(No Model.)

A. BRYSON, Jr., & H. S. MUDGE.

COMBINED GATE AND BLOCK FOR PNEUMATIC DISPATCH SYSTEMS.

No. 356,865. Patented Feb. 1, 1887.

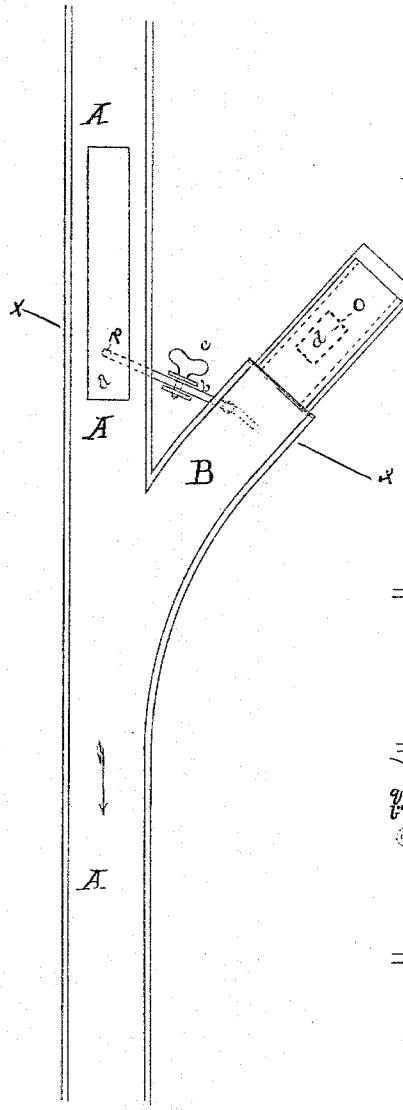


FIG. 1

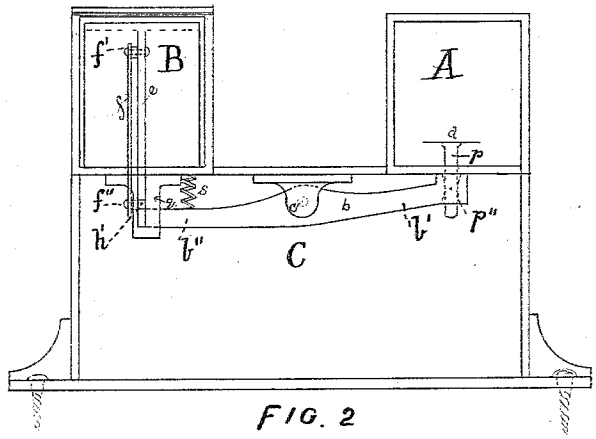


FIG. 2

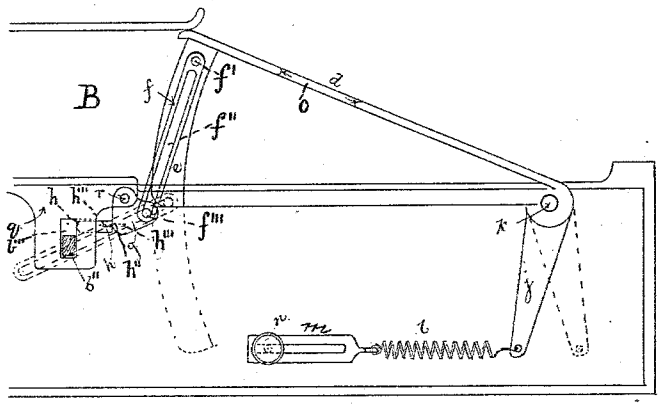


FIG. 3

WITNESSES:

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UNITED STATES PATENT OFFICE.

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COMBINED GATE AND BLOCK FOR PNEUMATIC DISPATCH SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 356,865, dated February 1, 1887.

Application filed September 23, 1886. Serial No. 214,364. (No model.)

To all whom it may concern:

Be it known that we, ANDREW BRYSON, Jr., and HENRY S. MUDGE, citizens of the United States, residing at Brooklyn, in the county of Kings, State of New York, have invented certain new and useful Improvements in a Combined Gate and Block for Pneumatic Dispatch Systems, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of our invention is to provide means to prevent collision when a carrier enters the main tube from a way-station; and our invention is especially designed for use with small pipes and light carriers, where no damage can result from blocking the main tube.

Our device consists of a door at the way-station, through which the carrier is introduced, connected by suitable mechanism to a block in the main line, whereby when the door at the way-station is opened for the introduction of the carrier the block in the main line is automatically set and a carrier about to pass that point is arrested in its course, and released only on the closing of the gate or door at the way-station.

In the accompanying drawings, which illustrate our invention, Figure 1 is a plan view of the main tube and branch. Fig. 2 is a cross-section of Fig. 1 on line *x x*, looking in the direction of the arrow shown in Fig. 1; and Fig. 3 is a longitudinal section through branch B, showing part of the mechanism for operating the block or switch.

A is the main tube; B, the branch tube. *d* is the carrier door or gate closing the entrance to the way-station and having an aperture, *o*, the size of which varies according to the number of switches on the line.

The block in the main line consists of plate *a*, its rear end fastened to the bottom of the tube and its forward end resting on a standard, *p*, forming the extremity of arm *b'* of lever *b*, the other arm of which, *b''*, plays in a slot in the carrying-block *q*. (See Figs. 2 and 3.) Standard *p* is secured to arm *b'* of lever *b* in such wise as to have a certain freedom of motion, in order that it may adjust itself to the movement of the lever-arm and that of the free end of plate *a*, while at the same time offering a firm support for the latter. It is shown in the drawings as loosely pivoted in tube *p''*, which flares at both openings.

Lever *b*, the arms *b'* and *b''* of which are shown in the drawings as of equal length, is pivoted at *c*, where it is provided with a thumb-screw and washers of leather or rubber, by which it may be adjusted to work with much or little freedom. The normal position of lever *b*, located, as shown, exterior to the main and branch tubes, is with its arm *b''* depressed, whereby arm *b'* and the forward end of plate *a* in the main tube are raised, so as to intercept any carrier passing through the main tube; but its resistance is so slight that the carrier coming in contact with the block depresses and rides over it, whereupon the block returns to its former position. To facilitate this action of the lever, we have shown a spring, *s*, placed between arm *b''* and the support of the lever; but it is obvious that the spring may be dispensed with and the same result obtained by lengthening the arm or by weighting it with a weight adjustable along the beam.

The locking mechanism by which block *a* is held in its elevated position when the gate of the way-station is opened is as follows: Arm *b''* of lever *b* lies in a slot, *b'''*, in carrying-block *q*, in which an additional slot, *h*, is provided immediately above and at right angles to lever-arm *b''*. Pin *h'*, playing in this slot, is linked by bar *h''* and pins *h'''* to one arm of cam *g*, which is pivoted at *r* to carrying-block *q*. The other end of cam *g* engages with the rounded extremity of arc *e*, rigidly secured to the under side of gate *d* and working in a slot in the bottom of tube B. Arc *e*, engaging with cam *g*, revolves it, and by means of connecting-link *h''* causes pin *h'* to project through slot *h* over arm *b''* of lever *b*, thus preventing its rise and locking it in its normal position—that is to say, with block *a* set.

The unlocking mechanism consists of a lifter-arm, *f*, (Figs. 2 and 3,) pivoted at *f'* to arc *e*, and having a slot, *f''*, in engagement with pin *f'''* of cam *g*. When gate *d* is opened, lifter-arm *f* takes the position shown in dotted lines in Fig. 3, being allowed to swing freely around pivot *f'*; but on the return of the gate to the closed position the length of slot *f''* in the lifter is such that it brings cam *g* back to its first position, withdraws pin *h'*, and thus leaves

block *a* free to descend and rise again with the passage of successive carriers.

To secure the closing of the gate immediately on its release, it is rigidly secured to a shaft, *k*, working on bearings. (Not shown in the drawings.) An arm, *j*, projects from shaft *k*, and is fastened to one end of a spring, *l*, adjustable by means of a slotted plate, *m*, and thumb-screw *n*, attached to its other end. Other means of securing the quick return of gate *a* to the closed position are sufficiently obvious.

We have described our system as especially designed for small pipes; but we do not limit it to such use.

In the drawings our invention has been shown as arranged for tubes having a rectangular cross-section; but it is obvious that it is equally adaptable to tubes having a cylindrical or oval cross-section, by making block-plate *a* sufficiently narrow to lie snugly to the bottom of the tubes, to allow of the passage of the carrier over it; neither do we limit ourselves to the use of our combined automatic gate and block in pneumatic dispatch systems alone, as it can be applied in substance to any system of transportation in which it is desired to automatically stop the passage of a carrier on a main way during the introduction of another at a way-station.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A combined gate and block consisting of a gate for the admission of a carrier, a block, and suitable connecting mechanism, whereby when the gate is opened the block is automatically locked.

2. A combined gate and block consisting of a gate for the admission of a carrier, a block, and suitable connecting mechanism, whereby when the gate is closed the block is automatically unlocked.

3. A combined gate and block consisting of a gate for the admission of a carrier, a block, and suitable connecting mechanism, whereby when the gate is opened the block is automatically locked, and when closed automatically unlocked.

4. The combination of lever *b* and plate *a*, connected to one arm of the lever, whereby when the other arm is depressed the block is set, and when raised is lowered, substantially as set forth.

5. The combination of lever *b*, plate *a*, secured at one extremity to the way, and standard *p*, substantially as and for the purpose set forth.

6. The combination of lever *b*, plate *a*, standard *p*, thumb-screw *c*, and spring *s*, substantially as and for the purpose set forth.

7. The combination, with a lever one arm of which operates a block mechanism, of a locking device, a gate, and suitable connecting mechanism, whereby when the gate is opened the block is locked.

8. The combination, with one arm of a lever, of a locking device, a gate, and suitable connecting mechanism, whereby when the gate is opened the lever-arm is automatically locked in a given position.

9. The combination, with a lever one arm of which operates a block mechanism, of carrying-block *q*, provided with slots *b'''* and *h*, pin *h'*, connecting-link *h''*, pins *h'''*, cam *g*, arc *e*, and gate *a*, substantially as described.

10. The combination of lever *b*, pivoted at *c*, carrying-block *q*, provided with slots *b'''* and *h*, pin *h'*, connecting-link *h''*, pins *h'''*, cam *g*, arc *e*, and gate *a*, substantially as described.

11. The combination, with a lever one arm of which operates a block mechanism, of an unlocking device, a gate, and suitable connecting mechanism, whereby when the gate is closed the block is unlocked.

12. The combination, with a lever one arm of which operates a block mechanism, of a locking device, an unlocking device, a gate, and suitable connecting mechanism, whereby when the gate is opened the block is locked, and when closed is unlocked.

13. The combination, with one arm of a lever, of a gate, an unlocking device, and suitable connecting mechanism, whereby when the arm has been locked in a given position the closing of the gate will unlock it.

14. The combination, with one arm of a lever, of a gate, a locking device, an unlocking device, and suitable connecting mechanism, whereby when the gate is opened said arm is automatically locked in a given position, and unlocked when the gate is closed.

15. The combination, with a lever one arm of which operates a block mechanism, of carrying-block *q*, provided with slots *b'''* and *h*, pin *h'*, connecting-link *h''*, pins *h'''*, cam *g*, having stud *f'''* and pivoted at *r*, arc *e*, slotted lifter-arm *f*, and gate *a*, substantially as described.

16. The combination, with lever *b*, pivoted at *c*, with an adjustable thumb-screw, standard *p*, and block-plate *a*, of carrying-block *q*, provided with slots *b'''* and *h*, pin *h'*, connecting-link *h''*, pins *h'''*, cam *g*, having stud *f'''* and pivoted at *r*, arc *e*, slotted lifter-arm *f*, and gate *a*, substantially as and for the purpose hereinbefore set forth.

17. The combination, with a gate for the admission of a carrier, said gate operating a block, of an automatic gate-closing device, whereby the only necessary act to set the entire system in operation is that of opening the gate.

18. The combination, with gate *a*, of shaft *k* and its bearings, arm *j*, spring *l*, plate *m*, and screw *n*, substantially as and for the purpose hereinbefore set forth.

19. The combination of a gate, a locking device operated by the gate, a block, and suitable connecting mechanism, whereby when the gate is opened the block is automatically locked.

20. The combination of a gate, an unlocking device operated by the gate, a block, and suitable connecting mechanism, whereby when the gate is closed the block is automatically unlocked.

21. The combination of a gate, a locking device, an unlocking device, both operated by the gate, and suitable connecting mechanism, whereby when the gate is opened the block is automatically locked, and when closed unlocked.

In testimony whereof we affix our signatures in presence of two witnesses.

ANDREW BRYSON, JR.
HENRY S. MUDGE.

Witnesses:
JAS. T. BENEDICT,
G. M. B. MUDGE.