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Photoresistor Photographic Slave Units

Joseph Beeman

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PHOTORESISTOR PHOTOGRAPHIC SLAVE UNITS

JOSEPH BEEMAN

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EDITOR.

A photographic slave unit is a device which, when activated by the light from a camera attached light, will fire a flash unit some distance away from the camera without connecting electrical cords. Thyatron slave units are bulky but have a short time delay of about 0.0005 seconds; selenium cell-transistor units have a delay of around 0.01 seconds requiring long time flash bulbs at the camera and

short time flash bulbs at the slave unit. Often they will not fire from an electronic strobe light. The unit described will fire from either flash bulbs or strobe lights, is sensitive to a #5 bulb at 150 feet, has a time delay of 0.003 seconds, is rugged, small, and is assembled from easily obtained parts. It has proven useful in outdoor traffic photography, where the nearby skid marks are photographed by the

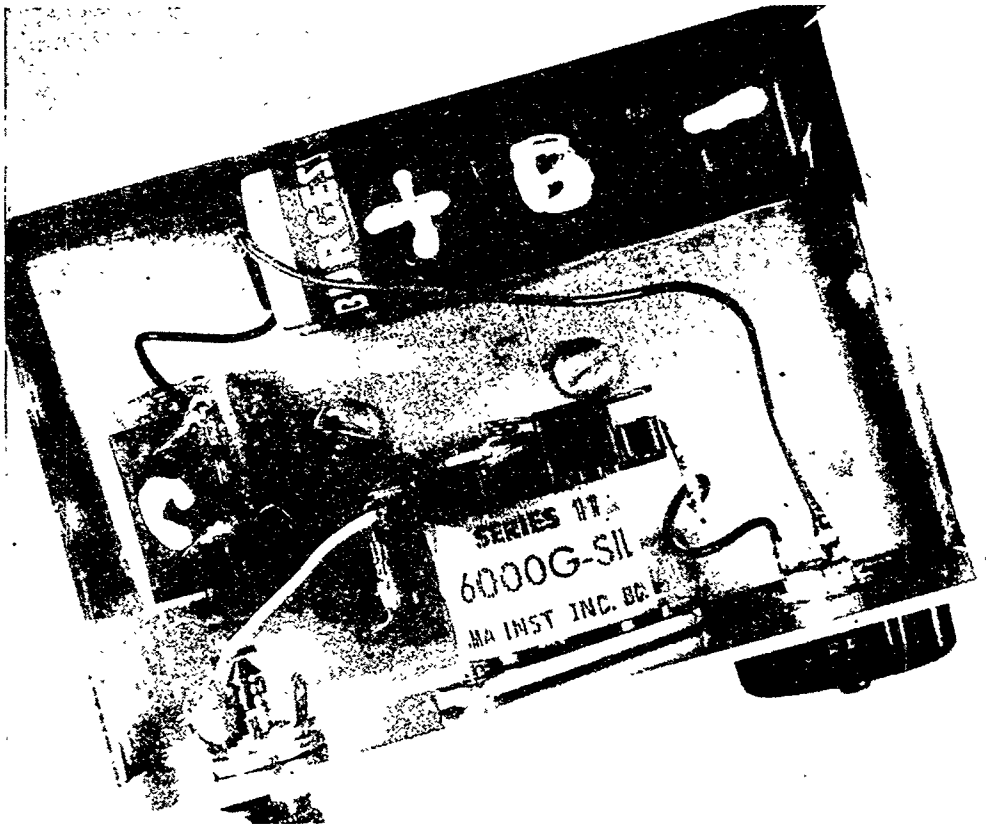


Figure 1

Placement of Parts in Chassis Box: Top—Batteries. Left—Cadmium sulphide photoresistor. Front—Min-jack, relay, switch.

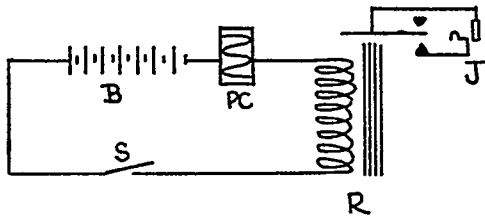


Figure 2

camera flash, and the distant wreck by the slave flash. It has also proven useful in photographing large rooms, particularly in color photography and could be helpful in other types of crime scene photography.

The parts needed are listed below; the parentheses refer to Lafayette Radio Co., Jamaica, New York, or Allied Radio, Chicago, Illinois:

- 2 Burgess Y15 22.5 volt batteries
- 1 Jenn CDS10 cadmium sulphide photocell (Lafayette CDS10)
- 1 Sigma 11 F 6000 relay (Allied 75PO74)
- 1 Single pole single throw switch
- 1 Metal chassis box $3\frac{1}{4} \times 2\frac{1}{8} \times 1\frac{5}{8}$
- 1 Series IV slip on type adapter ring (available at any photographic shop)
- 1 Series IV retaining ring (any photographic shop)
- 1 Connector to flashgun (Miniplug and mini-jack)
- 2 19 mm polaroid discs (from an old pair of polaroid glasses)

CONSTRUCTION

The general placement of parts is shown in Figure 1; these are not critical. The two batteries are soldered in series and wrapped in plastic tape, then cemented to the box side. The photocell is cemented to a $\frac{3}{8}$ inch block of wood which is cemented in the center of the box, near one end. The relay, switch and connector is mounted; if only one flash unit is to be permanently connected to the slave unit, the connector may be dispensed with. The circuit is shown in Figure 2 and the wiring diagram in Figure 3. A $2 \times 1 \times \frac{1}{4}$ inch piece of aluminum stock is bolted to the bottom after a $\#7$ hole is drilled, and it is tapped for a $\frac{1}{4} \times 20$ thread; this allows the unit to be mounted on a tripod. A $\frac{5}{16}$ inch hole is drilled in the top to accommodate a $\frac{1}{4} \times 20$ bolt to attach the flash equipment, if desired. We attached a small tripod head to the

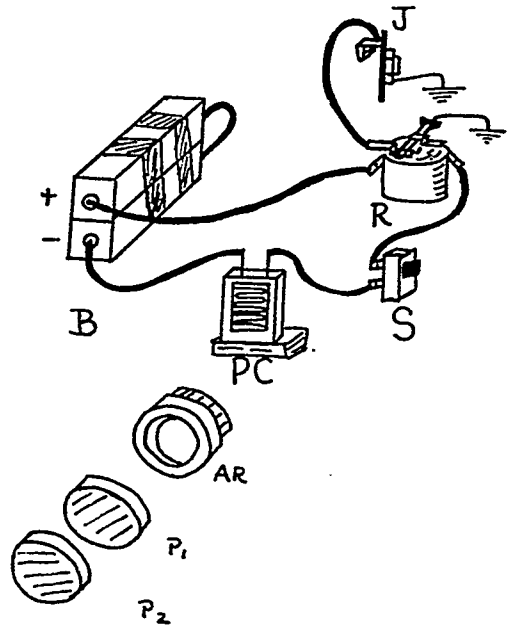


Figure 3

unit to allow the lamp to be moved in any direction. A hole is reamed in the end of the box to allow the slip on adapter ring to be inserted; the lugs are flattened inside to attach this firmly to the box. The Polaroid discs are cemented inside the two screw in parts of the adapter rings. Some metal flash units have one side grounded to their frame, and it may be necessary to reverse the connection from the unit, as one side of the relay point is grounded to the metal box chassis.

Screw both Polaroid discs in place; rotate the outer one until the maximum amount of light is transmitted through the two filters. Mark this position with a dot of paint; this represents the zero point of the filters; rotating the outer filter only, decreases the amount of light passing through both filters and serves as an effective light intensity control.

USE

Connect the flash gun to the slave unit; insert a *test lamp, not a flashbulb*, point the photocell face covered with the two Polaroid filters toward the camera flash; turn the switch ON. If the test lamp lights, rotate the outer polaroid filter until, when the photocell face is covered and uncovered by the hand, the test lamp fails to light. Now remove the

test lamp and insert a flash bulb. If electronic strobe is used with the slave, simply turn on and rotate the outer filter until covering and uncovering the photocell opening fails to flash the strobe. Now flash the light at the camera, and the slave will fire. If the unit is to be used in dim light only, the two Polaroid filters and assembly may be omitted.

HOW IT WORKS

The cadmium sulphide photoresistor has a resistance in the megohm region in the dark, which decreases when light strikes its face. This allows current to flow through the relay, closing the contacts, which in turn fire the light unit.

COMMENT

Only two parts are critical—the cadmium sulphide cell and the relay. The smaller cadmium sulphide cells require at least $67\frac{1}{2}$ volts and are less sensitive. Other relays tested were either insensitive or mechanically allowed their contact to close on movement of the box. Since current flows only when light hits the photocell, battery life approximates shelf life. Ordinary photographic filters may be used to decrease the light intensity, but the ones suggested give the best general results.

For extreme sensitivity, substitute two Burgess U-30 45 volt batteries in place of the 22.5 volt batteries indicated.

NORTHWESTERN UNIVERSITY'S THIRTEENTH ANNUAL SHORT COURSE FOR PROSECUTING ATTORNEYS

Ninety-four prosecutors attended the Thirteenth Annual Short Course for Prosecuting Attorneys conducted by the Northwestern University School of Law during the five-day period August 4-9, 1958. The attendants came from twenty-seven states: 24 from Illinois; 13 from Ohio; 9 from Florida; 6 from Louisiana; 5 from Nebraska, Oregon, and Pennsylvania; 4 from New Jersey; 3 from Kansas; 2 from California and North Carolina; and 1 from Alabama, Arizona, Georgia, Idaho, Iowa, Kentucky, Michigan, Minnesota, Mississippi, New Hampshire, New Mexico, Rhode Island, South Dakota, Utah, Wisconsin, and Wyoming.

Listed below are the names of the attending prosecutors and their office locations.

ALABAMA

Brutkiewicz, Donald E.—Mobile

ARIZONA

Powell, Edwin R.—Holbrook

CALIFORNIA

Bowler, Manley J.—Los Angeles
Maddux, Joseph—Santa Rosa

FLORIDA

Baker, H. Paul—Miami
Barmack, Donald B.—Miami
de la Parte, Louis—Tampa
Goshgarian, Aram—Miami
Kynes, James W., Jr.—Ocala
McCormick, John W.—Mount Dora
O'Connell, Thomas G.—Miami
Oldham, Gordon G., Jr.—Leesburg
Stockham, William H.—Sarasota

GEORGIA

Schaffer, Frank D.—Marietta

IDAHO

Welch, Dwaine L.—Payette

ILLINOIS

Appleton, Glenn W.—Aledo
Armstrong, Craig M.—Ottawa

Berkos, Manuel J.—Chicago
Bernard, Burton C.—Granite City
Bucher, Rodney G.—Lincoln
Buonafede, Samuel—Chicago
Cole, Robert L.—Decatur
Cuthbert, Stella Adams—Chicago
Dannehl, Robert L.—Watseka
Donlevy, John D.—Chicago
Durr, Alvin T.—Taylorville
Garippo, Louis B.—Chicago
Kirincich, Joseph V.—Joliet
Lambros, Adeline G.—Waukegan
McCarthy, Daniel J.—Chicago
Mioduski, Joseph W.—Chicago
Moore, Robert—Urbana
Orenic, Michael A.—Joliet
Petarca, Richard J.—Chicago
Swanson, Carl A., Jr.—Sycamore
Thomas, Lucia Theodosia—Chicago
Waalder, Robert—Urbana
Warren, Harland D.—Ottawa
Wilson, Robert V.—Harrisburg

IOWA

Branco, Richard F.—Holstein

KANSAS

Duncan, Robert F.—Atchison
Gideon, Clarence J.—Topeka
White, Donald L.—Ottawa

KENTUCKY

Lowery, Jack M.—Louisville

LOUISIANA

Bradford, William Ray—Alexandria
Doane, Walter E.—New Orleans
Emmons, W. Jackson—Jonesboro
Klein, Burton G.—New Orleans
Link, Robert S., Jr.—New Orleans
Smith, Ben E.—New Orleans

MICHIGAN

Shigley, Edward H.—Pontiac

MINNESOTA

Parker, Edward J.—Minneapolis

MISSISSIPPI

Travis, J. A., Jr.—Jackson

NEBRASKA

Brower, Thomas D.—Kimball
 Heaton, P. J., Jr.—Sidney
 Romig, Marvin A.—Oshkosh
 Tucker, D. C.—Minden
 Urbom, Ward C.—Arapahoe

NEW HAMPSHIRE

Bigg, Dort S.—Concord

NEW JERSEY

Kaplowitz, Leo—Elizabeth
 Schiffman, S. Richard—Paterson
 Thevos, John G.—Paterson
 Whipple, Lawrence A.—Jersey City

NEW MEXICO

Stevens, George F.—Albuquerque

NORTH CAROLINA

Neaves, Charles M.—Elkin
 White, Captain Arthur C., U.S. Army—Fort
 Bragg

OHIO

Brokaw, G. William—Lisbon
 Davis, Ray W.—Circleville
 Jacobson, Herbert M.—Dayton
 Jones, Robert A.—Batavia
 Kane, Lawrence A., Jr.—Cincinnati
 Marrs, Robert L.—Hamilton
 Masana, Henry A.—Hamilton
 McCulloch, John—Akron
 Mumpower, Glen E.—Dayton
 Parker, E. Allen—Cincinnati
 Rathman, William E.—Hamilton
 Roulhac, Joseph D.—Akron
 Weaver, William H.—Bryan

OREGON

Geurts, Glenn A.—Portland
 Howlett, Oscar D.—Portland
 Robinson, David, Jr.—Portland
 Van Hoomissen, George—Portland
 Williams, Grace K.—Canyon City

PENNSYLVANIA

Blanc, Victor H.—Philadelphia
 Heilman, Harry A., Jr.—Kittanning

Rosenwald, Edward—Philadelphia
 Stranahan, John Q.—Mercer
 Williams, Robert W.—Philadelphia

RHODE ISLAND

Larkin, Commander Murl A., U.S. Navy—New-
 port

SOUTH DAKOTA

Carnahan, William H.—Deadwood

UTAH

Banks, Jay E.—Salt Lake City

WISCONSIN

Miech, Robert J.—Milwaukee

WYOMING

Rees, Lynn—Laramie

The subjects covered in the course, in the order in
 which they were presented, were:

Preparation for Trial

The Selection of Jurors

Opening Statements

The Examination and Cross-Examination of
 Expert Witnesses

Closing Arguments

Homicide Investigation ("Murder Unrecognized"
 and "Apparently Murder")

Basic Principles in the Interrogation of Criminal
 Suspects

The Effective Use of Medical Evidence in Homicide
 Prosecutions

Your First Murder Case Investigation and Prosecution—Some "DO's" and "DON'Ts"

The Lie-Detector Technique in Criminal Investigations

The Art of Advocacy

Common Misconceptions about Dead Bodies

Criminal Interrogation Tactics and Techniques

Effective Prosecution Trial Techniques

The Examination of Questioned Documents (1. Handwriting Identification; The Detection of Forgery; etc.; 2. Typewriting Identification; Identification of Paper and Inks; Decipherment of Obliterated Writing; etc.)

Firearms Identification ("Ballistics") and Comparative Micrography ("Tool Mark Identification", etc.)

Getting Exhibits in Evidence

The Defense Viewpoint Regarding Criminal Prosecutions

Chemical Tests for Alcoholic Intoxication
 The Prosecution of Drunk Driving Cases
 The Preparation and Prosecution of Criminal
 Cases in Rural Communities
 The Taking of a Confession
 Law Enforcement and the Concepts of Probation
 and Parole
 The Ethics of Prosecution and Defense
 Extradition and Habeas Corpus Problems
 What Files and Information Must a Prosecutor
 Disclose to Defense Counsel?
 The Problem of the Indigent Defendant
 The Use and Limitations upon Demonstrative Evi-
 dence
 The Suppression of Organized Crime
 Group Discussion Regarding Non-support Actions
 and Bad-check Cases

The course was under the direction of Professor
 Fred E. Inbau of the Northwestern University
 School of Law. Members of the lecture staff
 were:

Junius L. Allison, Field Director, National Legal
 Aid Association, Chicago
 John Ascher, Lt. of Police and Director, Chicago
 Police Scientific Crime Detection Laboratory
 Richard B. Austin, Judge, Superior Court of Cook
 County, Chicago
 Charles A. Bellows, Attorney-at-Law, Chicago
 Rush C. Clarke, Assistant Attorney General, State
 of Nebraska; Former County Attorney
 Robert L. Donigan, Counsel, Northwestern Uni-
 versity Traffic Institute, Evanston, Illinois
 Peter Fitzpatrick, Attorney-at-Law, Chicago
 Richard Ford, M.D., Acting Head, Department of
 Legal Medicine, Harvard University

Irving Goldstein, Attorney-at-Law, Chicago; Pro-
 fessorial Lecturer, Northwestern University
 School of Law
 Ordway Hilton, Examiner of Questioned Docu-
 ments, New York City
 Fred E. Inbau, Professor of Law, Northwestern
 University School of Law
 Albin P. Lassiter, District Attorney, Monroe,
 Louisiana
 Joseph D. Lohman, Sheriff of Cook County,
 Chicago; Former Chairman, Illinois Parole
 and Pardon Board
 Dan H. McCullough, Attorney-at-Law, Toledo
 Frank J. McGarr, First Assistant U.S. District
 Attorney, Chicago
 C. W. Muehlberger, Ph.D., Director, Michigan
 Crime Detection Laboratory, Lansing
 Alexander J. Napoli, Judge, Municipal Court of
 Chicago
 Robert B. Oxtoby, Attorney-at-Law, Springfield,
 Illinois
 Virgil W. Peterson, Operating Director, Chicago
 Crime Commission
 John E. Reid, Director, John E. Reid and Asso-
 ciates, Chicago
 Elmer M. Scheele, County Attorney, Lincoln,
 Nebraska
 Ben Schwartz, Assistant Attorney General, State
 of Illinois
 Claude R. Sowle, Assistant Professor of Law,
 Northwestern University School of Law
 The Fourteenth Annual Short Course for Prose-
 cuting Attorneys will be conducted during the five-
 day period August 3-8, 1959.

ARSON INVESTIGATION SEMINAR

The 15th International Arson Investigator's
 Seminar will be held at Purdue University from
 April 27 to May 1, 1959. This five day intensive
 training program will be conducted in cooperation
 with the International Association of Arson Inves-
 tigators and other state agencies interested in the
 recognition, investigation, prosecution and preven-
 tion of the crime of arson.

The seminar will present the nation's outstand-
 ing arson authorities, lecturers and moderators.

The program will include essential basic informa-
 tion for the arson investigator which will be ex-
 panded into advanced techniques of investigation,
 criminalistics, and specific training that will lead
 to more effective detection, apprehension, prosecu-
 tion and conviction of the arsonist.

For additional information concerning the semi-
 nar please address: Professor Shelby Gallien,
 Seminar Director, Public Safety Institute, Purdue
 University, West Lafayette, Indiana.