

(No Model.)

2 Sheets—Sheet 1.

W. G. COLLINS.
DISPATCH TUBE SYSTEM.

No. 518,093.

Patented Apr. 10, 1894.

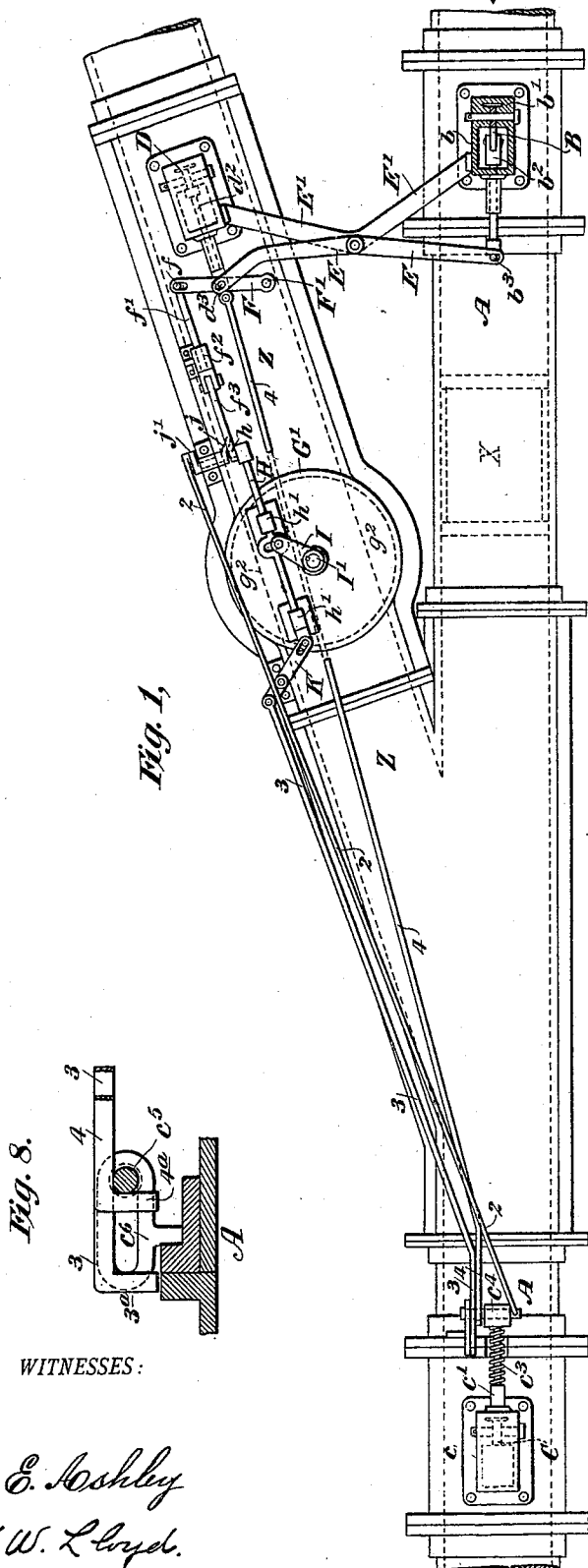


Fig. 1.

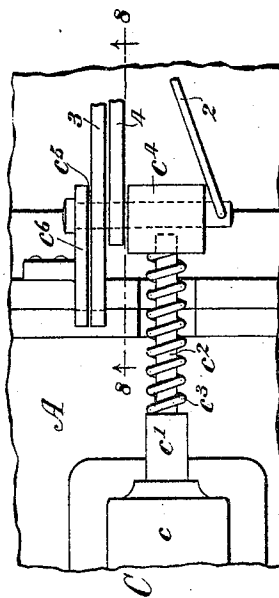


Fig. 7.

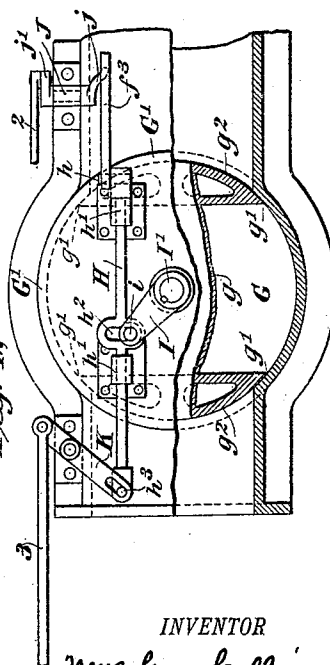
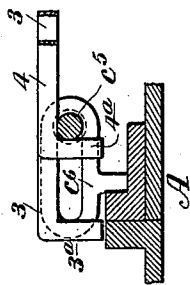


Fig. 4.

Fig. 8.



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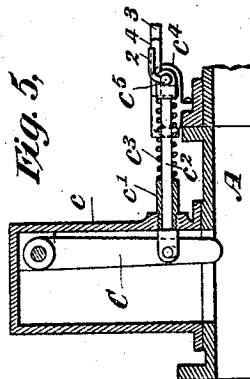
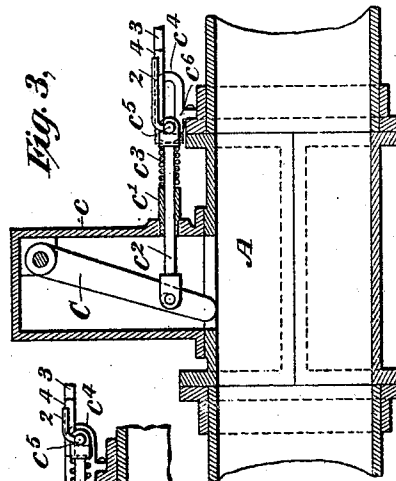
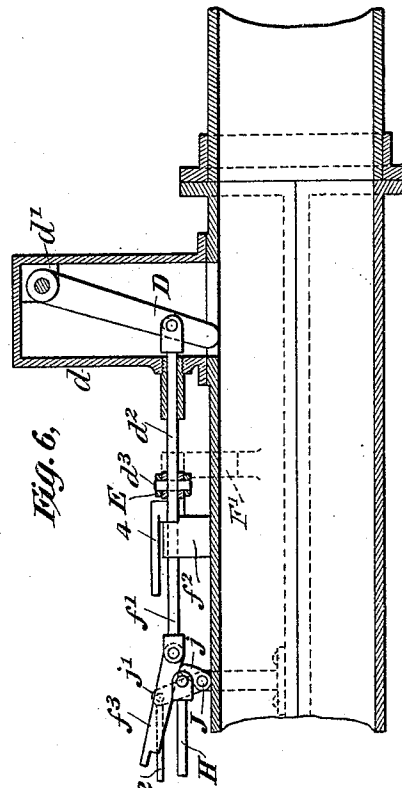
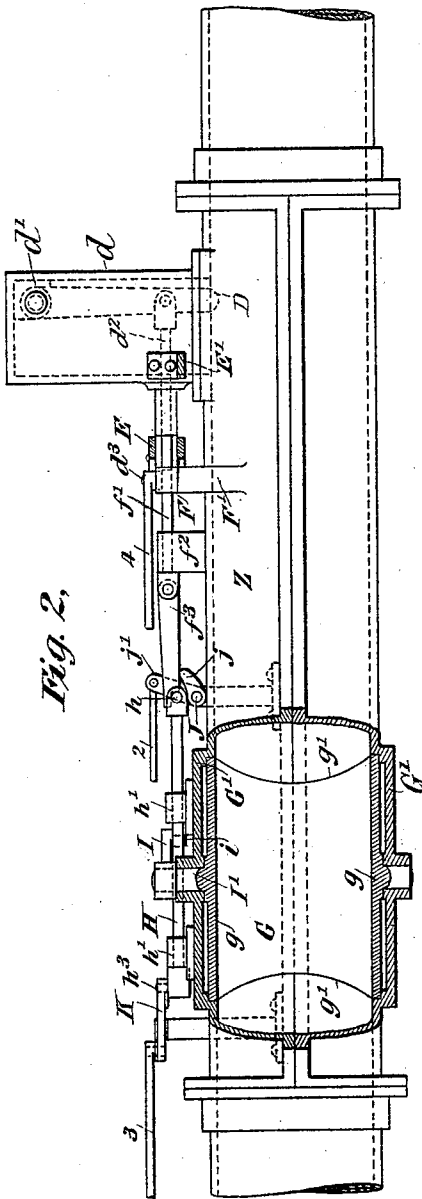
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

WILLIAM GUY COLLINS, OF NEW YORK, N. Y., ASSIGNOR TO THE COLLINS AUTOMATIC PNEUMATIC SWITCHING TUBES COMPANY, OF NEW JERSEY.

DISPATCH-TUBE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 518,093, dated April 10, 1894.

Application filed November 26, 1892. Serial No. 453,250. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GUY COLLINS, a citizen of the United States, and a resident of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Dispatch-Tube Systems, of which the following is a specification.

This invention relates to systems where tubes are used for the transmission of articles in carriers by pneumatic pressure, suction, or other motive force, and has for its general object to improve the character and efficiency of the apparatus, more especially in regard to regulating and controlling the passage of the carriers from one tube into another at the different points in the system where the junctions of the tubes are located.

My present improvements are more particularly adapted for use with the return tubes of a pneumatic or similar dispatch system, or in cases where one or more branch tubes discharge carriers into a main tube,—the devices and arrangements being intended to prevent collisions between two or more carriers at any junction, and to obviate crowding or blocking of a plurality of carriers traveling through different tubes in the same direction, or toward the same objective point, such as the dispatching end of the system.

To this end the improvements include devices arranged in connection with the junction of one tube with another, so that when a carrier is approaching the junction in one tube, a gate or retarding device will be automatically placed in the path of a carrier approaching in the other tube;—and also includes devices for restoring the apparatus to its normal position.

For clearness I will limit the description of my invention to an arrangement of a main tube and a single branch tube in connection therewith, it being understood that the same devices are simply multiplied according to the number of branches employed in the dispatch system.

To fully comprehend my invention reference must be had to the accompanying drawings forming part of this specification, which

illustrate what I esteem to be one of the best means for carrying the improvements into effect.

Similar letters and figures of reference indicate like parts.

Figure 1 is a plan view partly in section, representing a main tube and a single branch tube forming a junction therewith, each provided with devices for operation by their respective carriers according to my invention. Figure 2 is a sectional side elevation of part of the branch tube showing the gate and its auxiliaries. Figure 3 is a sectional side elevation of part of the main tube showing devices actuated by the carriers adjacent to the junction between the two tubes. Figure 4 is an enlarged sectional plan showing the gate in its closed position. Figure 5 is a sectional detail of carrier-actuated device C with parts in their normal position. Figure 6 is a sectional elevation of part of the branch tube showing push-rod in its disengaged position. Figure 7 is an enlarged detail plan of part of carrier-actuated device C and its immediate connections. Figure 8 is a detail view showing hooked ends of rods 3 and 4 and their auxiliaries.

A represents a main tube of a pneumatic, or similar system, having two carrier-actuated devices B and C, one at each end of the section of tube shown, and preferably consisting of points or fingers pivoted in separate casings or frames *b* and *c* carried by the tube A, and having their free ends adapted to project a sufficient distance into the tube, so that they may be conveniently moved by impact of the carrier X shown in dotted lines in Fig. 1, and which may be of any approved construction to correspond with the style of tube and other apparatus employed.

Z is a branch tube forming junction with the main tube A at a point near the carrier-actuated device C, this branch tube having also a carrier-actuated device D, substantially similar to that marked B in the main tube, and it is so situated as to permit of their simultaneous operation through a lever E which is connected with both, and is pivoted to a cross-bar E' centrally between the two tubes. In the branch tube Z, at a suitable distance

from the device D in the direction of the junction, is a rotary gate, or closure G, which is adapted to be automatically closed in advance of a carrier which may be approaching in such branch tube at the same time as another carrier may be approaching the junction in the main tube A and has passed the device B and through its actuation of the latter has set the device D in such position as to be operated by the carrier approaching in the branch tube, and to thus close the gate G and retard such branch-tube carrier until the carrier in the main tube shall have passed the device C, and by its actuation of the same has re-opened the gate G when the branch-tube carrier is permitted to proceed.

The carrier-actuated devices B, C and D are preferably of similar construction, and I will now proceed to describe them, and the other parts of the apparatus, in detail, so that the operation of the whole apparatus may be clearly understood, commencing with the device B at which the initial operation takes place. In the upper part of the casing or framing *b*, is a lug *b'* from which is suspended a bar or finger B of sufficient length for its free end to project a short distance into the tube A, so as to be struck by a carrier approaching in the direction of the arrow. At a point near the free end of this finger is pivotally connected a horizontal rod *b²* which projects through suitable ways in the casing *b*, and carries a pin *b³* which in turn connects with the slotted end of the pivoted lever E, before mentioned as connecting the carrier-actuated devices B and D. The other end of this lever E is also slotted and connects with a pin *d³* fixed to the horizontal rod *d²* of the device D, and which pin also passes through a lever F medially between its ends, such lever being also pivoted at one of its ends to a convenient projection F' from the branch tube, and its other end, which is slotted, embraces a pin *f* on the end of a horizontal rod *f'*, which slides in a bracket *f²* carried by the tube, and to this rod is pivoted a push-bar *f³*, the free end of which is notched, as is seen particularly in Figs. 2 and 6, and adapted to engage with a transverse pin *h* on the end of the bar H through which the gate G is actuated,—and to be disengaged from such pin, in the manner hereinafter explained, by means of a trip-finger *j* fixed upon one end of a transverse rocking shaft J journaled on a lug on the tube, its other end carrying an arm *j'* to which is attached a rod 2 which extends forward and establishes connection with the carrier-actuated device C in the main tube A as will be further explained. The bar H is parallel with the branch tube Z and is arranged to slide in guides *h' h'* formed on one face of a circular casing G' within which works the rotary gate G, the walls of such casing being practically continuations or parts of the tube itself, the same being simply bulged out in such shape as will best correspond with the shape of the gate, which is

preferably a cylinder with closed ends *g g* and openings *g' g'* coinciding with each other and with the diameter of the tube through which the carrier may freely pass when the gate is open, the solid portions *g² g²* being adapted to close the tube when turned in the direction of its length. The bar H is widened at its central part and has a transverse slot *h²* formed therein, which receives a pin *i* carried on the end of a crank arm I keyed to one of the trunnions or end-pivots I' of the rotary gate G. The other end of the bar H carries a pin *h³* which connects with the slotted end of a lever K pivoted to the tube framing and having connected to its other end a second rod 3 which extends—in like manner to the rod 2—forward to connection with the device C in the main tube A. A third connecting rod 4 extends from the extreme end of the rod *d²* of the carrier-actuated device D of the branch tube, to connection with the device C of the main tube so as to be operated thereby, as will hereinafter more fully appear. The horizontal rod *c²* of the carrier-actuated device C passes out from the casing *c* through a sleeve *c'*, and this rod has a coiled spring *c³* mounted upon it which tends to keep the finger C normally with its end projecting into the tube A, that is to say, to return it to that position each time after it has been struck by a passing carrier. The outer end of this rod *c²* is in rigid connection with a block or crosshead *c⁴*. A pin *c⁵* passes from this block *c⁴* outward and into a slotted fixed guide *c⁶* carried by the tube framing, space, however, being left between the block *c⁴* and the guide to permit the ends of the rods 3 and 4 to play between them, each of said rods at this point being formed with hooks, 3^a and 4^a respectively, as shown particularly in Figs. 7 and 8, (or they may be slotted and work in like manner) so that the hooks of said rods 3 and 4 may be normally out of engagement with the pin *c⁵*, and only come in contact therewith, so as to be affected by the movement of said pin, when the carrier-actuated device D, and rotary gate G, respectively, are being moved. The rod 2, which has been before described as operating the trip finger *j* and thus raising the push-bar *f³*, is secured, as shown in Fig 1, to the pin *c⁵*. It could of course be secured, if desired, to the cross-head *c⁴*.

Having now described the construction and relative arrangement of the different parts of my invention, I will explain the operation of the same. It is to be understood that the fingers B and C in the main tube A are normally down, or projecting into the tube, and the finger D in the branch tube Z is normally up, or clear of the tube, and the gate G is normally open, but Fig. 1 of the drawings is arranged with the parts in the position they occupy when the carrier X has passed into the main tube A, and is at any point between the devices B and C. The carrier X has thus by its impact upon the finger

B forced out the rod b^2 , moved the lever E correspondingly, and thrown back the rod d^2 and put the finger D down, or with its end projecting into the branch tube ready to be struck by any carrier coming through such branch tube. This movement has drawn upon the rod 4 so as to bring the hook at its opposite end into contact with the pin c^5 but no farther. The branch tube Z being thus guarded, the junction is clear and the carrier X may proceed and pass the device C. In passing, however, it strikes the finger C and presses it to the rear out of its way, and this action draws upon the rod c^3 , against the tension of the spring c^3 , and draws upon the block or crosshead c^4 and, through it, upon the rods 2 and 4, said rod 4, as before mentioned, having been brought with its hook into immediate contact with the pin c^5 , and this movement of the rod 4 pulls upon the rod d^2 and finger D, restoring said finger to its normal position, that is to say, raising it clear of the tube; simultaneously with this movement the rod 2 has been drawn upon and the trip-finger j has pressed the push-bar f^3 up out of connection with the pin h , on the gate-operating bar H, allowing the lever F to move simultaneously with the rod d^2 of the carrier-actuated device D, and this, through the pin d^3 , has so moved the pivoted lever E as to re-set the finger B into its normal position with its end projecting into the tube A. From the above it will be seen that the first operation of a carrier entering the main tube and striking the device B, is to set the finger D in the branch tube down so that it may be struck by any carrier approaching the junction in the branch tube Z. The operation when such branch-tube carrier strikes the finger D (the parts connected with the branch tube being in the position shown in Fig. 1) is to press forward the rod d^2 and all its immediate connections, so as to push the rod 4 to a position such that the hook on its far end is out of contact with the pin c^5 , and also through the push-bar f^3 to force the bar H forward sufficiently to turn the crank arm I and the gate G a quarter of a circle and bring the solid parts of the cylindrical gate across the branch tube, and thus afford an effectual bar to the further passage of such carrier. This forward sliding of the bar H, through its connection with the pivoted lever K, draws forward the rod 3 until its hooked end is in contact with the pin c^5 , but does not move it farther. The passage of the branch tube carrier past the finger D thus restores the fingers D and B and through the rod 4 the hooked end 4^3 to their normal positions respectively, namely, the finger D up and out of the branch tube Z, the finger B projecting downward into the main tube A and the hooked end 4^3 out of engagement with the pin c^5 . The carrier X in the main tube can thus pass the junction without colliding with, or being blocked by the carrier traveling in the same

direction through the branch tube, and directly this first carrier reaches the finger C it presses the same up out of the main tube, draws upon the rod c^3 and through the block c^4 , and pin c^5 , thus pulls upon the rod 3, (its hook having been, as before described, brought into contact with such pin) and through the lever K, bar H and crank I, rotates the gate until it is fully open as shown in Fig. 1, thus allowing the carrier in the branch tube to proceed and pass out of the junction. The passage of the branch-tube carrier past the finger C has no effect on the rods 3 and 4 as their hooked ends are out of engagement with the finger c^5 . It simply idly trips the finger C, rod 2 and trip-finger j , the said parts being at once restored to their normal position by means of the springs c^3 . When there is no carrier approaching in the main tube, and the normal positions of the fingers C and D consequently not having been disturbed, and a carrier should approach in the branch tube Z, it will meet with no obstruction as the gate also is normally open, but can pass immediately out of the junction, merely tripping the finger C as it passes, which finger, as before mentioned, is immediately restored to its normal position by the spring, the pin c^5 in this case merely traveling along the undersides of the ends of the rods 3 and 4 without engaging with their hooks, the rod 2 simply operating the trip-finger j , or holding the push-bar f^3 clear of the pin H on the gate-operating bar so that no other action takes place at this latter point.

In a pneumatic system I rely upon the air within the branch tube to afford a sufficient cushion to prevent the branch tube carrier from forcibly striking the gate or retarding device, and also to provide air cushions between two or more carriers in the same tube when the first may have been arrested.

It will be understood that although I have shown the gate in connection with the branch tube, it may be used to good advantage in the main tube at any point where such would be desirable according to the requirements of any particular system; and furthermore, by the mere exercise of mechanical skill it will be apparent that the gate G may be operated directly from the carrier-actuated device B without the intervention of the carrier-actuated device D in the branch tube,—and that other variations of construction and arrangements of parts, having the same general end in view, may be adopted without departing from the principle or sacrificing the advantages of my invention.

What I claim, and desire to secure by Letters Patent, is as follows:

1. In a dispatch system, the combination with two tubes forming junction with each other, of a gate normally open in one tube, a finger projecting into the other tube adapted to be struck by carriers in said tube and connections between said finger and said gate

whereby when said finger is struck by a carrier, said gate will be closed, substantially as set forth.

2. In a dispatch system, the combination with two tubes forming junction with each other,—of a gate and a finger or projection in one tube,—a finger normally projecting into the other tube and adapted to be struck by a carrier in said tube whereby said finger or projection is placed in position in the first tube to be struck by a carrier approaching said junction, and connections between said finger and said gate whereby said gate is automatically closed by said last mentioned carrier, substantially as set forth.

3. In a dispatch system, the combination with a main tube, and a branch tube forming junction therewith,—of a gate in the branch tube and a finger projecting into the main tube whereby the main-tube carrier may place said gate under control of the branch-tube carriers so that the latter may close said gate,—and another finger projecting into said main tube and also operated by the main-tube carrier to open said gate and release said branch-tube carrier, substantially as and for the purpose set forth.

4. In a dispatch system, the combination of a main tube and a branch tube,—two carrier-actuated devices in said main tube projecting into said tube,—one carrier-actuated device in the branch tube adapted to be projected onto said branch tube and having lever connections with one of such devices in the main tube,—a gate in the branch tube,—and connections between the carrier-actuated devices in the main tube and the carrier actuated device and gate in the branch tube whereby the actuation of the first device in the main tube by a carrier will set the device in the branch tube in position to be actuated by a branch-tube carrier to close said gate,—and whereby the actuation of the second device in the main tube by the main-tube carrier, will re-open said gate substantially in the manner and for the purpose set forth.

5. In a dispatch system, the combination of a main tube and a branch tube, two carrier-actuated devices projecting into the main tube, a gate in the branch tube, a carrier-actuated device adapted to be projected into the branch tube, lever connections between it and the first carrier-actuated device in the main tube whereby the actuation of the latter by a carrier will set the carrier-actuated device in the branch tube in position to be actuated by a branch tube carrier to close said gate and whereby when said carrier-actuated device in the branch tube is struck by a carrier it will restore said first carrier-actuated device in the main tube to its normal position, and connections between said second carrier-actuated device in the main tube and the gate whereby by the actuation of the former by the main tube carrier will reopen the latter, substantially as set forth.

6. In combination with a gate normally open at the junction of two tubes in a dispatch system, a carrier-actuated device for operating said gate consisting of a bar or finger pivoted at one end and having a free end adapted to be projected into the tube, and rod or lever connections between said finger and the gate whereby the gate will be closed when said finger is struck by a carrier, substantially as set forth.

7. The combination with the main tube having the carrier-actuated devices B and C,—of the branch tube having carrier-actuated device D connected so as to be operated simultaneously with the device B in the main tube,—rod d^2 connected to said device D,—pivoted lever F,—sliding rod f' ,—push-bar f^2 ,—trip-lever j and means connected with the device C for operating same,—bar H having pin h engaging said push-bar,—rotary gate G in the branch tube operatively connected to said bar,—pivoted lever K and rod 3 adapted to be operated by said carrier-actuated device C, all arranged and operating substantially as set forth.

8. The combination with the main tube having carrier-actuated device B, and with the branch tube having carrier-actuated device D and rotary gate G,—of the carrier-actuated device C,—a spring for keeping said device C normally in position to be struck by the carriers,—and lever connections whereby said devices B and D and gate G are restored to their normal positions, substantially in the manner and for the purpose set forth.

9. In combination with a gate in a dispatch tubesystem, a finger projecting into the tube adapted to be struck by carriers, a rod connected at one end with said finger and having its opposite end movable so that in one position it engages with said gate to close the same when said finger is struck by a carrier, and in another it does not engage, and a trip to remove the movable end of said rod from engagement with the gate, substantially as set forth.

10. In a dispatch system, the combination with two tubes forming a junction with each other, of a gate in one tube, two fingers projecting into the other tube and connections between said gate and each of said fingers whereby when the first of said fingers is struck by a carrier a projection will be forced into the tube containing the gate so as to be adapted when struck by a carrier to close said gate, and when the second of said fingers is struck by the carrier the gate will be opened, substantially as set forth.

11. In a dispatch system, the combination with two tubes forming a junction with each other, of a gate in one tube, a finger normally projecting into the other tube, a second finger adapted to be projected into the first mentioned tube but normally withdrawn therefrom, connections between said fingers whereby when one of the fingers is forced by a carrier out of its tube the other finger will be

projected into its tube, and connections between said gate and said second finger whereby when said second finger is struck by a carrier the gate will be closed, substantially as set forth.

12. In a dispatch system, the combination with two tubes forming a junction with each other, of a gate in one tube, three fingers, two of which are adapted to be projected into or withdrawn from the main tube and the other of which is adapted to be projected into or withdrawn from the branch tube, connections between said three fingers whereby when the first finger in the main tube is struck by a carrier the branch tube finger will be projected into the branch tube, and when said branch tube finger is struck by a carrier the said first finger in the main tube will be projected into the main tube, and when the second main tube finger is struck by a carrier the other fingers will be restored to their respective normal positions (if not already there) and connections between said gate and the said finger in the branch tube whereby when said finger is struck by a carrier the gate will be closed, substantially as set forth.

13. In a dispatch system, the combination with two tubes forming a junction with each other, of a gate in one tube, two fingers normally projecting into the main tube, a third finger adapted to be projected into the branch tube but normally withdrawn therefrom, connections between the branch tube finger and the first one of the main tube fingers so that when one of these fingers is forced out of its tube the other will be projected into its tube, connections between the gate and the branch tube finger whereby when the latter finger is struck by a carrier the gate will be closed, a rod or arm connected with the branch tube finger and adapted to engage with the second finger in the main tube only when the branch tube finger is projecting into the branch tube, whereby when said rod is in engagement with said second finger in the main tube and the latter is struck by a carrier the finger in the branch tube will be withdrawn from the tube, substantially as set forth.

14. In a dispatch system, the combination with two tubes forming a junction with each other, of a gate in one tube, two fingers normally projecting into the main tube, a third finger adapted to be projected into the branch tube but normally withdrawn therefrom, connections between the branch tube finger and the first one of the main tube fingers so that when one of these fingers is forced out of its tube the other will be projected into its tube, connections between the gate and the branch tube finger whereby when the latter finger is struck by a carrier the gate will be closed, a rod or arm connected with the branch tube finger and adapted to engage with the second finger in the main tube only when the branch tube finger is projecting into the branch tube, whereby when said rod is in engagement with said second finger in the main tube and the

latter is struck by a carrier the finger in the branch tube will be withdrawn from the tube, a rod or arm connected with the gate and adapted to engage with the second finger in the main tube only when the gate is closed, whereby when said rod is in engagement with said second finger and the latter is struck by a carrier the gate will be opened, substantially as set forth.

15. In a dispatch system, the combination with two tubes forming a junction with each other, of a gate in one tube, two fingers normally projecting into the main tube, a third finger adapted to be projected into the branch tube but normally withdrawn therefrom, connections between the branch tube finger and the first one of the main tube fingers so that when one of these fingers is forced out of its tube the other will be projected into its tube, connections between the gate and the branch tube finger whereby when the latter finger is struck by a carrier the gate will be closed, a rod or arm connected with the branch tube finger and adapted to engage with the second finger in the main tube only when the branch tube finger is projecting into the branch tube, whereby when said rod is in engagement with said second finger in the main tube and the latter is struck by a carrier the finger in the branch tube will be withdrawn from the tube, a rod or arm connected with the gate and adapted to engage with the second finger in the main tube only when the gate is closed, whereby when said rod is in engagement with said second finger and the latter is struck by a carrier the gate will be opened, a rod connected to said second finger in the main tube having a tripping mechanism at its other end whereby when said second finger is struck by a carrier the connections between the finger in the branch tube and the gate will be tripped to permit the gate to be closed without projecting the branch tube finger into the branch tube, substantially as set forth.

16. In a dispatch system, the combination with two tubes forming a junction with each other, of a gate in one tube, two fingers normally projecting into the main tube, a third finger adapted to be projected into the branch tube but normally withdrawn therefrom, connections between the branch tube finger and the first one of the main tube fingers so that when one of these fingers is forced out of its tube the other will be projected into its tube, connections between the gate and the branch tube finger whereby when the latter finger is struck by a carrier the gate will be closed, a rod or arm connected with the branch tube finger and adapted to engage with the second finger in the main tube only when the branch tube finger is projecting into the branch tube, whereby when said rod is in engagement with said second finger in the main tube and the latter is struck by a carrier the finger in the branch tube will be withdrawn from the tube, a rod or arm connected with the gate and adapted to engage with the second finger in

the main tube only when the gate is closed, whereby when said rod is in engagement with said second finger and the latter is struck by a carrier the gate will be opened, a rod connected to said second finger in the main tube having a tripping mechanism at its other end whereby when said second finger is struck by a carrier the connections between the finger in the branch tube and the gate will be tripped to permit the gate to be closed without projecting the branch tube finger into the branch tube, and a spring or weight to restore the second finger in the main tube to its normal position in the tube after being struck by a carrier, substantially as set forth.

17. In a dispatch system, the combination with two tubes forming a junction with each other, of a gate in one tube, two fingers normally projecting into the main tube, a third finger adapted to be projected into the branch tube but normally withdrawn therefrom, connections between the branch tube finger and the first one of the main tube fingers so that when one of these fingers is forced out of its tube the other will be projected into its tube, a rod connected with the branch tube finger having its opposite end movable and adapted to engage with an arm or projection from the gate when the branch tube finger projects into the tube, whereby the gate will be closed when said latter finger is struck by a carrier, a rod or arm connected with the branch tube finger and adapted to engage with the second finger in the main tube only when the branch tube finger is projecting into the branch tube, whereby when said rod is in engagement with said second finger in the main tube and the latter is struck by a carrier the finger in the branch tube will be withdrawn from the tube, a rod or arm connected with the gate and adapted to engage with the second finger in the main tube only when the gate is closed, whereby when said rod is in engagement with said second finger and the latter is struck by a carrier the gate will be opened a rod connected to said second finger in the main tube having a tripping mechanism at its other end adapted to trip the rod which is connected with the branch tube finger and engages the arm or projection from the gate, when said second finger in the main tube is struck by a carrier, and a spring or weight to restore the second finger in the main tube to its normal position in the tube after being struck by a carrier, substantially as set forth.

18. In combination with the junction of a branch with a main tube in a dispatch system, a gate in one tube, a finger in the same tube normally withdrawn from the tube but adapted to be projected therein another finger in the other tube normally projecting therein, connections between said fingers whereby when one is struck by a carrier the other will be projected into its respective tube, and connections between said first mentioned finger and the gate whereby when said finger is struck by a carrier the gate will be closed a second finger in the main tube, a rod connected with the branch tube finger adapted at its other end to engage with the second finger in the main tube only when the branch tube finger is projected into the tube, whereby when said second finger in the main tube is struck by a carrier the finger in the branch tube will be withdrawn from the tube substantially as set forth.

19. In combination with the junction of a branch with a main tube in a dispatch system, a gate in one tube, a finger in the same tube normally withdrawn from the tube, a finger normally projecting into the main tube, connections between said fingers so arranged that when one of said fingers is forced out of its tube the other one will be projected into its tube, a rod connected with the branch tube finger having its other end movable and adapted, when the said finger is projected into the branch tube, to engage with an arm or projection from the gate, whereby the gate will be closed when the branch tube finger is struck by a carrier, a second finger in the main tube, a rod connected with said gate and adapted at its other end to engage with said second main-tube finger only when the gate is closed, another rod connected with said last mentioned finger and having at its other end a tripping device for tripping the rod that is connected with the branch tube finger and that engages with the arm or projection from the gate, whereby when said second finger in the branch tube is struck by a carrier, the gate will be closed without projecting the branch tube finger into its tube, substantially as set forth.

W. GUY COLLINS.

Witnesses:

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EDWIN SEGER.