

(No Model.)

3 Sheets—Sheet 1.

G. W. SMITH.
SIGNAL LANTERN.

No. 440,206.

Patented Nov. 11, 1890.

Fig. 3.

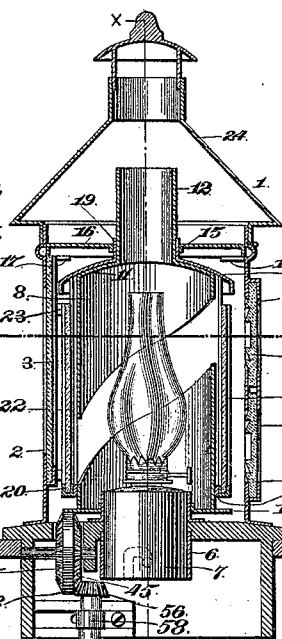
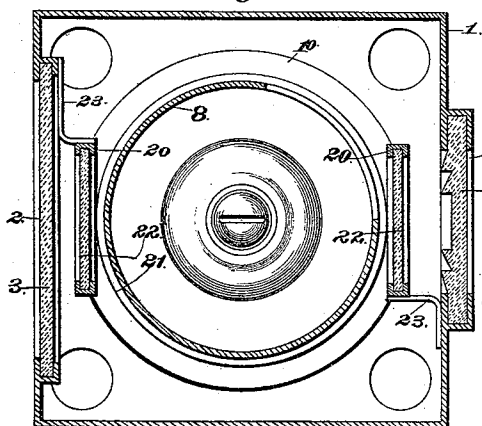


Fig. 1.

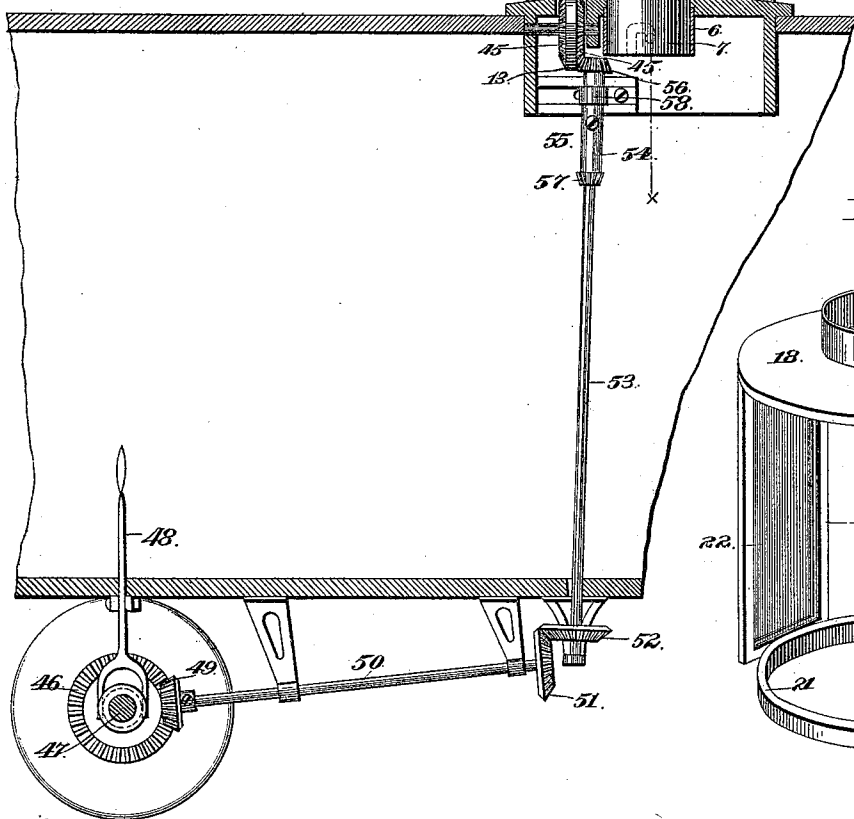
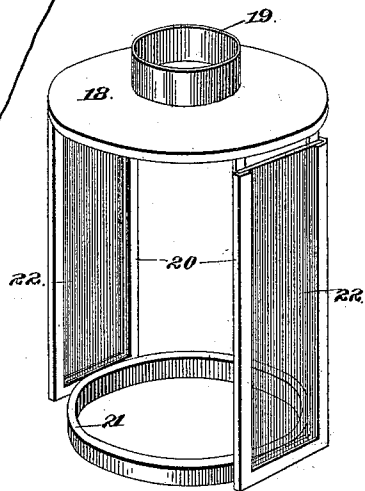


Fig. 5.



Witnesses

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George W. Smith

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Fig. 2.

Fig. 4.

Fig. 7.

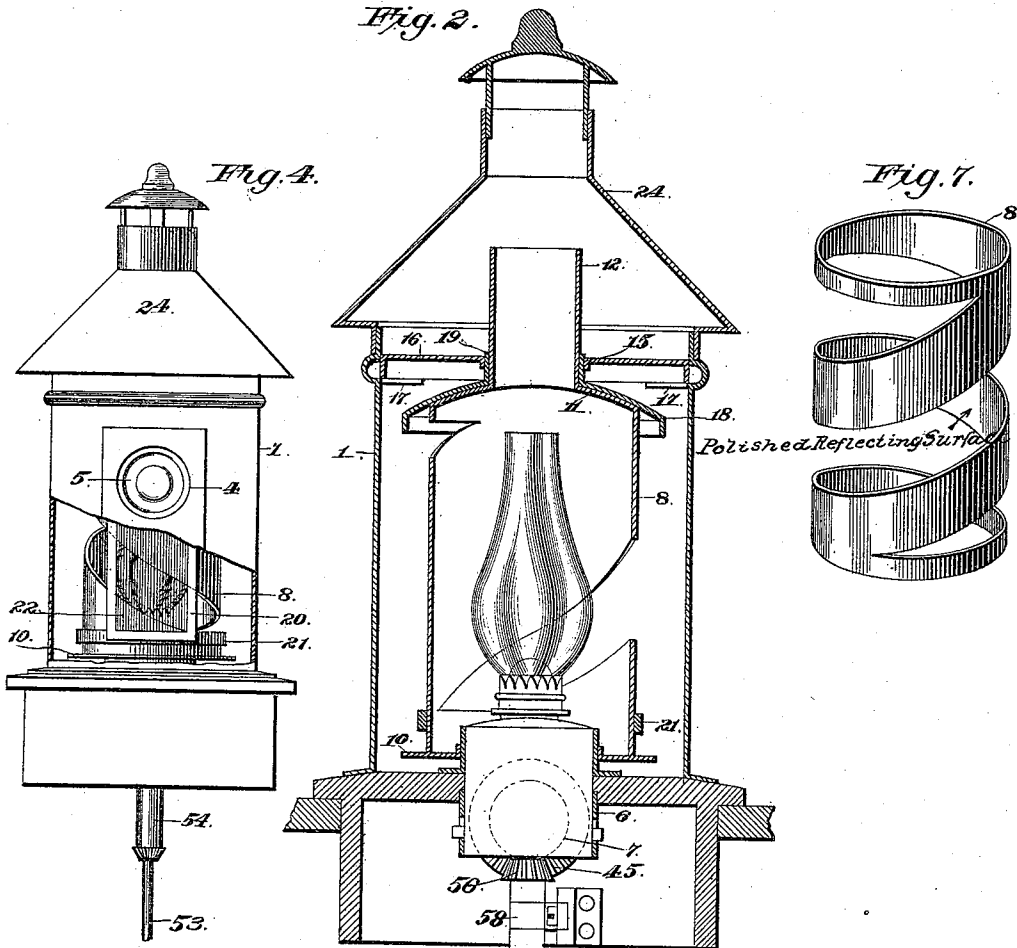
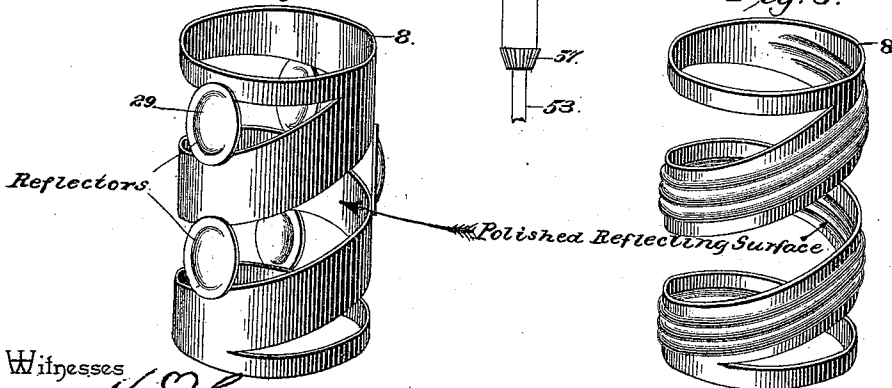


Fig. 9.

Fig. 8.



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Fig. 6.

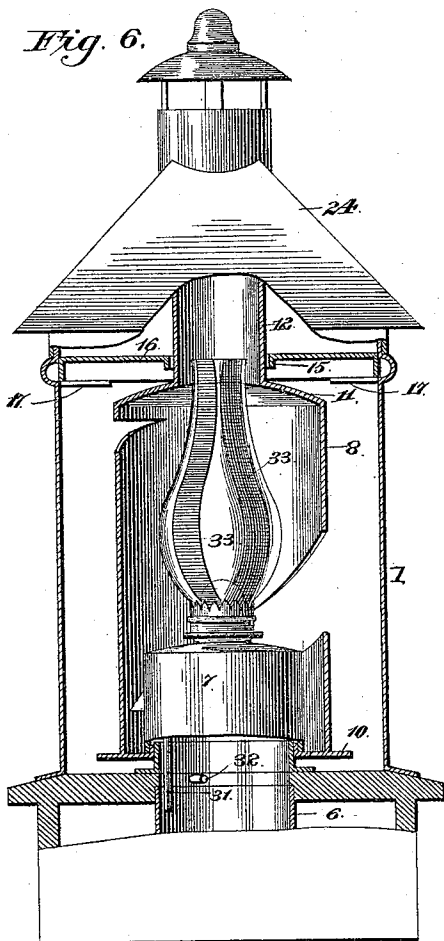
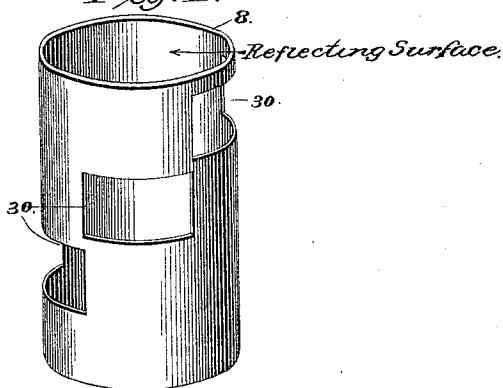


Fig. 10.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE WELLS SMITH, OF UNION CITY, INDIANA, ASSIGNOR OF ONE-HALF
TO JAMES B. HENDRICKS, OF SAME PLACE.

SIGNAL-LANTERN.

SPECIFICATION forming part of Letters Patent No. 440,206, dated November 11, 1890.

Application filed April 12, 1890. Serial No. 347,685. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WELLS SMITH, a citizen of the United States, residing at Union City, in the county of Randolph and State of Indiana, have invented a new and useful Signal-Lantern, of which the following is a specification.

This invention relates to signal-lanterns, and may be described as being an improvement on the device for which Letters Patent of the United States No. 413,577 were granted to myself on the 22d day of October, 1889.

The invention illustrated and claimed in the patent above referred to consisted in the combination, with a lantern-casing and lantern, of a revoluble cylinder encircling the lamp and having one or more spirals therein for the emission of light, said spirals being either in the nature of slots in a non-transparent cylinder or stripes, colored or otherwise, upon a transparent revoluble casing.

My present invention has, more particularly, reference to that class of revoluble cylinders which are slotted and non-transparent, although it is not necessarily confined thereto; and it consists first in so constructing the said revoluble casing as to reflect the light from the lamp placed within the same.

The invention further consists in interposing between the revoluble cylinder and the lantern-casing a partially-revoluble frame or casing having colored glasses placed therein to serve for signaling purposes.

The invention further consists in the various details of construction and operating mechanism, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a vertical sectional view illustrating a simple form of my invention applied to a railroad-car in position for operation. Fig. 2 is a vertical sectional view taken on the line *x x* in Fig. 1. Fig. 3 is a horizontal sectional view taken on the line *y y* in Fig. 1. Fig. 4 is a side elevation showing the side of the lantern-casing, which is provided with lenses for the emission of a flash-light, parts having been broken away for the purpose of showing the construction more clearly. Fig. 5 is a perspective detail view of the hood carrying the

frame, provided with the colored transparent slides. Fig. 6 is a vertical sectional view illustrating a modification whereby the hood having the colored slides is dispensed with, and whereby a lamp having a partly-colored chimney is mounted to partially revolve with the spirally-slotted casing. Fig. 7, 8, 9, and 10 are perspective detail views illustrating various modifications in the construction of the spirally-slotted cylinder.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates a lantern-casing, which may be of any suitable construction. In the drawings hereto annexed I have shown the front and rear sides of said lantern-casing as being provided, respectively, with a large opening 2, provided with a transparent pane 3, and with round openings 4 4 near its upper and lower ends, lenses 5 being seated in the said openings. The sides of the lantern-casing may be closed, as shown in the drawings, but are not necessarily so. The bottom of the lantern-casing is provided with a cylindrical sleeve 6, in which a lantern 7 is held removably by means of a bayonet-joint or other suitable fastening. The lamp, it will be seen, may be readily removed from the under side of the casing. In the construction of the lantern itself no novelty is claimed.

Arranged within the lantern-casing and surrounding the chimney of the lamp is the spirally-slotted cylinder 8. The simplest form of said cylinder has been shown in Figs. 1, 2, and 7 of the drawings, by reference to which it will be seen that it consists simply of the spirally-slotted cylinder of sheet metal, having its inner surface 8^a brightly polished. The lower edge of said cylinder is provided with an annular flange 10, and its upper end has a hood or cap 11, provided with upwardly-extending sleeve or collar 12.

At this point I desire explicitly to state that, although the spirally-slotted device is described and will be hereinafter referred to as being a cylinder, it is by no means essential that it should be true cylindrical in shape. Thus, for instance, it might be square or polygonal in cross-section, and yet operate as efficiently as the device illustrated in the accompanying drawings. I would also have it

distinctly understood that in view of the spirally-slotted non-transparent cylinder a transparent cylinder provided with spiral stripes may with equal efficiency be employed whenever desired.

Suitably mounted in the bottom of the lantern-casing is a friction wheel or disk 13, upon which the flange of the cylinder 8 is supported. It will be observed that by revolving the said friction-disk a rotary movement may be imparted to the said cylinder, the sleeve or collar 12 at the upper end of which has a bearing consisting of a central circular opening 15 in a plate or diaphragm 16, which is supported upon corner-brackets 17, near the upper end of the lantern-casing. A rotary motion may be imparted to the friction-disk either by hand or by mechanism of any suitable kind, which may be geared to the axle of a railroad-car or to operating mechanism of any suitable description. Mechanism for this purpose has been shown in Figs. 1 and 2 of the drawings, where it will be seen that the rotary friction-disk is provided on opposite sides with bevel-gears 45. 46 is a bevel-gear mounted slidingly upon the axle 47 of the car and having a grooved collar engaged by a shipping-lever 48, whereby the said bevel-gear may be thrown into or out of engagement with a pinion 49 on one end of a shaft 50. The other end of said shaft has a pinion 51 meshing with a bevel-gear 52 upon the lower end of a vertical shaft 53. The upper end of said shaft carries a sleeve 54, secured detachably by a set-screw 55, and provided at opposite ends with pinions 56 and 57 of different sizes. Either of these pinions may by reversing the sleeve be placed in engagement with one of the bevel-gears 45 upon the friction-disk 13, thereby imparting motion at different rates of speed to the said friction-disk. The upper end of the shaft 53 is mounted in a sliding box 58, and the lower end of said shaft is so mounted as to permit the shaft to rock or vibrate slightly at its upper end. It will be seen that by temporarily lowering the sleeve 54 to place the pinion at its upper end out of engagement with the bevel-gears upon the friction-wheel the shaft may be vibrated so as to shift the operating-pinion from one side of the friction-wheel to the other, thus reversing the direction of rotation and making it unnecessary to turn the car to which the device is applied around when its destination is reached and the return-trip is to be commenced. Any other suitable mechanism may, however, be used for transmitting motion.

18 designates a hood or cap supported upon the cap 11 at the upper end of the cylinder 8 and having a sleeve or collar 19 encircling the sleeve or collar 12. The hood or cap 18 is provided on opposite sides with depending frames 20, connected at their lower ends by a ring 21 and serving to hold in position the slides 22 of colored glass. Upon the inner side of the lantern-casing 1 are suitably-ar-

ranged stops 23, which serve to arrest the hood having the depending rings or flanges 21 at the proper point, said stops being arranged adjacent to the opening 2 in the front side of the lantern-casing. The top of the lantern-casing is provided with a hinged cover 24, through which access may be conveniently had to the interior of the casing.

The operation of this part of my invention will be readily understood. When the cylinder 8 is rotated in one direction, one of the frames or flanges 20 will be held in contact with one side of the stop 23, thus preventing the colored slides from swinging between the said cylinder and the front and rear sides of the lantern-casing. As soon as the direction of rotation is reversed the hood or cap 18, which rests frictionally upon the cap 11 at the upper end of the revolving cylinder, will partially rotate with the latter, thus causing the colored glasses 22 to swing into position behind the front and rear sides of the lantern-casing, thereby causing the light emitted through the openings in said lantern-casing to assume the color of the said glasses. The hood 18, instead of being provided with only two depending frames of diametrically-opposite sides, may be provided with four such frames arranged equidistantly, and having differently-colored glasses. It may then, by properly adjusting it in the casing, be used for the purpose of giving different-colored signals. It will also be seen that the said hood may be very conveniently exchanged for one provided with depending frames having differently-colored glasses.

In Fig. 8 I have shown a modification in the construction of the spirally-slotted cylinder, which consists in corrugating the same for the purpose of increasing the reflecting qualities thereof. The corrugations may run either longitudinally, transversely, or diagonally.

Another modification in the construction of said cylinder will be seen in Fig. 9. In this case the spiral slot in the cylinder is provided at suitable intervals with independent reflectors. (Designated by 29).

Still another modification in the construction of the said cylinder will be seen in Fig. 10. In this case the cylinder, instead of a continuous spiral slot, is provided with a spirally-arranged series of openings 30, which, as will be readily understood, serve particularly the same purpose.

In Fig. 6 of the drawings I have illustrated a modification whereby the hood 18, having the depending rings 21, may be dispensed with. In this case the lamp is supported upon the flange at the lower end of the revoluble spirally-slotted cylinder, so as to be capable of partially rotating with the latter. The said lamp is provided with a downwardly-projecting pin 31, adapted to engage a stop 32, projecting upwardly from the bottom of the lantern-casing, thereby limiting the extent to which the said lamp shall be capable of being

rotated in either direction. The lamp-chimney is provided on diametrically-opposite sides with vertical stripes 33 of suitable colors, which, as will be readily understood, may be swung into or out of line with the openings in the front and rear sides of the lantern-casing, according to the direction in which the spirally-slotted cylinder is being rotated.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood. When the device is used as a stationary signal, the revolving spirally-slotted cylinder may be operated by hand or by mechanism of any description, actuated, for instance, by weights or springs. When the device is to be used upon a caboose or railroad-car, the revoluble spiral cylinder may be geared to one of the axes of the railroad-car to which it is applied, and it is then obvious that said cylinder will be rotated in opposite directions according to the direction of the movement of the car, thus indicating by the apparent upward or downward movement of the light the direction in which the car is moving and also to some extent the speed at which it is moving. When the car is moving in one direction, the light will show white, and as soon as the direction of movement is reversed the colored slides or the colored sides of the lantern will swing into position, thus automatically giving the required signal.

In the practical manufacture of this invention I may find it expedient to adopt various modifications and changes in the construction and arrangement of details which have not been specifically referred to in the foregoing description. Thus, for instance, instead of operating the revoluble spirally-slotted cylinder by means of a friction-disk, as herein shown, I may find it expedient to actuate it by means of positive gearing. Again, the detailed construction of the said cylinder may be altered beyond the modifications herein described. Again, all four sides of the lantern-casing may be provided with openings for the emission of light, and each side may be provided either with a single glass or with several openings provided with lenses. When such lenses are properly arranged, they may be so located that only one at a time shall be in the path of the spiral stripe of light, and the appearance at a distance will thus be that of a flash-light, the upper and lower lenses being alternately in the path of the light.

I desire it to be distinctly understood that I reserve the right to any and all changes, alterations, and modifications in the construction and arrangement of the device or any of the parts of the same which may be resorted to without departing from the spirit of my invention.

When desired, the device may be constructed with additional slides of various colors, thus causing different colors to be shown, according to the direction of the movement of

the car, and making the device what might be termed a "changeable" signal-lantern.

Having thus described my invention, what I claim is—

1. The combination, in a signal-lantern, of a lamp, a cylinder having spirals therein for the emission of light, a lantern-casing, and colored signal-slides arranged within the lantern-casing and adapted to be adjusted between the cylinder and the sides of the lantern-casing, having openings for the emission of light, substantially as set forth.

2. In a signal-lantern, the combination of a lamp, a revoluble spirally-slotted cylinder, and colored signal-slides arranged within the lantern-casing and adapted to be actuated by said cylinder, substantially as set forth.

3. In a signal-lantern, the combination of the lamp, the revoluble cylinder having spirals therein for the emission of light, and a hood supported on said cylinder and having depending frames provided with colored slides, substantially as set forth.

4. The combination of the lamp, the revoluble spirally-slotted cylinder, the hood supported frictionally on said cylinder and having frames provided with colored slides, and stops to limit the rotation of said hood and frames in either direction, substantially as set forth.

5. The combination of the lamp, the revoluble spirally-slotted cylinder, the hood supported frictionally upon the latter and having colored transparent slides, and the lantern-casing having slots to limit the rotation of said hoods and slides, substantially as set forth.

6. The combination of the lamp, the revoluble spirally-slotted cylinder, the colored signal-slides connected frictionally with said revoluble cylinder, and stops to limit the rotation of said signal-slides, substantially as set forth.

7. The combination of the lamp, the revoluble spirally-slotted cylinder, the signal-slides connected frictionally with said revoluble cylinder, the lantern-casing, and stops within said casing to limit the rotary movement of the signal-slides, substantially as set forth.

8. In a signal-lantern of the class described, the combination, with the lamp and lantern-casing, of a metallic or non-transparent revoluble spirally-slotted cylinder having its inner surface brightly polished to form a reflecting-surface, substantially as set forth.

9. In a signal-lantern of the class described, the combination, with the lamp and lantern-casing, of a metallic or non-transparent revoluble spirally-slotted cylinder having its inner surface brightly polished to form a reflecting-surface and provided with independent reflectors secured at intervals in the said spiral slot, substantially as set forth.

10. The combination of the lamp, the revoluble spirally-slotted cylinder, and the lantern-casing, one or more sides of which

are provided with lenses located in different planes, substantially as set forth.

11. The combination of a lamp, a revoluble spirally-slotted reflecting-cylinder, a lantern-casing one or more sides of which are provided with lenses located in different planes, and the colored signal-slides connected frictionally with the revoluble cylinder, substantially as set forth.

12. The combination of the lamp, the revoluble spirally-slotted cylinder, the lantern-casing having one or more sides provided with lenses located in different planes, the signal-slides connected frictionally with the revoluble cylinder, and stops to limit the rotary movement of said signal-slides, substantially as set forth.

13. The combination of the lamp, the lantern-casing, the friction-wheel journaled in the bottom of the latter, the revoluble spirally-slotted cylinder having a flange bearing upon said friction-wheel and provided at its upper end with a hood having a sleeve or collar, and a diaphragm mounted in the lantern-casing and having an opening forming a bearing for said sleeve or collar, substantially as set forth.

14. The combination of the lamp, the lantern-casing, the friction-wheel journaled in the bottom of the latter, the revoluble spirally-slotted cylinder having a flange bearing upon said friction-wheel and provided at its upper end with a hood having an upwardly-extending sleeve, a diaphragm mounted detachably upon brackets in the lantern-casing and having an opening forming a bearing for the said sleeve, and a top or cover hinged to said lantern-casing, substantially as set forth.

15. The combination of the lamp, the lantern-casing, the revoluble cylinder having a hood provided with an upwardly-extending sleeve, the diaphragm mounted in the lantern-casing and having a bearing for said sleeve, and a hood or cap mounted upon the revoluble cylinder and having depending frames provided with signal-slides, substantially as set forth.

16. The combination of the lamp, the revoluble spirally-slotted cylinder having a hood provided with an upwardly-extending sleeve, the diaphragm mounted in the lantern-cas-

ing and having a bearing for said sleeve, the hood or cap mounted upon the lantern-casing and having frictional contact with the latter, stops within the lantern-casing to limit the rotary movement of said hood, and frames depending from the latter and having signal-slides, substantially as and for the purpose set forth.

17. The combination of the lamp, the revoluble spirally-slotted cylinder, the hood supported frictionally upon the latter and having the depending frames provided with signal-slides, and a ring or band connecting the lower ends of said frames, substantially as set forth.

18. The combination of the lantern-casing, a friction-wheel journaled in the bottom thereof, a revoluble spirally-slotted cylinder having a flange bearing upon said friction-wheel, a lamp within said spirally-slotted cylinder, a hood at the upper end of the latter, having an upwardly-extending sleeve, a diaphragm supported detachably in the lantern-casing and having a bearing for said sleeve, a top or cover hinged to the lantern-casing, and a hood supported frictionally upon the revoluble cylinder and having depending frames provided with signal-slides, and stops within the casing to limit the rotary movement of said hood and slides, substantially as and for the purpose set forth.

19. The combination of the lantern-casing, the revoluble spirally-slotted cylinder, the friction-wheel supporting the latter and provided with bevel-gears on opposite sides, the vertical shaft having its upper end mounted in a sliding box, a sleeve mounted detachably upon the upper end of said shaft and provided with pinions of different sizes at its upper and lower ends to engage the bevel-gears upon the friction-wheel, and mechanism for rotating or transmitting motion to the vertical shaft, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEO. WELLS SMITH.

Witnesses:

HENRY N. GARRIS,
D. HENNESSEY.