

No. 619,942.

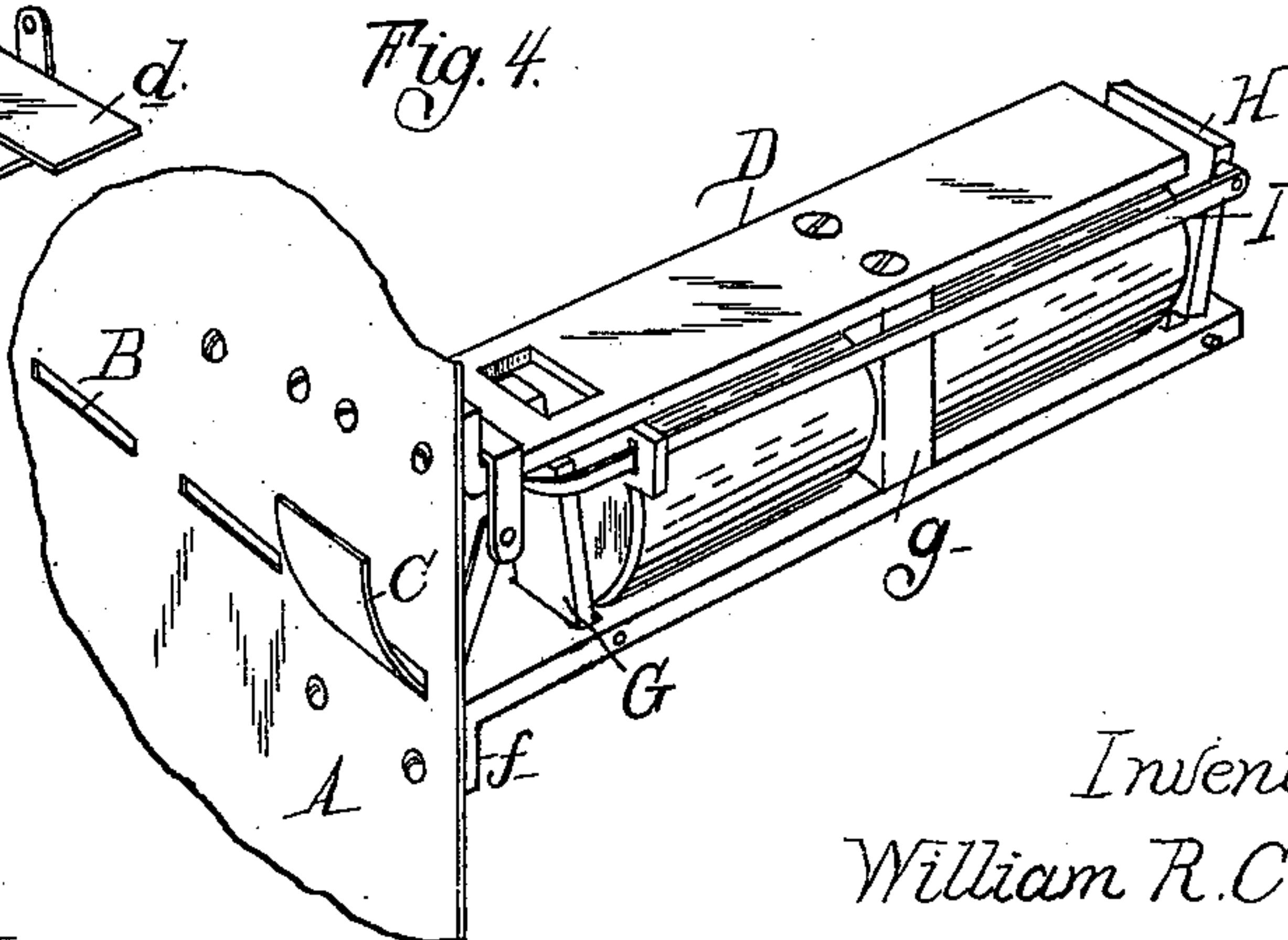
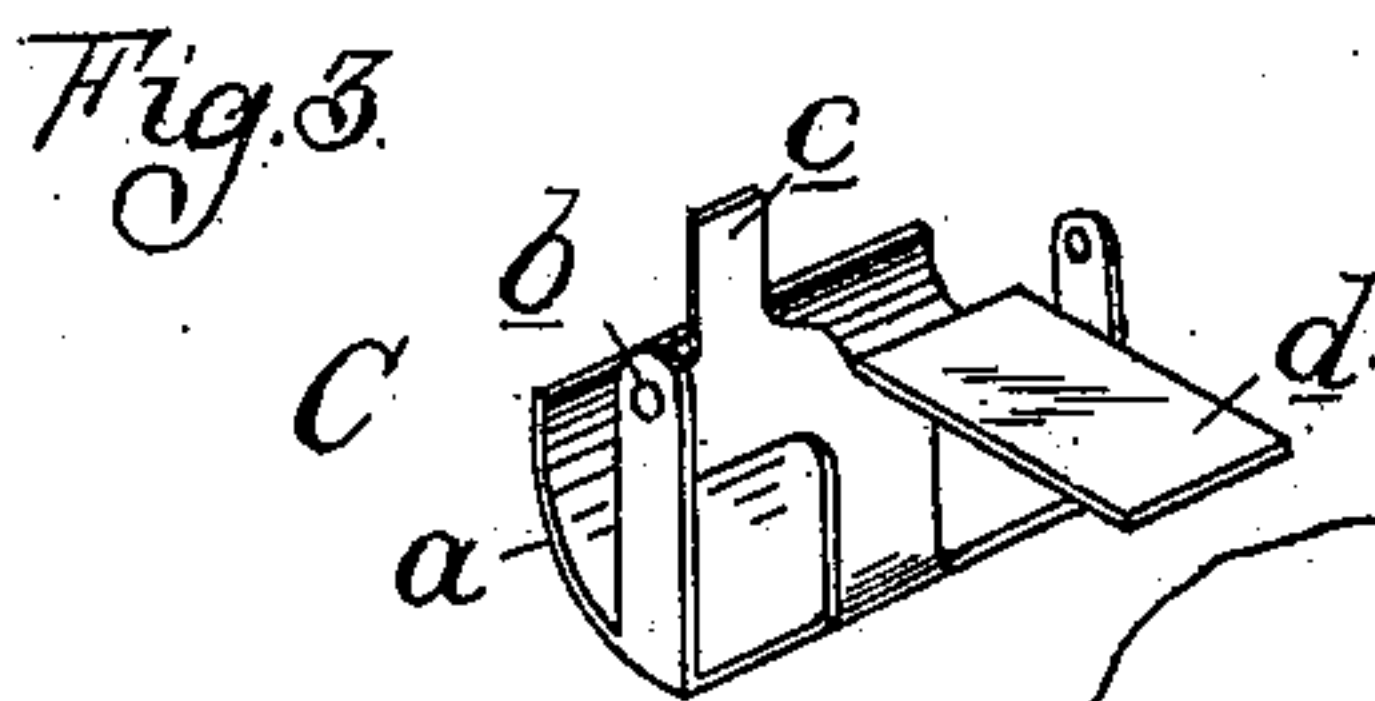
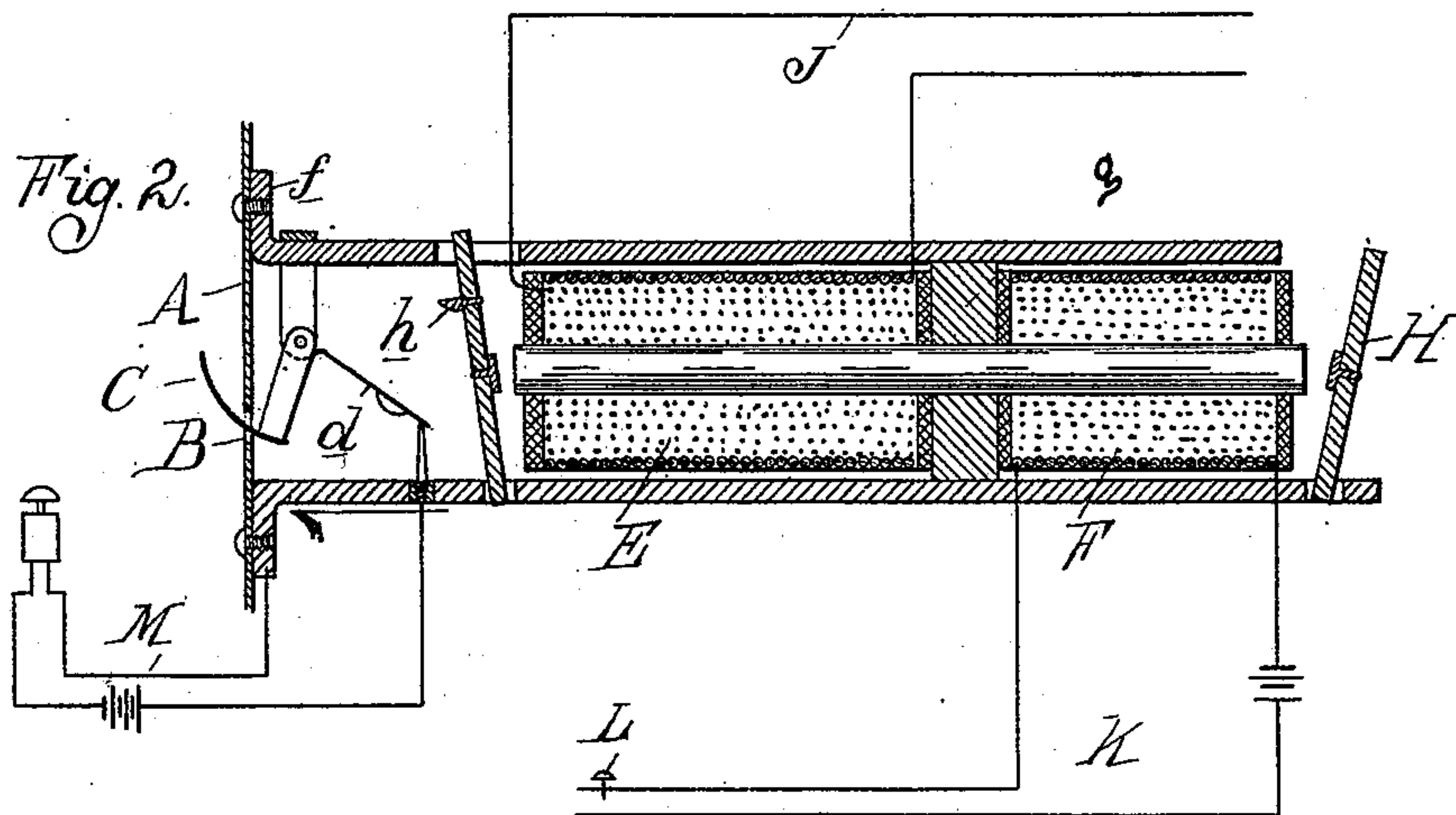
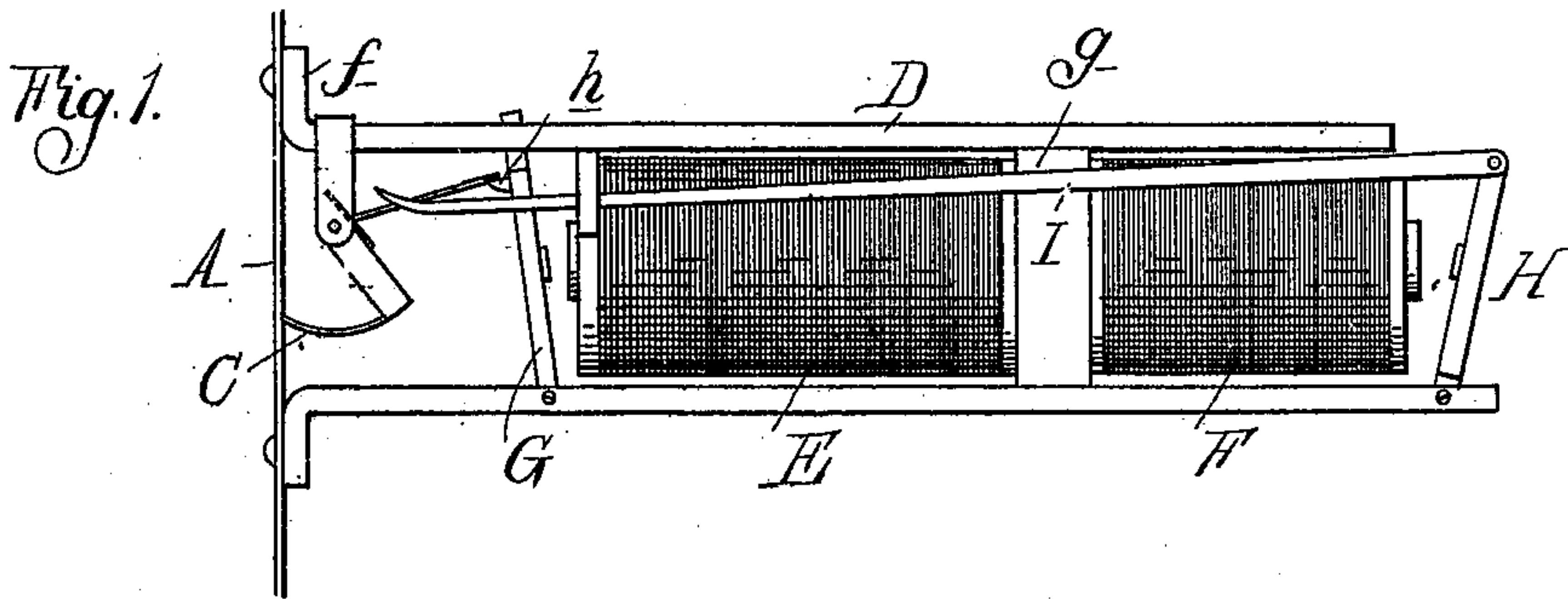
Patented Feb. 21, 1899.

W. R. COLE.

ANNUNCIATOR FOR TELEPHONE EXCHANGES.

(Application filed Aug. 25, 1897.)

(No Model.)



Witnesses:

Otto H. Bantel
R. M. Halbert

Inventor:
William R. Cole,

By *Wm. L. Spague & Co.*
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM R. COLE, OF DETROIT, MICHIGAN.

ANNUNCIATOR FOR TELEPHONE-EXCHANGES.

SPECIFICATION forming part of Letters Patent No. 619,942, dated February 21, 1899.

Application filed August 25, 1897. Serial No. 649,426. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. COLE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Annunciators for Telephone-Exchanges, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates more particularly to that class of annunciators especially designed to be used in connection with telephone-exchanges; and the invention is embodied in the peculiar construction, arrangement, and combination of parts whereby an easily-discernible signal is displayed and economy of space is secured.

In the drawings, Figure 1 is a side elevation of the annunciator. Fig. 2 is a longitudinal section thereof. Fig. 3 is a perspective view of the segmental wing forming the display-signal. Fig. 4 is a perspective view of a display-board, to which a number of the annunciators are secured.

A is the front plate or display-board, in which are formed a series of slots B. In rear of this board and opposite each of the slots is arranged a segmental wing C, which is pivotally secured to the board and is adapted to be projected through the slot in an upward arc. These wings C are normally held in their retracted position by a latch controlled by an electromagnet which when energized will release the wing and allow it to be projected through the slot.

In the construction shown in the drawings the wings C are formed of sheet metal having the segmental portion *a*, the pivoted ears *b*, the upwardly-extending arm *c*, and the rearwardly-extending arm *d*, the parts being so counterbalanced as to turn the wing into position where it is projected through a slot.

D is the frame for supporting the electromagnet and to which also the wings C are pivoted, said frame comprising two parallel bars having the lugs or feet *f* for securing them to board A, and the cross-bar *g*, to which the core of the magnet is secured. This core extends on each side of the cross-bar *g* and is sur-

rounded on the opposite sides by the separate coils E and F.

G and H are armatures hinged to the lower bar of the frame at opposite ends of the core, the former being provided with a pin or projection *h*, on which the arm *d* of the wing C normally rests to hold said wing in its restricted position. The armature H is connected with the rod I, which is slidingly secured in bearings on the frame D and extends to the front of said frame into proximity to the arm *c* of the wing.

Each of the coils E and F is preferably provided with an exterior winding of soft-iron wire, which forms a magnetic shield, preventing induction from adjoining coils.

J is the call-circuit, including the coil E, and K is a local restoring-circuit, including the coil F, and which is provided with a key or circuit-closer L under the control of the operator.

M is an electric circuit including the night-bell, which circuit is normally open and is adapted to be closed by a circuit-closer comprising the arm *d* of the wing C and an insulated contact secured to the frame D, against which said arm is adapted to strike when the wing is projected.

In operation the closing of the call-circuit J energizes the magnet formed by the coil E, the core on which it is wound, the cross-bar *g*, and that portion of the lower bar of the frame D between the cross-bar and the hinged armature, said bar being preferably formed of soft iron. This will move the armature G, disengaging the pin *h* from the arm *d* of the wing C and allowing the latter to be projected out of the slot B. To retract the wing to its normal position, the operator presses the key L, which closes the local circuit K and energizes the magnet F. This moves the armature H, which carries the rod I longitudinally, its forward end striking against the arm *c* and withdrawing the wing to its initial position, when the arm *d* will reengage with the pin *h*.

Such an annunciator is very compact, as all of its parts are contained within the parallel bars of the frame D. Thus it is especially adapted for telephone-exchanges where it is

desirable to group a large number of annunciators in as small a space as possible. Although thus closely grouped together the signal-wings C are nevertheless easily discernible, as their segmental shape will cause them to reflect the light, so as to catch the eye of the operator in whatever position he may be.

The magnetic shield formed by the winding of soft-iron wire prevents all disturbance of one annunciator by the operation of an adjoining one, and although the two coils E and F are placed on the same core and in line with each other yet they form independent magnets which do not interfere with each other, as each has a completed magnetic circuit, a portion of which is formed by the bar of the frame D.

What I claim as my invention is—

1. In an annunciator, the combination of a movable signal-wing, two axially-alined electromagnets in rear of said wing, an armature between the wing and the first electromagnet for holding the wing in its normal retracted position, an armature for the second magnet in rear thereof, and means operated by said last-mentioned armature for returning the wing to its normal position.

2. In an annunciator, the combination of a movable signal-wing, means for moving said wing into view, two axially-alined electromagnets in rear of said wing, a latch located between the wing and the first magnet for holding the wing in its normally-retracted position and controlled by said first magnet, an armature for the other magnet and in rear thereof, and means actuated by said armature for returning the signal-wing to its normal position.

3. In an annunciator, the combination of a segmental signal-wing, means for moving the same into view, two axially-alined electromagnets in rear of said wing, an arm carried by said wing, an armature located between the wing and the first magnet and adapted to engage said arm to hold the wing in its normally-retracted position, an armature for the

second magnet and in rear thereof and a rod operated by said last-mentioned armature for returning the wing to its normal position.

4. In an annunciator, the combination of a slotted plate, a wing hinged in rear of said plate, means for projecting said wing through the slot in said plate, a metallic frame secured to said plate and extending perpendicular thereto, a magnet-core, a supporting-block for said core between its ends and in electric connection with said frame, coils on said core one on each side of said supporting-block, an armature for one end of said core and between the latter and the hinged wing and adapted to hold the latter in its normal retracted position, an armature for the rear end of said core, and a rod connected to said armature and adapted to be moved thereby axially of said core to return said wing to its normal retracted position.

5. The combination with a slotted frame-plate, of the frame D secured to the rear side thereof and extending perpendicular thereto, the segmental wings C pivotally secured to said frame, adapted to be projected through said slot in an upward arc, and provided with the rearwardly-extending arm *d* and the upwardly-extending arm *c*, the oppositely-extending alined electromagnets E and F, one in rear of the other, secured to said frame in rear of said wing, the hinged armatures G and H therefor, the former normally supporting the arm *d* and holding the wing C in its retracted position but adapted to release said arm upon the operation of the magnet E, and the rod I connected to this armature H adapted on the operation of the magnet F to impinge against the arm *c* of the wing C and restore said wing to its normal retracted position.

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

WILLIAM R. COLE.

Witnesses:

M. B. O'DOUGHERTY,
P. M. HULBERT.