

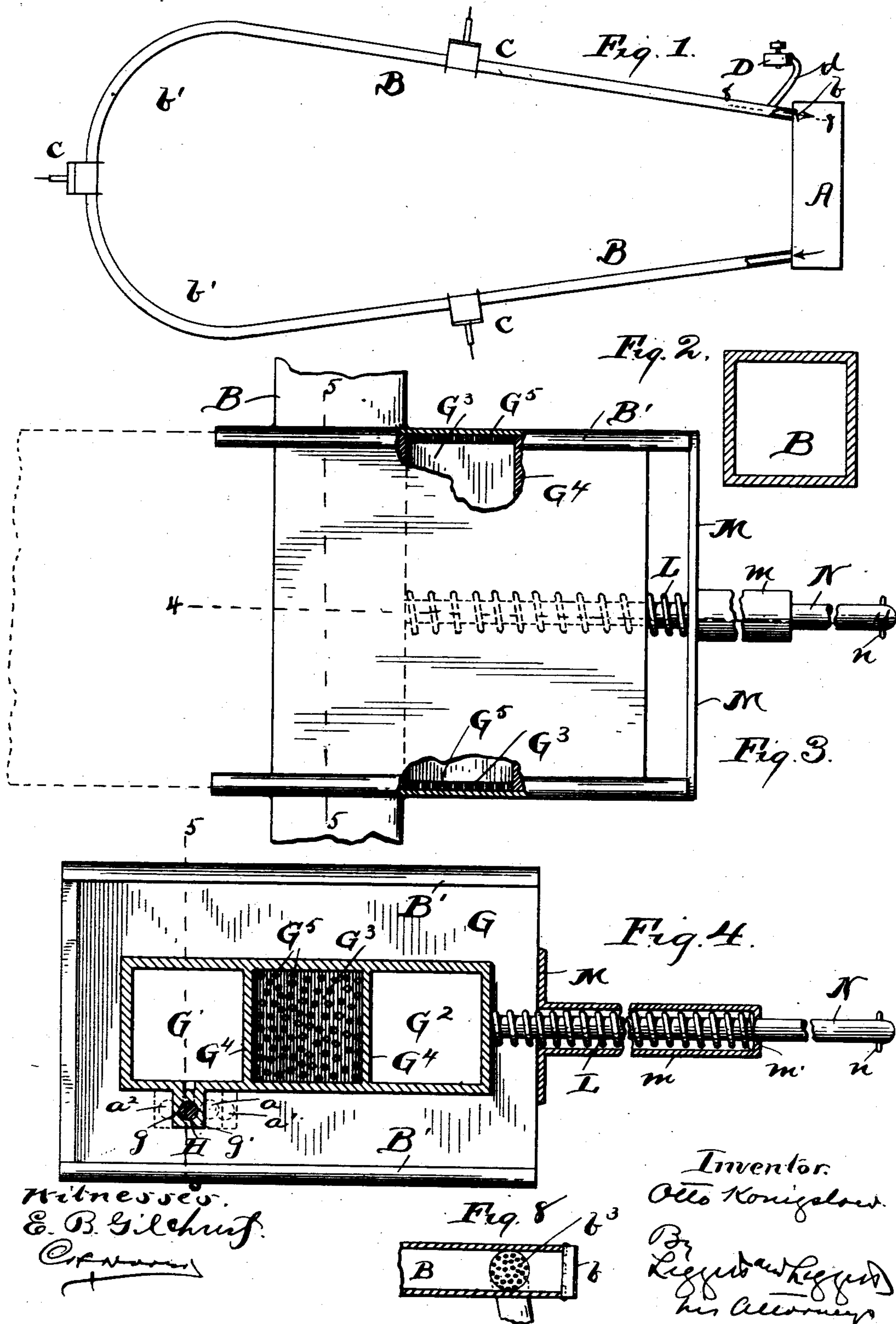
(No Model.)

2 Sheets—Sheet 1.

O. KONIGSLOW.
PNEUMATIC DISPATCH SYSTEM.

No. 525,606.

Patented Sept. 4, 1894.



(No Model.)

2 Sheets—Sheet 2.

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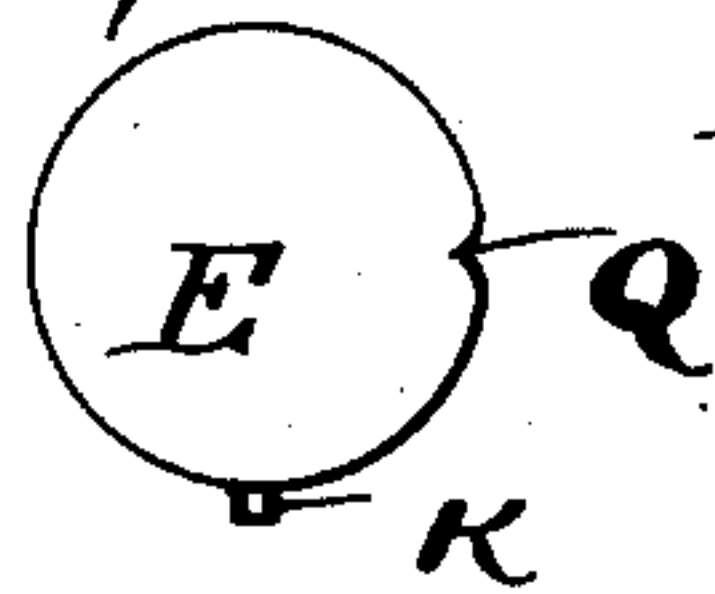
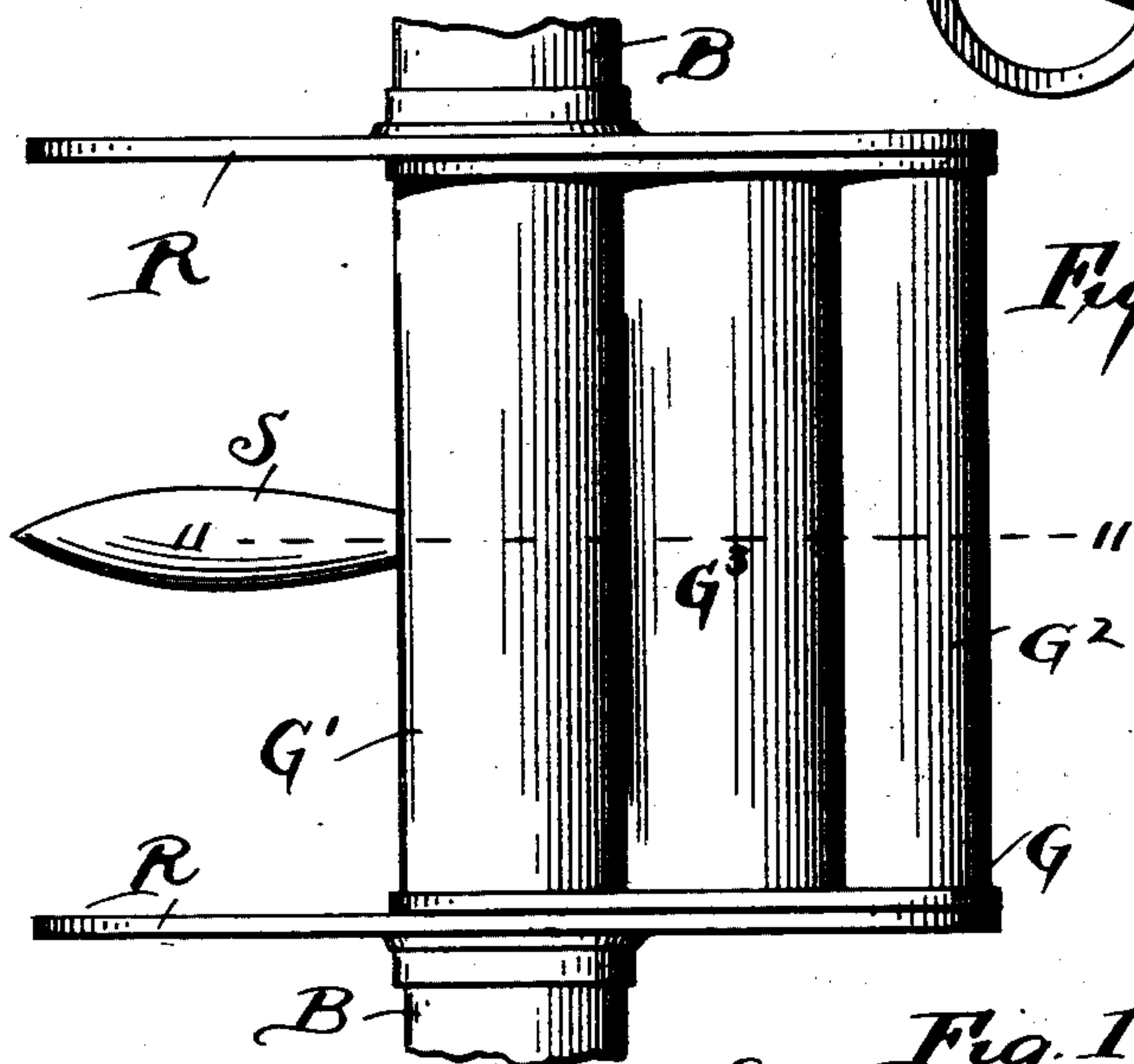
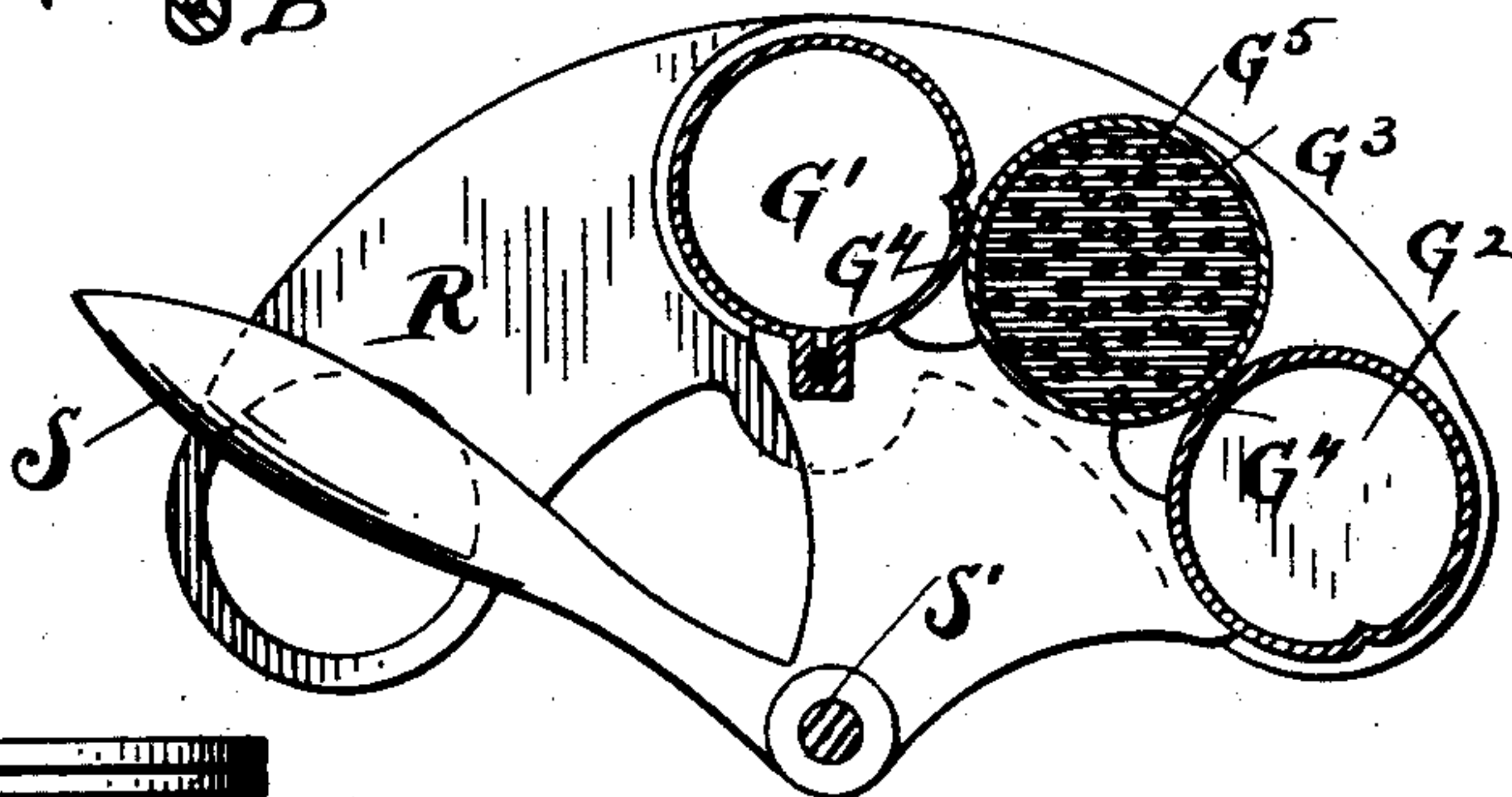
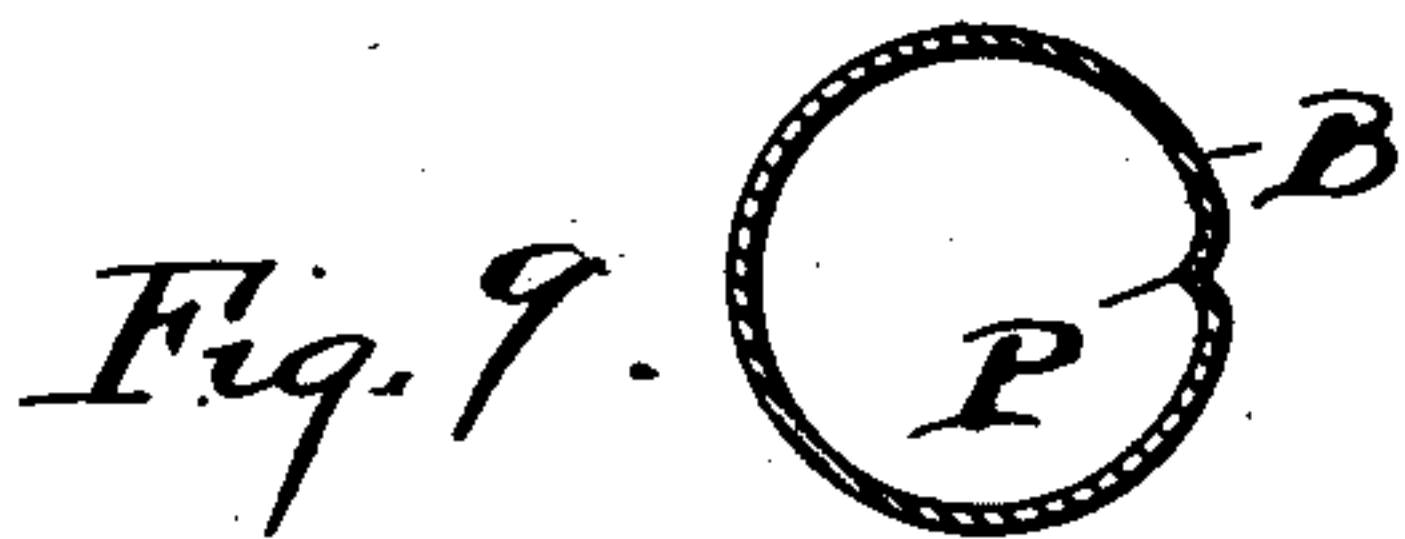
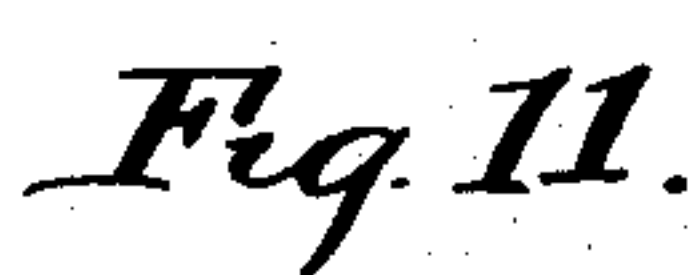
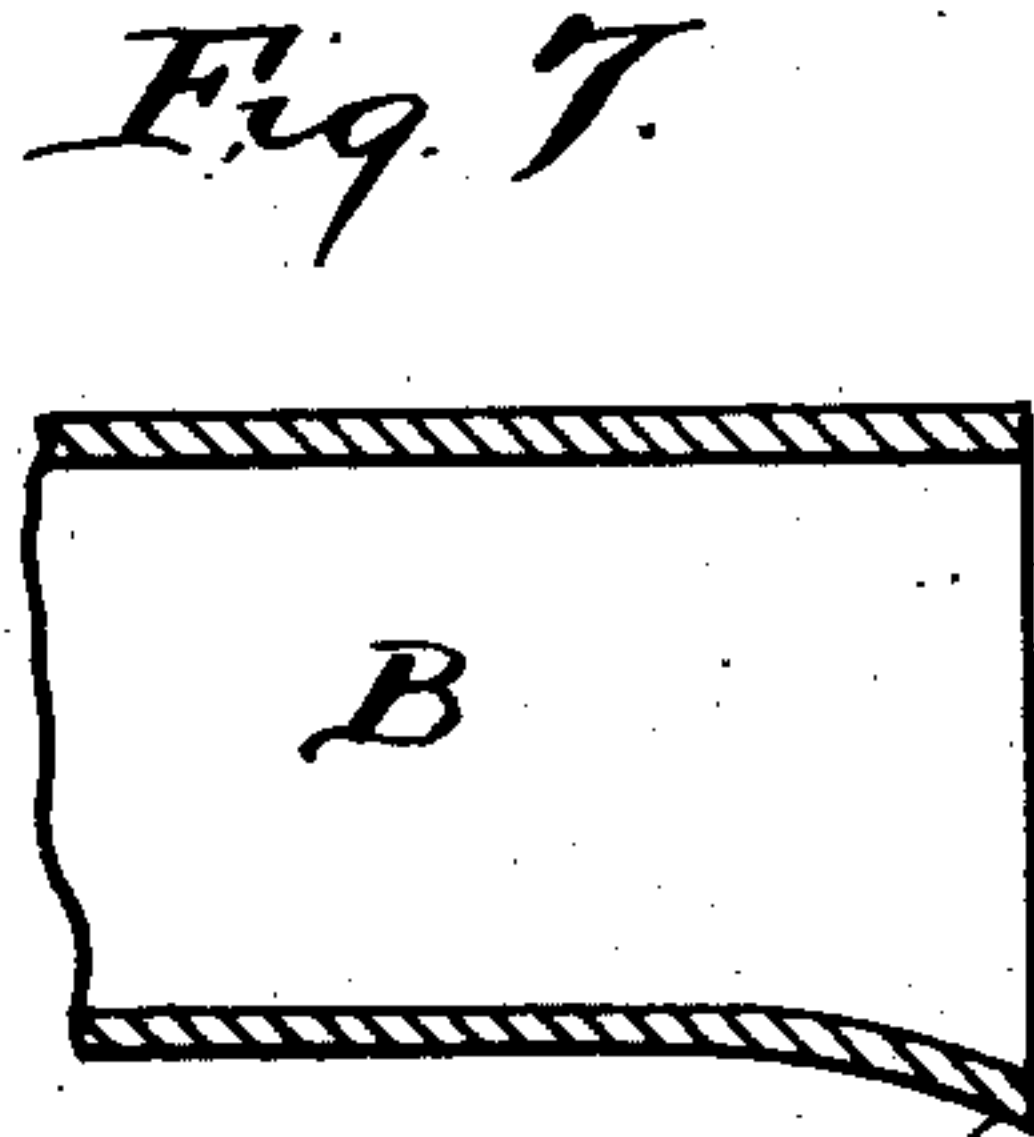
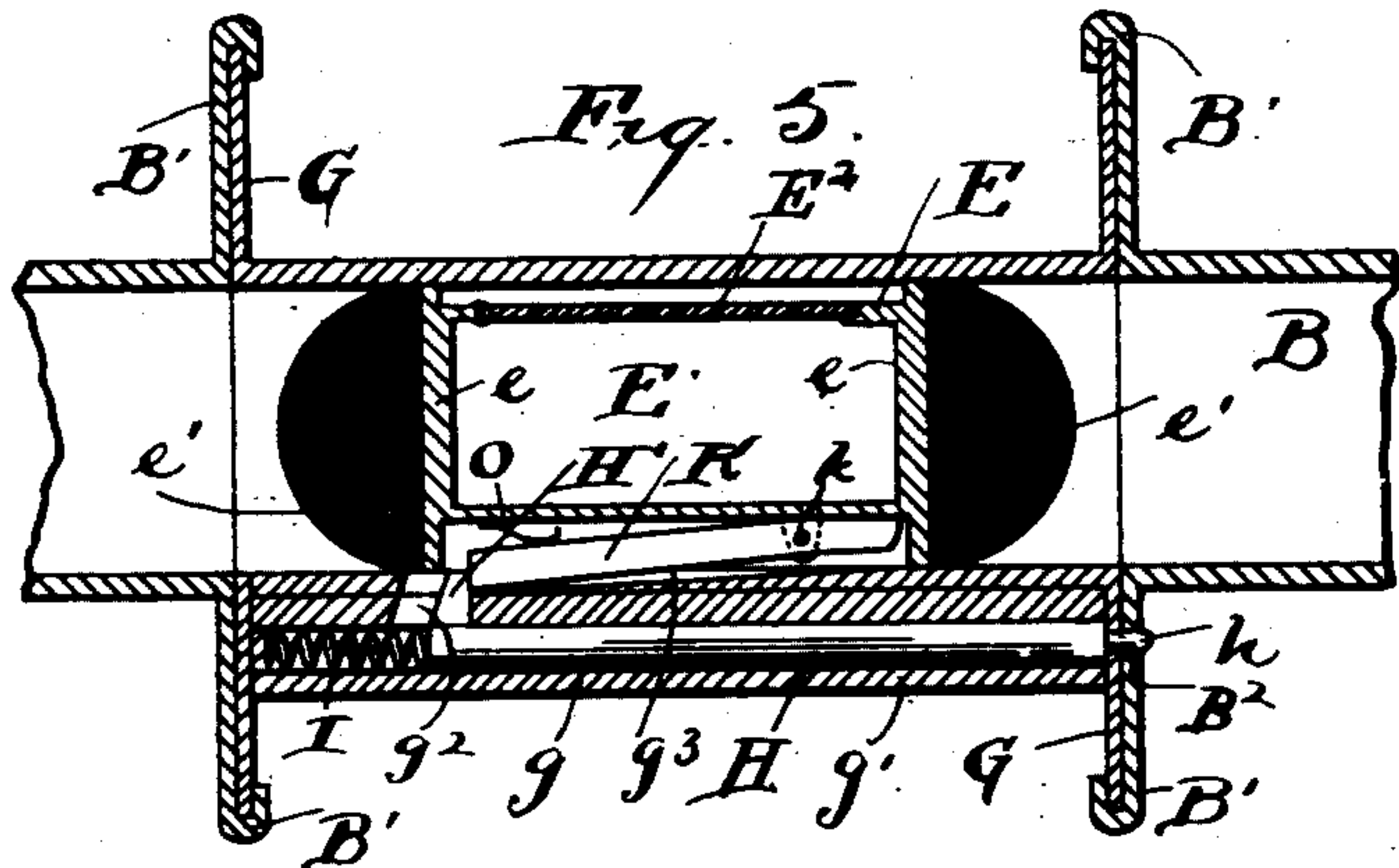


Fig. 12.

A cross-sectional view of a mechanical assembly. It features two horizontal rollers labeled *R* and *R'*. Above roller *R* is a component labeled *G*, and below it is *G'*. To the right of roller *R* is a component labeled *S*, and below it is *S'*. The entire assembly is supported by a base structure. On the far right, there is a label *B* and some handwritten notes: "on B", "B", "L", "R", "S".

Witnesses,
E. B. Gilchrist
Crawford

Inventor.
Otto Konigslow
By ^{Myself} ~~Liquor~~ ^{Myself} ~~Liquor~~
his Attorneys

UNITED STATES PATENT OFFICE.

OTTO KONIGSLOW, OF CLEVELAND, OHIO.

PNEUMATIC DISPATCH SYSTEM.

SPECIFICATION forming part of Letters Patent No. 525,606, dated September 4, 1894.

Application filed March 16, 1893. Serial No. 466,252. (No model.)

To all whom it may concern:

Be it known that I, OTTO KONIGSLOW, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Pneumatic Dispatch Systems; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in pneumatic dispatch or transit systems for messages, cash, parcels and other matter; wherein is employed a central or main station, a single tube-circuit leading from and back to the central or main station and connecting, with the main station, any number of local or sub-stations located along said tube-circuit, and apparatus at each local or sub-station for delivering its carrier to and from the tube-circuit without breaking or interrupting the continuity of the motive-power in the tube-circuit, and my present invention consists particularly in certain features of construction of the tube of the tube-circuit, carriers, and apparatus for delivering the carriers to and from the tube-circuit at the respective local or sub-stations, hereinafter described and pointed out in the claims.

The primary object of my invention is to produce a pneumatic dispatch and transit system that is more convenient, and vastly more simple in construction, than the systems heretofore devised.

In the accompanying drawings, Figure 1 is a diagrammatic plan, partly in section, of a system embodying my invention. Fig. 2 is a transverse section of a preferable form of tube for the tube-circuit. Fig. 3 is a top plan, partly in section, and Fig. 4 is a transverse vertical section on line 4—4, Fig. 3, of a suitable apparatus for delivering the carriers to and from the tube-circuit, at the local or sub-stations, and suitable for use with the form of tube shown in Fig. 2, and Fig. 5 is a vertical section on line 5—5, Figs. 3 and 4, exhibiting a partial central longitudinal section of a carrier in position in the carrier-delivering apparatus. Fig. 6 is an end-view of a carrier suitable for use with the construction shown in Figs. 2, 3 and 4. Fig. 7 is a longitudinal vertical section of the receiving-end

of the tube of the tube-circuit at the main station. Fig. 8 is an enlarged section on line 8—8, Fig. 1. Fig. 9 is a transverse section of a modified construction of tubing for the tube-circuit. Fig. 10 is a top plan of a construction of a local or sub-station's carrier-delivering apparatus suitable for use with the form of tube shown in Fig. 9, and Fig. 11 is a vertical section on line 11—11, Fig. 10. Fig. 12 is a left hand side elevation relative to Fig. 10. Fig. 13 is an end view of a carrier suitable for use with the construction shown in Figs. 9, 10, 11, 12 and 13.

Referring to Figs. 1, 2, 3, 4, 5, 6 and 7, A represents the central or main station; B the tube-circuit, and C the local or sub-stations located along the tube-circuit.

The tube-circuit leads from and returns to the central or main station, and is open at its receiving-end and provided with an outwardly opening valve *b* at its delivering-end, as shown in Fig. 1.

The motive power is preferably obtained by means of a blower, or pump, D, suitably connected with the tube-circuit near the delivering-end at the main station and adapted to exhaust the tube-circuit of air at the point of its connection with the tube-circuit and thereby create a pneumatic power through the tube-circuit, the tube or pipe *d* that connects the blower or pump with the tube-circuit being preferably closed at its junction with the tube-circuit, by a perforated diaphragm *b*³, as shown in Fig. 8.

The tubing of the tube-circuit is square or angular in cross-section as shown in Fig. 2, and the ends or heads *e* of the carriers E are correspondingly shaped and nicely but easily fit the conducting-tube, so that the carriers shall be properly guided in their transmission in the tube-circuit.

The body of the carrier comprises a box or receptacle E' that, in transverse section, is sufficiently smaller than the tube of the tube-circuit to enable the carrier to pass around curves, *b'*, in the tube-circuit. The box or receptacle of the carrier, at the top, is provided with a lid or cover, E², for access, and the heads or ends of the carrier are provided with buffers, *e'*, preferably of the semi-spherical variety.

At each local or sub-station, tube B is pro-

vided with guides or ways, B', arranged transversely of the tube, and supporting the apparatus adapted to deliver the carrier containing the message, cash, parcel, or matter transmitted, to and from the tube-circuit, the end-pieces or members G of said delivering apparatus being adapted to reciprocate endwise of said ways or guides. (See Figs. 3, 4, and 5.) Said carrier-delivering apparatus has an open-ended chamber G' for receiving the carrier and delivering the latter to and from the tube-circuit, said chamber, in cross-section, corresponding, in form and size, with the tubes of the tube-circuit and forming a part of the tube-circuit when brought into line with the tube-circuit. Said apparatus has another open-ended chamber, G², arranged parallel with chamber G', corresponding in cross-section with the tube of the tube-circuit and forming a part of the tube-circuit when brought into line with the tube-circuit.

To bring chamber G' a suitable distance away from the tube of the tube-circuit for the reception or delivery of the carrier, without breaking or interrupting at any time the continuity of the motive power in the tube-circuit, another chamber G³ is preferably provided between chambers G' and G² and the partition walls G⁴ between said chambers are preferably made as thin as possible. Chamber G³ is preferably closed at its ends, with the end-walls perforated, as at G⁵, Figs. 3 and 4, by which construction another carrier in transit is prevented from entering said chamber during the operation of the delivering-apparatus.

Suitable means for holding or retaining the local station carrier-delivering apparatus with chamber G' in line with the tube-circuit, is provided, and consists, preferably, in a reciprocating locking-pin or bar, H, that fits within and is adapted to reciprocate endwise of a corresponding hole g in the downwardly enlarged portion g' of the bottom-wall of chamber G', as shown in Figs. 4 and 5, said enlargement of the bottom wall of said chamber extending preferably the entire length or approximately the entire length of the chamber, and hole g being arranged lengthwise of said enlargement. Locking-pin or bar H does not occupy the entire length of hole g, but a spring, I, is interposed and confined between the inner end of said pin or bar and the adjacent end of hole g and acts in the direction to retain the locking-pin or bar in position with the outer reduced end h thereof in engagement with a corresponding hole, B², in the adjacent supporting guide B', to thereby lock the carrier-delivering apparatus in position with chamber G' in line with the tube-circuit as shown in solid lines, Fig. 3. The reduction of the outer end of pin or bar H and the corresponding difference in size between holes g and B², forms a stop to limit the actuation of the pin or bar in the direction to unlock.

Locking-pin or bar H, at its inner end, has an upwardly-projecting toe or member, H',

that, in the locking position of the pin or bar, engages the one or forward end-wall of a slot, g², that is in open relation, top and bottom, with chamber G' and hole g, respectively, and the bottom wall of chamber G' is provided with a recess or depression, g³, arranged lengthwise of the bottom. The bottom wall of said recess or depression preferably declines rearwardly, as shown in Fig. 5, and at its rear end opens into slot g², and upwardly projecting toe or member H' of locking-pin or bar H projects into said recess and is adapted to be engaged by the one extremity of a finger or key K pivoted, preferably at or near its opposite end, as at k, to the lower side of the box or receptacle of the carrier. The arrangement of parts is such that when a carrier is sent from the central or main station to the local or sub-station to which the carrier belongs, upon arrival of the carrier within chamber G' of the carrier-delivering apparatus of said station, finger or key K of the carrier will drop into recess g³, slide along the bottom of said recess until it engages toe or projection H' of locking-pin or bar H and thereupon actuate the latter, against the action of spring I, to unlock the respective carrier-delivering-apparatus subject to the action of a spring, L, adapted to actuate the carrier-delivering apparatus laterally of the tube-circuit to bring the chamber G' containing the carrier into the desired proximity to the person or operative in charge of said station, and to bring chamber G² in line with the tube-circuit as shown in dotted lines Fig. 3 and thereby enable the passage of other carriers in transit and destined for other stations.

Spring L is preferably mounted upon a rod or bar N rigid with and extending laterally from the outer side wall of chamber G², and confined upon said pin or bar between the outer side of the casing of chamber G² and the outer end-wall of the chamber of casing m rigid with cross-bar or yoke M that connects the guides of the carrier delivering-apparatus, the outer end-wall of the chamber of casing m being perforated, as at m', to afford bearing for and accommodate the reciprocation of rod or bar N that, a suitable distance outside of casing m, is provided with a stop, n, to arrest the movement of said apparatus when chamber G² shall have come into line with the tube-circuit.

Finger or key K of the carrier, being pivoted to the reduced portion or box or receptacle of the carrier, as shown, does not in any wise, obstruct or interfere with the transmission of the carrier. Said finger or key may be operated by gravity, or by the action of a spring, O, secured to the bottom of the box or receptacle of the carrier, or by both gravity and the action of a spring.

The location of the means employed at any local or sub-station for arresting the carrier upon its transmission from the central or main station and automatically unlocking the carrier-delivering-apparatus of said station

to deliver the carrier from the tube-circuit, is such, relative to the corresponding mechanism of the other local or sub-stations of the system, that a carrier shall be adapted to pass every station excepting the one to which it belongs. For instance, at one local or sub-station and its carrier said mechanism might be located, as shown in solid lines in Figs. 4 and 5 centrally of the carrier and chamber G' for receiving said carrier. In another station and its carrier, the locking-mechanism might be located somewhat to one side of the central portion, as shown at a in dotted lines, Figs. 4 and 6; in another station and carrier, still farther to the same side of the central portion, as shown in dotted lines at a' in Figs. 4 and 6; in another station and carrier it might be located to the other side of the central portion as shown a^2 , dotted lines, Figs. 4 and 6, and so on. In other words, the mechanism for arresting the carrier upon arriving in chamber G' of the delivering apparatus of its station, shall, either in location, construction, or arrangement be unlike that of any other local or sub-station and carrier so that there shall be no liability of any carrier being stopped or arrested at any local or sub-station to which it does not belong.

Of course it will be understood that in placing the carrier into chamber G' of the apparatus for delivering the carrier to the tube-circuit, it should not be placed into said chamber in the same position in which it is taken therefrom, but should be so placed therein, end for end, down-side up, or so as to bring finger or key K adjacent some other side of said chamber, or otherwise, so that it will not interfere with the transmission of the carrier when delivered to the tube-circuit. The tubing of the tube-circuit, at its receiving-end at the central or main station is somewhat gradually enlarged downwardly, as at b^2 , to prevent finger or key K of the carriers from slipping in under the tube in entering the carriers.

By the construction hereinbefore described, it will be observed that but a single tube-circuit is required, and that the construction is exceedingly simple and comparatively inexpensive.

Although I prefer the square or angular form of tube for the tube-circuit, I would not be understood as limiting myself to that form. For instance said tube might be circular in cross-section, as shown in Fig. 9, with a rib or tongue, P, formed upon the internal surface thereof and adapted to engage a corresponding groove or recess, Q, (shown in Fig 13) in the carriers, and thereby properly guide the carriers in their transmission.

I would also remark that instead of a reciprocating spring-actuated apparatus for delivering the carrier to and from the tube-circuit, an oscillating apparatus might be employed, as shown in Figs. 10, 11, and 12, in which case chambers G', G², and G³ of the transmitting apparatus would be arranged in

the form of an arc as shown in Fig. 11, and the tube-circuit, at each local or sub-station, would preferably be provided with two segmental plates, R, located a suitable distance apart and suitably connected with each other, as at R', and the carrier-delivering apparatus, at the central portion, would be provided with a gravity-lever, S, suitably fulcrumed, as at S', to said connecting member of the supporting segmental plates. The mechanism for arresting the carriers in case of a tube-circuit having a tubular cross-section, upon their arrival, from the main station, in chamber G' of the carrier-delivering-apparatus of the respective local station, would be substantially the same as that hereinbefore described, except that, perhaps, a spring O for actuating finger or key E, would likely be employed in most cases.

I would further remark that the function of chamber G² of the carrier-delivering-apparatus, as already indicated, is to avoid an interruption of the continuity of the tube-circuit when said apparatus is in position with the carrier-receiving-chamber G' ready to have the carrier put therein or taken therefrom by the attendant at the station with which said carrier is identified. For convenience in placing the carrier into and taking it from chamber, G', the latter is located a suitable distance from chamber G², and hence, another chamber, G³, as already indicated is provided between chambers G' and G², the function of said additional chamber being to reduce, to a minimum, obstruction to the current of air through the tube-circuit in actuating the carrier-delivering-apparatus to bring either chamber G' or G² in line with the tube-circuit. While I prefer the employment of the additional chamber G³, referred to, I would have it understood that said chamber might be dispensed with without departing from the spirit and purpose of my invention.

What I claim is—

1. In a pneumatic dispatch system, the combination of a line of pneumatic tubing leading from and back to the main or central station, carriers for transmitting matter between the main station and local or sub-stations, suitable apparatus at the local or sub-stations for delivering the carriers to and from the tube-circuit, said carrier-delivering apparatus comprising two open-ended chambers adapted to form a part of the tube-circuit, respectively, one of said chambers being adapted to deliver the respective carrier to and from the tube-circuit, and the other chamber being adapted to accommodate the transit of other carriers when the carrier-delivering chamber is out of line with the tube-circuit, a locking-pin or bar for locking the carrier-delivering apparatus in position with the carrier-delivering chamber in line with the tube-circuit; a finger or key connected with the carrier for engaging and actuating said bar or pin to unlock upon the reception of the carrier, during

its transmission from the central or main station, by the carrier-delivering chamber of the carrier-delivering apparatus, and thereby permitting said apparatus to be actuated to deliver the carrier from and bring the other chamber into line with the tube-circuit, substantially as set forth.

2. In a pneumatic dispatch-system, the combination of a line of pneumatic tubing leading from and back to the main or central station, carriers for transmitting matter between the main station and local or sub-stations, suitable apparatus at the local or sub-stations for delivering the carriers to and from the tube-circuit, said carrier delivering apparatus comprising two open-ended chambers adapted to form a part of the tube-circuit, respectively, one of said chambers being adapted to deliver the respective carrier to and from the tube-circuit, and the other chamber being adapted to accommodate the transit of other carriers when the carrier-delivering-chamber is out of line with the tube-circuit, a reciprocating locking-pin or bar H for locking the carrier-delivering apparatus in position with the carrier-delivering-chamber in line with the tube-circuit, and provided with a projecting toe or member H', suitable means acting to retain said locking pin or bar in its locking position, and a finger or key connected with the carrier for engaging said toe or projecting member of the locking-pin or bar and actuating said bar or pin to unlock upon the reception of the carrier, during its transmission from the central or main station, by the carrier-delivering-chamber of the carrier-delivering-apparatus, substantially as set forth.

3. In a pneumatic dispatch system, the combination of a line of pneumatic tubing leading from and back to the central or main station, carriers for transmitting matter between the main station and local or sub-stations, suitable apparatus at the local or sub-stations for delivering the carriers to and from the

tube-circuit and comprising three chambers; arranged the one between the others and the other chambers being adapted to form a part of the tube-circuit, respectively, one of said outer chambers to be utilized for delivering the respective carrier to and from the tube-circuit and the other outer chamber being adapted to permit the transit of other carriers when the carrier-delivering-chamber is out of line with the tube-circuit, the intervening chamber being adapted to avoid a break or interruption of the continuity of the motive power during the operation of the carrier-delivering apparatus, substantially as set forth.

4. In a pneumatic dispatch system, the combination of a line of pneumatic tubing leading from and back to the main or central station, carriers for transmitting matter between the main station and local or sub-stations, suitable apparatus at the local or sub-stations for delivering the carriers to and from the tube-circuit, and comprising three chambers arranged the one between the others and with the outer chambers adapted to form a part of the tube-circuit, respectively, one of said outer chambers to be utilized to deliver the respective carrier to and from the tube-circuit and the other outer chamber being adapted to permit the transit of other carriers when the carrier-delivering-chamber is out of line with the tube-circuit, the intervening chamber being closed at the ends to prevent the entrance or partial entrance of the carrier into said chamber with its end walls suitably perforated, substantially as set forth and for the purpose set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 27th day of February, 1893.

OTTO KONIGSLOW.

Witnesses:

C. H. DORER,
WARD HOOVER.