Nov. 18, 1924. 1,515,882

F. A. PURDY

TRAFFIC INDICATOR

Filed Sept. 7, 1920 4 Sheets-Sheet 1

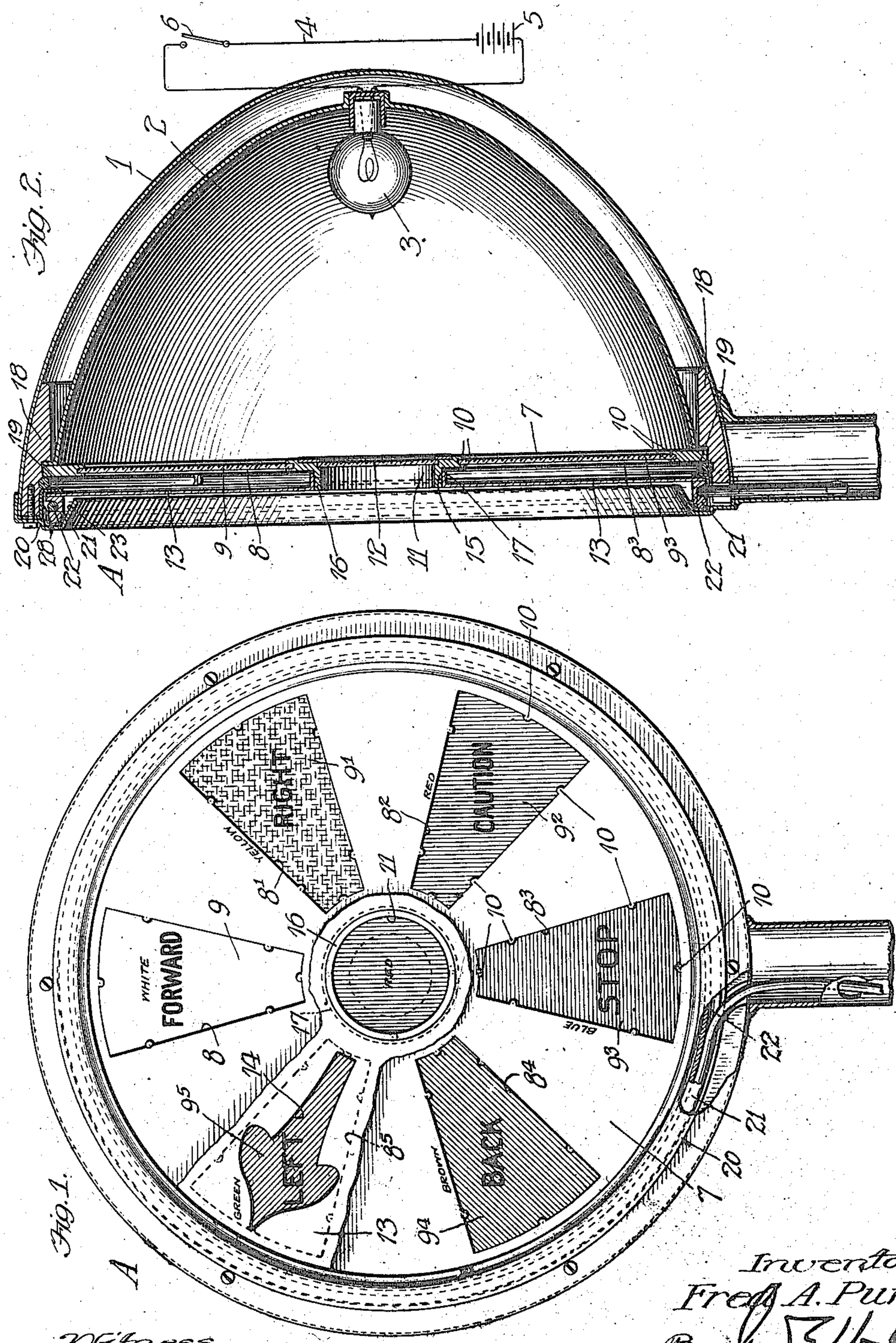

Fig. 1.

Fig. 2.

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Fig. 3.

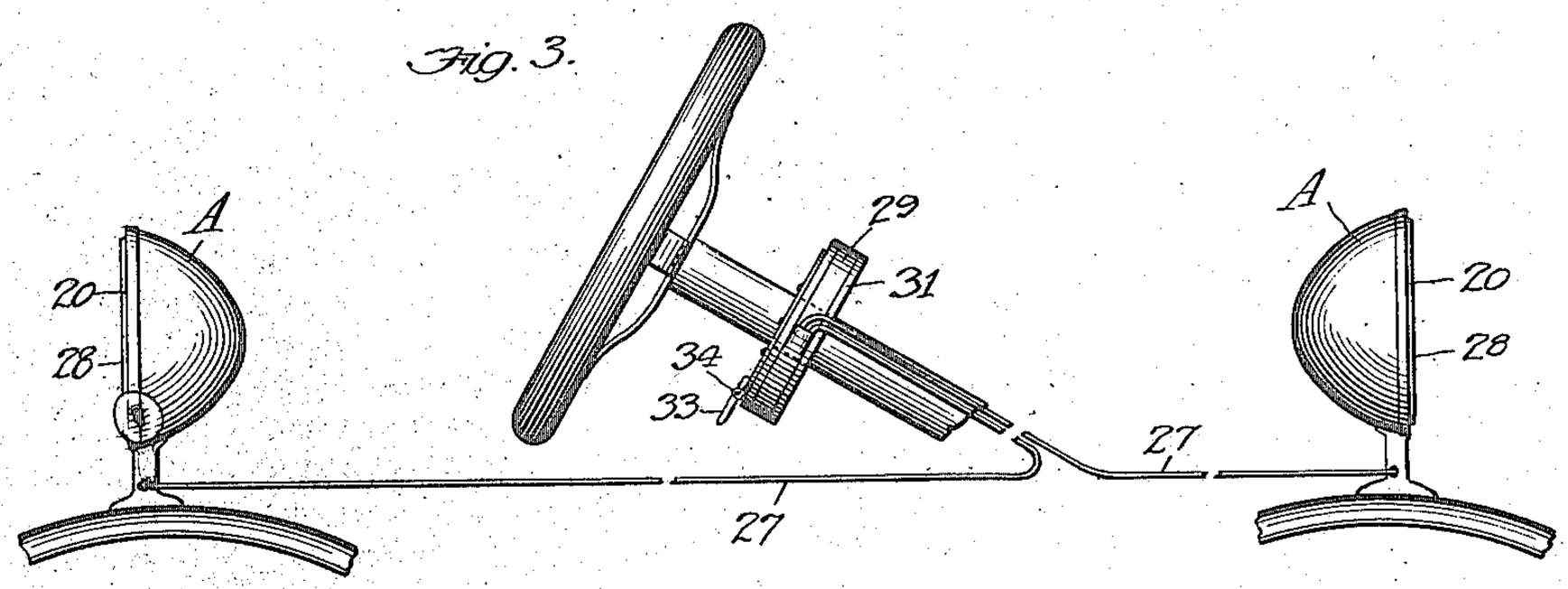


Fig. 5.

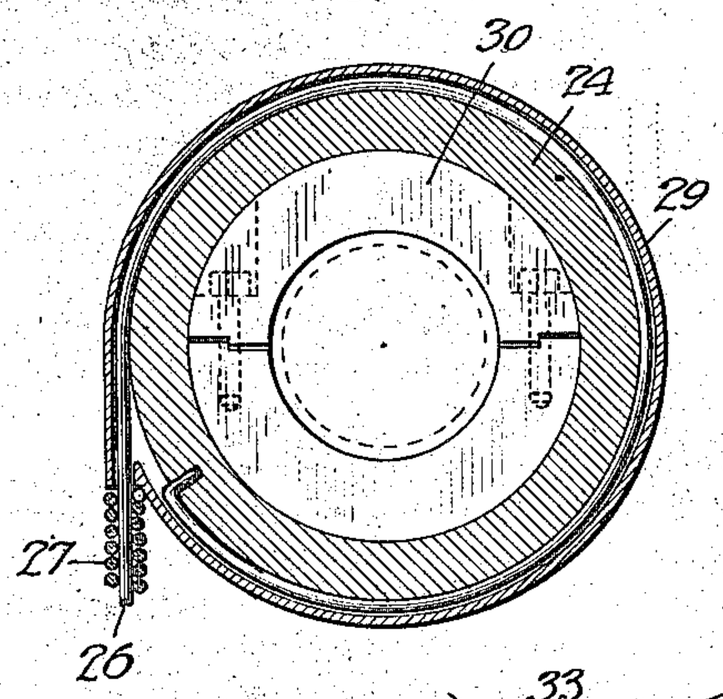


Fig. 6.

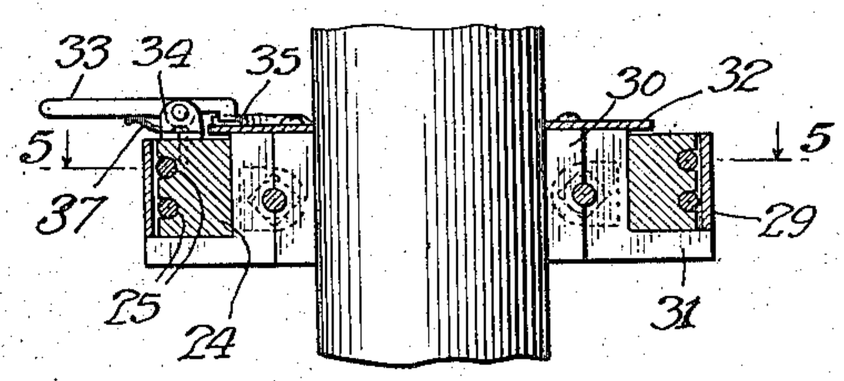


Fig. 4.

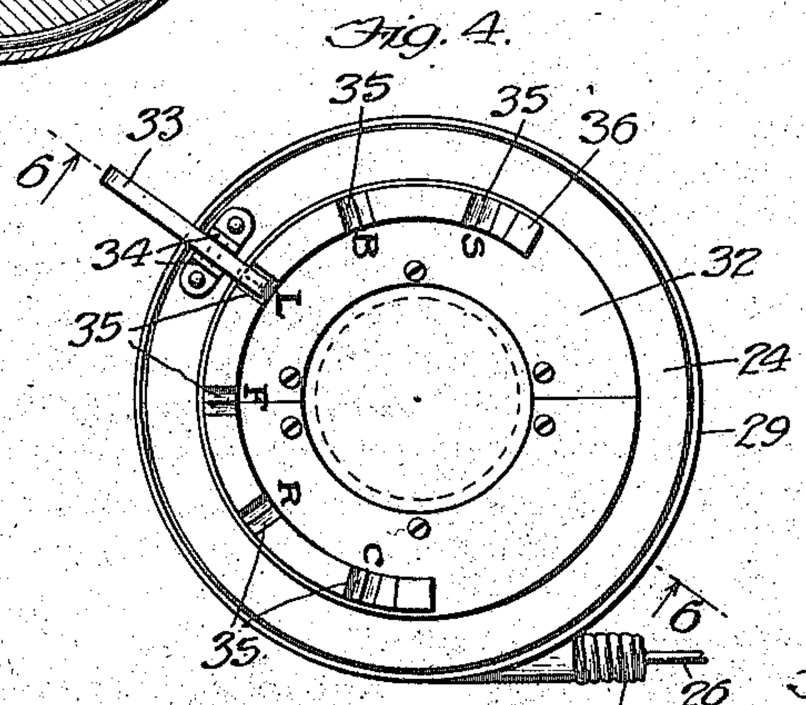


Fig. 7.

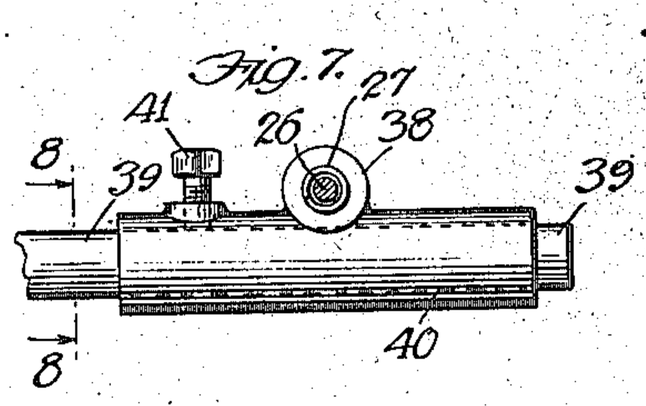
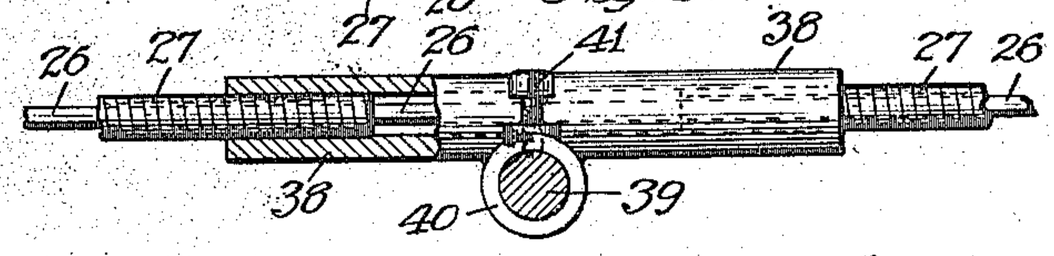


Fig. 8.



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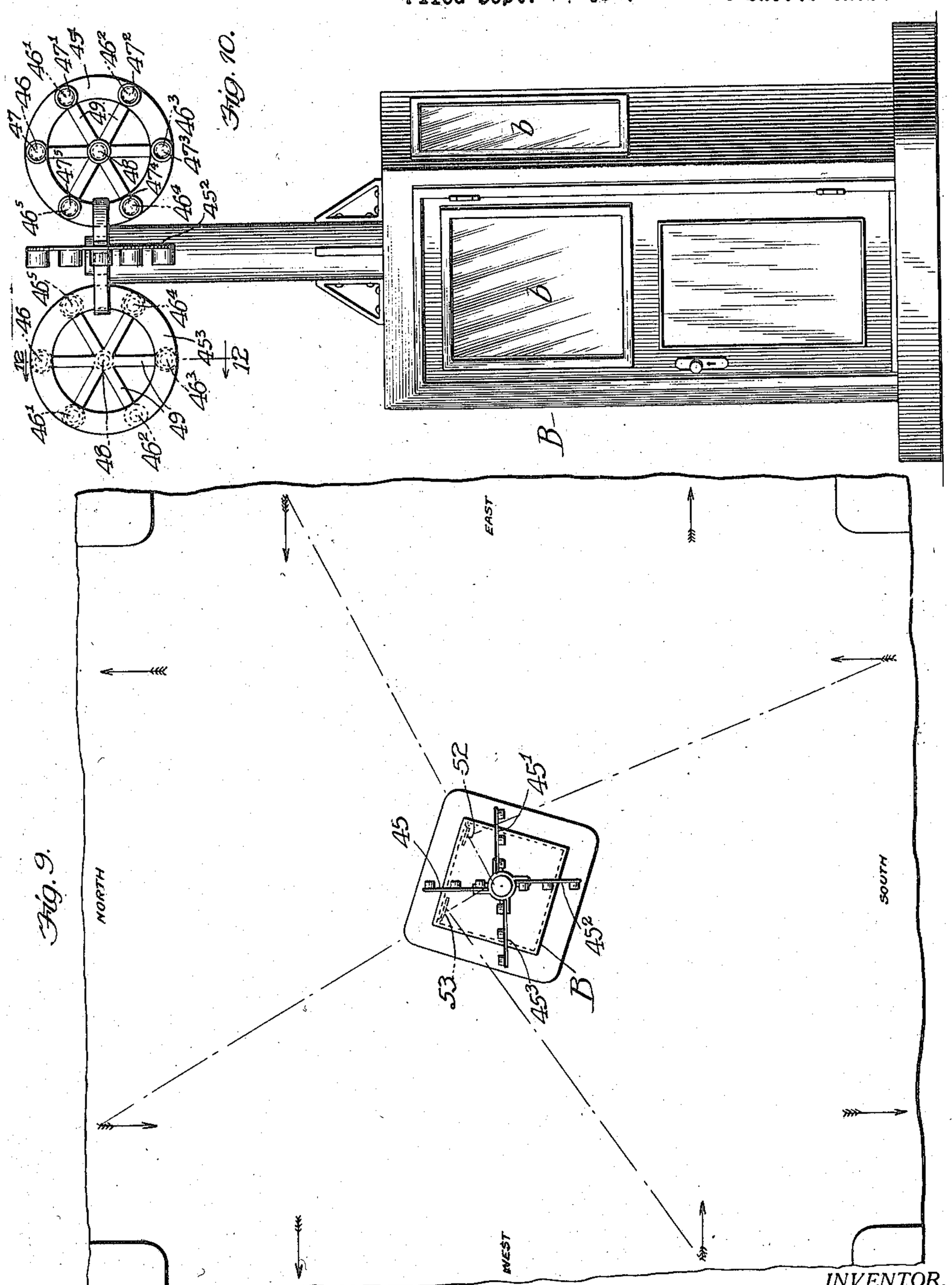
TRAFFIC INDICATOR

Filed Sept. 7, 1920 4 Sheets-Sheet 3



WITNESS

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1,515,882

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TRAFFIC INDICATOR

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Fig. 11.

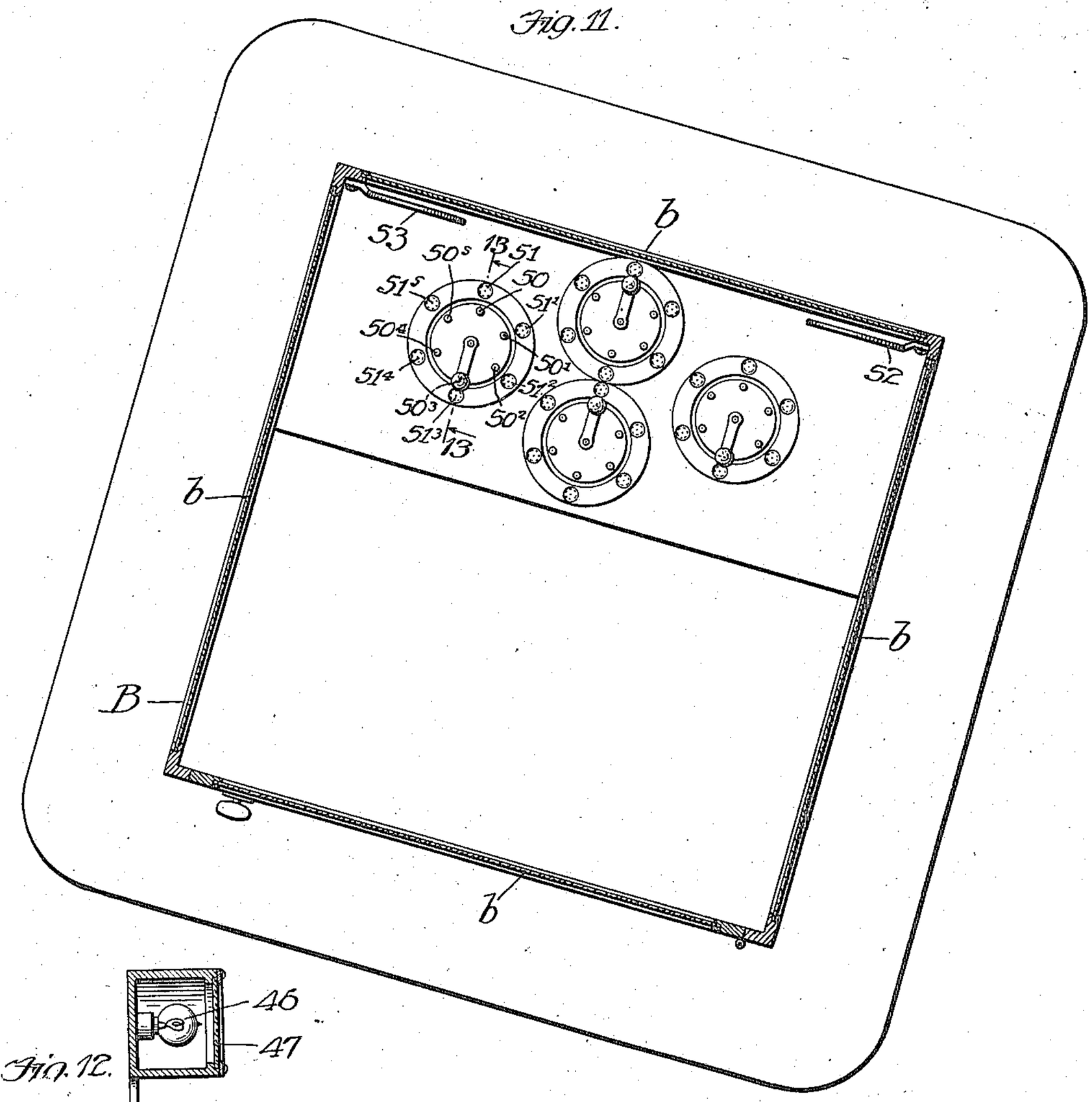


Fig. 12.

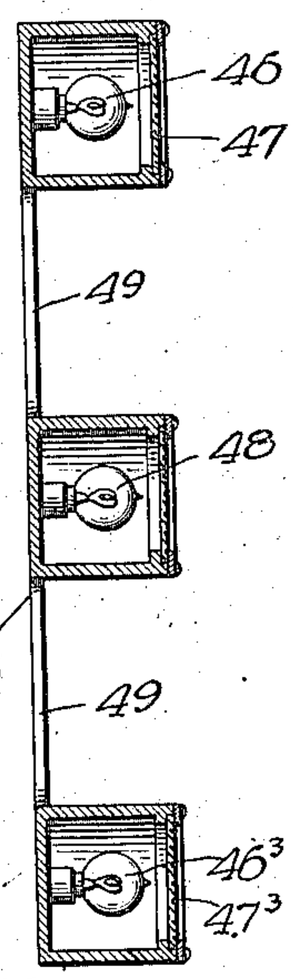
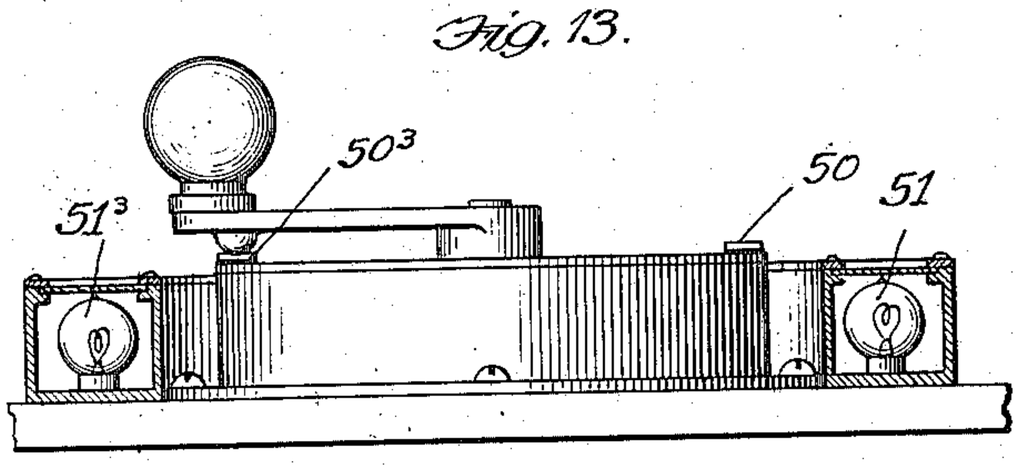


Fig. 13.



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Patented Nov. 18, 1924. 1,515,882

UNITED STATES PATENT OFFICE.

FRED A. PURDY, OF NEW YORK, N. Y.

TRAFFIC INDICATOR.

Application filed September 7, 1920. Serial No. 408,523.

To all whom it may concern:

Be it known that I, FRED ALEXANDER PURDY, a citizen of Dominion of Canada, and resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Traffic Indicators, of which the following is a specification.

This invention relates to traffic indicators.

Objects of the invention are to provide simple and effective signaling means for controlling traffic, which may be readily adapted for use on a vehicle to indicate the contemplated movements thereof, or by a traffic officer for directing the movement of vehicles at congested street intersections.

To effect the object of the invention, my improved signalling apparatus comprises the various features, combinations of features and details of construction hereinafter described and claimed.

In the accompanying drawings, in which my invention is fully illustrated,

Figure 1 is a front view of a signal lamp of my invention.

Figure 2 is a central, vertical, sectional elevation thereof.

Figure 3 is a diagrammatic view showing the manner of mounting my improved signal lamps on an automobile.

Figure 4 is a top plan view of mechanical means for operating my improved signal lamps.

Figure 5 is a sectional view on the line 5—5 of Figure 6.

Figure 6 is a sectional view on the line 6—6 of Figure 4.

Figure 7 is an enlarged fragmentary detail view of means for adjusting the operative lengths of the wires which connect said lamp operating mechanism with the lamps.

Figure 8 is a sectional elevation thereof on the line 8—8 of Figure 7.

Figure 9 is a plan view of signalling apparatus of my invention adapted for use by traffic officers, shown as located at the intersection of two streets.

Figure 10 is an enlarged elevation of said signalling apparatus.

Figure 11 is an enlarged sectional plan of the booth located at the traffic officer's station showing the position and arrangement of electrical switches for operating said signals.

Figure 12 is an enlarged vertical sectional view on the line 12—12 of Figure 10; and

Figure 13 is a sectional view of the switch for operating one set of said signals, taken on the line 13—13 of Figure 11.

To effect the object of the invention as it relates to signalling apparatus, I contemplate employing a plurality of different signals, all adapted to be exposed simultaneously, to indicate each contemplated movement of a vehicle, when employed by the driver of the vehicle, or each instruction which the traffic officer desires to communicate to the driver of a vehicle, or other person.

In practice, I preferably employ three different sets of signals for thus indicating and communicating contemplated movements by drivers of vehicles and desired instructions by the traffic officers, to wit:—1, color; 2, relative position; and 3, indicating words.

By thus multiplying said signals, it is almost impossible that a person familiar with the apparatus and code—whether the driver of a vehicle, a traffic officer, or a pedestrian,—will not see and note the signal, interpretate it correctly and act accordingly.

In what I now consider the preferable form of my invention, I amploy a plurality of illuminated areas of different colors arranged in different positions relative to a point or object of reference, said illuminated areas preferably consisting of colored glass plates and each thereof bearing an indicating word, the colors and positions of said illuminated areas, respectively, having and conveying, by accepted convention, the same meaning and significance as the indicating words appearing thereon, respectively.

As regards its specific construction, signalling apparatus of my invention admits of embodiment in many different forms, and may be operated to display the illuminated areas, either electrically or mechanically.

In the accompanying drawings, I have, for purposes of concrete and comprehensive illustration, shown both forms of signalling apparatus—that on the vehicle being adapted for mechanical operation and that at the station of the traffic officer being adapted for electrical operation—and which I will describe in order.

Referring now particularly to Figures 1 to 8, in which I have shown mechanically operated signalling apparatus of my invention, as applied in use on an automobile or other vehicle, A designates an electric lamp, as a whole, comprising a lamp casing 1, a reflector 2 mounted therein, an incandescent electric lamp 3 mounted substantially at the focus of the reflector 2, and 4 represents, diagrammatically, an electric circuit for said lamp, said circuit comprising a generator 5 and a switch 6 which, in practice, will be located accessibly to the driver of the automobile or other vehicle. As regards the foregoing and other usual features, the lamp A may be of any usual or approved construction and will be readily understood from an examination of the drawings without a description thereof in detail.

Instead of the usual glass dial, an opaque plate 7, preferably made of sheet metal, is secured in the front side of the lamp casing 1. Said plate 7 is provided with a plurality of openings—as shown, six—designated, respectively, 8, 8^1, 8^2, 8^3, 8^4 and 8^5 secured in which, respectively, are translucent, preferably glass, plates 9, 9^1, 9^2, 9^3, 9^4 and 9^5. As shown, said openings and plates are elongated radially and are wider at their outer than at their inner ends, but may be of any desired shape. Also, said openings are arranged substantially symmetrically with reference to the focal axis of the lamp A.

The plates 9 and 9^5 are secured in the openings 8 to 8^5 by any suitable means, simple means for the purpose consisting of clips 10 formed on the plate 7 at the edges of the openings 8 to 8^5, and comprising clips adapted to engage opposite sides of said glass plates 9 to 9^5.

Each of said plates 9 to 9^5 is of a different and distinctive color from all of the rest and said plates are arranged in fixed angular relations to the focal axis of the lamp, and each of said plates has painted, or otherwise delineated thereon, an indicating word.

By accepted convention, the color and relative position of the plates 9 and 9^5, respectively, will have the same significance as the indicating words thereon, respectively, so that there are in effect, three different sets of signals having the same significance, thus practically insuring that traffic officers, drivers of other vehicles, pedestrians and others will observe and notice one or more of said signals.

To effect the object of the invention as it relates to providing plural sets of signals, it is essential that the relative positions and colors of the plates 9 to 9^5 bearing different indicating words, shall be arranged according to an accepted convention, which while arbitrary will be uniform. While any desired conventional arrangement and color scheme may be employed, I have adopted the following:—I arrange the plates 9 to 9^5 equal angular distances apart, in the instant case, there being six of said plates, at angles of sixty (60) degrees, two thereof being, respectively, vertically above and below the center of the plate 7, and the others symmetrically on opposite sides thereof, respectively. Also, according to the convention which I have adopted, the top plate, see particularly Fig. 1, designated 9, is clear or "white" and bears the indicating word "Forward;" the upper right hand plate, designated 9^1, is yellow and bears the indicating word "Right"; the lower right hand plate, designated 9^2, is red and bears the indicating word "Caution"; the bottom plate, designated 9^3, is blue and bears the indicating word "Stop"; the lower left hand plate, designated 9^4, is brown and bears the indicating word "Back"; and the upper left hand plate, designated 9^5, is green and bears the indicating word "Left."

The plate 7 is also preferably provided with an opening 11 positioned centrally with reference to the openings 8 and 8^5, secured in which is a glass plate or dial 12 preferably red in color. Said plate 12 is designed to be exposed at all times and forms the tail light of the vehicle, being relatively small and preferably circular. Said plate 12, when illuminated, also forms a luminous point or object of reference by which the relative positions of the colored plates 9 to 9^5 can quickly and accurately be determined.

Rotatably mounted in the lamp casing 1, in front of the plate 7, is an opaque plate 13, formed in which is a single opening 14, see particularly Fig. 1, which is adapted to be brought into register wth the colored plates 9 to 9^5 by rotation of said plate 13, so that the indicating words on said plates, respectively, will be displayed through said opening when in register therewith. As shown, the opening 14 may be described roughly as arrow-shaped, but it may be of any desired shape.

In order that the central plate or dial 12 may at all times be displayed, said rotatable plate 13 is also preferably provided with a central opening 15 in register with the dial 12 in the plate 7.

As shown, the plate 13 is rotatably mounted in the following manner, see particularly Fig. 2;—Formed around the central opening 11 in the plate 7 is an outwardly projecting flange 16 to which the opening 15 in said plate 13 is fitted so that said plate will turn freely thereon. Said flange will thus form a bearing-bushing on which said plate 13 will be supported and by which its position will be defined.

In the preferable construction shown, also, an inwardly extending flange 17 is formed around the opening 15 in the plate 13, said flange providing a relatively long bearing

for said plate 13 and also operating to space said plate a desired distance from the plate 7 and the colored plates 9 to 9^5 secured therein.

The outer edge of the plate 7 is secured to what may be designated an anchor ring 18 secured in the open side of the lamp casing 1, and the outer edge of the plate 13 is confined, so that it will turn freely, between inner and outer rings 19 and 20 secured to the anchor ring 18.

For reasons presently explained, a flange 21 is formed around the outer edge of the rotatable plate 13, formed in which is a groove 22, the outer ring 20 by which said plate 13 is confined, being shaped to form a channel 23 to receive said flange 21.

As shown, said rings 19 and 20 are secured in position by screws inserted through holes therein and threaded into the anchor ring 18.

As shown in the drawings, Figs. 1 to 8, the plate 13 is adapted to be rotated to bring the opening 14 therein into register with the plates 9 to 9^5 so as to display the indicating words thereon, respectively, by suitable mechanical means as follows:—Rotatably mounted in position to be conveniently accessible for operation by the driver of the vehicle—preferably on the steering post thereof, if an automobile—is a drum 24 formed in the perimeter of which is a circumferential groove or grooves 25. The drum 24 is connected to the plate 13 by means of a wire 26, opposite ends of which are connected or anchored to said drum and to the flange 21 on the plate 13 and which lies in the grooves 25 and 22 formed therein, respectively, said wire acting in tension to turn said plate in one direction and in compression to turn it in the other direction. To guide said wire between the drum 24 and the flange 21 on the plate 13 and to prevent buckling thereof when subjected to compression, the section of the wire, which extends between said drum and the flange on said plate, is confined in a flexible conduit 27 which is attached to the vehicle frame or body and which is sufficiently stiff to prevent said wire from buckling, and to prevent buckling of the portions of said wire which pass around said drum 24 and the flange 21 on said plate 13, means are provided for confining said wire in the grooves 25 and 22 formed in said drum and flange, respectively.

As shown, the conduit 27 is made of wire coiled spirally to form a flexible metal tube of suitable size to receive said wire. The section of said wire which passes around the flange 21 is confined in the groove 22 by a shoulder 28 on the ring 19, which extends over said groove and in close proximity to the surface of said flange in which groove is formed. And the section of said wire which passes around the drum 24 is confined in the groove 25 in which it lies, by a plate or band 29 secured to said drum, which closes the outer side of said groove 25.

The use of encased wires acting both in tension and compression in connection with automobile equipment, for purposes closely analogous to the foregoing, is old and well known and, in a given case, can readily be installed by skilled mechanics familiar therewith without a description thereof in detail. Said plate 13 and drum 24 will have capacity for and the wire 26 will be applied thereto in such manner that rotation may be imparted to said plate by means of said drum through a sufficient arc to bring the opening 14 therein successively into register with all of the colored plates 9 to 9^5.

As shown, the drum 24 is rotatably mounted on a bushing 30 on the steering post of the automobile, which, to provide for assembling the same, is split and the parts of said bushing clamped upon the steering post by screws which connect the parts thereof. Said drum is held in position on said bushing by a flange 31 formed on the lower edge of said bushing and a circular plate 32 secured to the upper side of said bushing and which projects outwardly over the top side of said drum. As shown, the hole through said plate 32 is substantially of the same size as the diameter of the steering post and to provide for conveniently assembling the same it is preferably split.

Rotation is adapted to be imparted to the drum 24 by means of a handle 33 thereon and said drum is adapted to be secured in positions corresponding to register of the opening 14 in the rotatable plate 13 with the plates 9 to 9^5, respectively, by suitable stops provided for the purpose. As shown, the handle 33 is pivoted to a lug 34 on said drum and its inner end is adapted to engage notches 35 formed in the plate 32, there being as many of said notches as there are colored plates 9 to 9^5 and the relation being such that engagement of said handle with different notches 35 will display said plates 9 to 9^5, respectively. Also, rotation of said drum is limited to an arc necessary to display all of said plates by lugs 36 on the plate 32 which project into the path of movement of the inner end of the handle 33 when the drum 24 reaches the designed limits of its movement.

Engagement and disengagement of the inner end of the handle 33 with the notches 35 is effected by pivotal movement of said handle, said handle being preferably subjected to spring pressure adapted to turn it pivotally to effect engagement thereof with said notches 35, and disengagement thereof being effected by turning said handle pivotally against the force of the spring applied thereto. As shown, the spring applied

to said handle is a leaf spring 37 secured to the lug 34 to which said handle is pivoted, the free end of which bears against the under side of said handle outside of its pivot bearing.

The plate 32 preferably bears indicating words the same as those on the different plates 9 to 9^5, in the present case, the words "Forward," "Right," "Caution," "Stop," "Back" and "Left"—or the initials "F," "R," "C," "S," "B" and "L." Said words or initials, respectively, are positioned adjacent to the notches 35 in said plate, engagement of the handle 33 with which will correspond to register of the opening in the plate 13 with the colored plates 9 to 9^5 which bear the same indicating words as those applied to said notches, respectively.

To provide for adjusting the angular position of the plate 13 to effect register of the opening 14 therein with the different colored plates 9 to 9^5, when the operating handle 33 is in engagement with the notches 35 corresponding to said plates, respectively, the flexible conduit or casing 27 which guides the wire 26, preferably comprises separate sections the adjacent ends of which enter and are slidably fitted to the bore of a sleeve 38, the ends of said sections within said casing being spaced apart a short distance, say, for example, one inch. The sleeve 38 is movably supported so as to slightly increase or decrease the flexure of said wire, which will operate, in an obvious manner, to correspondingly increase or decrease the length of what may be referred to as the chord of the arc defined by the wire 26 between the points of attachment of said wire 26 to the drum 24 and the plate 13, respectively. Thus, by engaging the handle 33 with a notch 35 and moving said sleeve 38 in the proper direction the lengthening or shortening of the chord of the arc of the wire 26, will operate to impart rotation to the plate 13 in one direction or the other to effect register of the sight opening therein with the colored plate 9 to 9^5 corresponding to the notch 35 with which the handle 33 is in engagement. As shown, said sleeve 38 is movably supported on a fixed stud 39 which extends substantially at right angles to the bore of said sleeve and to which is slidably fitted the bore of a sleeve 40 formed integral with said sleeve 38. Said sleeve 38 is adapted to be adjusted by hand and to be secured in adjusted positions by a set screw 41.

To provide for signalling vehicles in the rear and also those approaching from the opposite direction, and more particularly to a traffic officer when approaching his station, my invention contemplates the use of two sets of signalling apparatus, one displayed rearwards and the other frontwards, but both operated by a single operating mechanism, to-wit, the drum 24. This can be effected in a simple manner by providing two signal lamps A, both connected with the operating drum 24 by separate wires 26, each provided with separate means for effecting register of the opening 14 with the plates 9 to 9^5. To thus provide for simultaneously operating both sets of signalling apparatus by means of the drum 24 it is merely necessary to provide two grooves 25 in said drum, which, respectively, receive the wires 26 of different signalling apparatus. In practice, I contemplate mounting said signal lamps on the car fenders.

In Figs. 9 to 13 of the drawings, I have shown a signalling apparatus embodying my invention in modified form, particularly designed and adapted for use by traffic officers in directing traffic at street intersections and elsewhere, if desired. This modification will now be described.

The stations for the traffic officers are preferably made in the form of booths, which will afford shelter and protection for the officers on duty from the weather, said booths, so far as possible, being located at the centers of street intersections and being provided with windows which command a view of said streets in all directions.

Referring now to Figs. 9 to 13 of the drawings, B designates the booth at a traffic officer's station, which is provided on all sides with windows *b* which command a view along all of the streets at the intersection of which the station is located. Said both may be of any desired construction and one having necessary requirements can readily be built by a mechanic of ordinary skill without a description thereof.

The signalling apparatus at the officer's station is adapted to be operated electrically, and is as follows:—Mounted on the top of the booth B is a standard 44, on which there are laterally extending arms, there being as many arms as there are street sections converging upon said station and said arms comprising an arm which extends substantially at right angles to each of said street sections. As shown, there are four such arms, designated, respectively, 45, 45^1, 45^2 and 45^3, each of which comprises a substantially circular section secured in which are incandescent electric lamps, as presently explained.

To provide a co-ordinated system of signals on vehicles and at the officer's stations, there are as many lights on each of the arms 45 to 45^3 as there are colored plates 9 to 9^5 in the apparatus designed for use on the vehicles, heretofore described, comprising lamps or illuminated plates of the same colors, arranged in the same relative positions and having associated therewith,

respectively, the same indicating words, and having the same code significance as the plates 9 and 9^5, respectively.

In the preferable construction shown, the circular portions of the arms 45 to 45^3 are hollow, being preferably made of sheet metal, the sockets for the incandescent lamps on said arms being secured in the rear walls of said hollow arms and the lamps themselves enclosed therein, separate compartments being preferably provided for each of said lamps. As shown, there are six of said lamps, designated 46, 46^1, 46^2, 46^3, 46^4 and 46^5. Formed in the front sides or walls of said hollow arms in register with the lamps therein, are holes or openings, secured in which are glass plates 47, 47^2, 47^3, 47^4 and 47^5 arranged in the same relative positions as the plates 9 to 9^5 in the signalling apparatus on the vehicle, said plates being of the same color, having the same relative positions, and bearing the same indicating words, as the plates 9 tc 9^5 respectively.

Thus, the top plate 47 is clear or "white" and bears the indicating word "Forward"; the upper right hand plate 47′ is yellow and bears the indicating word "Right"; the lower right hand plate 47^2 is red and bears the indicating word "Caution"; the bottom plate 47^3 is blue and bears the indicating word "Stop"; the lower left hand plate 47^4 is brown and bears the indicating word "Back"; and the upper left hand plate 47^5 is gree and bears the indicating word "Left."

Preferably, also, there is on each arm a light 48, which is arranged centrally with reference to the lights 47 to 47^5 and which is in circuit with all of the other lights on said arm so that, when any light is turned on, said center light will also be turned on, thus affording a luminous point or object of reference by which the relative position of the signal lamp turned on, can readily and accurately be determined.

As shown, the sockets for said center lights 48 are secured to a base plate connected to the hollow arms 45 to 45^3 by bars 49.

The lights on the different arms 45 to 45^3 are controlled by separate switches on a switch board in the booth B in position to be conveniently operated by the traffic officer, the switches for each arm being arranged in series, preferably corresponding to the arrangement of the lights 47 to 47^5, and each switch being marked to indicate the light which it controls. Thus, the switch contacts of each group or series, designated, respectively, 50, 50^1, 50^2, 50^3, 50^4 and 50^5 are arranged in circular series corresponding to the arrangement of the lights 47 to 47^5 and are marked, respectively, with the same indicating words, to-wit:—"Forward," "Right," "Caution," "Stop," "Back" and "Left" or with the initials "F," "R," "C," "S," "B" and "L." Also and in order that the traffic officer may learn to associate the different colors with the indicating words that correspond thereto, respectively, small electric lights, indicated at 51, 51^1, 51^2, 51^3, 51^4 and 51^5 are provided, arranged adjacent to the different switch contacts, said lights being colored the same as the signal lights which said contacts control, respectively, each light being electrically connected in series with said contact and the light which it controls. Thus, each time the switch marked with any particular indicating word or intial, is closed to turn on a given signal lamp 47 to 47^5, a lamp 51 to 51^5 of the same color on the switch board will also be turned on, whereby the traffic officer will soon come to associate the indicating words with the colors corresponding thereto, respectively.

Said lights 51 to 51^5 will also serve as a signal to indicate to the traffic officer whether the signal lamp 47 to 47^5 controlled by the switch which he may have closed was lighted or not.

The switch board for the switches 50 to 50^5 may be installed in any desired position so as to be conveniently accessible for operation by the traffic officer.

As shown, said switch board is arranged substantially horizontally at such a height that the switches can be conveniently operated by the officer both when standing and when seated, each series of switches being at the side of the switch board towards that street section which the lights corresponding to said series of switches control, respectively. Also, in order to avoid confusion and consequent possible mistakes, the switches of each series are arranged in the same positions relatively to one side of the switch board, which is assumed to be the top thereof and which corresponds to the top side of each series of lights 46 to 46^5.

The position of the switch board is such that, as the traffic officer faces the same, he can directly observe the traffic approaching from two directions—say from the north and the east—and to enable him to observe the traffic approaching from the remaining two directions—south and west—my invention contemplates the use of mirrors designated 52 and 53, in the booth B, so positioned that the traffic officer, when facing the switch board, can conveniently observe traffic approaching from behind. Said mirrors are preferably pivotally supported to provide for adjusting the angular positions thereof, in case it is desired to change the line of reflection and thus of observation.

With signalling apparatus as specified, it is obvious that the drivers of vehicles can readily signal not only to the occupants of other vehicles and to traffic officers their contemplated movements and course of travel, but traffic officers can also at all times effectively control traffic. Thus, if the

driver of a vehicle approaching from any direction signals that he desires to turn into an intersecting street across and in front of vehicles approaching from the opposite direction on the opposite side of the street, the traffic officer, in due course, signals the line of traffic in front of which such driver desired to cross, to stop and at the same time signals said driver to proceed and turn as desired, which will be a left turn for the driver of such vehicle. And, in like manner, whenever the driver of a vehicle approaching the station of the traffic officer signals any contemplated movement, the traffic officer can, by proper signals, give necessary instructions and directions to the driver of such vehicle and also to others who may be affected by his proposed movements.

I claim:

1. In signalling apparatus, the combination of a lamp comprising an open sided casing, a fixed plate forming a frame secured in the open side of said casing provided with a plurality of openings, plates permeable to light and of different colors secured in the openings in said fixed plate, an opaque plate provided with an opening, rotatably mounted adjacent to said fixed plate, and means for rotating said plate, the relation being such that rotation of said opaque plate will bring the opening therein into register with the colored plates in the fixed plate, the display of each of said colored plates, by its relative position with reference to the axis of said rotatable plate, under an accepted convention, conveying a message.

2. Signalling apparatus as specified in claim 1, in which the fixed and rotatable plates are provided with registering openings positioned substantially at the axis of rotation of said rotatable plate, said central opening and the colored plates secured in said fixed plate being luminous when the lamp is lighted.

3. Signalling apparatus constructed and arranged for conveying messages in accordance with an accepted convention by means of luminous areas displayed separately in different relative positions, respectively.

4. Signalling apparatus constructed and arranged for conveying messages in accordance with an accepted convention by means of luminous areas of different color displayed separately in different relative positions, respectively.

5. Signalling apparatus as specified in claim 1, in which the fixed and rotatable plates are provided with registering openings positioned substantially at the axis of rotation of said rotatable plate, said central opening and the colored plates secured in said fixed plate being luminous when the lamp is lighted, the bearing for said rotatable plate comprising flanges formed on said fixed and rotatable plates at the edges of the central openings therein, respectively, the opening through one of said flanges being fitted to the exterior of the other flange, said outer bearing flange being proportioned to space said plates a desired distance apart.

6. Signalling apparatus as specified in claim 1, in which the means for rotating said rotatable plate consists of a movably supported actuating member, a single transmission wire the ends of which pass around and are anchored to said actuating member and to said rotatable plate, respectively, and a flexible casing in which said transmission wire is confined so as to be movable endwise, said wire acting both in tension and compression.

7. Signalling apparatus as specified in claim 1, in which the means for rotating said rotatable plate consists of a rotatable drum, a single transmission wire the ends of which pass around and are anchored to said drum and to said rotatable plate, respectively, and a flexible casing in which said transmission wire is confined so as to be movable endwise, said wire acting both in tension and compression.

8. Signalling apparatus as specified in claim 1, in which the means for rotating said rotatable plate consists of a rotatable drum, a single transmission wire the ends of which pass around and are anchored to said drum and to said rotatable plate, respectively, and a flexible casing in which said transmission wire is confined so as to be movable endwise, said wire acting both in tension and compression, and means for varying the alignment of the transmission wire to provide for effecting register of the sight opening and color plates in the rotatable and fixed plates, respectively, of the signalling apparatus when said actuating member is secured against movement.

9. Signalling apparatus comprising a rotatable member, and means for rotating the same comprising a movably supported actuating member, a single transmission wire the ends of which pass around are anchored to said actuating member and to said rotatable member, respectively, a flexible casing in which said transmission wire is confined, said wire acting both in tension and compression, and means for varying the alignment of the transmission wire whereby axial adjustment of said rotatable member may be effected.

In testimony that I claim the foregoing as my invention, I affix my signature this 18th day of August, 1920.

FRED A. PURDY.