C. E. BEACH.

MULTIPLE SIGNAL TRANSMITTER.

APPLICATION FILED JUNE 3, 1911.

1,067,711. Patented July 15, 1913.

Fig. 1.

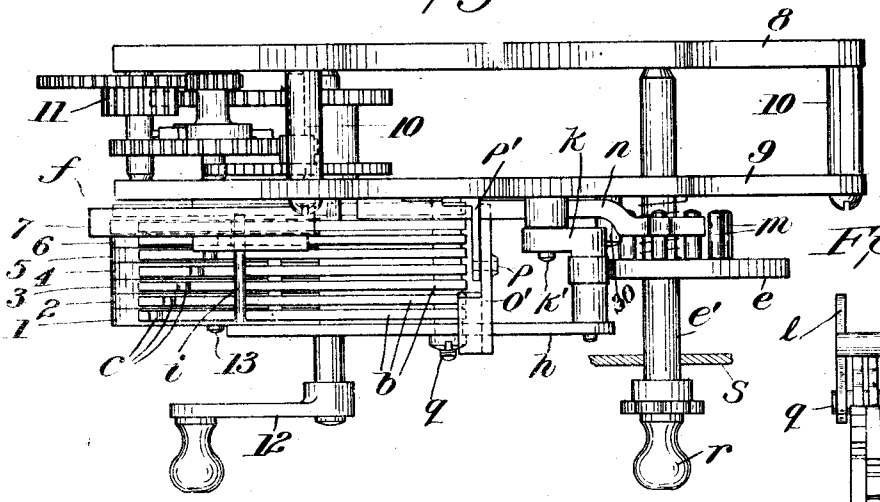


Fig. 3.

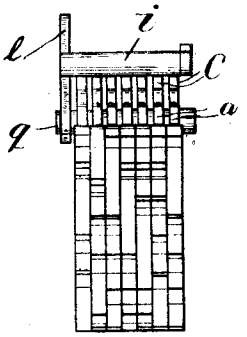


Fig. 2.

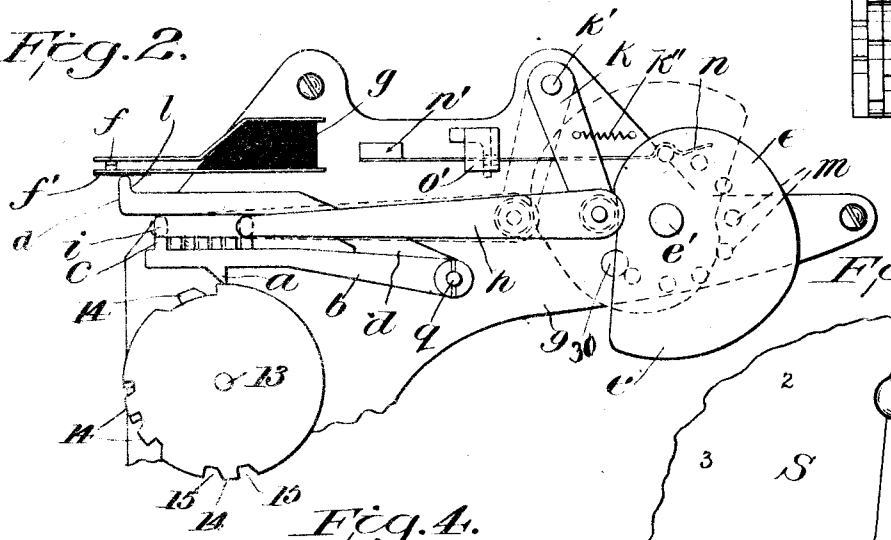


Fig. 5.

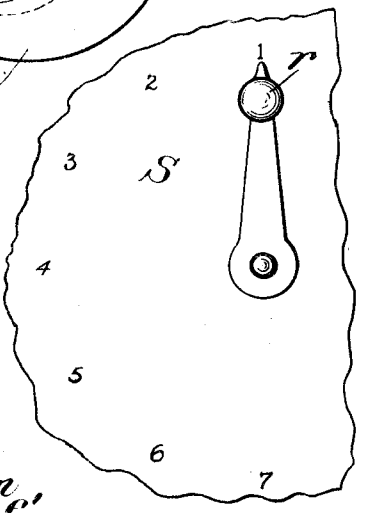


Fig. 4.

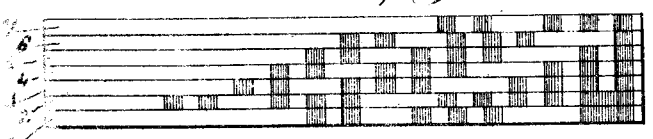
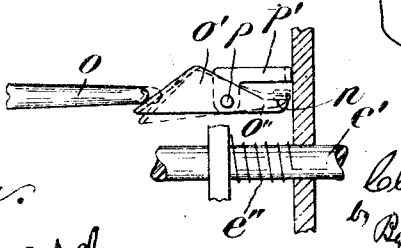


Fig. 6.



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MULTIPLE-SIGNAL TRANSMITTER.

1,067,711. Specification of Letters Patent. Patented July 15, 1913.

Application filed June 3, 1911. Serial No. 631,096.

To all whom it may concern:

Be it known that I, CLARENCE E. BEACH, a citizen of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Multiple-Signal Transmitters, of which the following is a specification.

My invention relates to a multiple signal transmitter and has for its object to provide such a device, with improved selective mechanism for determining the particular signal to be sent; to provide improved means for operating said selective mechanism; to provide improved means for restoring the mechanism to its original position after a signal has been sent; to provide a form of mechanism enabling the particular signals to be sent for any or all given settings to be quickly and easily changed without making any alteration in any of the parts; to provide such construction as will enable the character wheels of different boxes to be readily exchanged; to provide such construction as will enable the character wheels to be economically produced by permitting the portions of character wheels for producing each of the special signals to be produced for a number of boxes simultaneously while permitting the station designating signal for each box to be produced by a single operation; and also to provide such improved mechanism as to enable it to be readily applied to any signal box of ordinary construction such as is employed for fire alarm and district telegraph signaling.

Referring to the accompanying drawings: Figure 1 is a plan view of the signal-box mechanism; Fig. 2 is a side elevation; Fig. 3 is an end elevation of the character-wheels and associated circuit-operating devices; Fig. 4 shows diagrammatically the periphery of the character-wheels developed on a plane surface; Fig. 5 is a front view, partly broken away, of the dial and signal-box; and Fig. 6 is a detail view of the dial-restoring mechanism.

As shown in Fig. 1, plates 8, 9 are secured together by posts 10, and mounted between such plates is a spring-driven clock train 11 of usual construction, arranged to be operated by a handle 12, which, when moved in one direction, winds up the spring, and, upon release, permits the train to operate and rotate the shaft 13 upon which are mounted a series of character-wheels 1, 2, 3, 4, 5, 6, 7, each provided with teeth 14, 14 and notches 15, 15, the teeth and notches on each wheel being arranged so that each wheel will cause a distinctive signal to be transmitted. Pivoted to the frame 9, on a stud shaft q is a series of tracer arms b, each having a depending lug a, and an upstanding lug c. These lugs are "selectively arranged," *i. e.*, they are so arranged that the bar i, which may be termed the selecting device, may be moved to engage with a lug on any one of the bars and be operated by it without interference with any other lug and its bar. Also pivoted to the shaft q is an arm d having a lug l for operating a circuit controller consisting of a spring contact f' which normally tends to separate from a contact f, the two contacts being carried by an insulating block g, terminals of the signaling circuit being connected to the contacts f, f'.

Arranged between the arms b and d is the selecting device or bar i extending transversely across the series of arms b and secured to the end of a link h pivoted to the end of an arm k which is in turn pivoted to the frame at k' and provided with a retracting spring k''. A cam e mounted on a shaft e', having a returning spring e'', engages the arm k, and when rotated causes the selector bar i to rest on one or the other of the lugs c, the position of the rod being accurately determined by the engagement of the corresponding pin m (a series of such pins being located on the back of the cam-plate e) with a spring bar n having a curved bend therein, the spring n being secured at one end to the block n', which is fastened to the frame. The shaft e' carries at its outer end a pointer-arm r, which when moved (see Fig. 5) to one of the points indicated on the dial S causes the shaft to rotate the

cam *e*, which is then held by engagement of the corresponding pin *m* with the bend in the spring *n*.

As shown in Fig. 6, a bar *o*, which may be secured to the box-door, (not shown) engages a lever *o'* having an inclined side and an extension *o''* projecting beneath the spring *n*, the lever *o'* being pivoted at *p* to a bracket *p'* carried by the frame-plate 9. When the bar *o* is moved inward by the closing of the door, the inner end of the lever *o'* is raised and thereby disengages spring *n* from pin *m*, whereupon the restoring spring *e''* rotates the shaft *e'* until a pin 30, secured to the frame 9, engages the last of the series of pins *m* on the cam *e*, and stops the shaft, cam and pointer in their initial position.

In operation, assuming the device to be intended as a police-signaling box, the officer moves the arm *r* to some particular number, the corresponding rotation of the shaft *e'* causing the selector bar *i*, through cam *e*, arm *k* and link *h*, to be located above one of the lugs *c* on an arm *b* corresponding to a particular character-wheel, the rod *i* being held in position by engagement of one of the pins *m* with spring *n*. By movement and release of the winding arm 12, the clock train is set in motion and the character wheels rotated. As they rotate, the lug *a* on the arm *b* is dropped successively into the notches of the character-wheel and raised therefrom, thereby, through the rod *i* and arm *d* causing the contacts *f*, *f'* to be opened and closed, and a corresponding signal transmitted. The closing of the door of the box causes the bar *o* to operate the lever *o'* to raise the spring arm *n* out of engagement with the pin *m*, thus freeing the cam *e* and its shaft *e'* which are then, by the spring *e''*, restored to the initial position.

As shown in Fig. 4, each of the character-wheels is provided with a series of notches, arranged in the same relation to each other to produce the same characteristic signal, in this case the box number 32, and each wheel may have a notch or notches arranged to give an additional distinctive signal to convey some further item of information. By arranging the notches of the characteristic signal in the same relation on each wheel, the manufacture of such wheels is facilitated as all the characteristic signal notches for the wheels of any box may be cut at the same operation.

By cutting simultaneously a group of wheels each having the necessary notches to produce a distinctive signal, a stock of such wheels may be kept on hand, and by then taking the requisite number of such wheels for a box, each having its distinctive signal notches, and assembling such wheels in the proper relation, the characteristic signal notches may be simultaneously cut.

What I claim is:

1. In a signal transmitter, the combination with a series of character wheels, of a single pair of stationary contacts, a selective member arranged to be operatively interposed between said contacts and any one of said character wheels and thereby operatively associate any character wheel with the contacts, and means for operating said selective member.

2. In a multiple signal transmitter, a circuit controller consisting of a single pair of contacts, a series of character wheels, a selective mechanism arranged to be adjusted to operatively associate any one of said character wheels with the circuit controller, and means for operating said selective mechanism comprising a spring mechanism tending to resist the adjusting movement of said selective mechanism, a detent for holding said selective mechanism after adjustment thereof, and means for automatically releasing said detent to allow the spring mechanism to restore the selective mechanism to its normal position.

3. In a multiple signal transmitter, a circuit controller consisting of a single pair of contacts, a series of character wheels, a selective mechanism arranged to operatively associate any one of said character wheels with the circuit controller and normally so associated with one of said character wheels, and means for operating said selective mechanism comprising a spring mechanism tending to resist the adjusting movement of said selective mechanism, a detent for holding said selective mechanism after adjustment thereof, and means for automatically releasing said detent to allow the spring mechanism to restore the selective mechanism to its normal position.

4. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a selecting device adapted to engage the circuit-controller, means for operating such device, and selectively-arranged members for coöperating with said selecting device and said character-wheels.

5. In a multiple signal transmitter, a circuit-controller, a series of character-wheels mounted on the same shaft, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a selecting device adapted to engage the circuit-controller, means for operating such device, and selectively arranged members for coöperating with said selecting device and said character-wheels.

6. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a selecting device adapted to engage the circuit-controller, means for operating such device, and arms coöperating with said character-wheels and having selectively-arranged lugs on such arms for coöperating with said selecting device.

7. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a selecting device adapted to engage the circuit-controller, means for moving such device to a selected position, and selectively-arranged members for coöperating with said selecting device and said character-wheels.

8. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a selecting device adapted to engage the circuit-controller, means for moving such device to a selected position, means for holding it in such position, and selectively-arranged members for coöperating with said selecting device and said character-wheels.

9. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a selecting device adapted to engage the circuit-controller, means for moving such device to a selected position, yielding means for holding it in such position, and selectively-arranged members for coöperating with said selecting device and said character-wheels.

10. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a selecting device adapted to engage the circuit-controller, means for moving such device to a selected position, means for holding it in such position, means for restoring it to its initial position, and selectively-arranged members for coöperating with said selecting device and said character-wheels.

11. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a selecting device adapted to engage the circuit-controller, means for moving such device to a selected position, including a pointer and dial, and selectively-arranged members for coöperating with said selecting device and said character-wheels.

12. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a suitably marked dial, a pointer, a shaft for said pointer, a cam on said shaft, pins on said cam corresponding to the marks on the dial, a spring holder engaging such pins, a selecting device engaging such cam, and selectively-arranged members for coöperating with said selecting device and said character-wheels.

13. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a suitably marked dial, a pointer, a shaft for said pointer, a cam on said shaft, a selecting device engaging such cam, and selectively-arranged members for coöperating with said selecting device and said character-wheels.

14. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, and a selective mechanism for causing any character-wheel to operate such circuit-controller, comprising a suitably marked dial, a pointer, a shaft for said pointer, a retracting spring on said shaft, a cam on said shaft, pins on said cam corresponding to the marks on the dial, a spring holder engaging such pins, means for disengaging said spring holder, a selecting device engaging such cam, and selectively-arranged members for cooperating with said selecting device and said character-wheels.

15. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, a series of arms having members engaging said character-wheels, a lug on each arm, the lugs being selectively arranged with reference to each other, a selecting device, means for moving it to engage any one of said lugs, and means for operatively connecting the selecting device and circuit-controller.

16. In a multiple signal transmitter, a circuit-controller, a series of character-wheels, a series of arms having members engaging said character-wheels, a lug on each arm, the lugs being selectively arranged with reference to each other, a selecting device comprising a bar extending transversely across the arms, means for moving it to engage any one of said lugs, and means for operatively connecting the selecting device and circuit-controller.

17. In a multiple signal transmitter, a circuit-controller, a series of character-wheels,

a series of arms having members engaging said character-wheels, a lug on each arm, the lugs being selectively arranged with reference to each other, a selecting device comprising a bar extending transversely across the arms, means for moving it to engage any one of said lugs, and a pivoted lever having its free end between the bar and circuit-controller.

18. In a signaling system, a series of signaling boxes each having a group of character wheels, each wheel of each box being notched for a distinctive signal, this distinctive notching being the same in the corresponding wheel of each box, each wheel of each box being also notched for the characteristic signal of such box.

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

CLARENCE E. BEACH.

Witnesses:
H. N. PURPLE,
M. L. THOMAS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."