Aug. 5, 1958 R. E. CROSSLEY 2,846,675

SIGNAL LIGHT GUN

Filed April 9, 1957 3 Sheets-Sheet 1

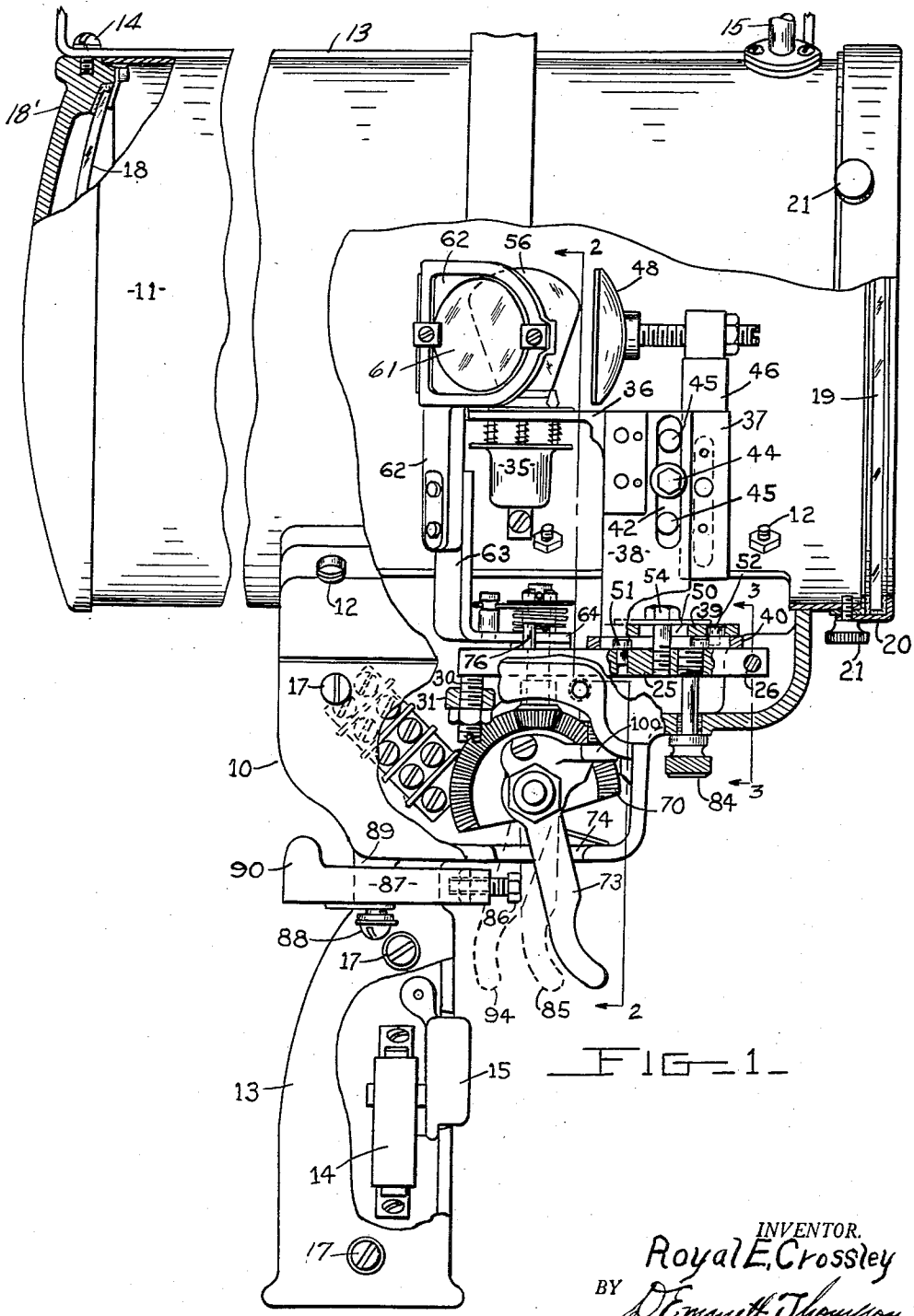


FIG. 1

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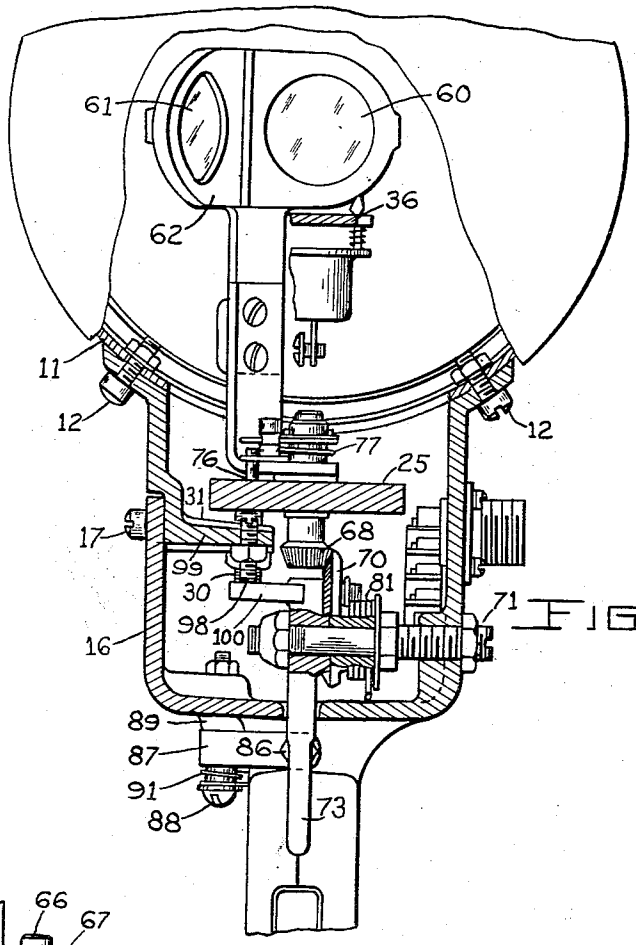


FIG-2-

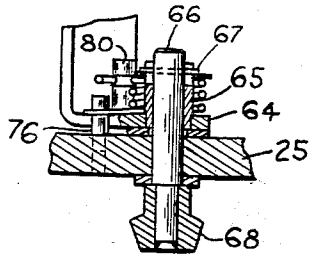


FIG-4-

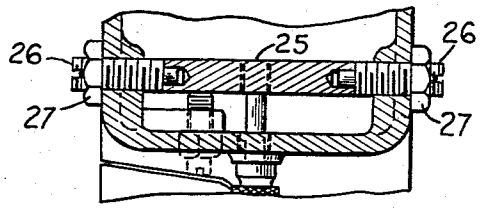


FIG-3-

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SIGNAL LIGHT GUN

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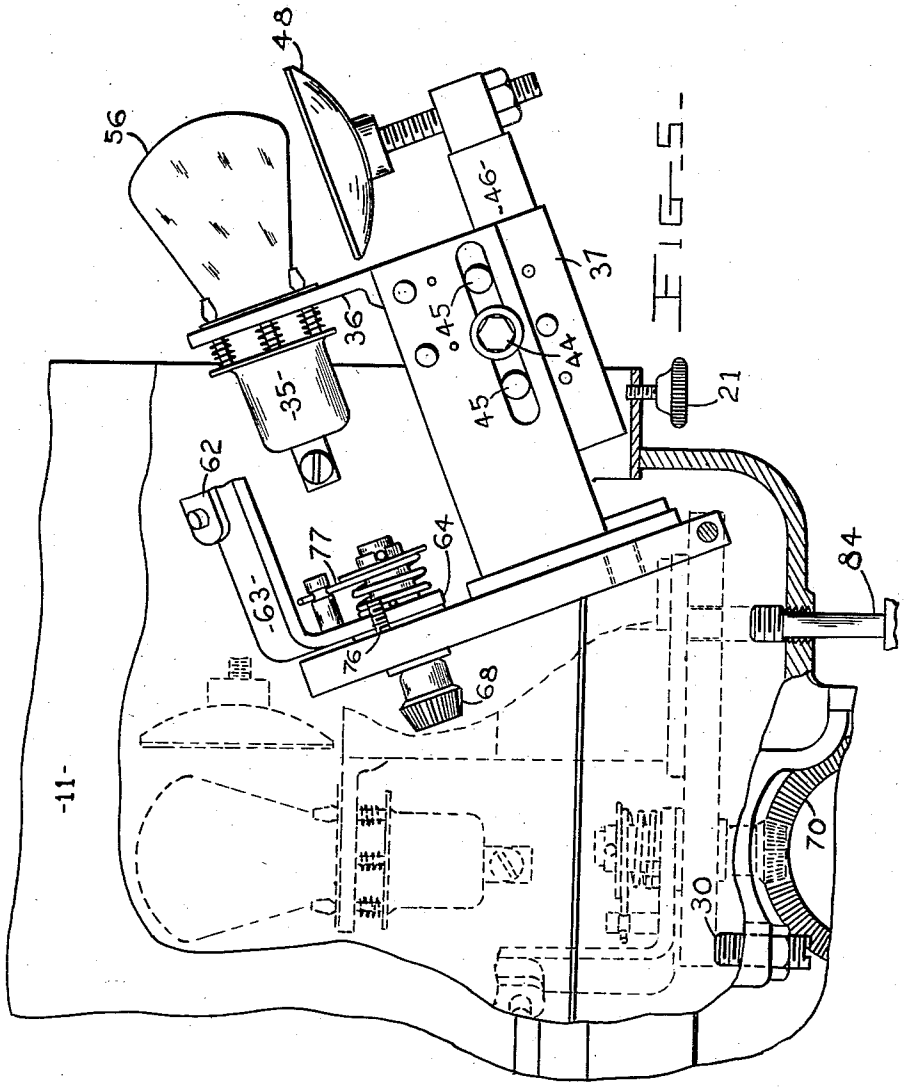


FIG-5-

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SIGNAL LIGHT GUN

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Application April 9, 1957, Serial No. 651,775

6 Claims. (Cl. 340—366)

This invention relates to signal light guns employing an electric lamp for a light source. These guns consist generally of a housing having an optical system consisting of a reflector and lens, with a lamp positioned at the focal point of the reflector. Heretofore, the casing was provided with a pair of handles for bodily manipulation of the casing, one of which contained a trigger operated switch for controlling the current supplied to the lamp, and the other handle was operatively connected to a pair of light filters which were selectively moved into the axis of the reflector by manipulation of the second handle member. These signal gun lights are used extensively for transmitting signals to ships, airplanes, etc. These prior signal gun lights required both hands for their operation, and it was difficult to renew the lamp which was positioned within the housing substantially midway between the ends thereof.

The invention has as an object a signal light provided with a frame mounted in the housing and which carries both the lamp receptacle and the support for the filters, and which is movable to shift the lamp from the focal point of the reflector exteriorly of the casing, whereby the signal light gun may be quickly and conveniently relamped, this shifting of the frame with its appurtenances not interfering with the motion transmitting mechanism between the filter support and its operating trigger mounted in the handle.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

In the drawings—

Figure 1 is a side elevational view of a signal gun lamp embodying my invention, a portion of the casing and handle structure being broken away and parts being shown in section.

Figure 2 is a view taken on line 2—2, Figure 1.

Figure 3 is a fragmentary sectional view taken on line 3—3, Figure 1.

Figure 4 is a vertical sectional view showing the mounting arrangement of the filter support.

Figure 5 is a view illustrating the receptacle and filter supporting frame moved to shift the lamp exteriorly of the casing.

The housing of the light gun consists of a handle structure indicated generally at 10, Figure 1, which is secured to a tubular casing 11, as by means of screws 12. A sight bar 13 is attached to the top of the casing as by screws 14, and a stem 15 extends upwardly from the front portion of the casing and is formed at its upper end with a hook, not shown, by which the signal gun may be suspended. The handle structure is hollow being split lengthwise and having a side portion 16 held in position by screws 17 generally conforming to the arrangement of handle structures commonly employed upon power operated hand tools.

The casing 11 is provided at one end with a reflector 18 secured to the inner surface of a closure 18'. The casing is open at its opposite end, and this open end is provided with a lens 19 mounted in an annular member 20 detachably secured to the open end of the casing, as by screws 21.

A frame is mounted in the upper portion of the handle structure and is here shown in the form of a plate 25, and is pivotally mounted at its forward end on screws 26. These screws are threaded into the side walls of the upper portion of the handle structure and provide for transverse adjustment of the plate 25 and are locked in position by jam nuts 27. The rear end of the plate engages a stop screw 30 threaded into an arm 31 extending inwardly from one wall of the handle structure, see Figures 1 and 2. This screw provides an adjustable stop for the plate 25 when it is in normal position, as shown in Figures 1 and 2. A lamp receptacle 35 is carried by the frame 25, the receptacle being suspended from a bracket 36 having a plate portion 37 overlying an angle plate 38, the lower leg 39 of which is positioned on a plate 40 positioned on the frame plate 25. The vertically extending leg 38 of the angle plate is formed with a vertically extending elongated slot 42. The bracket plate 37 is tapped to receive a screw 44 extending through the slot 42, and the plate 39 is also, provided with a pair of dowels 45 slidably disposed in the slot 42.

With this arrangement, the plate 37 carrying the receptacle 35 may be adjusted toward and from the frame plate 25. A vertically extending member 46 is mounted on the plate 37 for vertical adjustment, and carries a still light reflector 48.

The lower leg 39 of the supporting angle plate is formed with an enlarged aperture 50, as is likewise the under plate 40. The frame plate 25 is provided with dowel pins 51 positioned in a slot in the bottom plate 40 extending parallel to the axis of the reflector, and the plate 40 is provided with similar pins 52. With this arrangement, the angle plate can be adjusted in directions parallel and transversely of the axis of the reflector and secured in adjusted position by cap screw 54 extending through the plates 39, 40, and threading into the frame plate 25. With this arrangement, the lamp 56 may be positioned at the focal point of the reflector 18, and the still light reflector 48 properly adjusted, as will be apparent from Figures 1 and 5.

The gun is provided with a pair of light filters 60, 61, one of which is usually red, and the other green. These filters are mounted in a frame 62 secured to the upper leg 63 of an angular bracket, the other leg 64 of which is provided with an apertured collar 65 mounted upon and secured to a shaft 66, as by pins 67, see Figure 4. The shaft 66 is journalled in the frame plate 25, and is provided at its lower end with a beveled pinion gear 68. When the frame is in normal position, as shown in Figure 1, with the lamp 56 positioned at the focal point of the reflector, the pinion 68 is arranged in mesh with a gear quadrant 70, see Figures 1 and 2. The gear quadrant 70 is journalled on a stud 71 threaded in one side wall of the upper portion of the handle structure, and the gear quadrant is fixedly secured to a trigger 73 which extends downwardly through a slot 74 formed in the bottom wall of the upper portion of the handle structure, see Figure 1, whereby the lower end of the trigger is arranged in juxtaposition to the lower portion 13 of the handle structure, whereby the trigger may be conveniently operated by the index finger of the hand.

This gearing arrangement forms motion transmitting means to effect movement of the filter frame 62 by actuation of the trigger 73 to selectively position the filters 60,

61, in the focal axis of the reflector intermediate the reflector and the lamp 56.

The lower leg 64 of the angle bracket supporting the filter frame 62 is yieldingly held against a stop pin 76. This positions the filter 60 in the axis of the reflector 18. This position is maintained by a torsion spring 77 coiled about the hub member 65, one end of the spring engaging the stop pin 76, and the opposite end engaging a pin 80 carried by the leg 64 of the bracket. The trigger 73 is yieldingly maintained forwardly, or in the full line position shown in Figure 1, by a similar torsion spring 81.

The frame plate 25 is maintained in normal position against the stop screw 30 by a screw 84 extending through the bottom wall of the upper handle structure and threading into the plate and having a knob positioned exteriorly of the housing, see Figures 1 and 5.

When the trigger 73 is moved rearwardly to the dotted line position 85, Figure 1, the screen 60 is shifted out of the axis of the reflector and the screen 61 is shifted into the axis of the reflector to give light beam of different color. This operation of the trigger is controlled by the trigger engaging a stop screw 86 threaded into a stop member 87 pivotally mounted on a screw 88 threaded into a boss 89 formed on the handle structure, the stop member 87 having a tail portion 90 positioned for convenient manipulation by the thumb. The stop 87 is yieldingly maintained in position for engagement by the trigger by a torsion spring 91, see Figure 2.

With this arrangement, the stop member 87 can be conveniently moved about the pivot screws 88 so that the adjusting screw 86 will not be engaged by the trigger 85, and it may be moved further rearwardly to the dotted line position 94, Figure 1, in which event the second filter 61 is moved out of, or past, the axis of the reflector for the emission of a white beam from the gun.

When it is desired to relamp the gun, the lens ring 20 is removed and the screw 84 unthreaded from the frame plate 25. The frame plate, together with all of the appurtenances carried thereby, is then moved about its pivotal mounting 26 to the position shown in Figure 5. The lamp 56 is then positioned exteriorly of the casing where it may be conveniently removed from the receptacle 35 and a new lamp re-inserted. Upon this movement of the frame plate, the spring 77 will return the filter screen frame to its normal position. The spring 81 will return the trigger 73 to its normal position which may be accurately adjusted by a screw 98 threaded into an arm 99, similar to the arm 31, and which engages a laterally extending portion 100 of the trigger. Accordingly, when the frame plate 25 is returned to normal position against the stop screw 30, the gears 68, 70, automatically mesh in correct relation.

What I claim is:

1. A signal light gun comprising a housing consisting of a tubular casing and a hollow handle structure secured to the casing intermediate the ends thereof, said casing having a reflector mounted in one end thereof, the opposite end of the casing being open, a lens detachably secured to the open end of the casing, a frame mounted in said housing, a lamp receptacle carried by said frame, a filter support journalled in the frame, a filter carried by said support, a trigger mounted in the handle structure, said frame being normally positioned with a lamp mounted in said receptacle being positioned at the focal point of the reflector, motion transmitting mechanism connecting said trigger to said filter support and being operable upon movement of said trigger to move said screen into and out of the axis of said reflector intermediate the lamp and the reflector, said frame being movable in the housing to move the lamp from the focal point of the reflector to the open end of the casing, said motion transmitting means including parts carried by the trigger and said frame, and said parts being movable into and out of engagement upon movement of said frame toward and from normal position.

2. A signal light gun comprising a housing consisting of a tubular casing and a hollow handle structure secured to the casing intermediate the ends thereof, said casing having a reflector mounted in one end thereof, the opposite end of the casing being open, a lens detachably secured to the open end of the casing, a frame pivotally mounted in said housing and normally extending in parallel spaced relation to the focal axis of said reflector, a lamp receptacle carried by said frame for positioning a lamp at the focal point of the reflector when said frame is in normal position, a filter support journalled in the frame, a filter carried by said support, a trigger mounted in the housing, motion transmitting means carried in part by said frame and in part by said trigger and being operable upon movement of the trigger with said frame in normal position to move said filter into and out of the axis of the reflector intermediate the lamp and reflector, said frame being movable about its pivotal mounting to position said lamp at the open end of the casing, said motion transmitting parts being movable into and out of engagement upon movement of said frame about its pivot.

3. A signal light gun comprising a housing consisting of a tubular casing and a hollow handle structure secured to the casing intermediate the ends thereof, said casing having a reflector mounted in one end thereof, the opposite end of the casing being open, a lens detachably secured to the open end of the casing, a frame mounted in said housing, a lamp receptacle carried by said frame, a filter support journalled in the frame, a filter carried by said support, a trigger mounted in the handle structure, said frame being normally positioned with a lamp mounted in said receptacle being positioned at the focal point of the reflector, motion transmitting mechanism connecting said trigger to said filter support and being operable upon movement of said trigger to move said screen into and out of the axis of said reflector intermediate the lamp and the reflector, said frame being movable in the housing to move the lamp from the focal point of the reflector to the open end of the casing, said motion transmitting means including parts carried by the trigger and said frame, and said parts being movable into and out of engagement upon movement of said frame toward and from normal position and means operable externally of the housing to detachably secure the frame in normal position.

4. A signal light gun comprising a housing consisting of a tubular casing and a hollow handle structure secured to the casing intermediate the ends thereof, said casing having a reflector mounted in one end thereof, the opposite end of the casing being open, a lens detachably secured to the open end of the casing, a frame mounted in the housing, a lamp receptacle carried by the frame, said frame being normally positioned with the lamp in said receptacle positioned in the focal point of the reflector and being movable to position the lamp at the open end of the casing, a filter support journalled in the frame on an axis extending toward the axis of the reflector, a pair of filters carried by said support, one of said filters being normally positioned in the axis of the reflector, a trigger mounted in the handle structure, a trigger stop mounted on the handle structure, motion transmitting means between said trigger and said support operable upon movement of said trigger against said stop to move said second filter in the axis of the reflector, said stop being movable out of trigger engaging position to permit further movement of the trigger to effect movement of said second filter past the axis of the reflector, said motion transmitting means including parts carried by the trigger and said frame, said parts being movable into and out of operative engagement upon movement of said frame toward and from normal position.

5. A signal light gun comprising a handle structure, a tubular casing mounted on said handle structure, said

casing being provided at one end with a reflector and being open at its opposite end, a lens detachably secured to the open end of the casing, a frame movably mounted in said handle structure, a lamp receptacle carried by said frame for positioning a lamp at the focal point of the reflector, a filter support journalled in the frame and being provided with a pair of filters, one of which is normally positioned in the axis of said reflector intermediate the same and the lamp, a switch mounted in the handle structure and provided with a trigger for moving it into on and off positions, a filter trigger mounted in the handle structure and motion transmitting mechanism operatively connecting said filter trigger to said filter support for movement of the latter to selectively position the filters carried by said support into the axis of said reflector, said frame being movable toward the open end of the casing to position the lamp exteriorly of the casing, and stop means carried by the handle structure and movable into and out of position for engagement by the filter trigger for controlling the position of said filters.

6. A signal light gun comprising a housing consisting

of a tubular casing and a hollow handle structure secured to the casing intermediate the ends thereof, said casing having a reflector mounted in one end thereof, the opposite end of the casing being open, a lens detachably secured to the open end of the casing, a frame mounted in the housing, a lamp receptacle carried by the frame, a lamp mounted in the receptacle, said frame being movable to shift said lamp from the focal point of the reflector to a position exteriorly of the casing at the open end thereof, a filter support journalled in the frame, a pair of filters mounted on said support, a trigger mounted in said handle structure, motion transmitting means connecting said trigger and said support and being operable upon movement of said trigger to selectively position said filters in the focal axis of the reflector.

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