that no friction is exercised upon the carrier as it passes through the band, but only above and below the band, the latter may be made of one single continuous piece of metal. I have, however, shown it as made of two end pieces, *b b*, and springs *b²* on the sides attached to the end pieces by bolts *b' b'*, although the springs may be attached directly to the ends. Covering the springs *b²* and bolts *b' b'* are loose tubes *b³*, in which they work freely, and which give a neater appearance to the structure and protect the springs from any accidental injury.

In Fig. 5 the four rods a^1 are shown as replaced by two flat elastic strips, $a^8 a^8$, carrying splines $a^9 a^9$, which fit into the groove c , made in the periphery of the carrier, and thus keep the carrier in its path between the elastic strips. In all other respects these elastic strips are made to form a receiver and act upon the carrier like the rods a^1 , as each pair of the latter constitute an elastic side of the receiver, as shown in Fig. 1. The advantages of this receiver are that it is simple and automatic in operation and dispenses with frictional devices between it and the track, and as the carrier is withdrawn from its lower end it need not be brought down so low from the elevated track as if the carrier were removed from its side.

In Figs. 6 and 7 is shown the arrangement of a similar receiver placed at an intermediate station upon the track $A^2 A^2$. In this arrangement it is of course necessary to provide means for the carrier which is intended for a station beyond to pass over and not be delivered into the receiver, and I employ the open trap shown and described in my Letters Patent granted March 24, 1885, No. 314,263.

$A^3 A^3$ are the pivoted rail-sections. A^4 are their pivots in the frames $a a$.

A^5 is the lifting-bar which sustains sections $A^3 A^3$ in a normally-open position, being held upward against them by the spring A^6 ; and A^7 is the projecting spline or edge attached to the latter, designed to be pressed downward by the carrier which is to pass beyond this station, and thus close the trap and enable it to do so. The carrier which is to be delivered into the receiver at this station has a groove which registers with the spline A^7 , and so allows the carrier to pass on without moving the latter and fall through the open trap the same as shown in Fig. 1 and as described in my said former patent. It is evident, however, that the deflector a^6 cannot be fixed, as shown in Fig. 1, but must be made to automatically rise as the carrier passing on to the next station closes the trap, so as to allow that carrier to pass under it. I therefore pivot the arm a^5 of the deflector to the bar a^4 , as shown, and extend it on the other side of its pivot, and provide it with a counter-weight, a^{10} , to balance the other end and adjust its weight to the degree required. I extend the short arms A^8 upon which the trap-sections A^3 are supported on their pivots A^4 outside of those pivots, as shown, and to their outer ends I pivot the links a^{12} at their lower ends, and pivot these links at their upper ends to the arm a^5 on each side by pivots loosely, so as to allow the necessary freedom of action of the parts. When the carrier presses upon the spline A^7 and drops the trap-sections $A^3 A^3$, the deflector a^6 will be raised and allow the carrier to pass over the trap and under the deflector, as shown; but when the carrier to be delivered into the receiver below arrives at this station the deflector will be down in the relative lo-

cation shown in Fig. 1, and divert the carrier into the receiver. By means of the deflector I am enabled to run the carrier, over the track at a much higher speed without causing them to jump over the open traps where they are to be delivered, respectively. It is evident that the movable deflector may be connected directly to the bar A^5 or to the spline A^7 by suitable link mechanism, and thus operated when the carrier presses the latter down, and another spline may then be used to operate the trap-sections independently and simultaneously with the deflector.

In Figs. 8 and 9 my improvement in switch mechanism is shown. From the track A^2 the carrier is to be delivered or switched upon the track A^9 . For this purpose I use the open trap-sections A^3 with their actuating mechanism, as shown, and just above described for Figs. 6 and 7, with the deflector to divert the carriers to be switched through the open trap, while the carrier to be sent along the main track will close the trap and elevate the deflector, as before described. All these parts are understood to be intended to be attached to the trap-sections $A^3 A^3$, as shown in Figs. 8 and 9, and for the sake of clearness in the drawings of other parts I have omitted them from these figures.

My present invention is an improvement upon the form of switch shown and patented to me in the Letters Patent No. 313,370, granted March 3, 1885, and in that part of it wherein a pair of rails received the carrier from the trap-sections A^3 as they descended and delivered it upon the track below.

Upon the sides of the frames a , I secure side strips, $e e$, and to each of these a vertical strip of metal, $e' e'$, and upon each of the latter two sleeves, $e^2 e^2$. In these sleeves the rod e^3 plays vertically up and down, being bent so that its central part crosses the path of the carrier in falling from the upper to the lower track. A cross-strip, e^4 , is attached to the ends of the rod e^3 above, to which is in turn to be attached by a cord and pulley a suitable counterweight, which holds the rod e^3 at its highest point in the sleeves, such counterweight being of less weight than the carrier. I have not shown the counterweight, as its application and use are well understood.

On each side of the track A^9 , and extending upward immediately underneath the drop-sections $A^3 A^3$, I attach two flat guide-strips of metal, $e^5 e^5$, which serve to keep the carrier in a vertical position as it descends between them. I also attach a short guide, e^6 , in front of the carrier. The ends of the track-rails A^9 are supported by a cross-bar, e^7 , and two rods, $e^8 e^8$. The short guide e^6 and the rod e^3 are so placed in reference to each other and the rods $e^8 e^8$ and the open trap above that the horizontal part of the rod e^3 on which the carrier falls will be in the rear of the center line of the carrier as it descends. The carrier will therefore roll off of the rod upon the

track $A^9 A^9$ as soon as it descends below the guide e^6 . This switch may be applied at an intermediate portion of the track $A^9 A^9$ as well as at its end, if desired.

5 In Figs. 10, 11, 12, 13, 14, and 15 is shown my improvement in carriers for the track before described. C is the carrier, formed of a cylinder of wood or other material, and provided with a groove, c , and wheel-treads c' c'
10 turned in its circumference. I provide this carrier with a cylindrical chamber extending through it concentric with its axis, and at each end of the chamber I countersink the face of the carrier all around the chamber. I provide a cy-
15 lindrical cup, c^2 , with an axial pivot, c^4 , attaching it to a wheel, c^3 , so that it can revolve on said pivot, and make said wheel to fit loosely in the countersink in one face of the carrier, as shown. I then provide a second cylindrical cup, c^5 , of
20 a proper size to slide closely over the first one when they are in the chamber of the carrier, and attach it to another wheel, c^6 , by a loose axial pivot, c^7 , which wheel is made to fit loosely in a countersink in the opposite
25 face of the carrier. When the cups c^2 and c^5 are slipped together from opposite sides of the carrier, as shown in Fig. 11, until each of the wheels c^3 and c^6 are in their respective countersinks in the faces of the carrier, the
30 cups will conjointly form a cylinder capable of revolving freely upon the pivots c^4 and c^7 and of receiving the cash to be transported within it. At the same time the wheels c^6 c^3 revolve in their countersinks in the carrier as the latter rolls over the track. In order to hold the
35 cups c^2 c^5 together with sufficient friction, I spin an enlargement, c^8 , in the metal of the outer one and a corresponding enlargement, c^9 , in the metal of the inner one, and I slit or
40 cut through the metal of the latter enlargement a series of slits, as shown in Fig. 15, thus allowing it to spring or yield while the cups are being pressed together until the enlargements register with each other, when the one,
45 c^9 , springs outward into the other and holds the cups together. By this construction the cash always remains stationary and does not rattle when the carrier is traversing the track. The cups c^5 c^2 may, however, be attached to
50 the wheels c^6 c^3 , so as to revolve therewith, if preferred.

What I claim as new and of my invention is—

1. In combination with the track and a cash-
55 carrier adapted to traverse the same, a trap or space adapted to allow the carrier to fall downward through it, and a receiver formed of two or more opposite elastic sides graduated to check the carrier in its descent be-
60 tween them toward its lower end, substantially as described.

2. In combination with the track and a cash-
carrier adapted to traverse the same, a trap
or space adapted to allow the carrier to fall
65 downward through it, and a receiver formed of two or more opposite elastic sides curved

inward at or near their lower ends to arrest and hold the carrier between them and allow it to be withdrawn downward, substantially as described.

3. The combination of the track, a trap-section adapted to be normally open to allow certain carriers to fall through the same, and to be closed to allow certain other carriers to pass over the same, the cash-carrier adapted
70 to traverse said track, and a receiver provided with two or more opposite elastic sides graduated to check the carrier in its descent between them, substantially as described.

4. The combination of the track, a trap or
80 opening therein, the cash-carrier adapted to traverse said track, and the elastic depending rods a^7 a^7 beneath said opening, graduated to press upon and check the descent of the carrier falling between them without entirely ar-
85 resting such descent, substantially as described.

5. The combination of the track, the trap or opening therein, the cash-carrier adapted to traverse said track, and the yielding depend-
90 ing rods a^7 a^7 beneath said opening, curved inward at or near their lower ends sufficiently to arrest the descent of the carrier falling between them, and allow it to be withdrawn from between them downward by hand, substantially
95 as described.

6. The combination of a track provided with a trap or opening, the cash-carrier adapted to traverse said track and pass through said open-
ing, and the deflector a^6 , placed in the path of
100 said carrier, prolonged beyond the break in the track, and adapted to be struck by the carrier and to deflect it from its course over said track downwardly into said trap, substantially as de-
105 scribed.

7. The combination of the track provided with a trap-section adapted to be opened to allow certain carriers to fall through the same, and to be closed to allow certain other carriers to pass over the same, the carrier adapted to
110 traverse said track, and the movable deflector a^6 , adapted to be automatically moved out of and into the path of the carrier by the spline A^7 , lying in said path in advance of the deflector, and suitable connecting devices con-
115 veying the motion of said spline to said deflector, substantially as set forth, as and for the purpose described.

8. The combination of the track adapted to allow a carrier to traverse it, and provided
120 with the trap or opening in the same, the yielding rods or straps a^7 or a^8 , forming opposite frictional faces of the receiver and attached beneath the said opening, and the springs b^2 b^2 , connecting the said opposite frictional faces
125 outside the path of the carrier in descending between them, substantially as described.

9. In combination with the upper track, A^2 , the lower track, A^9 , the opening or trap in said upper track, and a counterweighted ris-
130 ing and falling bar, e^3 , extending transversely between the tracks and in the path of the car-

rier falling through said trap, and adapted to check the descent of the same in passing from one track to the other, substantially as described.

5 10. The combination, with the track A^9 , of a conduit leading upon the same from above, formed of the side guides, e^5 e^5 , the front guide, e^6 , having its lower end a sufficient distance above the track to allow a carrier to pass
10 between them, and one or more rear guides, e^8 , and the counterweighted rising and falling bar e^3 , crossing said conduit transversely of the track and above the latter, and adapted to be struck by the carrier falling through said con-
15 duit and check its descent and deliver it upon the track, substantially as described.

11. The combination of the track A^2 , the track A^9 , the conduit formed of the side guides, e^5 e^5 , and the front guide, e^6 , and the
20 vertically rising and falling bar e^3 , extending transversely across between said tracks and at such a distance horizontally from the front guide, e^6 , as to be adapted to support the carrier beneath it and upon the opposite side of
25 its center of gravity from said front guide, substantially as described.

12. In combination with the carrier C, provided with an axial chamber through it, a cash-box formed of two cups, c^2 c^5 , pivoted in the
30 wheels or disks c^3 c^6 , and fitting one within the other, substantially as described.

13. The combination, in the carrier C, of the pivoted cup c^5 , formed with the enlargement

c^8 , and the pivoted cup c^2 , fitting within the other and formed with the corresponding elastic enlargement c^9 , substantially as described. 35

14. The combination, with the carrier C, of the wheels c^3 c^6 , fitted on each side of the carrier into cavities in the carrier and capable of rolling therein, and the cup c^5 , attached to the
40 wheel c^6 , and the cup c^2 , attached to the wheel c^3 , and fitting the one into the other and forming a closed box or receptacle capable of revolving either with or independently of said wheels in the axial chamber in the carrier, sub-
45 stantially as described.

15. The combination of the track, a movable trap therein adapted to be opened to allow certain carriers traversing said track to fall through the same, and to be closed to allow
50 certain others of such carriers to pass over the same, and a movable deflector, a^6 , adapted to be moved into or out of the path of said carriers, and suitable connecting devices, substantially as set forth, between said deflector and
55 the spline A^7 , located in the path of the carrier, adapted to transmit the motion of the latter to said deflector and move the same into or out of the path of the carrier with the opening or closing of said trap, substantially as de-
60 scribed.

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Witnesses:

WILLIAM P. BLAKE,
N. P. OCKINGTON.