

G. H. BUTTERWORTH & E. VEEVERS.
FLASH LIGHT SIGNALING APPARATUS.
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973,913.

Patented Oct. 25, 1910.

FIG. 1.

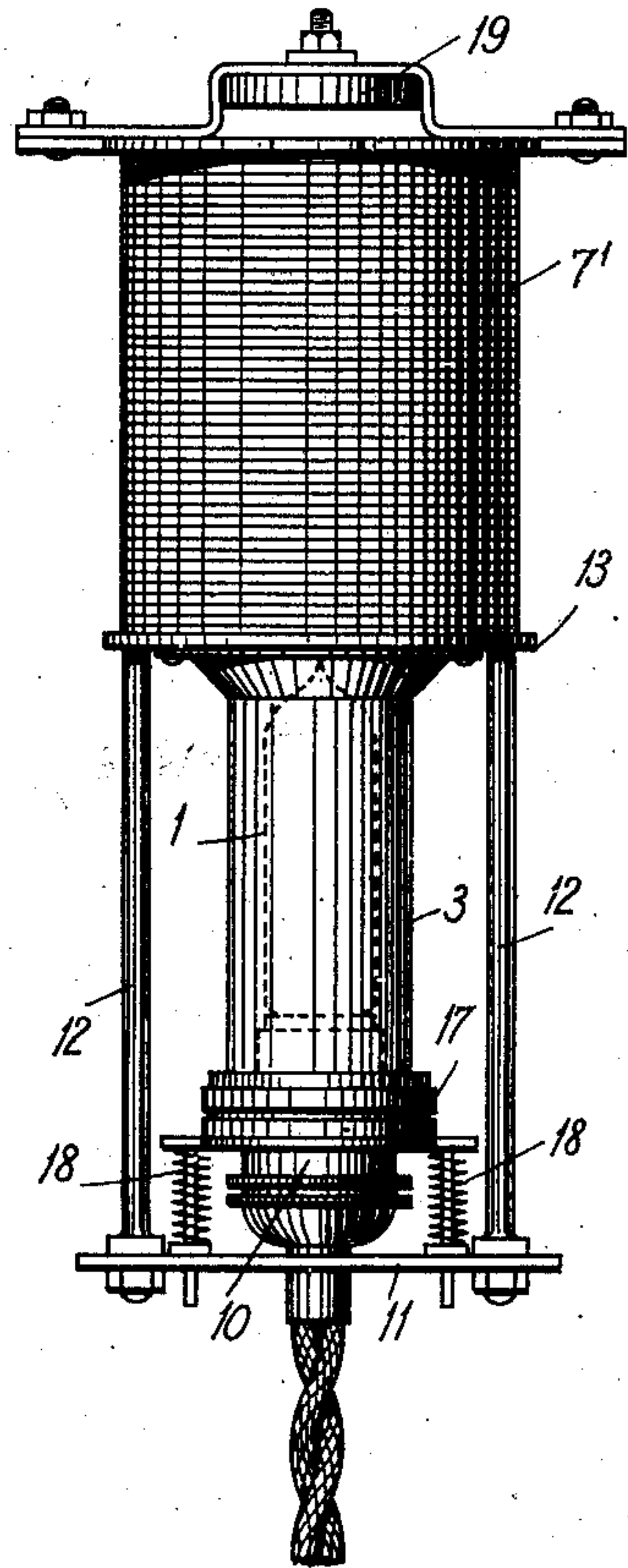


FIG. 3.

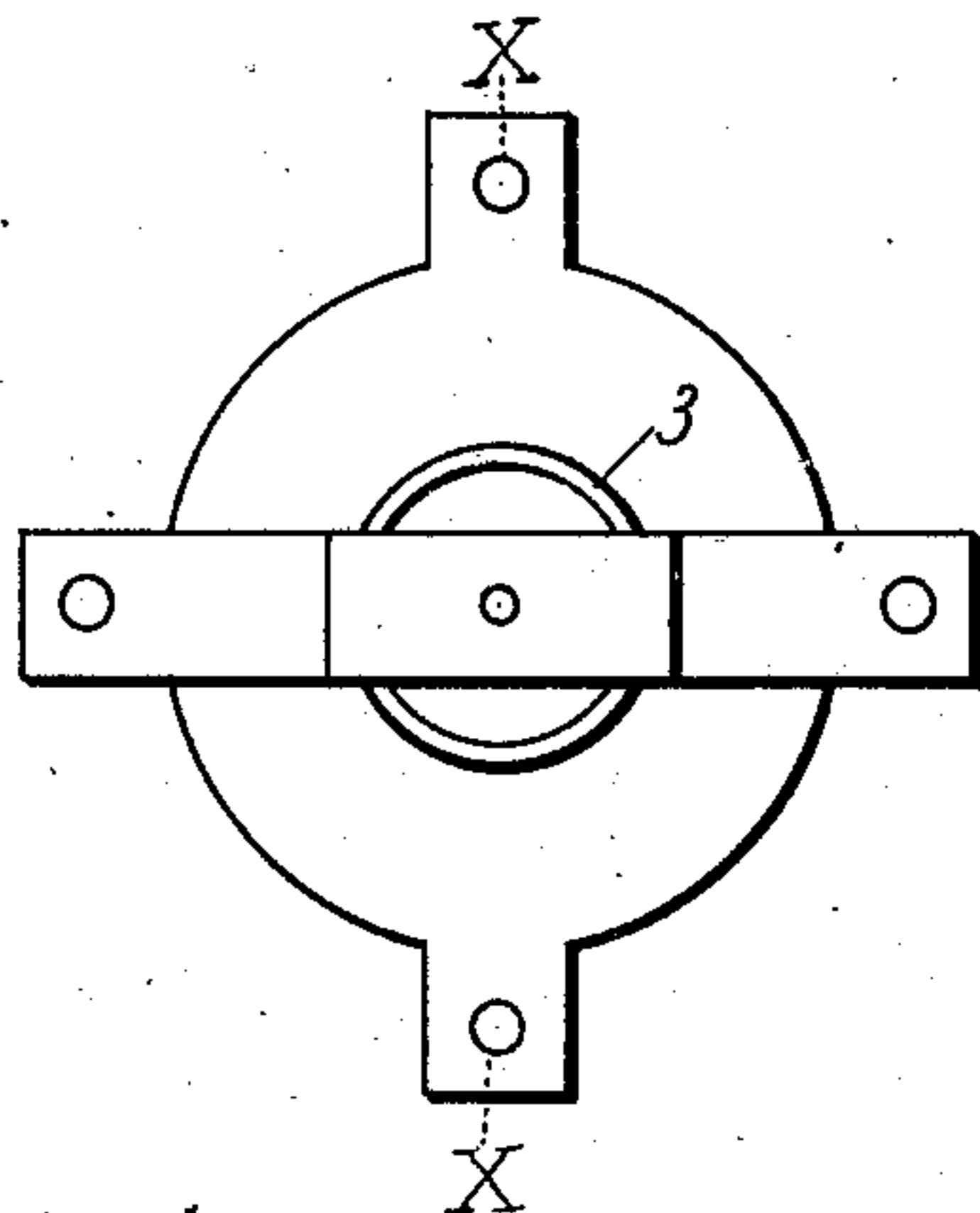
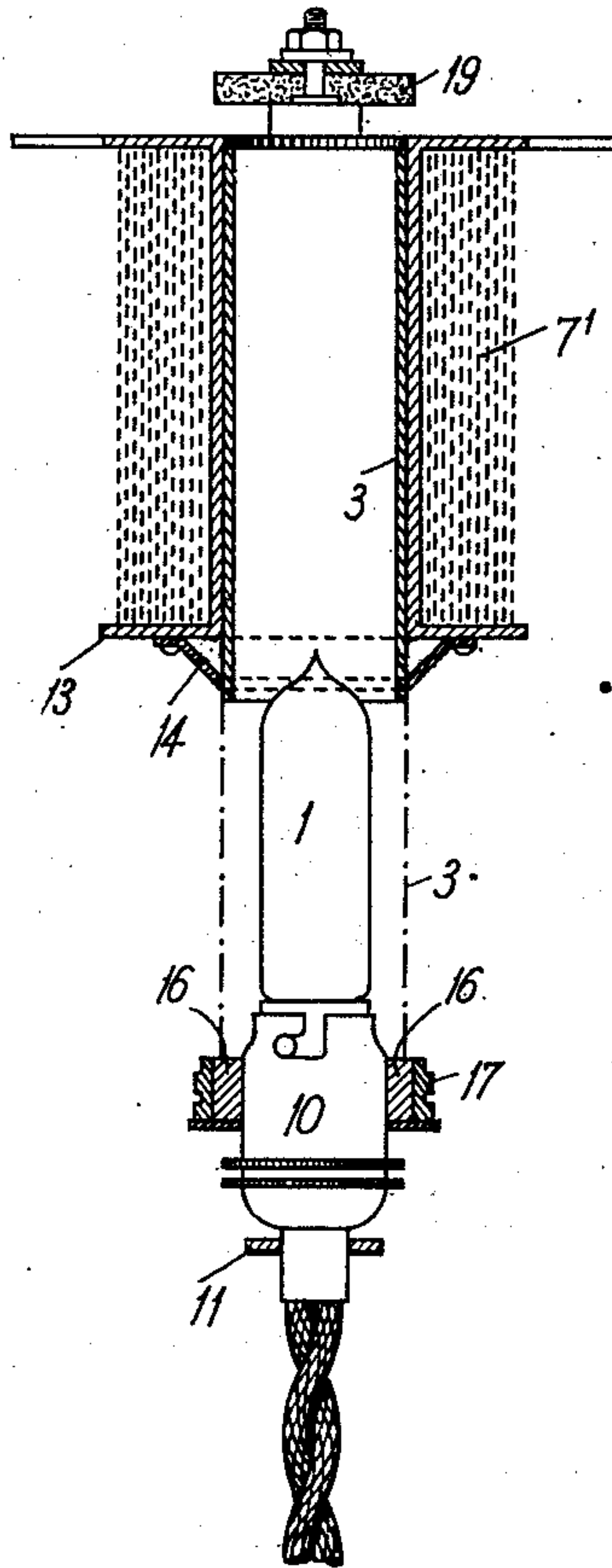


FIG. 2.

Attest:

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UNITED STATES PATENT OFFICE.

GEORGE HERBERT BUTTERWORTH AND EDMUND VEEVERS, OF LIVERPOOL, ENGLAND.

FLASH-LIGHT SIGNALING APPARATUS.

973,913.

Specification of Letters Patent.

Patented Oct. 25, 1910.

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To all whom it may concern:

Be it known that we, GEORGE HERBERT BUTTERWORTH and EDMUND VEEVERS, subjects of the King of Great Britain, and residing in Liverpool, in the county of Lancaster, England, have invented certain new and useful Improvements in Flash-Light Signaling Apparatus, of which the following is a specification.

This invention relates to flash light signaling apparatus of that type which comprises a lamp and a movable opaque screen which normally shrouds the lamp but which can be withdrawn at will by electro-magnetic means so as to expose the light and give a flash of any desired duration.

The object of the invention is to provide an apparatus of this type of very simple construction in which the mass to be moved in order to shroud or expose the light is reduced to a minimum, so as to permit the signaling to be effected at a high rate of speed.

We have illustrated our invention in the accompanying drawings in which—

Figure 1 shows the apparatus in elevation with the screen 3 in its lowered position shrouding the light, Fig. 2 is a plan with the cushion 19 removed, and Fig. 3 is a sectional elevation on the line X X of Fig. 2, showing the screen in its raised position, exposing the light.

7 is a solenoid wound on the bobbin 13, to the bottom plate of which the rods 12 are secured; these rods are fixed at their lower ends to the cross bar 11.

The lamp 1, which is preferably an incandescent electric lamp with a cylindrical bulb, is held by a lamp holder 10 which is carried by the cross bar 11. As shown, the lamp is arranged below the solenoid and co-axially therewith.

3 is a tube of soft iron which serves both as the core of the solenoid and the screen for the lamp. This tube slides freely within and is guided by the bore of the solenoid bobbin, and when the solenoid is not energized, the tube rests by gravity in its lowermost position, as shown in Fig. 1, shrouding the lamp.

The electrical circuit wires, which are not shown, are controlled by switches of any usual and suitable type, located at the signaling place or places, such as the bridge or chart-room when fitted on board ship.

The mode of action will be readily under-

stood; normally the solenoid circuit is broken and the screen 3 rests in its lowest position shrouding the lamp as shown in Fig. 1. When a flash of any desired duration is required, the switch of the solenoid circuit is closed for the time being, and the solenoid being thus energized, it draws up the screen 3 in opposition to its weight, as shown in Fig. 3, and so allows the light to shine all around the horizon. As soon as the solenoid circuit is broken, the screen again falls by its weight and cuts off the light. An annulus 16 of asbestos or other yielding cushion is arranged for the screen 3 to fall on, and this annulus is preferably carried in a cup 17 which is itself spring supported as shown at 18.

19 is a cushion arranged above the solenoid for the top of the screen to strike against.

It will be observed that in our apparatus, the mass to be moved in order to expose or shroud the light is reduced to the absolute minimum, being no more than that of the screen itself, there being no added mass to form the solenoid core, as the screen forms itself the solenoid core also. This feature is of the greatest importance in facilitating rapidity of signaling; the screen with any attachments thereto has to be started, accelerated into rapid motion and arrested several times for each letter signaled, and any unnecessary mass is thus most detrimental, as it reduces the speed of signaling, calls for heavier currents, and causes concussion and wear and tear.

The construction is simple and not likely to get out of order, as there are no complicated electric circuits and the solenoid acts directly upon the screen, there being no interposed levers or other articulations.

The screen is moved into and retained in the shrouding position by gravity and the solenoid circuit is then broken, so that no electrical energy is consumed by the operative mechanism except during the time while the lamp is actually exposed to give the flash.

Having now fully described our invention, we declare that what we claim, and desire to secure by Letters Patent is:—

1. In a flash light signaling apparatus, in combination; a continuously lighted lamp adapted to shine all around; a solenoid located co-axially with said lamp; and a tubular core for said solenoid forming a screen for the lamp and adapted to expose

the latter when withdrawn therefrom by the solenoid; substantially as described.

2. In a flash light signaling apparatus, in combination; a continuously lighted lamp
5 adapted to shine all around; a solenoid located co-axially above said lamp; and a tubular core for said solenoid forming a screen for said lamp and urged by its weight into
10 position to screen said lamp; substantially as described.

3. In a flash light signaling apparatus, in combination; a continuously lighted lamp adapted to shine all around; a solenoid located co-axially above said lamp; a tubular
15 core for said solenoid forming a screen for said lamp and urged by its weight into position to screen said lamp; and yielding cushions to receive the impacts of the screen; substantially as described.

20 4. In a flash light signaling apparatus, in combination; a continuously lighted lamp adapted to shine all around; a solenoid located co-axially above said lamp; a tubular core for said solenoid forming a screen for
25 said lamp and urged by its weight into position to screen said lamp; a yielding cushion

for the top of the screen, carried by the frame of the solenoid; a second cushion for the base of the screen; and a spring-supported cup carrying said lower cushion; substantially as described. 30

5. In a flash light signaling apparatus, in combination; a solenoid; a pair of rods depending from the solenoid; a cross bar carried by said rods; a continuously lighted
35 lamp carried by said cross bar co-axially below the solenoid; a tubular core for the solenoid guided by the solenoid frame and adapted to shroud the lamp when in its lowest position; cushions for the screen, and a
40 cup for one of the cushions, supported by springs from the said cross bar; substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two sub-
45 scribing witnesses.

GEORGE HERBERT BUTTERWORTH.
EDMUND VEEVERS.

Witnesses:

ROBERT A. SLOAN,
JOSEPH E. HIRST.