Jan. 6, 1953 E. R. FARBER 2,624,831

UNITARY PORTABLE PHOTOGRAPHIC ILLUMINATION SOURCE

Filed June 28, 1949 2 SHEETS--SHEET 1

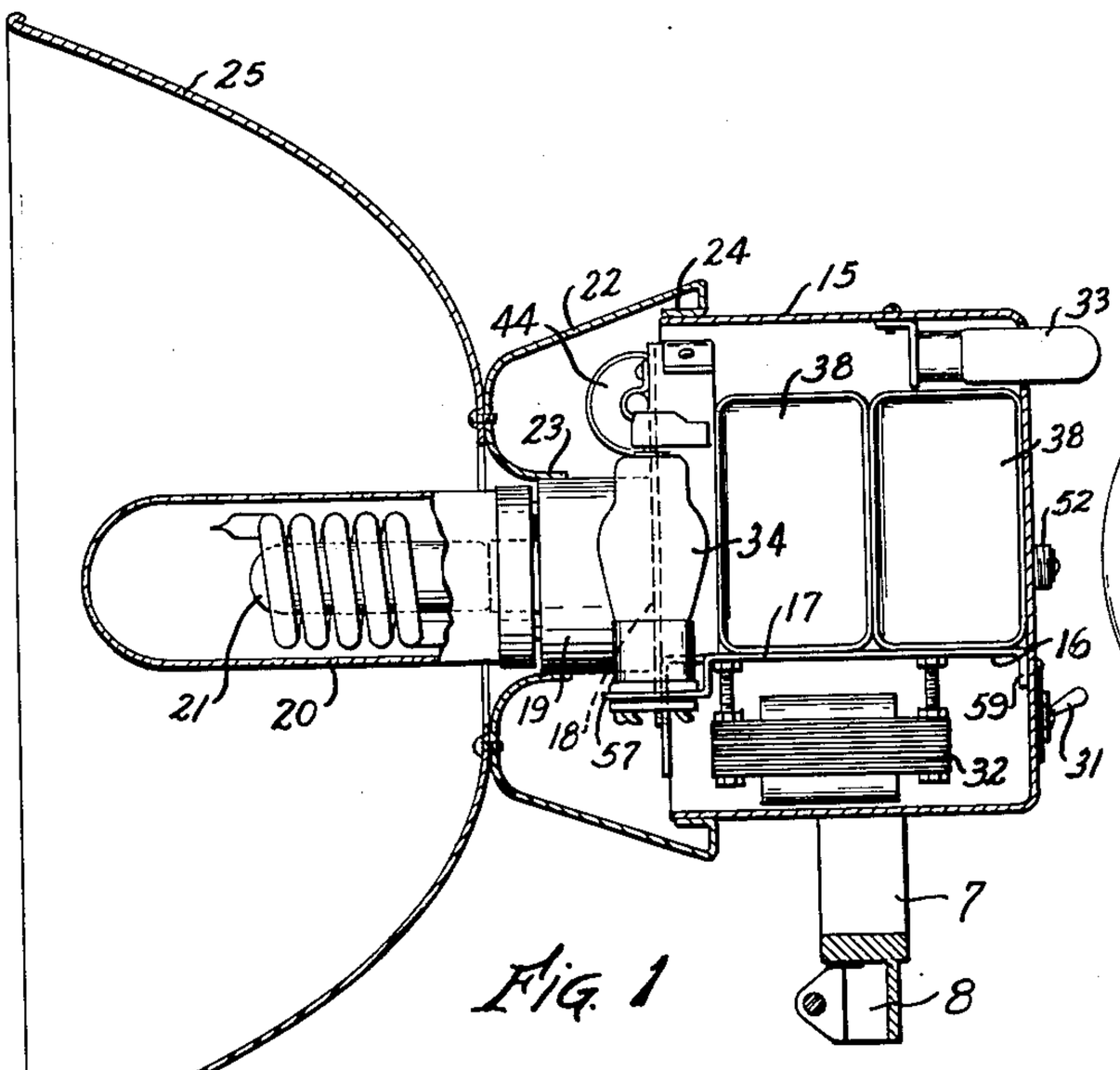

FIG. 1

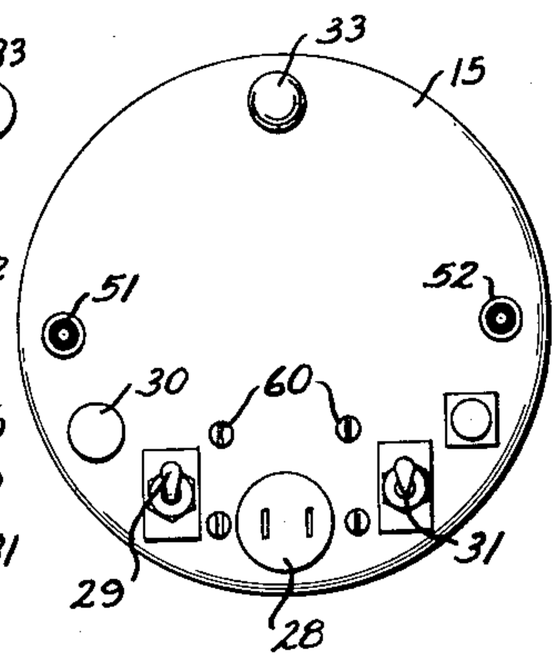

FIG. 2

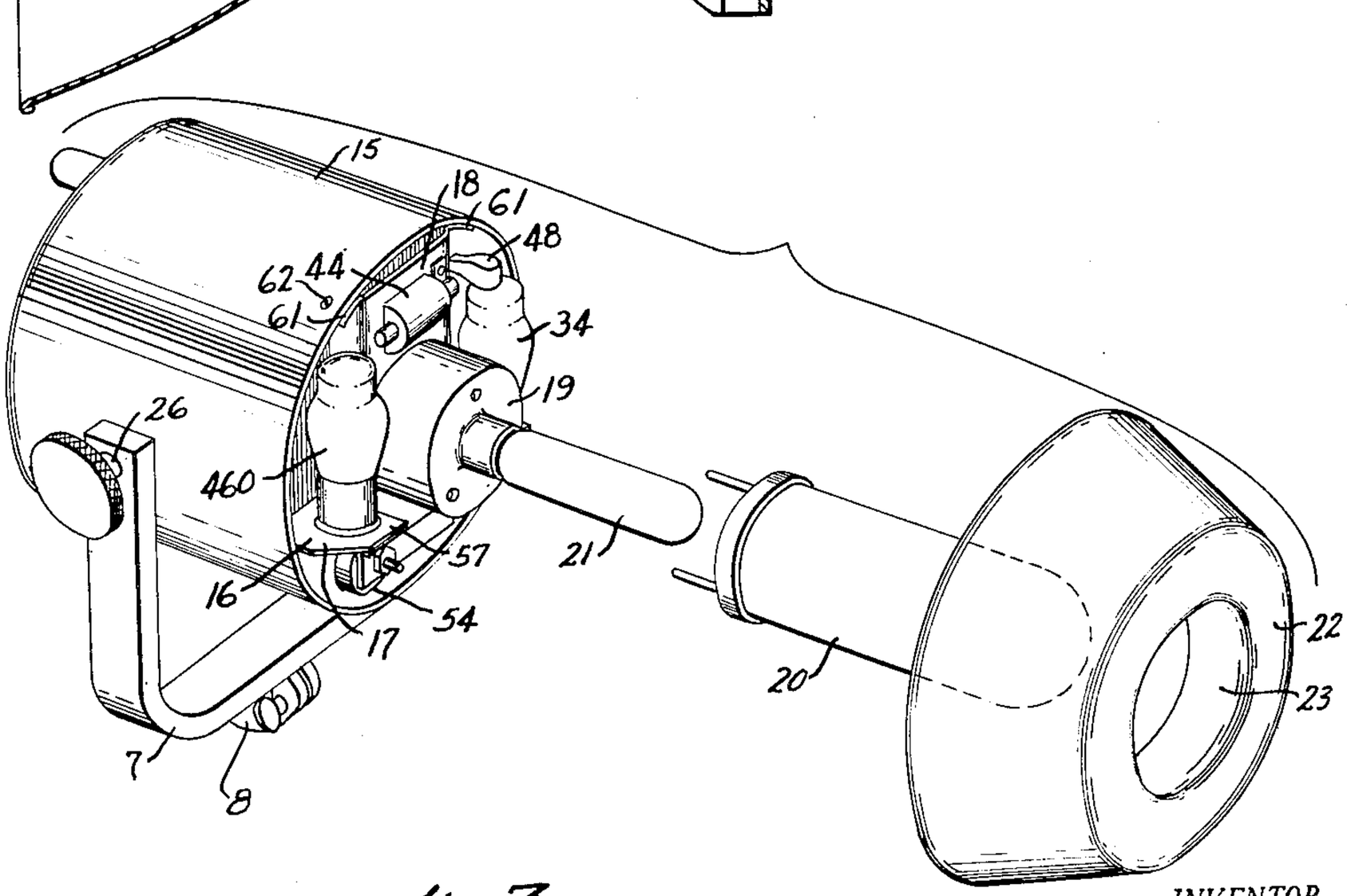

FIG 3

INVENTOR.
EDWARD R. FARBER
BY
Wheeler, Wheeler & Wheeler
ATTORNEYS

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UNITARY PORTABLE PHOTOGRAPHIC ILLUMINATION SOURCE

Filed June 28, 1949 2 SHEETS--SHEET 2

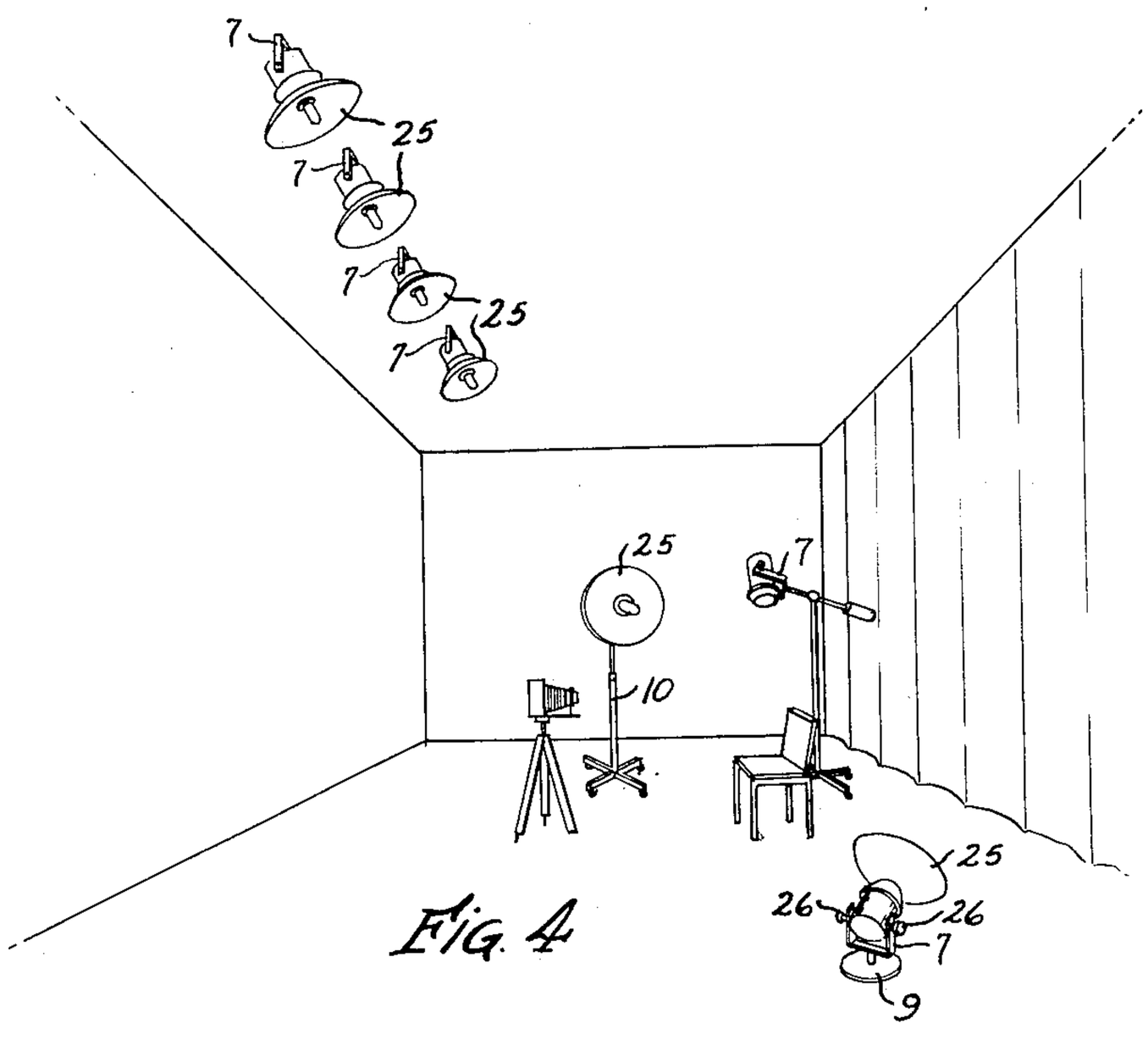

FIG. 4

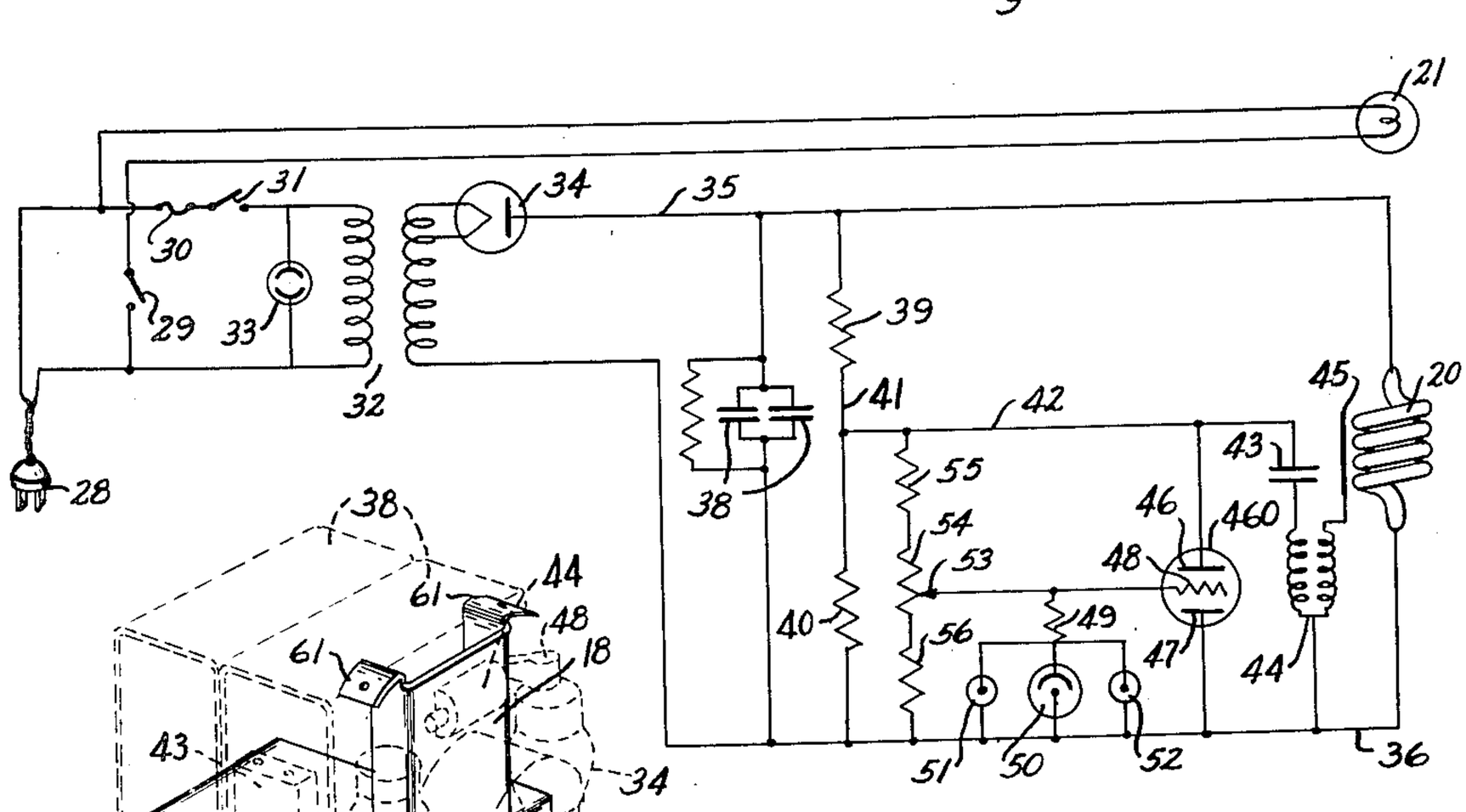

FIG. 6

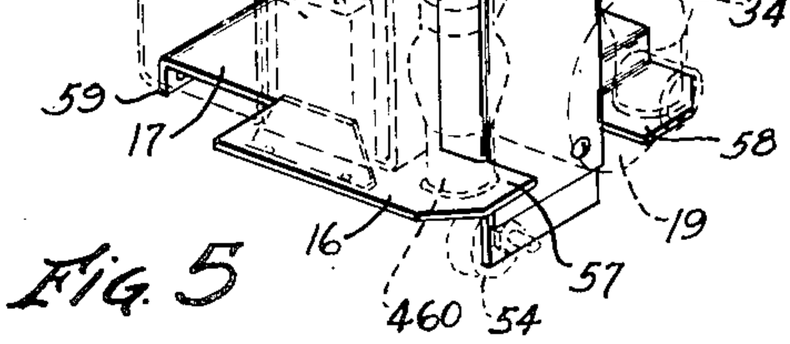

FIG. 5

INVENTOR.
EDWARD R. FARBER
BY
Wheeler, Wheeler & Wheeler
ATTORNEYS

Patented Jan. 6, 1953

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UNITARY PORTABLE PHOTOGRAPHIC ILLUMINATION SOURCE

Edward R. Farber, Milwaukee, Wis.

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4 Claims. (Cl. 240—1.3)

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This invention relates to unitary portable photographic illumination sources.

It is a primary object of the invention to provide in one unitary and readily portable package a brilliant flash source of photographic illumination, a modelling light, a power pack for the operation of such source, and a photo-operable relay for rendering such source operable, whereby a plurality of like units may be substantially simultaneously operated from a master unit without connecting cables of any type.

Further objects of the invention have to do with a compact, simple and readily portable organization of the components of the portable package as above described and these objectives will be more fully understood from anaylsis of the following disclosure of the invention.

In the accompanying drawings:

Fig. 1 is a view in axial section through a package embodying the invention.

Fig. 2 is a view in rear elevation of the shell or casing of the device shown in Fig. 1.

Fig. 3 is a front three-quarter view in perspective of the device shown in Figs. 1 and 2, portions thereof being disassembled to expose the interior construction.

Fig. 4 is a diagrammatic view in perspective showing, by way of exemplification, the manner in which units of the type herein disclosed are adapted to be employed.

Fig. 5 is a view in perspective showing the frame on which the components of the organization are desirably assembled for use, some of such components being illustrated in dotted lines on the frame.

Fig. 6 is a wiring diagram exemplifying one embodiment of the invention.

In the preferred embodiment of the invention as herein disclosed, the mounting yoke **7** is socketed at **8** to receive any desired type of mounting fixture. Fig. 4 shows a number of such yokes mounted on the ceiling; another is mounted on the low stand **9**, and the adjustable tall stand **10** is adapted to support another.

Swiveled on the mounting yoke is a casing or shell **15** within which is fixed the frame **16** which is shown in perspective in Fig. 5, such frame including the horizontal plate **17** and an upright plate **18**. Mounted to project forwardly from the upright plate **18** is a duplex socket **19** for the flash tube **20** and the modelling light **21**. The coupling collar **22** (Figs. 1 and 3) has an internal sleeve at **23** telescopically adjustable frictionally on the socket **19** and its outer periphery is turned inwardly to provide an outer sleeve at **24** frictionally fitted telescopically on the casing or shell **15**. The telescopic adjustment of collar **22** respecting shell **15** enables the operator to move the reflector **25** axially of flash tube **20** and modelling light **21** for the focusing of these lights. It will be observed in Fig. 1 that a considerable range of telescopic movement is possible. This collar carries a reflector **25** for the lamps **20** and **21**, the whole organization of the shell **15**, coupling collar **22**, reflector **25** and the lamps therein being unitarily oscillatable upon the trunnions **26** which carry the shell from the mounting yoke **7**.

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Upon the rear end of the shell or casing **15** there is an electrical connector plug **28** to which any extension cord may be coupled to supply 120 volt A.-C. current. By means of the switch **29**, current from this source may be supplied to the modelling light **21**. Current may be supplied as desired through the fuse **30** and another switch at **31** to the primary of the transformer **32** and to the pilot light **33**.

From the secondary of transformer **32**, current is supplied to power the rest of the apparatus. Particulars of the preferred embodiment will be disclosed, but it will be understood that these are by way of exemplification only, since those skilled in the art can make many changes within the spirit of the invention. The rectifier used in this particular embodiment is an 879 tube shown at **34** which delivers 2250 volts D. C. through conductor **35**, which leads to one terminal of the flash tube **20**, the other terminal of such tube being connected to the ground conductor **36** which returns to the transformer secondary. Shunted across the tube is a high capacity condenser. I may use two condensers **38**, each of 14 mf., connected in parallel to function as one condenser of 28 mf. capacity. These may be shunted by a high resistance of 8.2 megohms. When charged, these condensers may be made by a trigger tube to discharge through the flash tube **20**.

Also shunted between the high tension line **35** and the ground line **36** is a voltage dividing system which includes in series connection a resistor **39** of 8.2 megohms and a resistor **40** of 75 megohms. From the conductor **41** between these resistors is tapped a conductor **42** leading to one terminal of a condenser **43** of 1 mf. capacity. This is connected to the primary of a spark coil transformer **44**, the secondary of which is connected between the plate **45** and the ground line **36**, the primary also being connected to the ground line.

The line **42** also connects to one plate **46** of a tube **460** which may be of the type known as

OA4G. Another plate **47** of such tube is connected to the ground line **36**. The grid **48** of such tube is connected through a one megohm resistor **49** to a photo-tube **50** and to a pair of additional sockets **51**, **52**, whereby additional photo-tubes may be used for special purposes. While the device is intended to function in a single unitary package without coupling wires, it may be that the built-in photo-tube will be shadowed so that it will fail to function in response to a flash from a predetermined point. In that event, one of more additional tubes may be coupled into the circuit in parallel with tube **50** as shown in the wiring diagram and these may be so located that they will pick up the flash from whatever direction it comes. In addition to the connection to the photo-tube **50** as above described, the grid **43** of the trigger tube is connected to the moving contact **53** of a tube having potentiometer resistance **54** which is in series with a 2 megohm resistance **55** and an 8.2 megohm resistance **56** between line **42** and ground line **36**.

The mechanical organization of these components is such that the forwardly projecting platforms **57** and **58** of the normally horizontal plate **17** of the frame **16** carries tubes **34** and **460** at opposite sides of the socket **19** carried by the normally upright portion **18** of the frame, the latter preferably being channeled as best shown in Fig. 5. At the rear of plate **17** are carried the condenser **38**. Beneath plate **17** is the transformer **32**.

At the bottom end of the channel plate **18** is the potentiometer **54** while at the top of such plate the spark coil **44** is mounted above the socket **19**. Condenser **43** is mounted on one of the wings of the bed plate **17** at the end of one of the condensers **38**. The positions of the various resistors are not shown because, these being small, they are readily accommodated beneath the bed plate and behind the upright channel plate **18** near the sockets for the respective tubes.

The frame **16** comprising bed plate **17** and upright **18** is fixed within the shell **15**, the bed plate having a downwardly turned flange **59** (Fig. 5) held by screws **60** (Fig. 2) to the rear of the shell, while the upright channel **18** has integral tabs **61** (Figs. 3 and 5) held by screws **62** to the periphery of the shell. Thus, the entire organization including the source of power, the wiring, the flash tube and the triggering and firing means are all so organized with the reflector as to swivel unitarily to be directed downwardly, upwardly or horizontally as shown in the various positions in which the unit is illustrated in Fig. 4.

Since the modelling light and the flash tube are coaxial, the photographer can compose his lighting system intelligently to direct light from any desired point upon his subject.

While, in the illustrated embodiment, each unit requires an ordinary extension cord from an electrical convenience outlet, it will be understood that no electrical connections from one unit to another are needed, each of the several units being discharged to produce a brilliant flash automatically when any other unit is made to flash within the range of photo-electric cells which trigger the slave units.

The absence of connecting cords and the compactness and portability of the unit shown greatly assist the photographer by making it possible for him to place his units as desired without taking connecting wiring into consideration.

They also relieve the untidiness of photographic studios which have heretofore used this type of flash illumination. It will be understood that I am referring not only to the elimination of wiring from one unit to another, but particularly to the elimination of wiring from power packs to the mounted flash tubes, which wiring has been even more objectionable and annoying than wiring from one unit to another, both types of wiring being eliminated in the preferred embodiment of my invention as herein disclosed.

I claim:

1. In a device of the character described, the combination with a shell having a side wall and one substantially closed end and one open end, a frame fixed within the shell, a lamp mounting projecting from the open end of the shell, electronic tube mountings at opposite sides of the lamp mounting and carried by said frame, a power pack including a storage condenser mounted on the frame and a transformer mounted on the frame and a flash tube disposed in said mounting and resistances and wiring all disposed within the shell as a self-contained portable unit and in operative connection with said lamp mounting for the storage of energy in said condenser and the discharge thereof to said lamp mounting.

2. The combination with a mounting yoke provided with transversely aligned trunnions, of a shell pivoted upon said trunnions to said yoke and comprising a side wall, and a substantially closed end, one end of said shell being open, a frame fixed within the shell and comprising a bed plate, a transformer suspended beneath the bed plate within the shell, condensers and electronic tube sockets mounted on said bed plate within the shell, the said sockets being at the open end thereof, complete power pack wiring and resistances housed within the shell encompassing a unitarily portable package with said sockets and condensers, a flash-tube mounted at the open end of the shell and operatively connected through said power pack wiring to one of said condensers to be energized thereby, said power pack including triggering means for controlling such energization, and a reflector for said flash tube mechanically connected with said shell adjacent its open end in operative encirclement respecting the flash tube and to constitute a part of said unitary package.

3. The device of claim 2 in which the reflector is provided with a collar telescopically adjutable upon said shell for the focusing of the reflector.

4. A self-contained portable unit for flash-tube illumination, said unit comprising in combination a shell having a side wall and an apertured rear wall and an end, a photo-electric tube having a portion exposed through the apertured rear wall of the shell to receive external light, a reflector connected with the shell at the end thereof opposite the apertured end, means for mounting a flash-tube within the reflector, and a power pack including a transformer, a rectifying tube, condenser means, a trigger tube, resistors and circuit connections all housed within said shell and between the reflector and the apertured end of the shell for compact unitary handling with said shell and reflector and the photo-controlled triggering of condenser discharge to said mounting for the energization of the tube carried therein, said reflector being provided with mounting connections constituting an extension

of said shell whereby to cooperate with said shell in housing said power pack and said tube.

EDWARD R. FARBER.

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