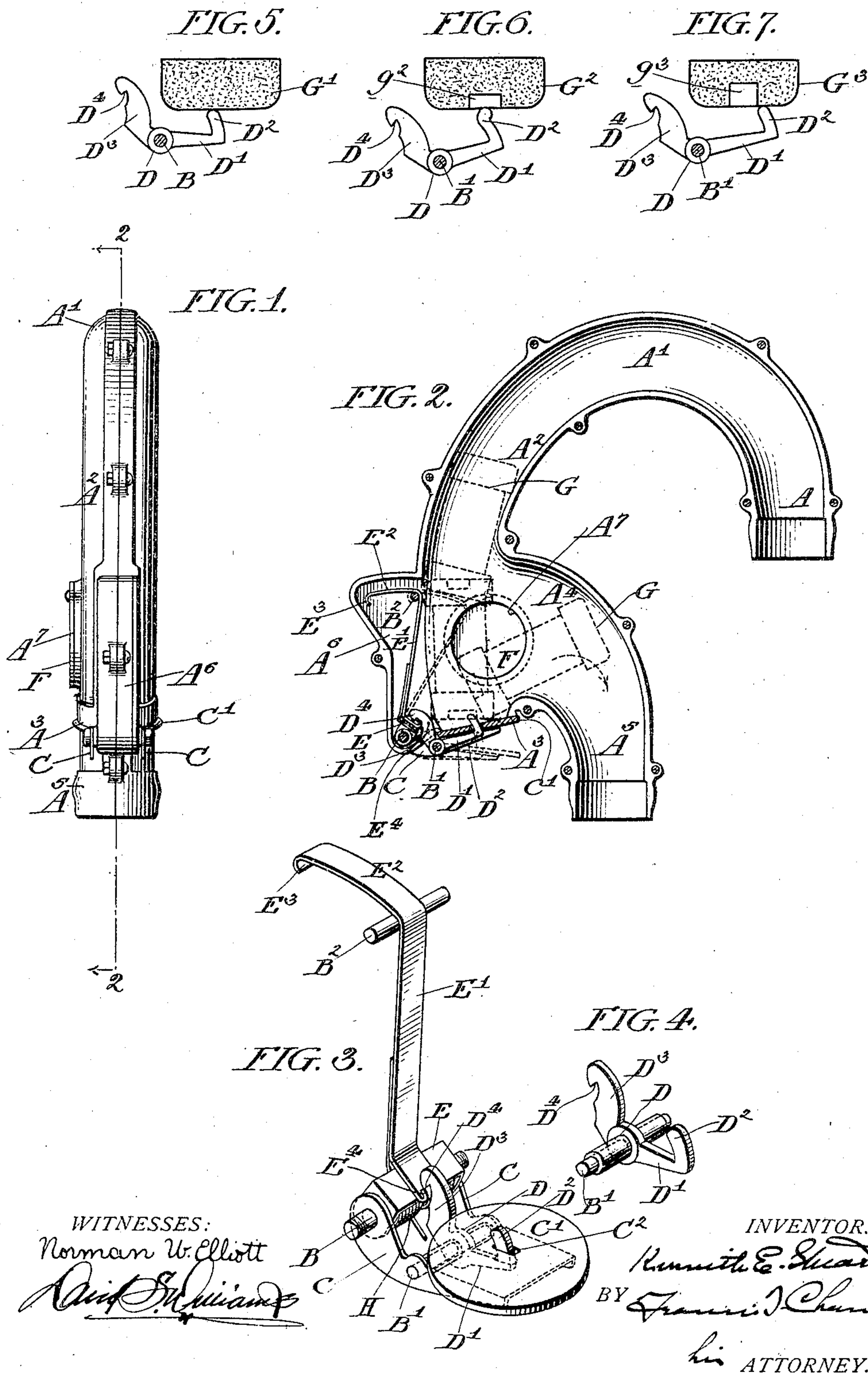


K. E. STUART.
PNEUMATIC DESPATCH TUBE SYSTEM.

APPLICATION FILED FEB. 10, 1904.

2 SHEETS—SHEET 1.



WITNESSES:
Norman W. Elliott
Norman W. Elliott

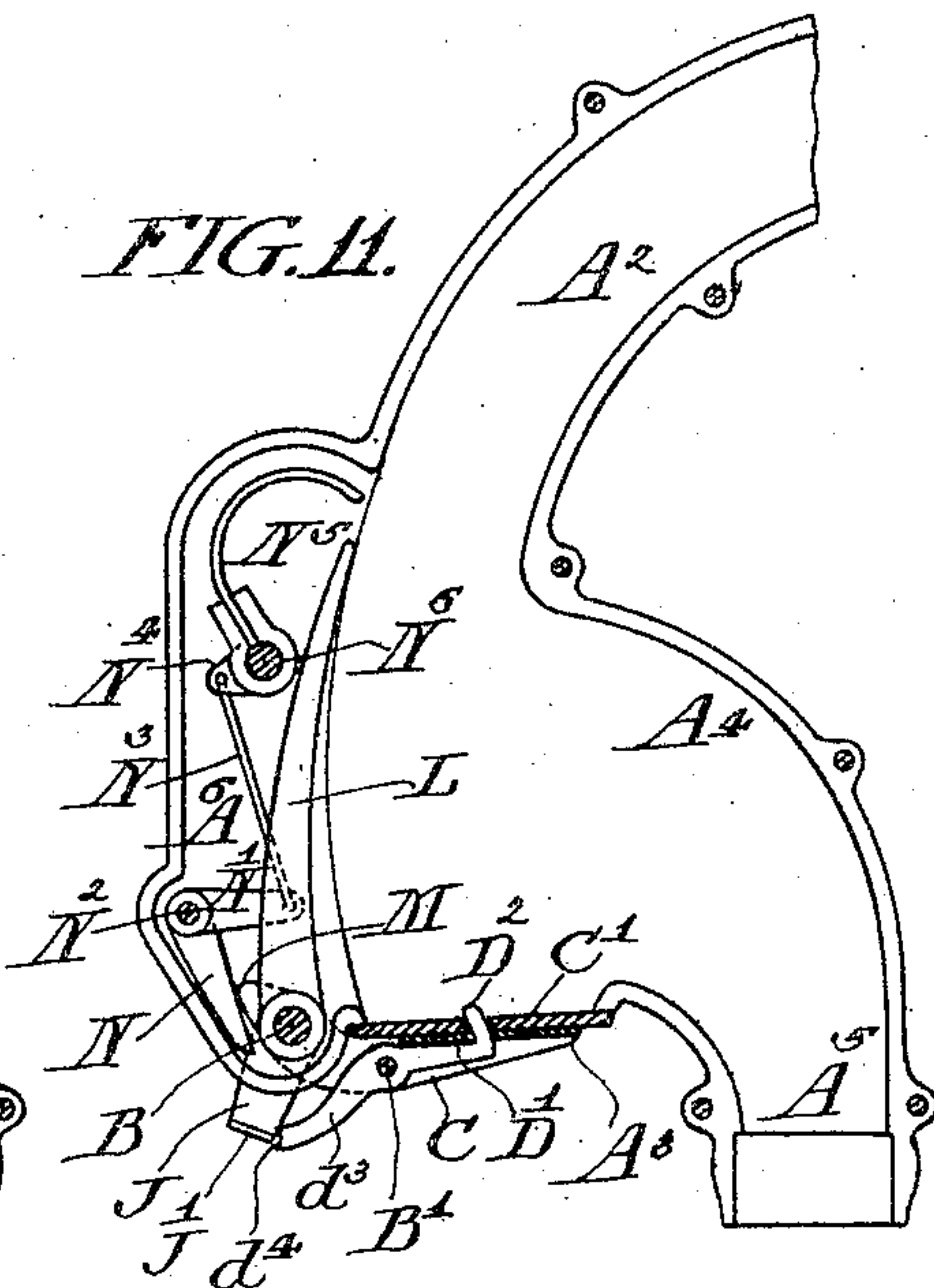
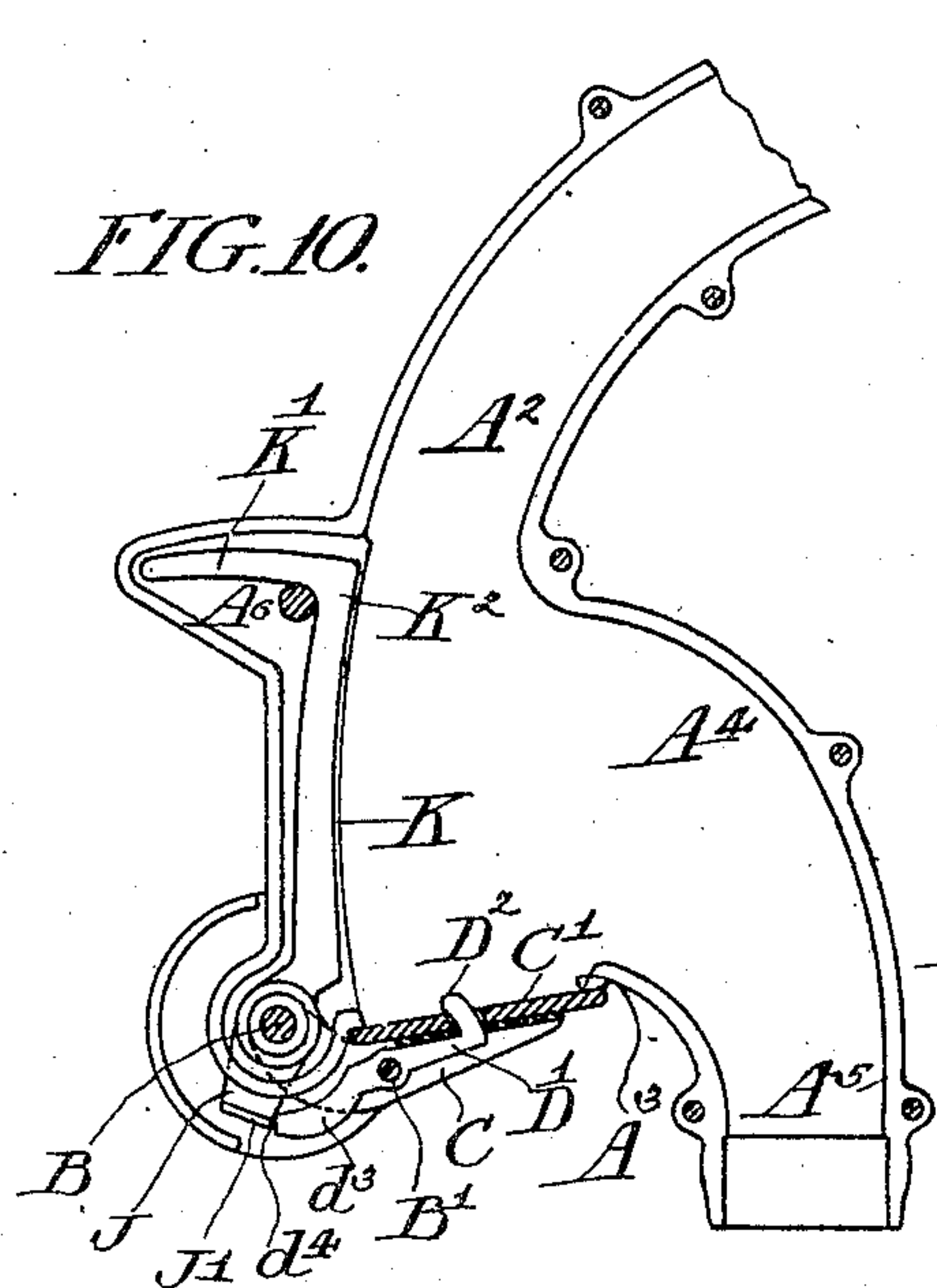
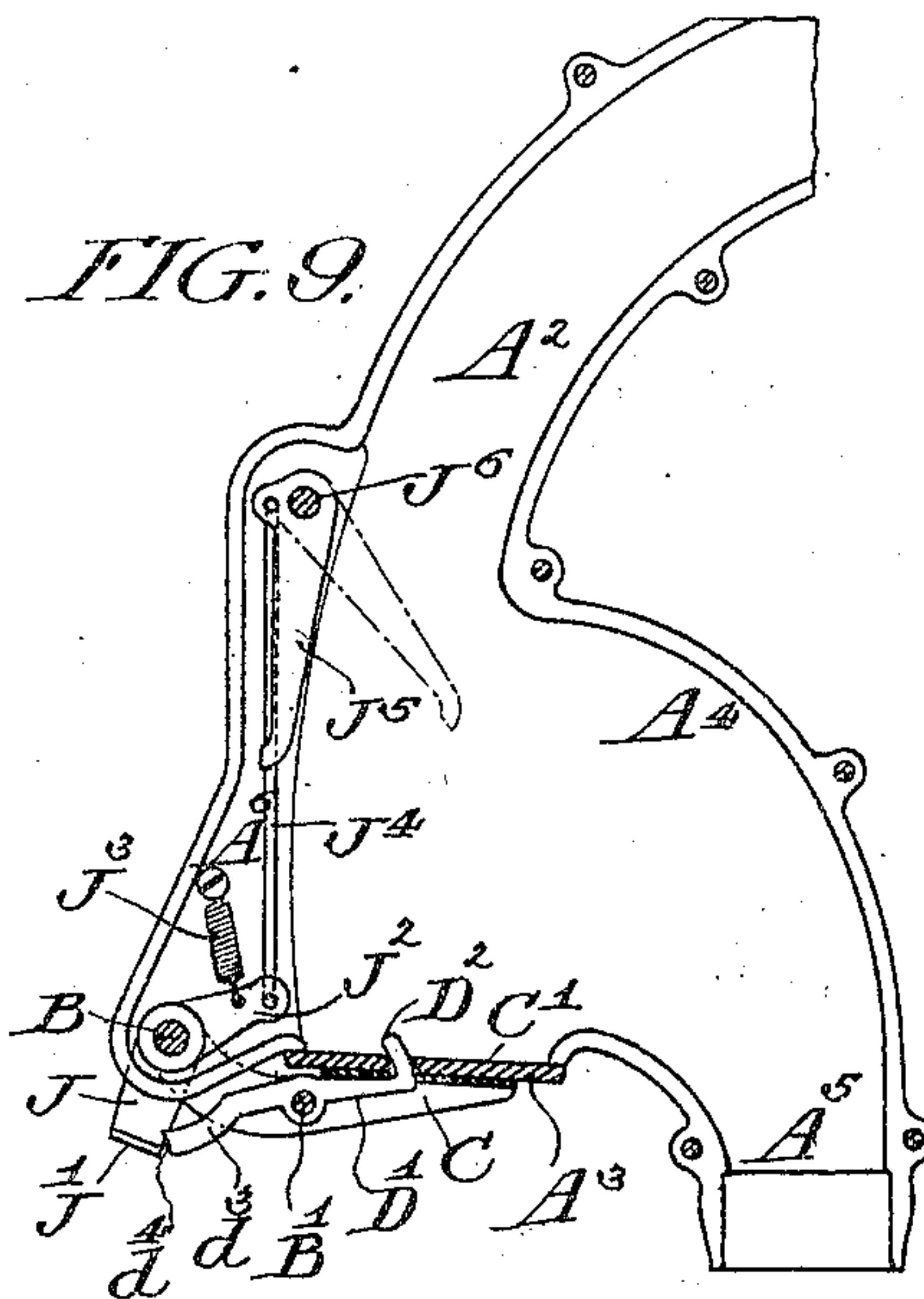
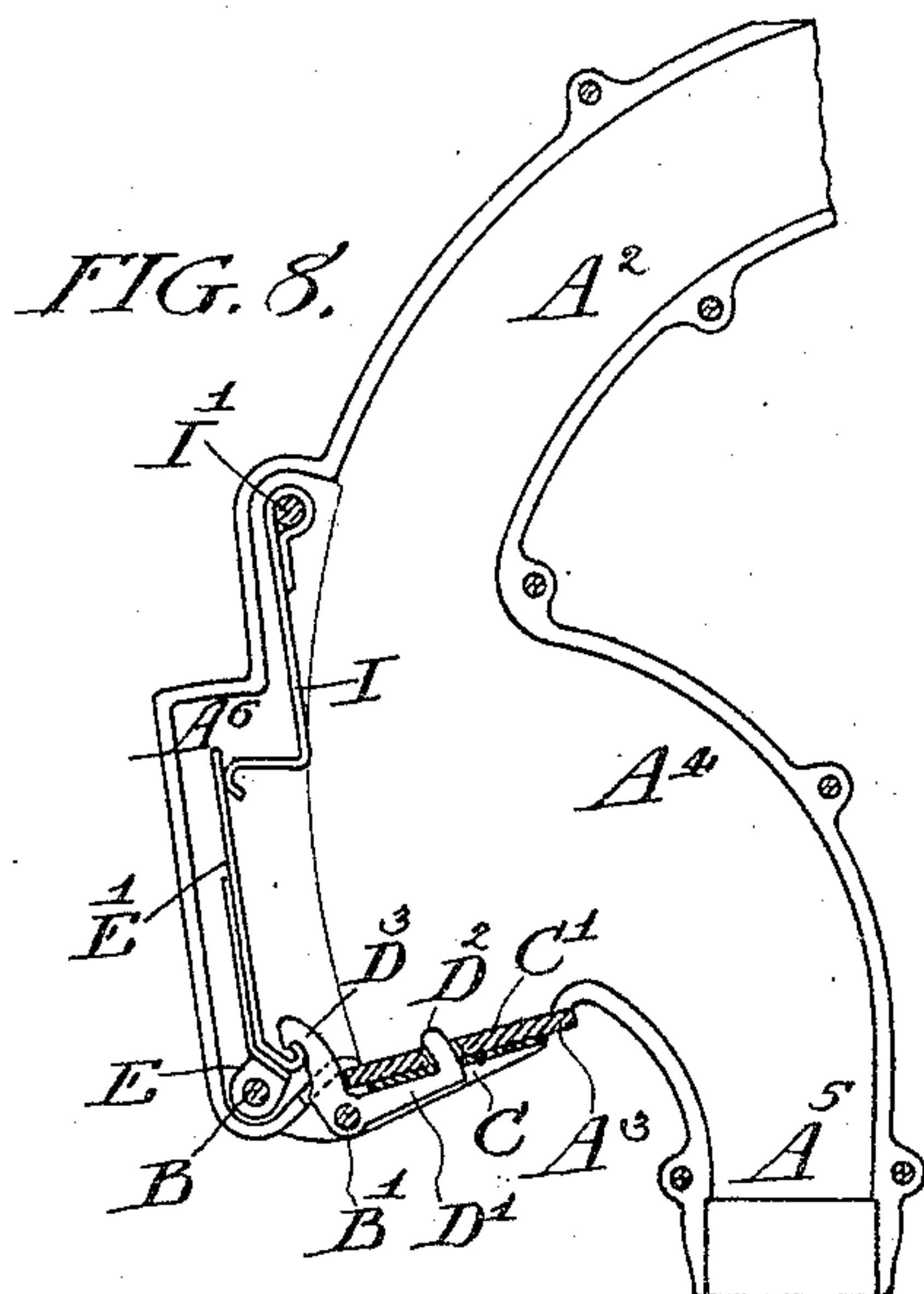
INVENTOR.
Kenneth E. Stuart
BY *Francis J. Chambers*
his ATTORNEY.

K. E. STUART.

PNEUMATIC DESPATCH TUBE SYSTEM.

APPLICATION FILED FEB. 10, 1904.

2 SHEETS—SHEET 2.



WITNESSES:

Norman W. Elliott
Norman W. Elliott

INVENTOR.

Kenneth E. Stuart
 BY *James J. Chambers*
 his ATTORNEY.

UNITED STATES PATENT OFFICE.

KENNETH E. STUART, OF PHILADELPHIA, PENNSYLVANIA.

PNEUMATIC-DESPATCH-TUBE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 789,888, dated May 16, 1905.

Application filed February 10, 1904. Serial No. 192,904.

To all whom it may concern:

Be it known that I, KENNETH E. STUART, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Pneumatic-Despatch-Tube Systems, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to pneumatic-despatch-tube apparatus of the general character described in my former patent, No. 713,524, of November 18, 1902, the object of my present invention being the improvement of the apparatus which forms the subject-matter of my former patent; and the leading features of my present invention consist in the arrangement of the chambers, such as are used for terminals or for switches in the tube system, in such a way that the gated or barred opening will lie directly beneath the entrance-port, while the alternative exit-passage is situated at one side of the gate-opening. In this way I insure that irrespective of the speed with which the carrier enters the chamber it will come in contact with the gate or barrier.

Another feature of my present invention consists in providing in or adjacent to the chamber, but normally out of the path of the entering carriers, a finger capable of movement across the path of the carriers and which is actuated by or with the gate or barrier when it is latched against a full opening movement, the finger serving the purpose of pushing the carrier over sidewise into the second exit-passage or the purpose of affording a stop to prevent the second carrier from following too close on the movements of the one in contact with the gate, or both of such purposes.

The nature of my improvements will be best understood as described in connection with the drawings in which they are illustrated, and in which—

Figure 1 is a front view of the chamber and connected parts; Fig. 2, a side elevation on the section-line 2 2 of Fig. 1; Fig. 3, a per-

spective view of the gate, latch, latch-actuating mechanism, and finger adapted to be thrust in across the path of the carriers. Fig. 4 is a perspective view of the latch and latch-actuating finger. Figs. 5, 6, and 7 are detached views showing selecting devices in the carrier-heads and their mode of action in connection with the latch-actuating finger; and Figs. 8 to 11, inclusive, are elevations showing various modifications of my invention.

A indicates the receiving-tube of the chamber, said receiving-tube by preference falling sharply from its highest point A' to the entrance-port of the chamber, (indicated at A²), the chamber proper being indicated at A⁴ and the gated outlet at A³, while A⁵ indicates the alternative outlet-passage situated, as shown, at one side of the outlet-passage A³, while the outlet-passage A³ is situated immediately below the entrance-passage A², so that a carrier entering the chamber will fall directly upon the gate, closing the outlet, the steep entrance-passage A² insuring that the carrier shall fall with considerable velocity.

A⁶ indicates a chamber extending from the chamber A⁴, as shown.

B indicates the pivot of the gate, to or upon which are secured the gate-carrying arms C C, the gate itself being indicated at C' C' and the arms C supporting the pivot-pin B'. The gate here shown has a valve closing the outlet-passage A³ and is provided with opening C².

D is a hub secured to or on the pivot-pin B' and from which projects on one side the lever-arm D', carrying the finger D², which projects through the opening C', lying directly in the path of the carriers and in advance of the barrier C'. From the other end of the hub D extends the lever-arm D³, having a hook D⁴ at its end.

E is a box pivoted on the pin B and normally turned backward by the action of a spring H. Secured to the box E is the finger E', having its upper end E² turned backward and provided with the downwardly-turned hook end E³. The finger E' normally lies

within the chamber A^6 , as shown in Fig. 2, but is capable of being projected into the chamber A^4 , as shown in dotted lines. In this position it is prevented from further inward motion by the engagement of the hook E^3 with the pin B^2 , extending across the chamber A^6 .

E^4 is a hook end adapted to be engaged by the hook D^4 , as shown in Fig. 3.

A^7 indicates an aperture in the side of the chamber A^4 , which is normally closed by a plate F .

G indicates a carrier having heads G' , G^2 , and G^3 , as shown in Figs. 5, 6, and 7, g^2 and g^3 indicating selective apertures formed in the head, as described in my before-mentioned earlier patent.

Before describing the modifications I will call attention to the operation of the mechanism of Figs. 1 to 7, inclusive, which is as follows: Normally the hooks D^4 and E^4 are engaged. The carrier entering the chamber A^4 falls directly on the gate-valve C' , and if the selective head is such that it does not engage the finger D^2 the weight of the carrier will partly open the gate C' , which as it turns on the pivot B will throw the finger E' out to the position shown in dotted lines in Fig. 2, said finger striking against the side of the carrier and pushing it over, as shown in Fig. 2, so that it will fall in reversed position into the outlet-passage A^5 . At the same time the backwardly-bent portion E^2 of the finger forms an abutment which will arrest the motion of a carrier following the one in contact with the gate, holding it in elevated position until the gate is closed. If, on the other hand, the selective mechanism is such as to bring the head of the carrier into contact with the finger D^2 that finger will be depressed and the hooks D^4 and E^4 uncoupled, so that when the carrier strikes the gate C' said gate is free to open fully, permitting the carrier to pass out of the passage A^3 .

In the modification shown in Fig. 8 the finger E' instead of being projected bodily into the chamber A^4 acts against the second finger I , pivoted at I' , pressing this finger out across the path of the carriers, where it acts in the same way as finger E' in the construction of Fig. 2.

In the modification of Fig. 9 a stop-lever J is pivoted on pin B and attached to turn with the lever-arm J^2 , which through a rod J^4 is connected, as shown, to a finger J^5 , pivoted at J^6 . The rearwardly-extending arm of the latch-finger (here indicated at d^3) has a notched end d^4 , which normally lies in position to engage a stop-latch J' on the lever J . It will be seen that in this construction the carrier impacting itself on the gate C' without operating the latch will in partly opening the gate bring the arm d^3 into contact with stop-latch J' , whereupon the levers J and J^2

will move in the direction of the hands of a watch and the finger J^5 be thrust out, as shown in dotted lines, serving the same purpose as the finger E' in Fig. 2.

In the construction of Fig. 10 the latching device is similar to that of Fig. 9, and the finger here indicated at K with a backwardly-turned arm K' is generally similar to the finger E' with its backwardly-turned arm K^2 . The finger K^2 serves as a stop. The operation is practically as before described.

In the modification illustrated in Fig. 11 the latching device and finger L are generally similar to that shown in Fig. 10, where the finger is illustrated at K . The gate-supporting arms C , however, are provided with a backwardly-extending finger M , which comes in contact with the lever-arm N , pivoted at N^2 and secured to a lever-arm N' , which through a rod N^3 is coupled to a lever-arm N^4 , pivoted at N^6 and connected to a finger N^5 . It will be seen in this construction that a partial opening of the gate C' by turning in the direction of a clock-hand the finger N will permit the finger N^5 to fall or be turned inward into the chamber A^4 , said finger serving as a stop to prevent the passage of a second carrier, while the finger L serves the purpose when actuated of tumbling the carrier over into the outlet-passage A^5 .

My invention is obviously capable of embodiment in many other modifications, and it will be understood that save where specific illustrated constructions are made limiting elements of my claims they are in no wise to be considered as implied or requisite to the patented structure.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a pneumatic-tube system, a station having an entrance-conduit and an outlet-passage A^3 , situated directly beneath said entrance-conduit, in combination with a gate normally closing outlet A^3 , a latch which, when engaged by the gate prevents it from fully opening, and a latch-finger in the path of the carrier for governing the engagement and disengagement of the latch and gate.

2. In a pneumatic-tube system, a station having an entrance-conduit and an outlet-passage A^3 , situated directly beneath said entrance-conduit, and a second outlet-passage situated at one side of outlet A^3 , in combination with a gate normally closing outlet A^3 , a latch which, when engaged by the gate prevents it from fully opening, and a latch-finger in the path of the carrier for governing the engagement and disengagement of the latch and gate.

3. In a pneumatic-tube system, a station having an entrance-conduit and an outlet-passage A^3 , situated directly beneath said en-

trance-conduit, in combination with a gate normally closing outlet A³, a latch which, when engaged by the gate prevents it from fully opening, and a latch-finger in the path of the carrier for governing the engagement and disengagement of the latch and gate, a finger arranged between the entrance and outlet passage, said finger being normally retracted from the path of the carrier but movable across the same, and means whereby said finger is connected and actuated by the partial opening of the latched gate and disconnected from the gate when it is free to open fully.

4. In a pneumatic-tube system, a station having an entrance-conduit and an outlet-passage A³, situated directly beneath said entrance-conduit, and a second outlet-passage situated at one side of outlet A³ in combination with a gate normally closing outlet A³, a latch which, when engaged by the gate prevents it from fully opening, and a latch-finger in the path of the carrier for governing the engagement and disengagement of the latch and gate, a finger arranged between the entrance and outlet passage, said finger being normally retracted from the path of the carrier but movable across the same, and means whereby said finger is connected and actuated by the partial opening of the latched gate and disconnected from the gate when it is free to open fully.

5. In a pneumatic-tube system, a station having an entrance-conduit at or near its top and an outlet-conduit situated at a lower level and in the path of entering carriers, said station having also another outlet for carriers situated at the side of the outlet-conduit aforesaid and being formed with a clearance between the inlet and outlet conduits aforesaid which is adapted to permit a carrier arrested at the mouth of the outlet-conduit to fall over laterally and by gravity to the second outlet, in combination with a hinged gate arranged to close the outlet-conduit, a finger normally lying to one side of the path traversed by the entering carriers, but capable of being projected across said path, a latch arranged to engage and disengage the gate and finger as described, and a latch-actuating finger arranged in the path of entering carriers.

6. In a pneumatic-tube system, a station having an inlet-passage, an outlet-passage arranged in the path of an entering carrier and a hinged gate adapted to close said outlet-passage, the combination with said gate of a finger normally retracted from the path of the carrier but adapted to be moved across said path, a buffer also normally retracted from the path of the carrier but capable of being moved to extend transversely across the said path, means connecting the finger and buffer so that they will move together, a

latch whereby the gate and finger aforesaid are connected so that a movement of the gate will actuate the finger and buffer, and a latch-actuating finger arranged in the path of the carrier.

7. In a pneumatic-tube system, a station having an inlet-passage, an outlet-passage arranged in the path of an entering carrier and a hinged gate adapted to close said outlet-passage, the combination with said gate of a finger normally retracted from the path of the carrier but adapted to be moved across said path, said finger having a buffer-arm extending transversely from its end, a latch whereby the gate and finger aforesaid are connected so that a movement of the gate will actuate the finger and buffer, and a latch-actuating finger arranged in the path of the carrier.

8. In a pneumatic-tube system, a station having an inlet-passage, an outlet-passage arranged in the path of an entering carrier and a hinged gate adapted to close said outlet-passage, the combination with said gate of a flexible finger normally retracted from the path of the carrier but adapted to be moved across said path, a buffer also normally retracted from the path of the carrier but capable of being moved to extend transversely across the said path, means connecting the finger and buffer so that they will move together, a latch whereby the gate and finger aforesaid are connected so that a movement of the gate will actuate the finger and buffer and a latch-actuating finger arranged in the path of the carrier.

9. In a pneumatic-tube system, a chamber A⁴, having an inlet-conduit A², an outlet-passage A³, arranged in the path of a carrier entering the chamber, and a second outlet A⁵, situated at one side of the outlet A³, in combination with a gate, the said gate closing outlet A³, and adapted to be opened by the impact of a carrier against it, a latch for preventing the gate from opening to its full extent, a latch-actuating finger situated in the path of the carriers and adapted to be acted on by selective devices on the carriers, a finger in chamber A⁴, normally retracted from the path of the carriers but movable across the same and means whereby said finger is connected and actuated by the partial opening of the latched gate under the impact of a carrier, and disconnected from the gate when unlatched and free to open fully.

10. In a pneumatic-tube system, a chamber A⁴, having an inlet-conduit A², an outlet-passage A³, arranged in the path of a carrier entering the chamber and directly beneath the inlet-conduit A², and a second outlet A⁵, situated at one side of the outlet A³, in combination with a gate, said gate closing outlet A³, and adapted to be opened by the impact of a carrier against it, a latch for preventing

the gate from opening to its full extent, a latch-actuating finger situated in the path of the carriers and adapted to be acted on by selective devices on the carriers, a finger in
5 chamber A⁴, normally retracted from the path of the carriers but movable across the same and means whereby said finger is connected and actuated by the partial opening of the latched gate under the impact of a carrier,
10 and disconnected from the gate when unlatched and free to open fully.

11. In a pneumatic-tube system, a chamber A⁴, having an inlet-conduit A², an outlet-passage A³, lower than said inlet and arranged in the path of a carrier entering the
15 chamber and a second outlet A⁵, situated at one side of the outlet A³, in combination with

a gate, said gate closing outlet A³, and adapted to be opened by the impact of a carrier against it, finger in chamber A⁴, normally retracted from the path of the carriers but capable of movement across said path, a latch connecting the gate and finger whereby the partial opening of the gate throws the finger across the path of the carriers and a latch-
25 finger situated in the path of the carriers and coacting with devices on the carriers to determine the engagement of the gate and finger aforesaid.

KENNETH E. STUART.

Witnesses:

CHAS. F. MYERS,
D. STEWART.