R. F. MURPHY.

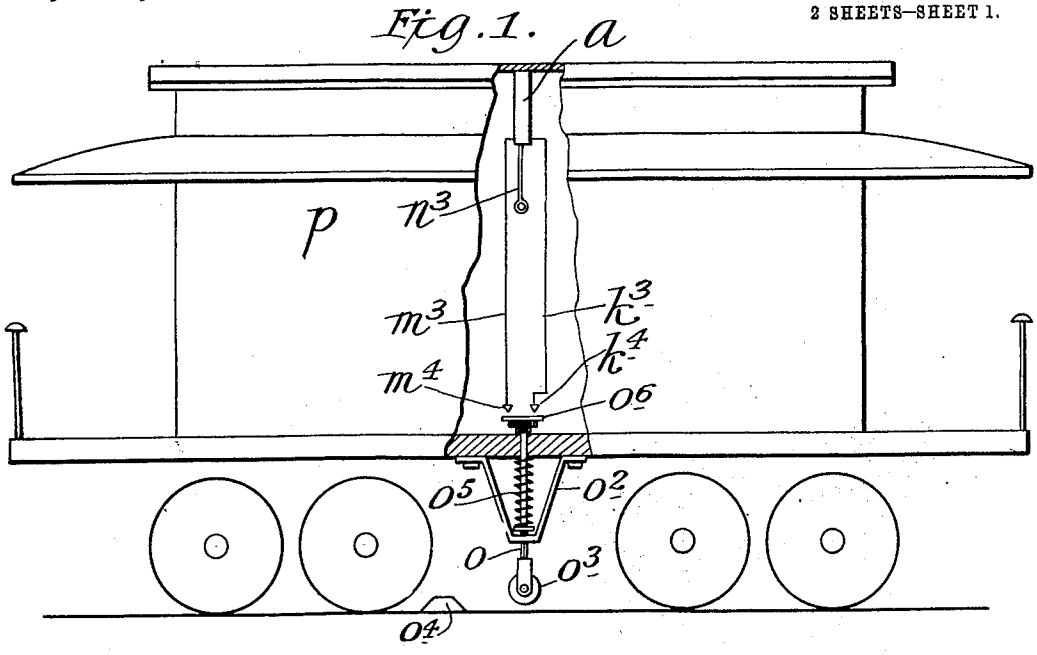
STREET SIGNALING APPARATUS FOR TRAMWAY AND OTHER CARS.

APPLICATION FILED SEPT. 18, 1912.

1,067,483. Patented July 15, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



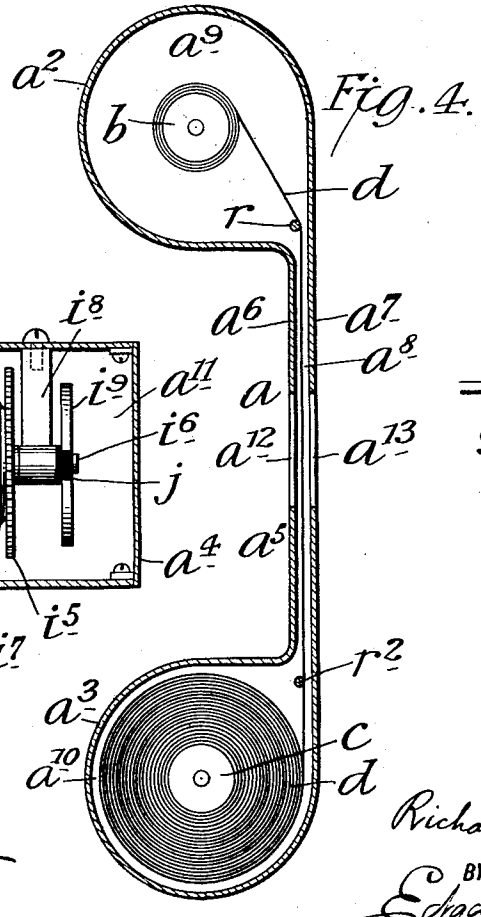


Fig. 4.

Fig. 5.

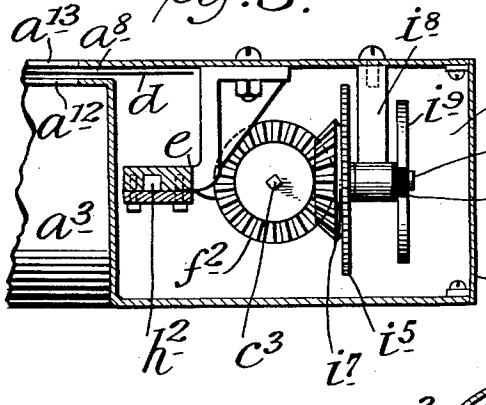
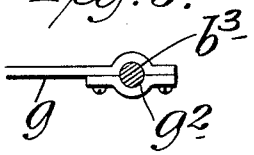


Fig. 6.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

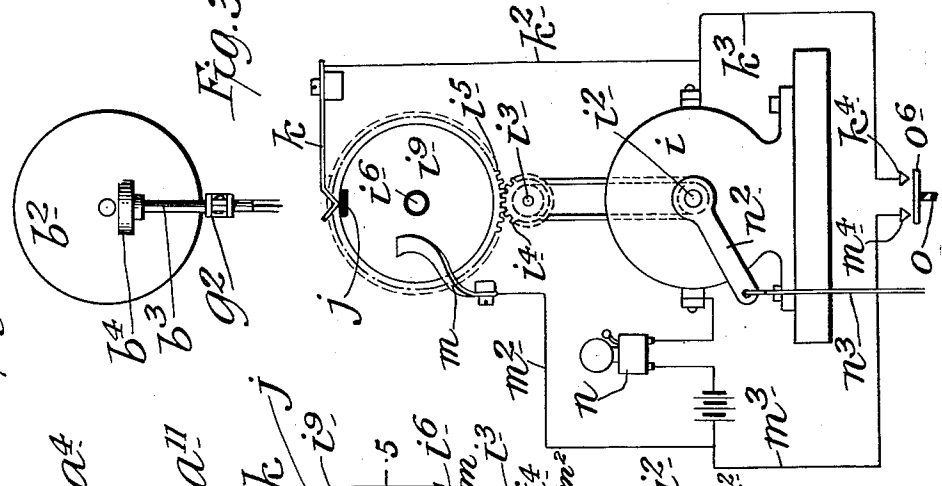


Fig. 3a.

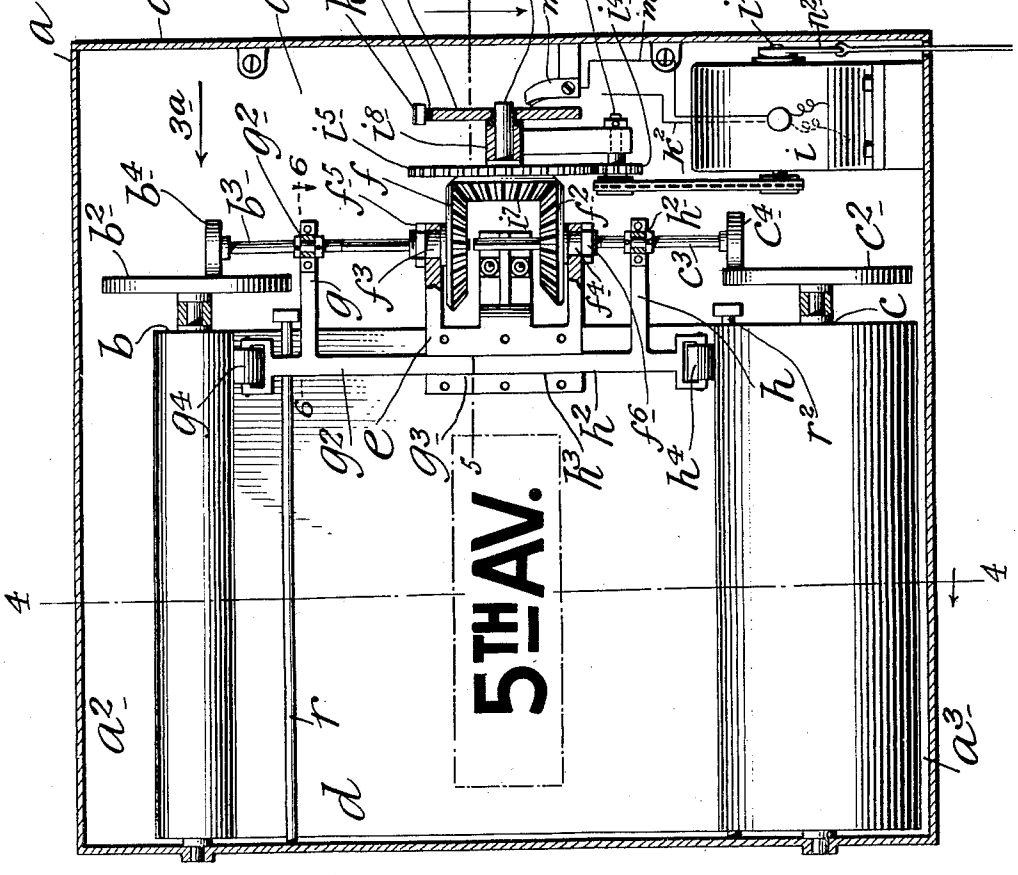


Fig. 2.

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UNITED STATES PATENT OFFICE.

RICHARD F. MURPHY, OF NEW YORK, N. Y.

STREET-SIGNALING APPARATUS FOR TRAMWAY AND OTHER CARS.

1,067,483. Specification of Letters Patent. Patented July 15, 1913.

Application filed September 18, 1912. Serial No. 721,013.

To all whom it may concern:

Be it known that I, RICHARD F. MURPHY, a citizen of the United States, and residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Street-Signaling Apparatus for Tramway and other Cars, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to apparatus for signaling to the occupants of tramway and other cars the various streets, avenues and the like crossed by said cars, and the object thereof is to provide an improved apparatus of this class which is designed particularly to be placed in the central top part of a car and to signal the occupants thereof the names of the streets, avenues and the like as they are approached by the car; a further object being to provide an apparatus of the class specified which is designed to signal to the occupants of the cars of a subway, railway train or an elevated railway train the various stations along the line or lines as they are approached by the trains; and with these and other objects in view the invention consists in an apparatus of the class specified, constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a side view of an ordinary tramway car provided with my improvement, part of the construction being broken away; Fig. 2 a central vertical section through the casing containing the main operative parts of my improved signal apparatus; Fig. 3 a partial diagrammatic view showing an electric motor which I employ and showing the motor controlling circuits; Fig. 3^a a detailed detached view looking in the direction of the arrow 3^a of Fig. 2; Fig. 4 a section on the line 4—4 of Fig. 2; Fig. 5 a partial section on the line 5—5 of Fig. 2; and, Fig. 6 a section on the line 6—6 of Fig. 2.

In the practice of my invention, as shown in the drawing, I provide a casing a consisting of parallel top and bottom parts a^2 and a^3, a vertical side part a^4, and a central part a^5 consisting of vertical parallel plates a^6 and a^7 placed closely adjacent and forming a thin space or chamber a^8 which is in communication with a top and bottom chamber a^9 and a^{10} formed by the top and bottom parts a^2 and a^3 of the casing, and with a side chamber a^{11} formed by the side part a^4 of said casing.

In practice, the casing a is placed transversely of the top of the car and the side plates a^6 and a^7 of the part a^5 of said casing are provided respectively with horizontal openings a^{12} and a^{13} through which the names of the streets or stations are seen as hereinafter described. The top and bottom parts a^2 and a^3 of the casing a are preferably circular in cross section and placed therein are rollers b and c, in connection with which I employ a flexible sheet d of suitable length and on the opposite sides of which are placed, in practice, and at equal distances apart, the names of the streets crossed by a street railway in regular order, or the names of the stations of a subway or elevated railway in regular order. This arrangement of the names of streets or stations being such that they read in the same order on both sides of the sheet. The sheet d is connected with the rollers b and c and is alternately wound from one onto the other, and as this operation is mechanical it is necessary to provide a differential gear or uniform feed and take up mechanism, whereby the decrease of the size of one roller and the increase of the size of the other as the sheet is unwound from one roller and rewound on the other will be provided for. In the pursuance of this object, I provide the shaft of the roller b with a friction gear b^2, and the shaft of the roller c with a friction gear c^2, and mounted centrally between said rollers and connected with the casing a is a bracket e in the top and bottom parts of which are mounted horizontal beveled gears f and f^2 having hubs f^3 and f^4 provided with threaded nuts f^5 and f^6, and I also provide vertically arranged shafts b^3 and c^3, the adjacent end portions of which are angular in cross section and freely movable through the gears f and f^2 and the hubs f^3 and f^4 thereof, and these shafts are provided at their upper and lower ends respectively with small friction gears b^4 and c^4, which bear on and operate on the outer surfaces of the gears b^2 and c^2, and connected with the shafts b^3 and c^3 are inwardly di-

rected arms g and h having bearings g^2 and h^2 in which the shafts b^3 and c^3 are rotatable, and the arms g and h are provided at their inner ends with vertically arranged bars g^2 and h^2 which are movable in a suitable bearing in the bracket e as shown at g^3 and h^3, and the upper and lower ends of the bars g^2 and h^2 are provided with rollers g^4 and h^4 which bear on the rollers b and c, or on the sheet d as said sheet is unwound from one roller and rewound on the other. I also provide, in the form of construction shown, an electric motor i which is supported in the bottom of the side chamber a^{11} of the casing a, and the shaft i^2 of which is geared in connection with a shaft i^3 provided with a pinion i^4 which meshes with a large gear i^5 mounted on a stub shaft i^6 provided with a beveled gear i^7, which meshes with both of the gears f and f^2. The shafts i^3 and i^6 are mounted in suitable supports i^8 supported in the chamber a^{11}, and the outer end of the shaft i^6 is provided with a circuit making and breaking disk i^9 which is insulated from the shaft i^6 and from the supports i^8.

The disk i^9 is provided at one point in its perimeter with an insulating block j, and suitably supported at opposite sides of the disk i^9 are spring contact brushes k and m which are adapted to bear on the perimeter of said disk, and connected with the brushes k and m are circuit wires k^2 and m^2 which comprise a supplemental circuit connected with the main motor circuit consisting of the wires k^3 and m^3, and placed in this circuit is a signal bell device n which is operated at each movement of the sheet d in the operation of the apparatus, as hereinafter described, and which is designed to call the attention of the occupants of a car to the fact that the car is approaching a street crossing or station and also to the signal device on or by which the name of the street or station is shown. The motor i is also provided with a reversing lever n^2 with which is connected a hanger rod or similar device n^3 by means of which the motor may be reversed at the end of a street car line, or at the end of a subway or elevated car line, and by means of which the beginning of the operation of the apparatus of rewinding the sheet d from one of the rollers b—c onto the other is effected. I also provide, in the form of construction shown, means whereby the motor circuit may be opened and closed automatically for the purpose of moving the sheet d step by step, and in the form of construction shown this means consists of a vertically movable shaft o mounted in a hanger bracket o^2 secured to the bottom of the car and passing vertically and loosely therethrough and provided at its lower end with a roller o^3 adapted to operate in connection with trip blocks o^4 or similar devices arranged along, or in connection with one of the rails of the track and by which the said shaft o is moved vertically, said shaft being normally depressed by a spring o^5 mounted thereon in the bracket o^2.

The upper end of the shaft o is provided with an insulated contact plate o^6 and the motor circuit wires k^3 and m^3 are provided with suitable terminal contacts k^4 and m^4 in connection with which the contact plate o^6 operates, and at each upward movement of the shaft o the circuit through the motor will be completed. When the car or train approaches a street or station the roller o^3 will strike and roll up on and over one of the trip blocks o^4 and this operation causes the contact plate o^6 to rise and engage the terminal contacts k^4 and m^4, and the trip blocks o^4 have a flattened top surface or surfaces as shown, and this construction causes the motor circuit to be closed for a time sufficient to allow the insulated block j to be drawn from under the brush k, at which time the motor circuit is broken by the roller o^3 riding off of the trip block o^4, but the motor is kept energized by the supplemental circuit until the shaft i^6 has made a complete revolution when the supplemental circuit will be broken by the insulating block j riding under the brush k, when the motor will come to a stop and this construction insures a uniform movement of the sheet d at every operation of the motor i, as will be readily understood, and this operation will be repeated each time that a car approaches a cross street or each time that a train approaches a station.

In each operation of the motor, as above described, the shaft i^6 is turned and the beveled gears f and f^2 are both turned and the shafts b^3 and c^3 are turned, and in this operation the said shafts move radially of the gears b^2 and c^2, and the radial movement of the friction gears b^4 and c^4 across the gears b^2 and c^2 produces the differential movement of the rollers b and c hereinbefore referred to whereby the decrease of the size of one roller and the increase of the size of the other roller as the sheet d is unwound from one and rewound on the other so as to properly feed and take up the sheet d in order that the streets or stations will appear in regular order at the openings a^{12} will be provided for, and it will also be understood that the radial or longitudinal movement of the shafts b^3 and c^3 is produced by the bars g^2 and h^2 which move inwardly and outwardly according as the sheet d is unwound from one of the rollers b—c and wound on the other, and it will also be understood that the bars g^2 and h^2 need not be formed separately but may be connected, if desired.

It will be understood that my invention is not limited to the exact construction here-

in shown and described for starting and stopping the motor *i* and any suitable automatic apparatus for this purpose may be employed as may be desired either in connection with an ordinary street car, or in connection with a subway or elevated railway train, or the cars thereof, and if preferred hand-operated apparatus of this class may be employed, said apparatus to be under the control of a motorman, conductor, guard or other official.

As hereinbefore stated the main part or casing *a* of my improved signal apparatus is placed transversely of and within the central top portion of a car, one of which is indicated at *p* in Fig. 1, and at each movement of the motor the sheet *d* is moved one step and a new station may be seen on each side of said sheet through the apertures or openings a^{12} in the opposite sides of the part a^5 of the casing *a*, and each time that the motor circuit is closed the signal bell, or gong device *n* is also operated, and this attracts the attention of the occupants of the car to the signal device or apparatus as will be readily understood. The casing *a* in the form of construction shown, is provided at the top and bottom of the central part a^5 thereof with transverse guide rods *r* and r^2 over which or around which the sheet *d* passes so as to center said sheet where it passes into and out of the part a^5 of said casing, but it will be understood that my invention is not limited to the exact form of the casing *a*, herein shown and described, nor to the exact details of the operative parts of the apparatus, and various changes in and modifications of the construction herein shown and described may be made, within the scope of the appended claim, without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

In a signal apparatus of the class described, the combination of two parallel rollers provided at their adjacent ends with friction gears, gear shafts mounted in the same axial line and movable radially of said friction gears and provided with supplemental friction gears adapted to bear on the side surfaces thereof, beveled gears mounted on the adjacent ends of said gear shafts, means for moving said gear shafts longitudinally through said beveled gears when said gears are turned, a beveled power gear mounted between the beveled gears on the gear shafts and meshing with both, and means for turning said beveled power gear at predetermined intervals.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 17th day of September 1912.

RICHARD F. MURPHY.

Witnesses:
C. MULREANY,
S. ANDREWS.