

(No Model.)

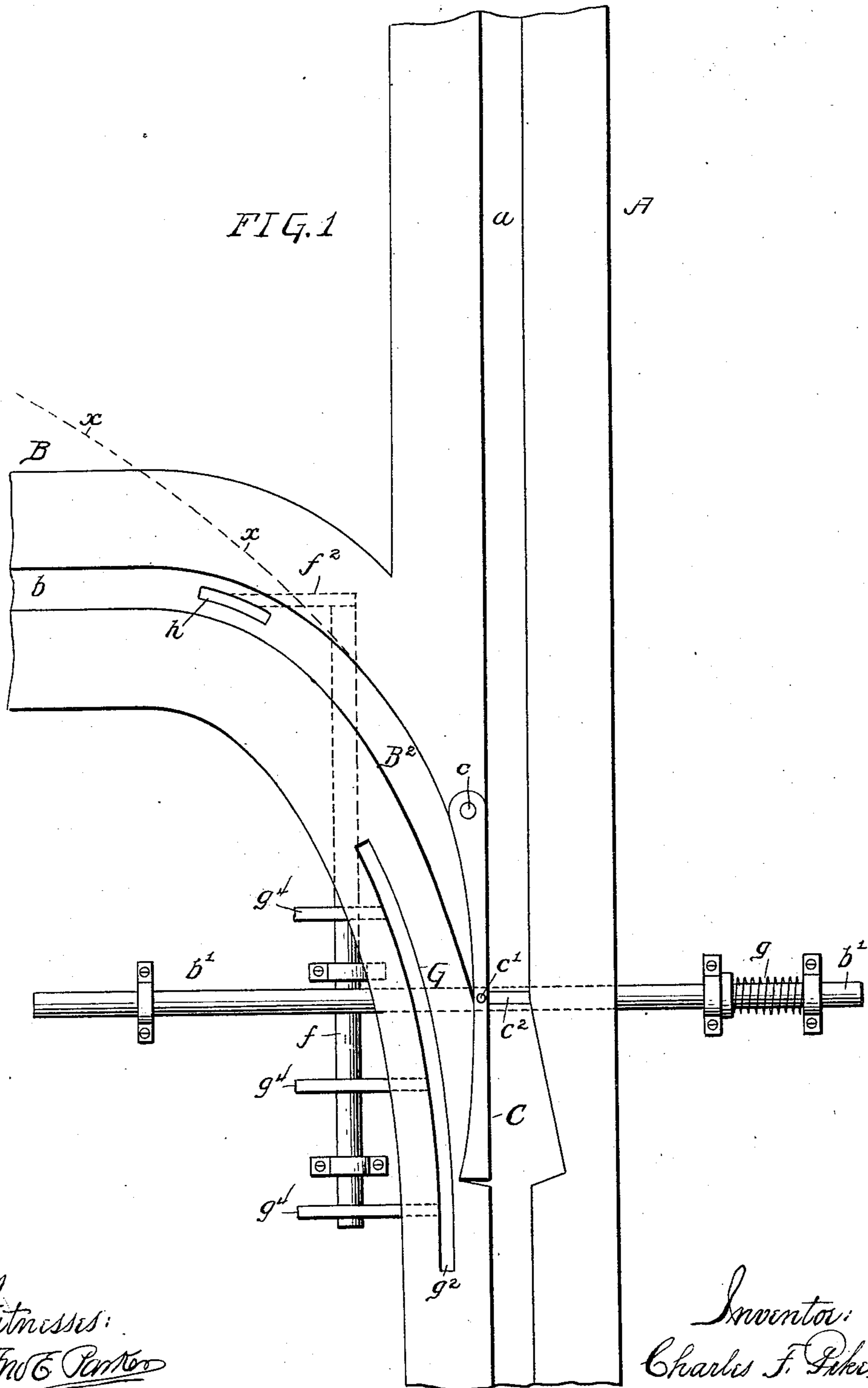
3 Sheets—Sheet 1.

C. F. PIKE.

SWITCH FOR PNEUMATIC DESPATCH TUBES.

No. 562,022.

Patented June 16, 1896.



Witnesses:
Jno E. Parker
J. Henderson.

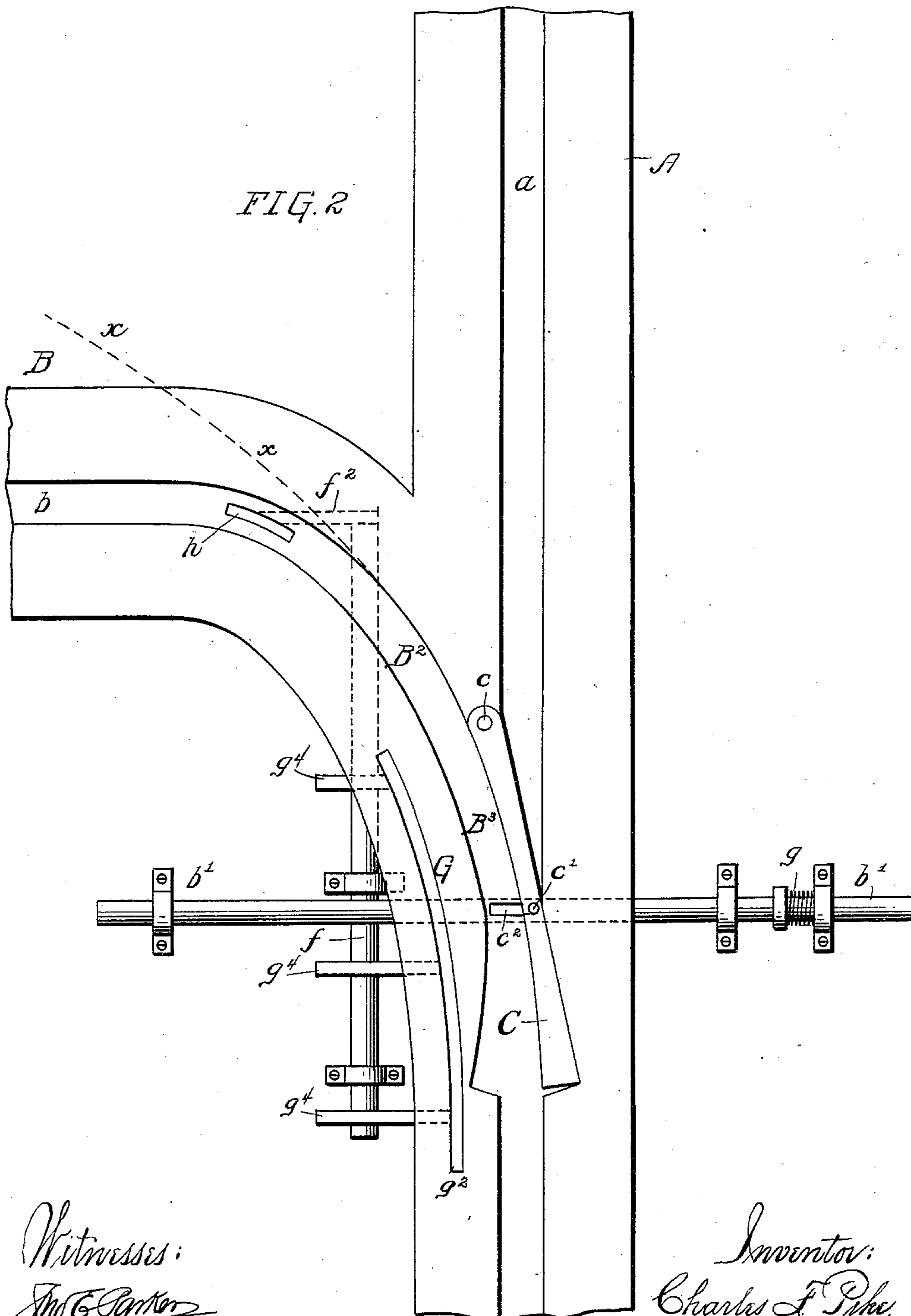
Inventor:
Charles F. Pike.
by his Attorney,
William A. Pike

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J. Henderson

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3 Sheets—Sheet 3.

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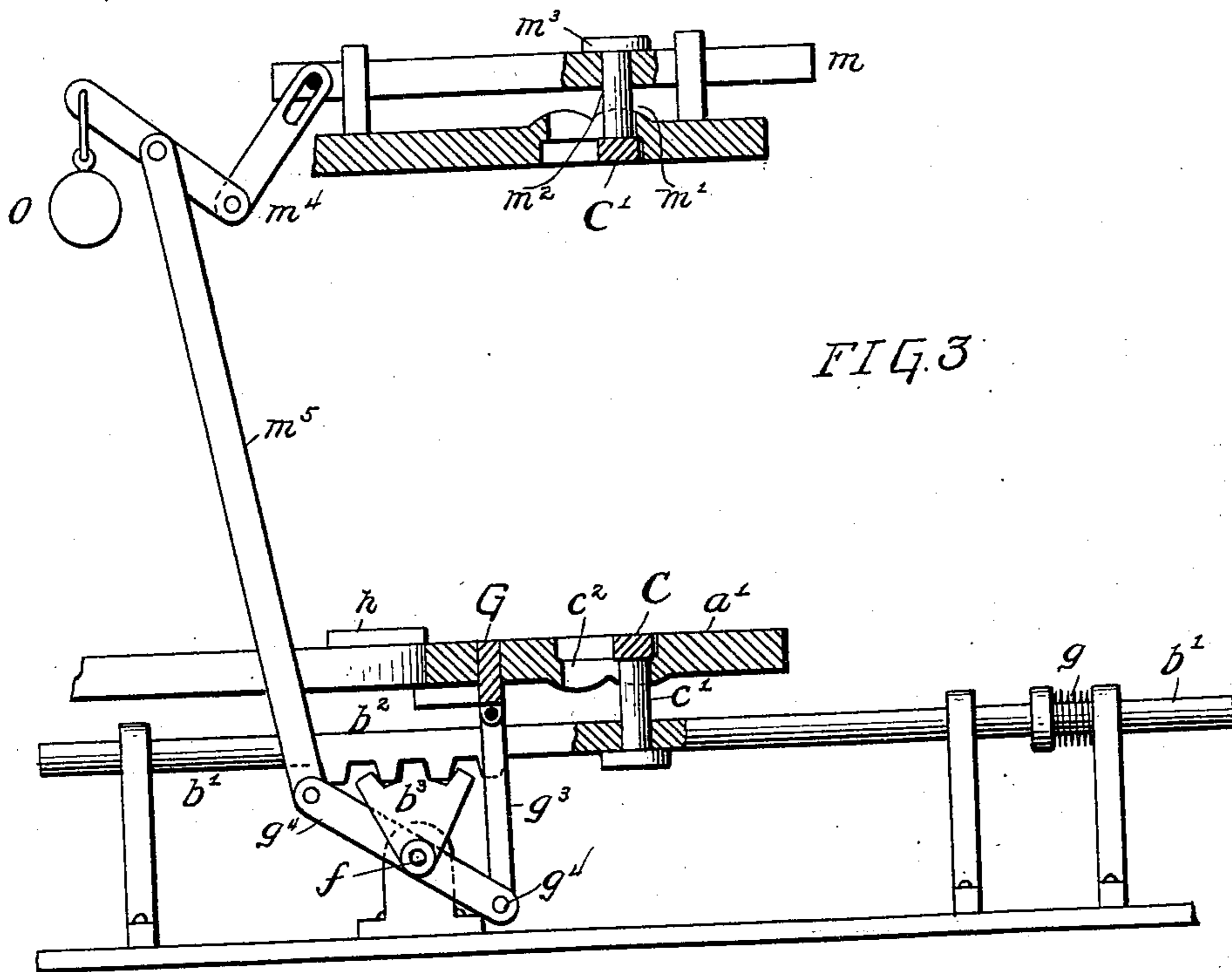


FIG. 3

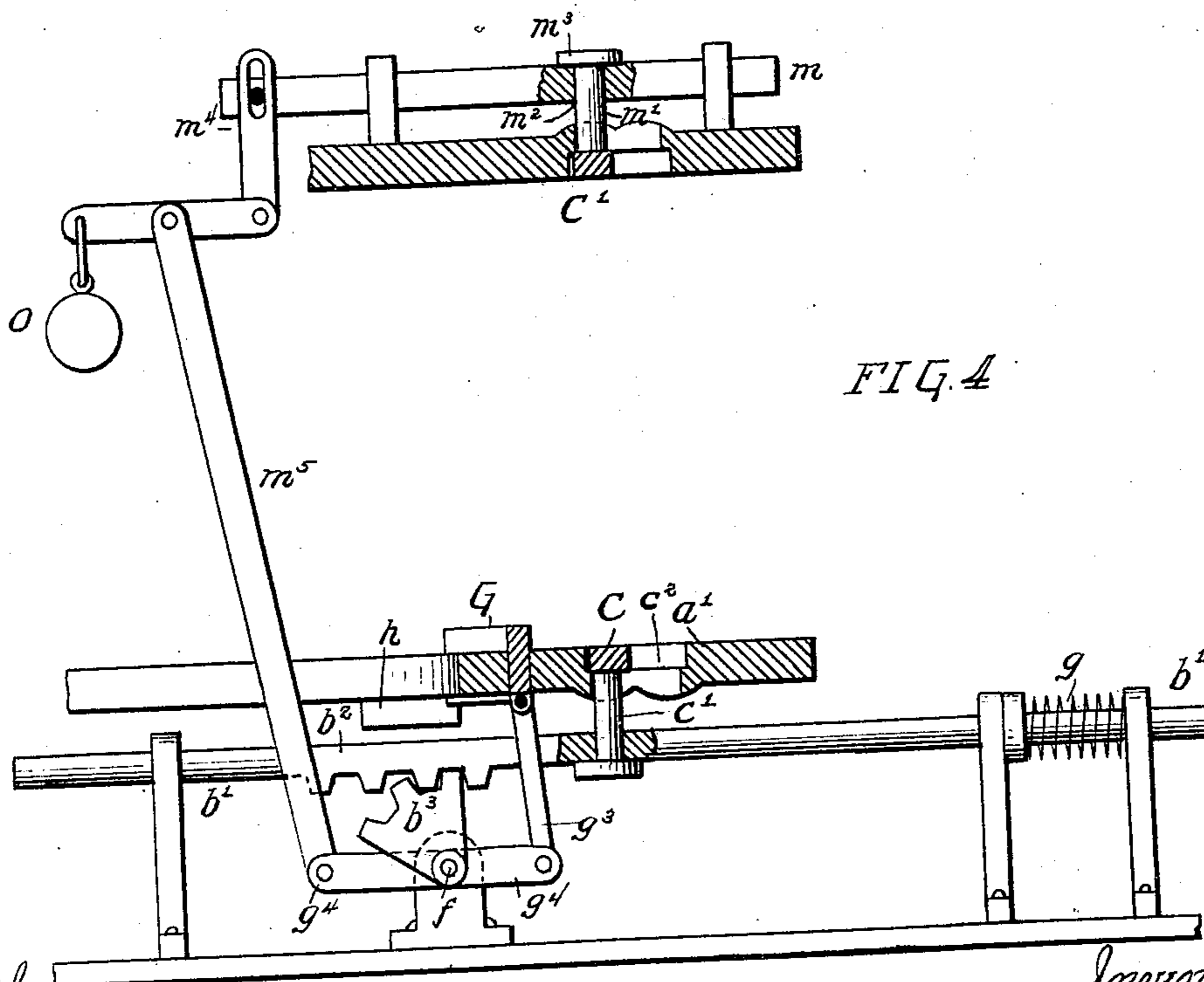


FIG. 4

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UNITED STATES PATENT OFFICE.

CHARLES F. PIKE, OF PHILADELPHIA, PENNSYLVANIA.

SWITCH FOR PNEUMATIC-DESPATCH TUBES.

SPECIFICATION forming part of Letters Patent No. 562,022, dated June 16, 1896.

Application filed May 31, 1895. Serial No. 551,217. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. PIKE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Switches for Pneumatic-Despatch Tubes, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has relation to switches and their actuating devices at the junction of branching tubes of pneumatic-despatch-tube systems, having particular reference to that form of switches which are pivoted at one end and free at the other and known as "tongue-switches."

My invention has for its object a short-length switch applicable for long or short curves, and actuating mechanism therefor of a simple, durable, and efficient construction, and which admits of the curved tube from the main or other tube having a quick or short curve of an involute form, or one having a number of different centers instead of those of regular quadrant or segmental form struck from a single center, whereby the curved tube is more compact or occupies a much less extent of space or room, and hence is more available for laying it in the city streets, where space is restricted, and for leading it into buildings or other locations where economy of space is a necessity, the same being especially available for use under said described conditions when the tube is of a large diameter.

My invention accordingly consists of the combinations, constructions, and arrangements of parts, as hereinafter described in the specification, and pointed out in the claims.

Reference is had to the accompanying drawings, wherein—

Figures 1 and 2 are plan views of straight and curved junction-tubes with switch and actuating mechanism embodying my invention and showing the switch in its different positions; and Figs. 3 and 4 are cross-sections of the same, showing the switch and actuating mechanism in two different positions.

A represents a straight, and B a curved tube, respectively, of junction-tubes of a pneu-

matic-despatch-tube system, which tubes, as shown, are of a form having top and bottom track grooves or rails *a* and *b*, respectively; but any other forms of tubes may be used.

C C' represent the tongue-switches at the junction of the form of tubes shown, and they are pivoted or journaled at their ends *c* in any suitable manner. The upper switch *C'* is in engagement with a sliding bar *m*, by means of a pin or bolt *m'* passing through an opening *m²* in bar *m*, and having a nut *m³* at its upper end. The lower switch *C* has on its under side a depending pin *c'*, which passes through a transversely-located slot *c²* in casing *a'* and is rigidly connected to a sliding rack-bar *b'*, having rack *b²*, as shown, into which meshes the segmental gear-wheel *b³*, and which is mounted on a suitably-located shaft *f*, having suitable bearings, as desired. Said rack-bar *b'* is provided with a suitably-located retracting-spring *g* for alone returning it to its normal position, which is to open the straight tube *a*, as shown in Fig. 1. The sliding bars *m* and *b'* are connected by a bell-crank lever *m⁴*, crank-arm *g⁴*, and link *m⁵*, so that when bar *b'* is moved in either direction the bar *m* is correspondingly moved.

G represents a long curved or other configured tripper-bar located to one side of the junction-curve rail-groove *b*, and its end *g²* extends beyond the end of the switch *C*. This tripper-bar *G* has suitable connections *g³ g⁴* with shaft *f*, so that when first depressed by a passing carrier the connections *g³ g⁴* and shaft *f* are actuated to rock the segmental gear *b³* and move rack-bars *b'* and *m* in one direction to move the switches *C C'* from their normal position, as shown in Fig. 1, to that shown in Fig. 2, to open the curved tube *B* to the straight tube *A*, or their respective grooves *a* and *b* therein, to divert the carrier from the tube *A* to *B*. As long as the carrier or a finger or stud or roller depending from the carrier impinges upon the tripper *G* the switches are locked in their moved positions to guide the carrier into the branch *B*. When the carrier passes off of the tripper *G*, it or one of its wheels may depress a tripper *h*, having a connection *f²* with shaft *f*, to actuate the latter and the gear *b³* to reversely slide bars *b'* and *m* to return the switches *C C'* to normal

position, as shown in Fig. 1, such movement being assisted by the retraction-spring g on bar b' . Tripper h and actuating mechanism between it and the rack b^2 on bar b' , as well as said rack b^2 , may be dispensed with, and the reverse movement of the rack-bar b' for resetting the switches to normal may alone be done by the spring g , which is made strong enough for that purpose, or the weight o , Figs. 3 and 4, may be employed instead of spring g , said described tripper h and actuating mechanism being used as precautionary devices, if desired, but, as stated, are not absolutely essential, especially in tube systems of small diameter.

The junction-curve B^2 of the tube B, or of both it and its track-groove b , is of an epicycloidal or involute form, having the straighter part B^3 thereof at the initial end or junction of such curve with the tube A, (see more plainly Fig. 2,) such straighter part being approximately of the length of the curved side of switch C, beyond the pivoted end of which the curve quickens or is made gradually shorter and quicker to approximate any suitable involute form of curve, as contradistinguished from a regular curve, as indicated by dotted lines $x x$, Figs. 1 and 2, heretofore used. The quicker portion of the involute part of the curve B^2 begins, therefore, beyond the pivot-point of switch C or in the solid-metal part of the tube B, the effect whereof is that when the carrier-wheel strikes or impinges against the curved side B^3 of switch C, when it is set to divert the carrier from tube A to B, the impact of such impingement is substantially the same as that provided by regular curves and continues substantially the same while such wheel is in contact with switch C. As soon, however, as the carrier-wheel passes into the quick involute form of curve B such impingement increases as the curve grows shorter; but as this part of the curve is located in the solid metal of the tube such additional strain or stress falls not upon the switch C, but upon the tube. As the curve B^2 is of an involute form the length of switch C may be materially reduced, or is of a much shorter length than it would be if the curve B^2 were a regular curve. The involute form of curve B^2 admits of its being laid in a restricted space like city streets, and can be readily led into a building, thereby making it especially available for cities and towns, particularly so when the diameter of the tubes is large.

As the herein-described constructions and arrangements of parts may be changed without departing from the invention, I do not confine myself to the same as shown and described.

Having thus described my invention, what

I desire to claim and secure by Letters Patent is—

1. In combination with the junction-tubes of a pneumatic-despatch system, a switch having a pivoted and a free end, actuating mechanism under control of a traveling carrier for setting or moving the switch in one direction and for holding it locked in such set direction, and mechanism under corresponding control for resetting or returning said switch to normal, substantially as set forth.

2. The combination of a switch, actuating mechanism for setting and resetting said switch, a tripper in advance of and extending the full length of the switch and in engagement with such actuating mechanism, a second tripper beyond the first tripper having an engagement with said actuating mechanism, and both of said trippers being under the control of a passing carrier whereby it first sets the switch, holds it locked while passing over or by the switch and releases or resets it, substantially as set forth.

3. In a pneumatic tube, the combination of upper and lower pivoted switches, actuating mechanism for setting and resetting said switches, trippers in engagement with said actuating mechanism and controlled by a passing carrier for setting and locking the switches and for resetting them, substantially as set forth.

4. In a pneumatic-tube system, the combination of diverting-tubes, one of which has an involute or gradually-increasing sharp curve at the junction of said tubes, and a switch at such junction having a curved side forming the straighter part of such involute curve, substantially as set forth.

5. In pneumatic-despatch tubes, the combination of diverting-tubes having trackways or grooves, involute curved ways or grooves at said junctions, and one or more switches at said junction having a curved side corresponding to the straighter part of said involute curved ways or grooves substantially as set forth.

6. In combination with the junction-tubes of a pneumatic-despatch-tube system, a switch having a pivoted and a free end, actuating mechanism under the control of a traveling carrier for setting or moving the switch in one direction and for holding it locked in such set direction, and spring or gravity mechanism for resetting or returning said switch to its normal position substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES F. PIKE.

Witnesses:

THOS. S. RODGERS,
JOHN H. HUDSON.