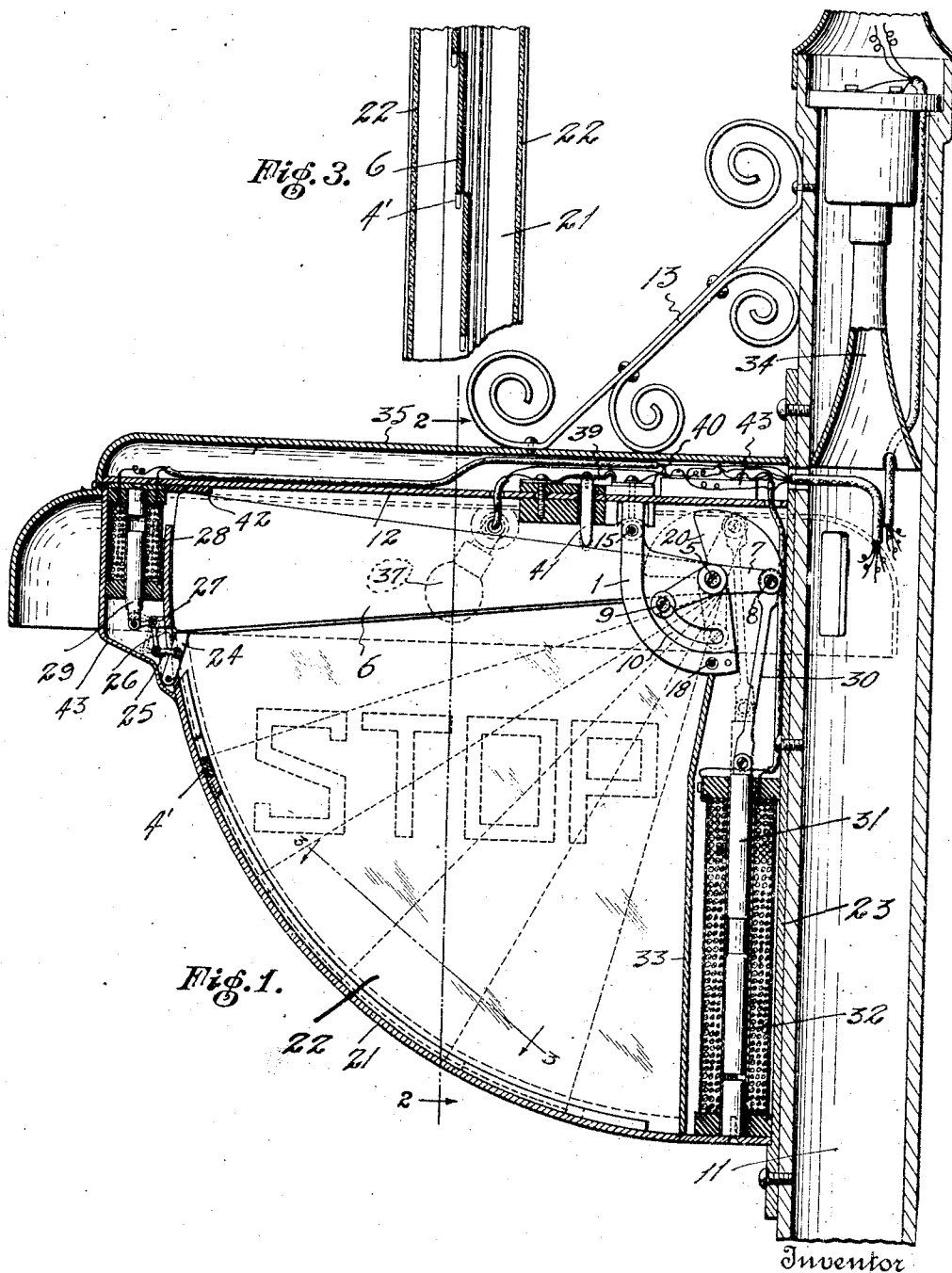


1,326,009.

R. E. WETTER,
 'SIGNAL APPARATUS,
 APPLICATION FILED JAN. 20, 1919.

Patented Dec. 23, 1919.

3 SHEETS—SHEET 1.



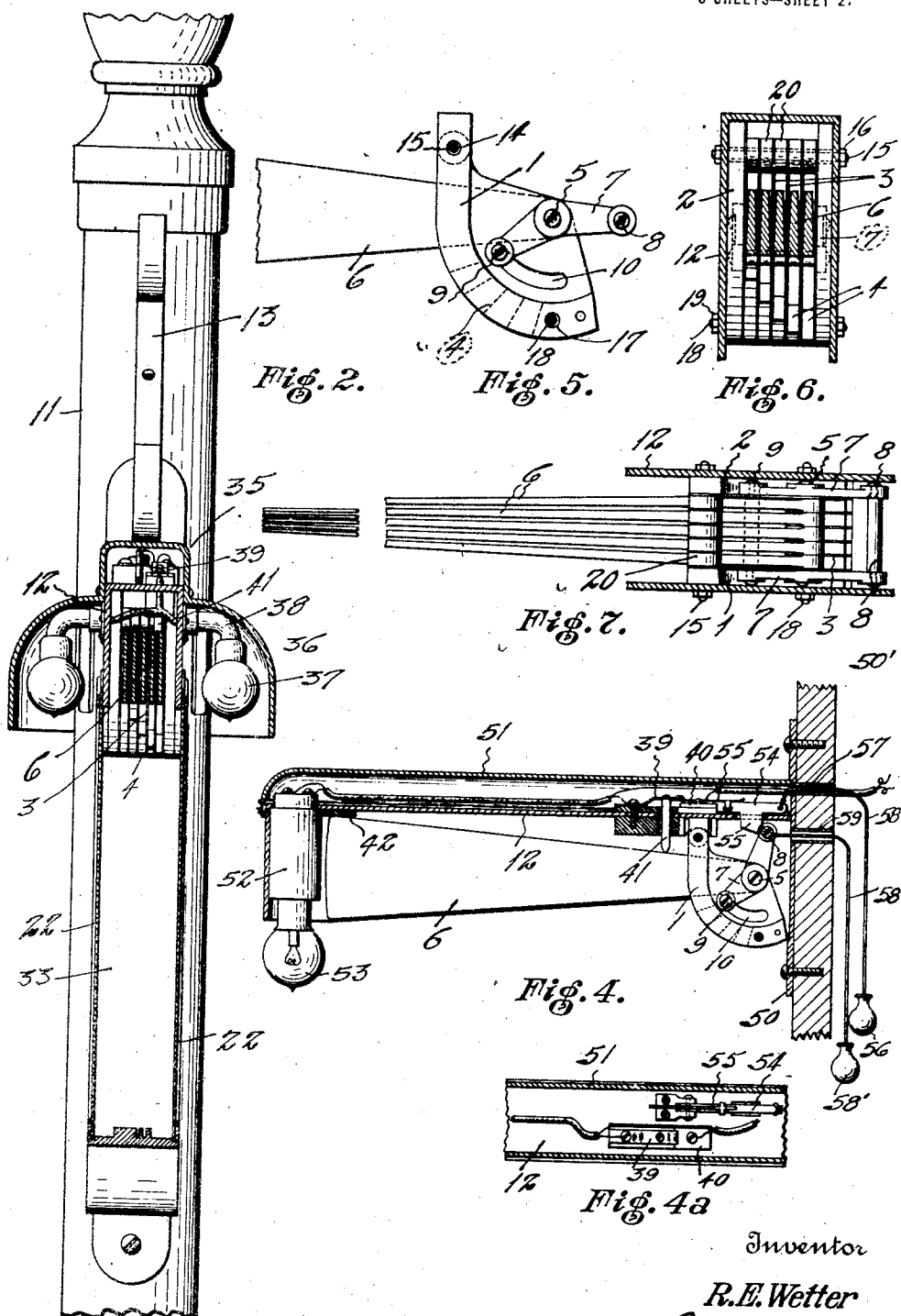
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3 SHEETS—SHEET 3.

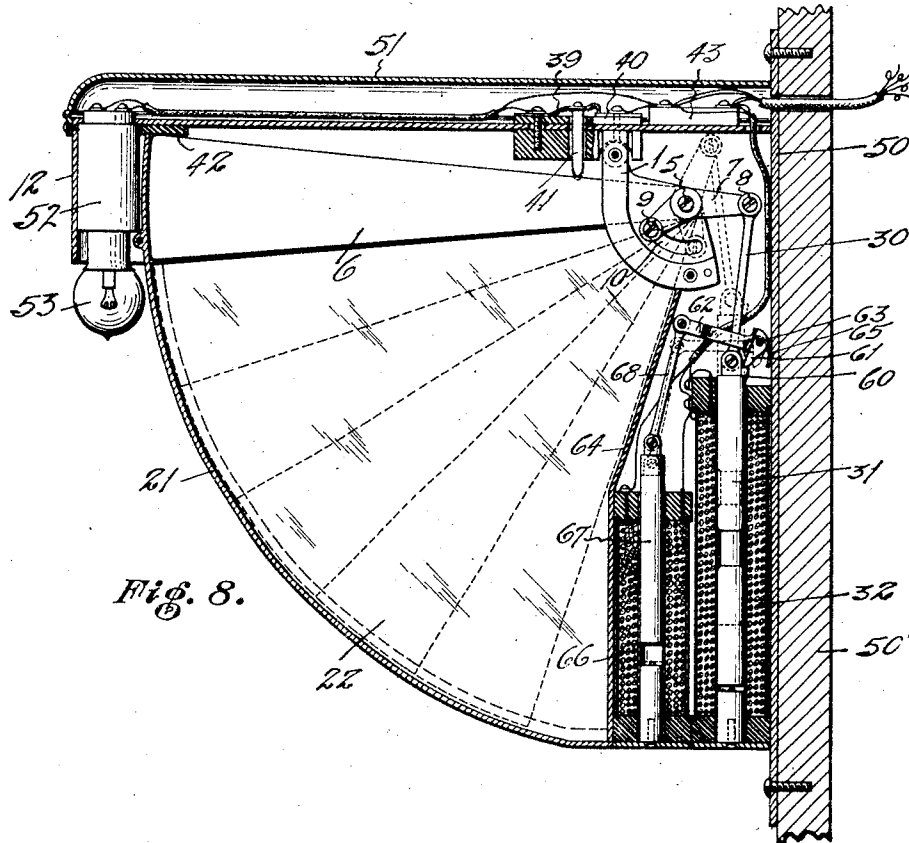


Fig. 8.

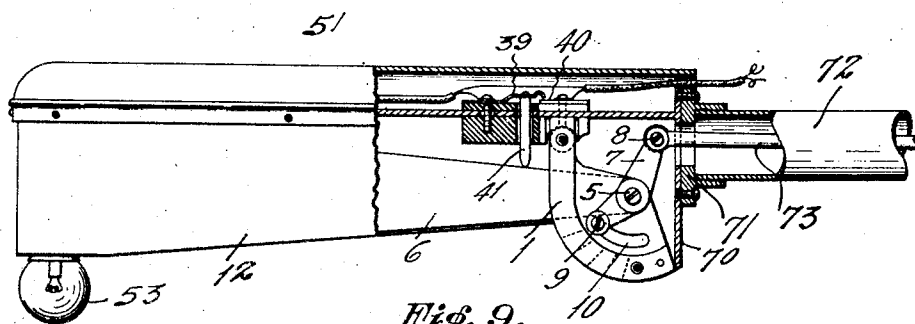


Fig. 9.

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SIGNAL APPARATUS.

1,326,009.

Specification of Letters Patent.

Patented Dec. 23, 1919.

Application filed January 20, 1919. Serial No. 272,159.

To all whom it may concern:

Be it known that I, RALPH E. WETTER, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Signal Apparatus, of which the following is a specification.

This invention relates to signaling apparatuses and particularly to a signal semaphore or target and means for operating and illuminating the same.

The pedestrian as well as the driver of a motor vehicle is more or less guided by instinct and it is apparent that a particular form of signal semaphore or target which is universal in its application will be more easily observed and obeyed by both pedestrians and drivers of motor vehicles.

It is the aim of this invention to provide a signaling apparatus employing a particular kind of semaphore or target which may be used as a stationary traffic signal or mounted on a vehicle or common carrier, the semaphore in each instance retaining its dominating features and similarity so that the pedestrians and drivers will recognize the semaphore irrespective of its application or installation. Thus one will be more easily guided by such a signal and having seen it used as a traffic signal in one locality would readily recognize it and obey it when used as an automobile direction signal in another locality.

Furthermore the invention seeks to provide a semaphore structure and a generic form of operating means which however may be set to operate and controlled in various manners. It is also proposed to provide a visual signal in the form of an electric lamp which has the additional function of illuminating the semaphore. One of the particular ends sought is simplicity both in operation and construction.

In carrying out the invention in a broad sense a folding semaphore or target is folded into and normally concealed in a housing, but it is within the province of this invention to provide a non-folding semaphore which may be swung into a housing and normally concealed. I prefer, however, to employ a folding semaphore comprising a plurality of leaves or sectors arranged to be distended in segmental formation when in operation. It is proposed to support the sec-

tors in folded or normal position within the housing and to employ a restoring element which after the sectors have been released and distended or depended may be operated to swing or fold the sectors up into the housing. It is obvious that in some instances the restoring element may be used to hold the sectors folded within the housing and when released or operated will permit the sectors to swing downward; whereas in other instances separate means may be employed for holding the sectors in the housing and releasing them when the signal is to be displayed.

It is obvious that the semaphore may be electrically or manually operated and that the releasing means may be manually or electrically manipulated. An electric lamp may be mounted in the housing adjacent the semaphore and controlled by a switch which is automatically closed when the semaphore is released. If desired the electric lamp may be omitted.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is illustrated, and wherein—

Figure 1 is a vertical sectional view of a signal apparatus showing the invention as applied for stationary traffic signaling,

Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1,

Fig. 3 is a cross sectional view on the line 3—3 of Fig. 1,

Fig. 4 is a detail vertical sectional view of a manually operated signal apparatus for use on a motor vehicle and the like,

Fig. 4^a is a detail of the switch and latch,

Fig. 5 is a detail of the sector restoring means and associated parts,

Fig. 6 is a cross sectional detail of the same,

Fig. 7 is a plan view of the sectors and their supporting parts,

Fig. 8 is a vertical sectional view of an electrically operated signal apparatus suitable for use on motor vehicles and the like, and

Fig. 9 is a view partially in elevation and partially in section showing another form of structure.

In the drawings the numerals 1 and 2 designate the side plates of a signal hanger,

These plates have their lower portions shaped in the form of a segment. Web or guide plates 3 are disposed in spaced order between the plates 1 and 2, and stop members 4 are disposed between the web plates, said members 4 terminating in stepped order as is shown in Fig. 6 and indicated by dotted lines in the other figures. A transverse shaft 5 passes through the plates 1 and 2 and 3 in concentric relation to the segmental portion of the latter. Sectors or leaves 6 have their inner ends pivoted on the shaft 5 and when released come to rest on the stops 4 whereby they are disposed in segmental order or in fan shape, each sector being disposed between a pair of web plates and maintained in position thereby. A yoke member comprising side arms 7 is also provided with cross bars 8 and 9 respectively. The arms are pivoted on the shaft 5 on the outer sides of the plates 1 and 2, which are countersunk to receive said arms and permit the same to swing. The bar 9 passes through arcuate slots 10 in the plates 1 and 2 under the lower edges of the sectors 6, said slots being concentric to the shaft 5. When the sectors 6 swing downward they carry the bar 9 with them thus swinging the yoke member and consequently by pulling on the bar 8 the bar 9 will be swung upward and in turn swing the sectors 6 upward to their normal position.

It will be seen that the sectors 6 when distended constitute a signal semaphore and the yoke member may be suitably operated to restore the sectors and withdraw the signal. The parts described constitute a generic construction which may be installed for different kinds of signal work, and in conjunction with various other parts it is capable of performing the work wherever placed, and this is one of the very important features of the invention.

As an illustration of one use of the signal semaphore I have illustrated in Figs. 1, 2 and 3 an apparatus constructed to be operated at street intersections, railway crossings and on other highways for controlling traffic. A suitable pole or other supporting structure 11 is employed and a laterally directed horizontal housing 12 is mounted on the pole. The housing is open along its bottom and is supported by a bracket 13. The housing is made wide enough to snugly receive the plates 1 and 2, while a bushing 14 passed through the plates 1, 2 and 3 contacts with the inner sides of the side walls of the housing, while a bolt 15 passes through the bushing and the side walls of the housing and receives nuts 16. The bushing 14 is located at the upper end of the structure, while a similar bushing 17 passes through the plates and the stops 4 at the lower portion of the structure, and a bolt 18 passes through the bushing 17 and receives nuts 19.

The web plates 3 have their upper ends spaced apart by washers 20 mounted on the bushing 14. It will be seen that in this way the sectors 6 and their supporting elements are securely fastened in the housing. The sectors and their supporting and operating elements as shown in Figs. 5, 6 and 7 might be termed the semaphore unit and will be so referred to hereinafter.

In the signal structure shown in Figs. 1, 2 and 3 the sectors will be rather long and for this reason counter balance weights 20 are added to the arms 7. These weights will assist in swinging the sectors upward when the signal is to be folded or withdrawn into the housing which conceals the sectors. A segmental channel 21 depends from the outer end of the housing in concentric relation to the segment formed by the sectors when the same are lowered or distended. The outer edges of the sectors are received in this channel which acts as a guide for the same. Transparent plates 22 supported by the channel have their upper edges attached to the side walls of the housing and their vertical inner edges secured to a mounting plate 23 fastened on the pole 11. Each sector has its lower outer end supported on a latch 24 which is connected by a link 25 with a bell crank lever 26. The bell crank lever is supported in a bracket 27 mounted on the channel 21 as is shown in Fig. 1. The housing 12 extends beyond the outer edges of the sectors and receives a solenoid 28 with its core 29 disposed downwardly and pivotally connected with the bell crank lever 26 so that when the solenoid is energized the core 29 is retracted or drawn upward whereby the lever 26 is swung and the parts attached thereto swung outward thus releasing the sectors 6 and permitting the same to swing downward.

When the sectors 6 swing downward they carry the bar 9 with them thus swinging the bar 8 and the weights 20 upward. A link 30 depends from the bar and is pivotally connected to the upper end of the core 31 of a solenoid 32 fastened against the mounting plate 23 resting on the lower end of the channel 21. This solenoid is inclosed within a casing 33 between the plates 22 and having its upper end extending to the plates 1 and 2. When the bar 8 is swung upward the core 31 is elevated through the agency of the link 30 and thus by energizing the solenoid 32 the core 31 is pulled downward whereby the yoke member is swung and the sectors elevated by the bar 9. The counter balance weights 20 will assist the solenoid in elevating the sectors. It will be seen that the stops 4 are arranged so as to arrest the sectors with their radial edges overlapping sufficiently to obstruct vision therebetween thus giving the semaphore a solid appearance when the signal is dis-

played. It is also obvious that when the sectors are folded up and concealed in the housing nothing will obstruct a clear view through the plates 22 and this will indicate that traffic may pass, but when the sectors are released the signal will be displayed through the plates in both directions and by painting the sectors with a contrasting and bright color the signal will be easily observed.

This signal apparatus is capable of use in connection with the poles illustrated in my traffic signal system application filed November 23, 1918, Serial No. 263,916. In this connection an electric siren 34 may be mounted in the pole 11 and electrically connected with a suitable controlling device with which the solenoids 28 and 32 are also connected. By this arrangement the solenoid 28 may be energized momentarily to release the sectors 6 and then the siren 34 energized to sound a warning blast thus stopping traffic. By energizing the solenoid 32 the signal is withdrawn and at the same time the siren 34 may be again energized to notify traffic that it may move. Stops 4' are arranged in the channel 21 for arresting the ends of the sectors.

The housing 12 is covered by a hood 35 having wings 36 on each side of the housing. Electric lamps 37 are supported under each wing in socket brackets 38. Each lamp has a circuit connection with the breaker member 39 of a switch mounted on the roof of the housing as shown. The breaker member 39 is of a resilient nature and is disposed to engage a contact 40 to close the circuit and illuminate the lamps. A detent 41 depends from the breaker member into the path of one of the sectors 6 so that when the latter is swung up into the housing it will engage said detent and raise the member 39 from the contact 40 thus breaking the circuit to the lamps. When the sectors are released the member 39 will be permitted to engage the contact 40, close the circuit and illuminate the lamps. The lamp circuit may also be connected with a suitable switch (not shown) for cutting it out during the day-time. A cushion 42 is attached to the roof of the housing so as to be impinged by the outer ends of the sectors when the latter are swung up so as to eliminate jar. A terminal block 43 may be mounted on the roof of the housing under the hood 35. It is pointed out that the solenoids and the lamp switch are fully protected from the weather and there is little danger of short circuiting from this cause. The transparent plates 22 admit light but protect the inclosed parts. A guard 43 extends from the outer end of the housing to the channel 21 thus inclosing the releasing device and protecting the solenoid 28.

As before stated the semaphore unit may

be applied in different places and used wherever a traffic signal is required. In Fig. 4 I have shown the semaphore unit and its housing 12 secured to a mounting plate 50 which may be attached to any support 50' either fixed or moving, but particularly to a motor vehicle or common carrier. This particular form of signal may easily be attached to the wind shield of an automobile. The housing 12 is covered by a hood 51. The cushion 42 is employed as well as the circuit breaking member 39, contact 40 and detent 41. However, instead of two lamps a single lamp socket 52 is mounted in the outer end of the housing and carries a depending lamp 53. The arms 7 of the yoke member are removed and reversed so as to occupy the position shown in Fig. 4.

In this form the sectors 6 will be comparatively short and no supporting device for their outer ends will be required as the bar 9 will hold them in their elevated position. For locking the yoke member in position a latch lever 54 is mounted on the roof of the housing and has a dog 55 depending in the path of the bar 8. The latch lever is pivoted under the end of a spring leaf 55 which normally holds the lever down so that the dog is impinged by the bar 8 and the sectors retained in the housing. A flexible connection 56 such as a cord is attached to the free end of the lever 54 and is passed through a sleeve 57 which extends through the plate 50 and support 50', at an elevation higher than the end of the lever 54. The connection 56 has a knob 56' on its lower end within easy reach of the operator. By grasping the knob 56' and exerting a pull on the connection 56 the lever 54 is swung upward so as to withdraw the dog 55 from the path of the bar 8 whereby the yoke member is freed, thus permitting the sectors 6 to swing downward until they are arrested by the stops 4. Thus to display the signal it is merely necessary to pull on the connection 56.

When the sectors swing downward they carry the bar 9 therewith thus swinging the arms 7 and the bar 8. Another flexible connection 58 having a knob 58' on its end passes through a sleeve 59 in the parts 50 and 50' and is attached to the bar 8. Thus when it is desired to restore the sectors or withdraw the signal the operator merely has to pull on the connection 58 whereby the yoke member is swung and the bar 9 carried upward; the latter successively engaging the sectors and swinging them into the housing. It is quite important that each connection and its knob be of a distinguishing color from the other connection and its knob or that the knobs be distinguished so that the operator may readily select the proper knob for the desired operation. As an illustration the releasing knob 56' may be red as this color has been more or less associated with signal

displaying and the average person would readily select it above other colors. The knob 58 may be black or any other distinguishing color desired. It is obvious that the lamp 53 and its connections may be omitted and the signal operated without illumination, but the lamp not only serves to illuminate the sectors but constitutes a night signal in itself.

10 In Fig. 8 I have illustrated still another application of the invention in which certain parts of both of the forms hereinbefore described are used and which are indicated by the same numerals, it being unnecessary to
15 redetermine said parts. In this form the arms 7 are disposed the same as shown in Figs. 1 and 5. On the upper end of the core 31 of the solenoid 32, which is the same as that used in Fig. 1, a beveled lug 60 is provided.
20 This lug is engaged by a dog 61 fixed on the end of an arm 62 and pivoted on a transverse shaft 63 fixed in a casing 64. A spring 65 attached to the arm 62 and bearing against the mounting plate 50 holds the arm
25 in its elevated position and the dog in the path of the lug 60. This locking device holds the sectors 6 elevated within the housing through the agency of the bar 9. A releasing solenoid 66 is also mounted in the casing 64 and said casing is supported on
30 the channel 21 between the plates 22. The solenoid 66 has a vertical sliding core 67 which has its upper end connected by means of a link 68 with the end of the arm 62.
35 Suitable electric control is provided for energizing the solenoid 66, the solenoid 32 remaining dormant. When the solenoid 66 is energized its core 67 is pulled downward thus swinging the arm 62 whereby the dog 61
40 is moved out of the path of the lug 60. This permits the sectors 6 to swing downward by gravity whereby the signal is displayed. When the solenoid 66 is released the spring 65 raises the arm 62 thus restoring the parts
45 to normal position and throwing the dog 61 into the path of the beveled lug 60 which is now above the same. To restore the signal the solenoid 32 is energized whereby the core 31 is pulled downward thus swinging the
50 bar 9 upward and swinging the sectors 6 up into the housing. As the core 31 is pulled downward the lug 60 rides under the dog 61 thus locking the sectors within the housing. The operation of the lamp 53 is the same
55 as in the other cases.

In Fig. 9 I have shown still another application of the semaphore unit and this is particularly designed to be used in connection with the signal device forming the sub-
60 ject matter of my co-pending application filed December 18, 1918, Serial No. 267,237. In this instance the arms 7 are disposed as in Fig. 4 and the structure is similar to that used in Fig. 4, except that the latch device
65 and cords are omitted. The housing 12 and

hood 51 are attached to a mounting plate 70 which is secured to bracket 71, which in turn is fastened on the end of a tubular support 72. An operating rod 73 disposed in the tube passes through the bracket 71 and plate 70 and is attached to the bar 8 and by displacing the rod 73, the signal device and the bar 9 are swung downward and the sectors 6 permitted to fall by gravity. When the rod is moved in a reverse direction the bar 9 is swung upward and the signal restored.

I desire to particularly impress that the semaphore unit is interchangeable and may be applied in connection with various structures and further the illustrations as herein given are not limitations but merely exemplifications and various other structures could be evolved.

What I claim is:

1. A semaphore signal unit comprising the following elements: a plurality of separate and disconnected sectors, a support in which the sectors are mounted on a common pivot point, means for normally holding the sector in folded position arranged to release the sectors to permit the same to fall, and stops separate from the sectors for arresting the same in segmental order.

2. A semaphore signal unit comprising the following elements: a plurality of separate and disconnected sectors, a support in which the sectors are mounted on a common pivot point, means for normally holding the sector in folded position arranged to release the sectors to permit the same to fall, stops separate from the sectors for arresting the same in segmental order, and means for restoring the sectors to their folded position.

3. A semaphore signal unit comprising the following elements: a supporting structure, sectors mounted on a common pivot in said structure, web plates separating the sectors, and stepped stops in the path of the sectors positioned between said web plates, in combination with a housing into which the sectors are normally folded.

4. A semaphore signal unit comprising the following elements: a supporting structure, sectors mounted on a common pivot in said structure, web plates separating the sectors, and stepped stops in the path of the sectors positioned between said web plates, in combination with a housing into which the sectors are normally folded, and means for swinging the sectors into the housing.

5. A semaphore signal unit comprising the following elements: a supporting structure, sectors mounted on a common pivot in said structure, web plates separating the sectors, and stepped stops in the path of the sectors positioned between said web plates, in combination with a housing into which

the sectors are normally folded, an illuminating lamp associated with the sectors.

6. A semaphore signal unit comprising the following elements: a support, a plurality of sectors pivoted in the support, a plurality of stepped stops in the path of the sectors, and a swinging restoring member

including a pair of arms and a cross bar carried by the arms and extending under the sectors so as to swing the same upward when 10 said bar is swung upward.

In testimony whereof I affix my signature.

RALPH E. WEITER.