C–HOW THE PHOTOMATIC WORKS

(TECHNICAL)

NOTE: Where parts are identified by numbers, these numbers refer to the Photo-Diagrams on pages 39 through 44; for example, (A-39) refers to Diagram A part 39. When more than one number is given, it means this part can be identified on two Diagrams; for instance, cam disk is shown on both A-39 and B-26.

To assist you in finding where each vital part of the Photomatic is referred to in this Manual, consult the Photo-Diagrams, which show the reference numbers of the parts. Then refer to the Index on pages 46 and 47 to see on which pages these parts are described or mentioned.

THE TIMING

Cams controlling timing described below are fastened solidly on cam disk (A-39) and should not be altered.

When proper coin is dropped in the coin chute, and is "passed" by the slug rejector, it will make contact across jaws of the coinswitch and start motor. The motor through gears C-1, C-2, C-3, and C-4 will turn the cam disc (A-39 or B-26) one complete revolution causing following operations in consecutive order:

FIRST: Cam (B-20) raises Roller (B-21) thus elevating upper part of B-18. This elevating of upper part of (B-18) causes mercury switch (B-19) to turn on Photolamps and also causes lower part of (B-4) to move down, thereby moving arm (B-8 or E-4) to left thus pulling spring (E-3) which opens shutter of lens through bellcrank (E-5).

SECOND: Upper part of (B-18) is lowered causing:
A—shutter to close
B—mercury switch to turn off photolamps
C—conical contactor (A-26) on lower end of coin switch insulator to make contact between switch jaws and open them so that coin drops into cash box.
D—Lever (D-8) to be pushed out of the slot in the cam disk and thus tilt the mercury switch (D-7) which will keep the motor "on" until complete revolution of the round disk is finished.

THIRD: Slide (A-17) will push Photoframe into Developing Chamber (A-50) depositing it on the Tilter platform fastened onto the Tilter shaft (A-51) at which time pin in back of cam (D-22) will push (B-27) down, release pressure on the hose and allow Developer to pour onto Photoframe.

FOURTH: A—Tiltercam (D-20) will push pin (D-23) on Tilterarm (D-24 or B-28) to the left and through its lower slotted part (D-26) will cause shaft (A-51) of Tilter platform to turn clockwise, thereby allowing used *Developer* to drain off Photoframe into waste tank through drain hose (A-58) at lower end of outlet chute (A-54).

B—Watercam (D-16) on the outside edge of Cam disk will lift (B-5), releasing pressure on water hose and allow water to flow through holes in sprinkler tube (B-33) which is locked with screw (B-34) in position so that the water will reach exactly to top edge of paper in Photoframe when tilted.

C—Water will shut off; Tilterarm will return Tilter platform to level position, at which moment (or slightly before) the *Bleach* solution will pour onto Photoframe as pin (B-22 or D-18) opens (B-29) Pinchcock.

FIFTH: Cam fastened on gear in back of Cam disk will push mercury switch (B-24) down, causing second exposure lamp (located on top of Developing Chamber) in socket (B-31) to go on.

SIXTH: Operation No. 4 is repeated except that this time the Bleach-Solution is drained off and Clearing-solution is poured on when pin (D-21) on cam disk lifts pinchcock arm (B-6).

SEVENTH: Operation No. 4 is again repeated, Clearing-Solution is drained off and Developing-Solution poured on when (B-27) is opened by pin in back of cam (B-7).

EIGHTH: When second Development described above is complete:

A—Mercury switch (B-24) will be lifted by spring (B-23) on its arm, thereby extinguishing second exposure lamp.

B—When Developing-Solution is washed off, flow of water will stop and due to extension of the last Tilter cam (D-15) the Tilter platform will turn clockwise until Photoframe strikes a stationary "Throw-out arm" held by 2 screws (A-52) located centrally under platform shaft, throwing finished Photoframe into outlet chute, while Tilter platform is returned to level position by spring (A-20).

NINTH: At this time, or slightly before, the lever (D-8) will drop into cutout in Cam disk as shown in Photo-diagram (D) thereby shutting off the motor circuit and machine will stop.

SLIDE OPERATION

During Operations No. 3 to No. 8 the slide (B-9) has been pulled all the way to the left, causing next Photoframe to be dropped into slide frame and slide has pushed it under lens-housing ready for next Photo. At the same time slide arm (A-8) has caused Register (A-7) to advance one number.

DELAY MECHANISM

During bleaching operation and final rinse the conical jaw contactor (A-26) will be lowered by means of cams (D-14 and D-19) and cause the current to go through the full resistance of Regulator (A-22) thereby slowing the motor until contactor is again elevated giving knob (A-22) control of speed.

Note: If motor slows too much or stops entirely during Bleaching operation or final rinse the resistance of Regulator is too great and may be decreased by moving end of green wire onto the next tap at top of regulator. This may easily be done by pulling plug on machine and removing cover on Regulator (A-22) held by screw at the bottom and pulling it out.

SETTING UP AND GETTING READY FOR OPERATION

A—CHECK ELECTRICAL REQUIREMENTS: The PHOTOMATIC will operate on 110-120 Volts, either alternating (A.C.) or direct (D.C.) current.

If any other voltage must be used, consult your electrician before installing machine. *Before plugging in machine,* locate and read all tags attached to the various parts. (See pages 10 and 11.)

B—SET MACHINE LEVEL: Correctly setting up the machine so Photoframes inside the machine are absolutely level, will save you money by enabling you to use least amount of solutions needed to cover paper in Photoframe. Only when machine is level will solution flow to all four sides equally when it is poured on the dry Photoframe. Level entire cabinet in both directions until solution on a Photoframe in Developing Chamber (A-50) shows that the machine is absolutely level.

C—FILL "PREHEATER" (A-37) WITH PLAIN WATER AND PLUG IN MACHINE:

WARNING—The Thermostat in the Preheater has been adjusted and set at factory. Do not adjust unless absolutely necessary.

1. Before plugging in machine, remove pipe plug and fill preheater with plain water, using small rubber hose or funnel. Container holds approximately one quart. Replace pipe plug tightly.

2. Remove two wing nuts (A-30) on top of preheater and take off black cover. Make sure (100 Watt) heating coil is screwed tightly into socket. Replace cover. Also see that red pilot lamp (A-36) on left side of preheater is tight in socket.

3. After plugging in machine, pilot lamp will light up for about 10 minutes, showing that heater is on, and after proper heat is obtained (90° to 100° F., 32° to 38° C.) in preheater, pilot lamp will go out. Temperatures higher than 100°F.-38° C. may cause yellow pictures.

4. When Thermostat shuts off and thermometer shows less than 90°F.-32°C. turn SCREW (A-34) counter-clockwise. This adjustment will raise the temperature. To disconnect heater, pull plug (A-27).

WARNING: DO NOT TURN SCREW MORE THAN ¼ TURN AS THIS WILL INCREASE TEMPERATURE AT LEAST 20°. *MORE THAN ¼ TURN MAY BURN OUT PREHEATER.*

WARNING—Before making any adjustment make sure red pilot lamp of preheater is in order. If temperature cannot be controlled, consult factory. When shipping machine, drain water through draincock (A-40) on side of preheater.

D—INSTALL SOLUTION TANKS: Place the 3 tanks into opening in rear top shelf as follows: BLEACH—on left side. DEVELOPER—in center. CLEARING—on right side from rear. The hinged cover over this compartment should be locked with key marked CM 460, which key also fits the side doors.

An 18 gallon tank on top of the machine is connected to developing chamber (A-50) to supply water for rinsing. This tank is filled to within ½" from top through large hole at top. *A tank-full of water will rinse approximately* 300 *Photoframes.* IMPORTANT — CLOSE HINGED COVER OVER TANKS WHEN FILLED, and place covers over openings in water tank.

E—ATTACH HOSE TO TANKS: All hose (as shown in Photo-diagram B) should be attached to tanks as follows:

Developer—Hose No. (B-16)
Clearing—Hose No. (B-2)
Bleach—Hose No. (B-17)
Water—Hose No. (B-3)

F—ATTACH PRISM-MIRROR AND HOLDER: Place mirror and holder (A-9) over lens (B-30) and when parallel with background, tighten with screw (A-10). If Photoframe shows one side of background more than the other, move mirror-holder (A-9) in opposite direction until properly centered. Always be sure that Prism-mirror and holder are set firmly down on lens before tightening with screw (A-10). See picture No. 10 on Page No. 34.

G—FILL SOLUTION TANKS: After solutions have been made (see page 19) and tanks installed fill each of the solution tanks with the required solution. Capacity of the tanks is two gallons. It is recommended that solutions first be poured from the 5 gallon bottles into either 1 gallon bottles or suitable pitchers, for convenience in filling.

H—INSERT LAMPS AND CHECK LIGHTING: Lamps are to be installed exactly as shown on wiring diagram. Photolamps consist of four 250 Watt Clear Projection lamps at top and two at bottom which are lighted only during exposure. Mercury Switch (A-29) attached to lever (A-31) controls these Photolamps and makes them light as the shutter opens and go out as the shutter closes. (If you find Photolamps stay on too short or too long a time see page 27 as to how to adjust.) *General lighting* consists of one 40 Watt lamp at top and two 40 Watt lamps at bottom which are controlled by switch at top of the machine.

To replace lamps under upper glass, lift up reflector directly above front door. To replace lamps under lower glass, reach through side doors and loosen two thumbscrews holding hinged reflector.

I—LOAD PHOTOMATIC WITH PHOTOFRAMES: Photoframes are delivered to you in a special box appropriately called "Photomatic Daylight Loading Magazine". Instructions for inserting these magazines into Daylight Loading Bases will be found on each box.

To place this magazine and base into position in machine, proceed as follows: Slide safety-cover at bottom of base out about ⅛", then insert rear end of base into cleats (A-18) and push into grooves as far as it will go—automatically safety-cover will slide free of base. Now turn latch (A-19) so as to hold base and magazine in place.

If it is necessary *to remove magazine and base,* turn latch (A-19) and pull base out about ⅛" and slide safety cover into place with one hand while removing base and magazine with other hand. Turn latch on base to hold cover in place.

NOTE:—A handy place to keep the safety-cover is on the inside of the front door—at the bottom groove, behind the Lockrod.

Care should be taken not to bend metal straps (A-13) on loading base because when winged thumbscrew (A-14) is tightened, bent edge at top of strap should not press into magazine as the pressure may prevent Photoframes from dropping properly if bent out of shape. If bent, these straps may be easily rebent to proper shape again so as not to press too tightly against magazine. Should the loading base have been dropped and bent it may be straightened by gently bending it back to shape—do not hammer on it.

If it is desired to use Photoframes from partly filled magazine to make a full magazine, a dark room or closet is necessary, using the red lamp furnished with equipment as only source of light. Then, proceed as follows:—

Place all Photoframes into "Loading Slide" with backs facing the handle, discarding all those marked "Machine Empty", one of which will be found in each magazine next to the top Photoframe. When the "Loading Slide" is filled, place one of the "Machine Empty" Photoframes next to the last of Photoframes at the end entering the magazine first.

Push the entire "Loading Slide" with Photoframes into an empty magazine properly attached to the Daylight Loading Base. Hold the Photoframes in place with one hand and pull the "Loading Slide" out entirely. Place safety-cover on base and lock with latch (A-15).

J—SET LENS FOR PROPER EXPOSURE: Assuming that all previous instructions have been carefully followed, magazine in place, tanks filled with solutions, lamps installed, electricity connected, etc., proceed as follows:

IMPORTANT:—Watch lens in prism-mirror and see that the shutter opens immediately before Photolights go on, and closes before Photolights go out. If shutter does not work as explained above, refer to next paragraph.

A—Insert coin directly into slug rejector (A-21) to start machine and wait until machine stops. A Photoframe has now been automatically placed under the lens.

B—Close and lock all doors.

C—Seat yourself or other subject on stool and follow directions on door for posing. Insert coin in coin chute in door and wait for finished Photoframe to be delivered in chute.

D—Use this picture as a guide for setting exposure, regulating lens diaphragm slightly by means of knob in center of the front door as required. Repeat this operation until desired picture is obtained, setting either darker or lighter as judged from previous picture (refer to pictures 4-5-15).

TAKING CARE OF THE PHOTOMATIC

A. HOW TO CONTROL THE OPERATING SPEED:—When the PHOTOMATIC leaves the factory it is set to produce and deliver the photo in 55 seconds from the time coin is inserted. (To check the operating speed simply time the operation from start to finish with an ordinary watch.)

The speed is controlled by knob on Motor-Speed Control (A-22) located at rear left inside of cabinet.

TO INCREASE SPEED: Turn knob clockwise.

TO DECREASE SPEED: Turn knob counter-clockwise.

(NOTE: *If at any time you want to operate machine without using coin simply lift up small mercury switch* (D-7) *at left behind slide arm* (A-8).)

B. HOW TO CLEAN LENS AND SHUTTER: Remove magazine, prism-mirror and holder by loosening screw (A-10). Then remove lens, loosen all screws on ring sufficiently to enable you to lift out lens to clean bottom glass. Always be careful not to stretch lens-spring (E-3). When thoroughly cleaned with soft, clean cloth or chamois, be sure that lens is set all the way down on ring. Before tightening screws (A-11) to hold lens, see that spring (E-3) is not tight, but has about 1/16" play when machine is at its automatic stop.

If solution, water or oil has gotten into shutter or lens, it will be necessary to take both lens and shutter apart so as to dry and clean them thoroughly. Proceed as follows:

A—Loosen screws (A-11)
B—Turn lens to left until springs are easy to reach
C—Detach lens-spring (E-3) by removing small nut and screw (E-1) on lever (E-5) and lift lens out.
D—Detach lever by removing screw (E-2) being careful not to lose small washer under screw.
E—Remove four small screws (E-10) holding two halves (upper and lower) of lens together.
F—Separate both halves of lens by forcing a thin knife blade between them (E-11).
G—Lift out two shutter blades carefully and note order in which they belong, so as to get them back in same order.
H—Thoroughly clean all parts that are wet or dirty with a weak solution of ammonia water on a soft cloth. Wipe absolutely dry.
I—Put all parts together as they were before, then clean both lens glasses and replace into housing as explained at beginning of this paragraph.

NOTE: If solution has found its way between lens element, remove screw-ring holding them together, wipe elements clean and dry and re-assemble very carefully in same order in which they originally were.

WARNING:—If bleach has been left on lens for some time, it may eat into the glass in which case return complete lens and shutter to us for re-grinding and adjustment.

CAUTION:—Whenever lens has been moved for any reason and is properly replaced insofar as focus and shutter adjustment is concerned, the following precaution is necessary: Loosen nuts holding pin (E-12) and set pin in position at center of lens and securely tighten nuts again. This will assure pin properly entering V shaped attachment inside of door and prevent damage.

C. HOW TO ADJUST SHUTTER SPEED:—The shutter has been properly set before leaving our factory, and will only need to be re-set if lens has been removed for cleaning, repairing or refocusing. The normal shutter speed should be about ¼ second, and need never be changed unless pictures are too dark when lens is wide open, in which case more exposure is required.
In order to set shutter speed, turn knurled-nut (E-O) as follows:

To make shutter faster (less exposure)—turn upwards to the right.
To make shutter slower (more exposure)—turn downwards to the left.
Check shutter speed by running machine and looking into lens.
The longer shutter remains open, the greater is the exposure.
Replace mirror-holder and magazine and make test picture No. 10 (see page 34).

D. HOW TO ADJUST FOCUS OF LENS:—The lens-focus has been properly set before leaving our factory and focusing of lens is only necessary if lens has been removed for cleaning or repairing. Make 3 pictures of a newspaper or other printed matter, holding it (without moving) parallel with background at following distances:

No. 1—20 inches from glass in door—
No. 2—24 inches from glass in door—
No. 3—28 inches from glass in door—
(refer to picture No. 11 on page No. 35)

Number 2, being the average distance subject will be from glass, should be in sharpest focus; if not, set lens as follows:

If No. 1 is sharpest—Lower lens by loosening lower brass ring (A-12) on top of lens-box, loosen screws in brass ring (A-11) and turn (A-11) clockwise about ¼ turn.

If No. 3 is sharpest—Raise lens by turning ring (A-11) counter-clockwise ¼ turn. Always tighten screws on ring (A-11) and tighten ring (A-12) before taking another picture.
Repeat this operation until No. 2 is in sharpest focus.

CAUTION: Always be sure lens-shutter and mirror-holder (A-9) remain in exactly the same position when setting focus. Otherwise, it will be necessary to reset the shutter and mirror-holder before continuing (See picture No. 10 on Page 34).

E. COIN SWITCH ADJUSTMENTS: Photomatics are equipped with direct contact switches. It may be necessary after months of operation to clean points where coin drops to make contact, and eliminate oxidization caused by poor electrical contact due to dirty coins or oil getting into jaws. (Remove plug at Motor (A-6) and clean switch coin-jaws located under (A-23) with a piece of fine emery cloth.) Place coin in slot (A-21) and if machine does not start make contact with *insulated* wire between screws (A-24) and (A-25) which should start machine or show small sparks, then proceed as follows:

1—*If machine does not start in above test*—check electric circuit (see wiring diagram) and check motor by plugging it directly into a tested line. If necessary replace motor brushes.

2—*If machine does start in above test*—clean coin jaws thoroughly as described above.

3—If coin is not released immediately after Photo-lamps go out, check all connecting parts from jaw contactor (A-26) up to roller (A-33) which is lifted by stopcam on main disk.

4—Screw (A-56) on the extreme right controls opening of jaws when machine is at automatic stop and should only be adjusted if small coins go through without making contact. Adjust screw only ½ turn counter-clockwise and see that locknut is tight.

F. OILING AND CLEANING:

DAILY

1—Keep lens, mirror and glass in door clean with either soft cloth, tissue paper or chamois to prevent dull pictures.

2—Keep plenty of oil in both front (A-49) and rear bearings for Tilter shaft (A-51). Insufficient oiling of these bearings may cause jams due to Tilter-platform not being returned to level position by spring (A-20). Excess tension on this spring will cause unnecessary wear of Tilter cams (A-35 and A-38).

3—Keep only a slight film of grease or oil on all other moving parts and studs for gears.

ONCE A WEEK

Put ONE drop of oil in each hole (A-1) and (A-3) at governor shaft. Excess oiling of these bearings may cause temporary increased speed, but will later tend to "gum" at friction disk (A-5) or cause oil to be splashed onto lens, mirror or window in door. Remove this excess oil by washing with kerosene, which must be wiped off before starting machine. Also clean developing tank thoroughly to prevent spoilage of fresh developer.

4—Keep slide and slide-frame clean. If necessary remove slide (A-17) by taking off cleat (F-1) held by one screw (F-2) and by pulling out cotterpin holding pin (A-16), thoroughly clean and cover with a thin film of oil by wiping with clean rag slightly saturated with oil.

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KEEP OIL AWAY FROM LENS!

Every week, or oftener, the chemical deposits should be removed from Tilter platform, developing chamber (A-50) and outlet chute (A-54). This can be easily done in a few minutes by scraping off heavy deposits and by brushing the insides with a stiff brush with plenty of water. Also run a looped wire through the lower end of discharge pipe (A-58) running into the waste tank to be sure that it will not clog and cause a mess if tank overflows. Every 60 days, a more thorough cleaning is very essential as follows:

a—Remove waste tank and clean it thoroughly.

b—Remove lens by loosening screw (A-11) in lens ring; clean glasses with soft rag and a few drops of alcohol.

c—Remove second exposure lamp in socket (A-42), pull off rubber hoses (A-44 and 45) from nipples in developing chamber and disconnect spring at Tilter arm (A-20).

d—Remove outlet chute held by 2 screws (A-53) and clamp (A-57), clean it thoroughly in warm water to which ordinary household ammonia has been added. Be sure to remove all dirt and chemical deposits with a scraper or stiff brush. The chemical deposits, especially on the sides, may cause drops of bleach to hang on and later be deposited on the finished Photoframe as it is dropped through this chute. This will cause a yellow streak across the picture. The lower hole (A-55) into which goes the tongue of the casting on the door must be kept clean.

e—Remove developing chamber, held by two screws in top of slide frame, one in front (E-13) and one in back of lens-housing (E-6). Clean same as outlet chute. It is very important that the tilter-shaft (E-15) and its platform are kept clean at all times. These parts, with the screws and nuts, are made of stainless steel to prevent corrosion but should nevertheless be cleaned and oiled regularly.

f—Remove lens-housing (E-6) held by 4 screws (E-8) and clean in same manner as outlet chute. Be sure that the flat surface is clean and smooth.

g—Remove lens-housing spring (E-7) held by 3 screws. Handle this gently so that the shape is not altered, as it both helps to close the end of the slide frame and also lifts the Photoframe against the lower surface of the lens-housing to insure proper distance from lens. Clean in same manner as outlet chute.

h—Remove slide by taking off cleat (E-9) and by pulling out cotter pin (A-16) holding pin at lower end of arm (A-8) clean slide-frame thoroughly. After these parts are dry, remove all rust spots with emery cloth, then wipe with cloth and cover with a thin film of oil by means of a slightly oiled clean rag. When all parts are thoroughly cleaned, re-assemble in reversed order, *being careful to guide pin on Bellcrank* (on rear end of Tilter shaft) *into slot in Tilter arm* (D-26) *when replacing Developing Chamber.*

WARNING:—Do not force any of the screws into their holes. If parts are properly lined up, the holes will be in alignment and screws will go in easily. Also see that the shafts (C-5) and (C-14) for the pinchcocks are kept dry, that is, if something should accidentally be spilled on them remove the cotter pin and sandpaper shaft if dirty, then wipe shafts with oil saturated rag and re-assemble. Always keep the door-glass clean on both sides as well as the prism-mirror and lens. This care will be rewarded by brilliant clear photos.

You will find these periodic cleanings well worth your while. Remember, a clean machine produces good clean photos and good photos mean more business and profits to you.

G. PROTECTION OF PAINT ON CABINET:—For protection of the enamel paint on the cabinet it has been covered with wax. When machine has been unpacked and placed on location:

1—Wash entire cabinet down with cold water.

2—Wipe to a high lustre with clean soft cheese cloth.

3—To keep machine in proper condition, simonize as you would your automobile.

4—If extremely dirty, use Simonize Cleaner sparingly and wax, following directions on the cans.

H. HANDLING AND STORING PHOTOFRAMES: It is important to know the following facts to obtain best results:

These Photoframes consist of a special photographic paper sealed in metal frames. This paper is sensitive to light and should be handled only in deep red light. Do not expose to this red light longer than is necessary when transferring partly filled magazines. Make-shift lamps or coated red bulbs are only temporarily safe at best and will eventually cause the paper to be fogged, causing flat results, and perhaps complete failure. A 10 Watt red safelight lamp is furnished with equipment.

ALWAYS LEAVE IN ORIGINAL PACKING UNTIL READY TO USE.

ALWAYS STORE IN COOL, *DRY* PLACE.

ALWAYS USE LOWEST SERIAL NUMBER FIRST.

Photoframes can be safely stored for at least six months in this manner.

I. HOW TO PREPARE SOLUTIONS: Solutions must always be carefully and properly mixed and stored. If solutions look dirty or contain any foreign matter. they should be filtered through several layers of clean cheesecloth placed over a large funnel. When the solution tanks have to be refilled, it is very important that tanks be filled slowly, so as to avoid spilling or splashing the solution into the machine.

Chemicals for solutions are made by us in prepared form, simply add water as directed and when dissolved they are ready for use. Instructions for making solutions are contained on every package of prepared chemicals, which are furnished in the following units:

	Standard packing quantities:
1 Unit Prepared Developer to make 5 gallons—or 20 liters	Cartons of 10 units
1 Unit Prepared Bleach to make 5 gallons—or 20 liters	Cartons of 4 units
1 Unit Prepared Clearing to make 5 gallons—or 20 liters	Cartons of 5 units

5 gallons of Developing solution will finish approximately 500 Photoframes and 5 gallons of Clearing and Bleach will finish approximately 1,000 Photoframes.

16 Gallon Waste Tank at bottom of machine will hold the waste of approximately 250 Photoframes. Always empty it before it is too full.

J. HOW TO STORE SOLUTIONS: Developing solution should be kept in clean bottles filled to the top and securely corked and can be safely kept in this manner for a considerable time. Whenever part of a 5 Gallon bottle is to be used, it is absolutely necessary to transfer remaining solution into clean one gallon bottles, filled to the top and securely corked. Bleach and Clearing solutions can be stored in partly filled bottles as they do not readily oxidize. Dry chemicals, whether prepared or in bulk, should be stored in a cool DRY place; temperature of storing room should not be less than 50°F.-10°C.

K. PHOTOMATIC SOLUTION FORMULAE:

(ALL FORMULAE ARE IN AVOIRDUPOIS WEIGHT AND U.S. GALLONS—128 OUNCES) DISSOLVE ONE CHEMICAL AT A TIME IN WARM WATER IN ORDER LISTED BELOW; EACH CHEMICAL TO BE ENTIRELY DISSOLVED BEFORE ADDING NEXT; USE WARM WATER, NOT HOTTER THAN YOUR HAND CAN COMFORTABLY STAND.

CHEMICALS NEEDED FOR 5,000 PHOTOFRAMES

Sodium Sulphite (Photo-anhydrous)	40 lbs. (20 kg.)
Hydrochinon (Hydroquinone)	10 lbs. (5 kg.)
Potassium Bromide (Granular U.S.P.)	1 lb. (500 grams)
Boric Acid (Crystals U.S.P.)	3 lbs. (1. 5 kg.)
Sodium Hydroxide (Pellets U.S.P.)	10 lbs. (5 kg.)
Prepared Bleach	5-60 oz. jars (9 kg.)

Cover chemicals thoroughly when finished using them.

Do not leave chemicals exposed to air, always store in a cool dry place.

A complete set of equipment and extra parts is sent with each new PHOTOMATIC, excepting the following which is needed for storing chemical solutions:

3—5 gallon bottles (20 liters)

5—1 gallon bottles (4 liters)

DEVELOPER

Warm Water (about 125°F.-50°C.)	about 3 gallons (12 liters)
Sodium Sulphite (Photo-anhydrous)	2 lbs. (1 kg.)
Hydroquinone	1 lb. (500 grams)
Boric Acid (Crystals U.S.P.)	3¾ ozs. (115 grams)
Potassium Bromide (Granular U.S.P.)	1¾ ozs. (50 grams)
Sodium Hydroxide (U.S. Pellets)	1 lb. (500 grams)

When all of the above chemicals are thoroughly dissolved and solution is clear and cool, pour into a clean 5 gallon (20 liter) bottle, fill with water and cork well. This solution can be used immediately, but gives best results if allowed to stand for 24 hours before using. Large quantities of developer can be made and stored for a considerable time, *if bottles are filled to top and properly corked*. CAUTION: Be careful not to allow Sodium Hydroxide to touch skin or get into your eyes.

Whenever you do not use entire solution from 5 gallon (20 liter) bottle, empty remaining solution into small 1 gallon (4 liter) bottles, filled to top and well corked. Never store partly filled bottles of developer. 5 gals. (20 liter) developing solution will finish approximately 500 Photoframes.

BLEACHING SOLUTION

Warm Water	about 2 gals. (8 liters)
Pott. Bichromate, powdered or granular	9¼ ozs. (280 grams)
Sulphuric Acid, C.P.	11¼ ozs. (340 grams)

CAUTION: ALWAYS POUR ACID SLOWLY INTO SOLUTION—*NEVER POUR WATER INTO ACID.*

Add cold water to make 5 gallons (20 liters).

In cold weather, or when running machine fast, if photo does not bleach out completely, use 4 gallons (16 liters) of water instead of 5 gallons (20 liters) to make solution more concentrated. 5 *gallons* (20 liters) will finish approximately 1,000 *Photoframes.*

WE STRONGLY RECOMMEND USING PHOTOMATIC PREPARED BLEACH IN PLACE OF ABOVE FORMULA WHENEVER POSSIBLE. IT IS A GREAT DEAL SAFER TO HANDLE.

CLEARING SOLUTION

Sodium Sulphite	3½ lbs. (1.7 kg.)
Warm Water	5 gals. (20 liters)

Allow to clear before using. 5 *gallons* (20 liters) will finish approximately 1,000 *Photoframes.*

L. USING PREPARED CHEMICALS: There are many advantages enjoyed by the buyer of chemicals already prepared:

1—No waste of material.

2—No time lost through needless handling of weighing and measuring equipment.

3—Attendants are enabled to devote all their time to machine servicing, assisting patrons, selling accessories, tinting photos, etc. Prepared chemicals are economical time savers; especially during busy week-ends and holidays. We supply complete assortments of *prepared* chemicals, sufficient to finish approximately 5,000 Photoframes. Order either these assortments or standard packing quantities. Write us for price list.

Care of Chemicals: Whether prepared or in bulk, they should be kept sealed and stored in a cool dry place. Always use up oldest chemicals first.

M. GENERAL INSTRUCTIONS SUMMARIZED:

1. Keep machine clean and oiled.

2. Every time you change magazine, pour in one (1) gallon (4 liters) of Developer, wipe off slide-frame and put a few drops of oil in bearings on Developing Chamber (A-50) and see that tilter-shaft (A-51) works freely, only if necessary shorten spring (A-20) slightly.

WARNING: When pouring solution, be very careful that you fill tanks without spilling or splashing. Wipe off with rags every drop splashed outside of tank. It is advisable to cover the prism-mirror holder and lens with a cloth large enough to absorb any solution that may be spilled on it. Be sure to replace the floating lid in the Developing Tank.

3. Clean lens, mirror and both sides of glass in door. Always use soft clean rag or chamois, to avoid scratches.

4. Check operating time of machine while you wait for customers' photo. (See page 16 paragraph 1.)

5. If temperature is below 90°F.-32°C. and bleach does not entirely remove black image on paper then use 1 jar of Prepared Bleach to 4 gallons (16 liters) water instead of 5 gallons (20 liters) and if necessary slow down machine slightly until bleach action is complete (refer to picture No. 3, on page No. 32).

6. At every second change of magazine, pour in 1 gallon (4 liters) of bleach and clearing as well as 1 gallon (4 liters) of developer. Also fill water tank and drain waste tank.

7. When putting in full magazine, mark register reading on front of magazine (see page 23). Whenever removing a magazine with Photoframes in it, use the safety-cover and secure it with safety-latch and put a rubber band around top of magazine to indicate that it contains Photoframes.

8. If spots should show on pictures, see page 30.

9. If machine has been idle for some time open all pinchcocks and drain out solutions which were left in the hoses, at the same time changing position of the hoses at pinchcocks slightly.

10. If Developer, which has been in tank for any length of time, does not give proper results (which can be checked by making test No. 1, page 24) refill tank with fresh developer.

11. When removing machine—always empty water tank, waste tank, and containers and wipe dry to prevent spilling on mechanism or cabinet. A syphon-hose will be the easiest way to empty tanks by syphoning water or solutions into pails. Be careful not to get solutions mixed;—and replace in correct tanks. Floating lid on Developing solution prevents oxidization and prolongs life of solution; *always use it.*

4. Rinse large brush and apply color to background, using a light color for light background, and dark color for dark backgrounds. You will find a weak light blue very suitable for white backgrounds and easy to apply.

5. Rinse small brush and apply lip color (red) and blot. Do not use too much color in brush, and point brush by twisting brush between your fingers while pulling towards you on a piece of paper.

6. Rinse small brush and color eyes as follows (Blot when finished):

blue, brown, etc.

Black or grey eyes need not be colored.

Be careful to avoid coloring whites of eyes. Use only a little color and bring brush tip to sharp point.

7. Rinse brush and apply weak red cheek color and blot. Apply this color with a circular motion, starting from center and working out, so as not to show a sharp outline.

CAUTION: When finished coloring, it is advisable to lightly wipe entire surface with alcohol (rubbing, denatured, or wood) to remove dust, lint, etc. Be careful to do this lightly and quickly so as not to remove too much color and thereby weakening it.

We supply a complete tinting set with each Photomatic.

B. PHOTOFRAME ENLARGEMENTS — With our special combination viewer and enlarger, enlargements from Photoframes can be made and mounted in about 2 minutes. We will send you complete details upon request.

PHOTOFRAME EASELS: Another means of increasing your income and at the same time pleasing your customer, is to fit Photoframes in an attractive miniature easel. These can be sold at a very moderate price. Prices and samples for both the Photoframe and Enlargement size on request.

COMIC BACKGROUNDS: Your income can be increased by using these comic backgrounds. Send for complete information.

PASSPORTS AND LICENSES: Photoframes can be used for Passports and other identification purposes if taken with white background. Picture must be cut out of frames, trimmed, and back of paper rubbed briskly with either acetone or alcohol in order to remove waterproof backing so that it can be pasted onto paper. A special die for cutting out circular pictures for use on chauffeur's licenses and a special frame for taking Passport pictures with narrow white space at bottom for signature. may be obtained from us. Write for further information.

DIAGRAMS

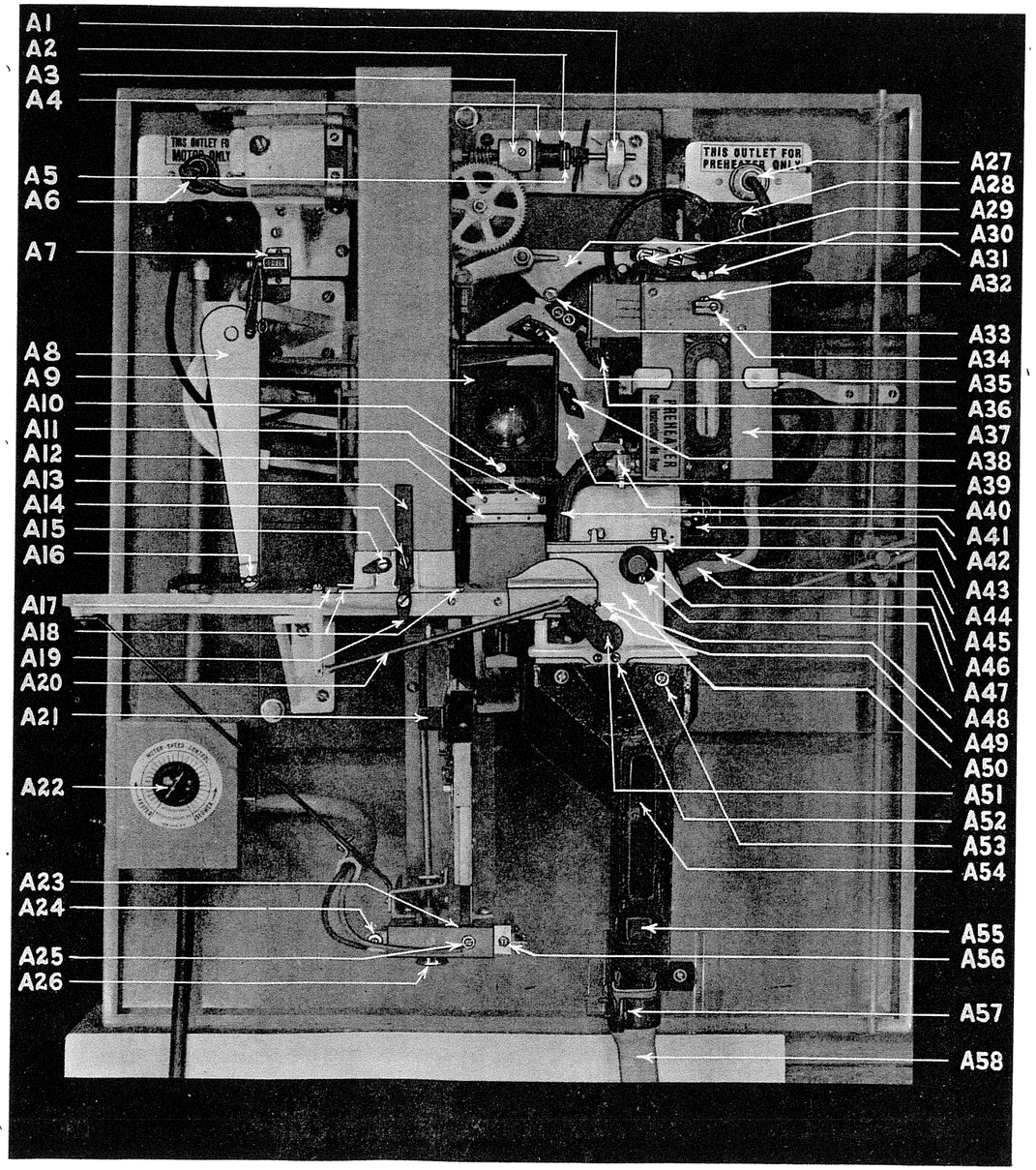

DIAGRAM A

Front view of mechanism ready for operation.

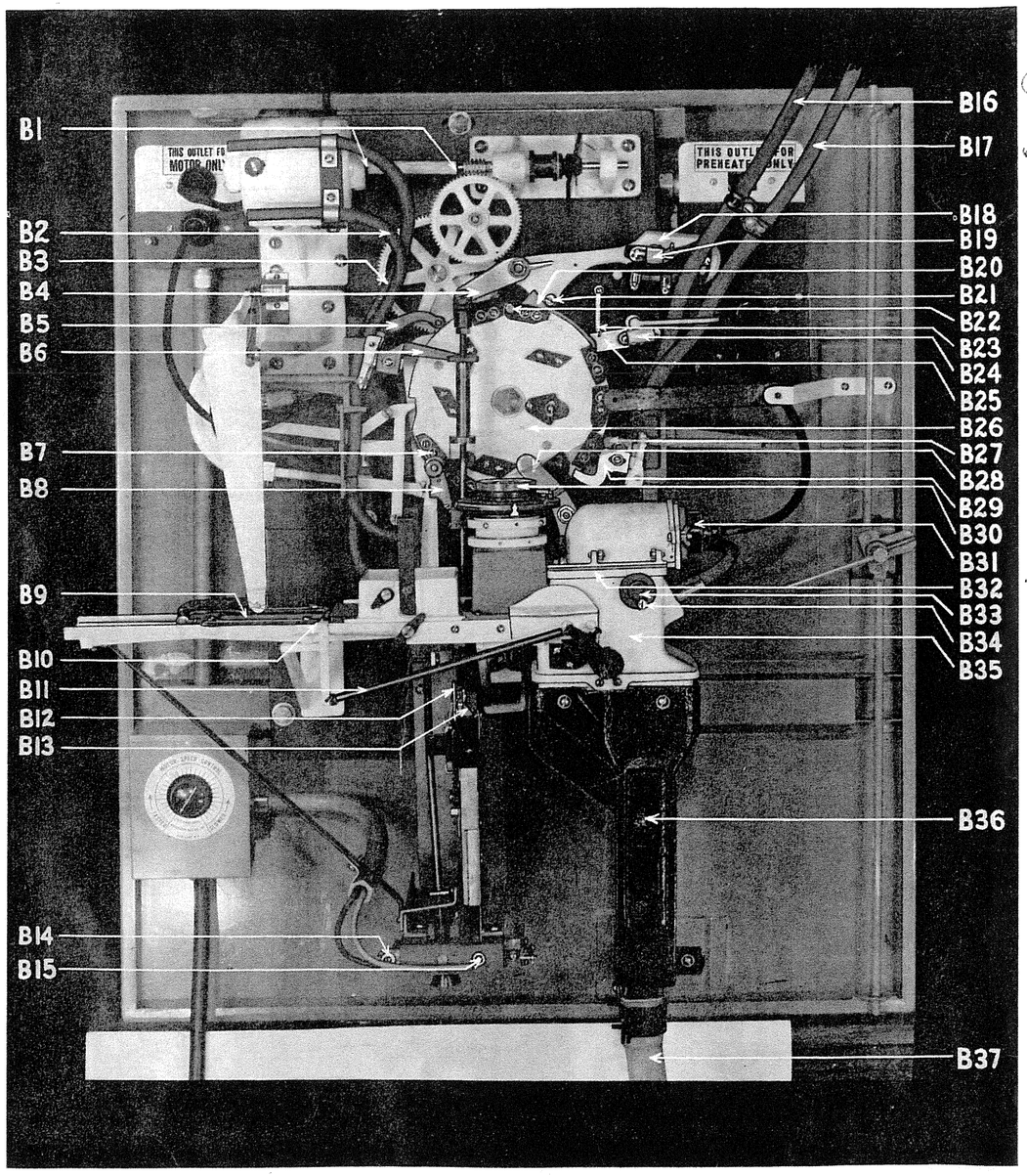

DIAGRAM B

Front view of mechanism; preheater and magazine removed.

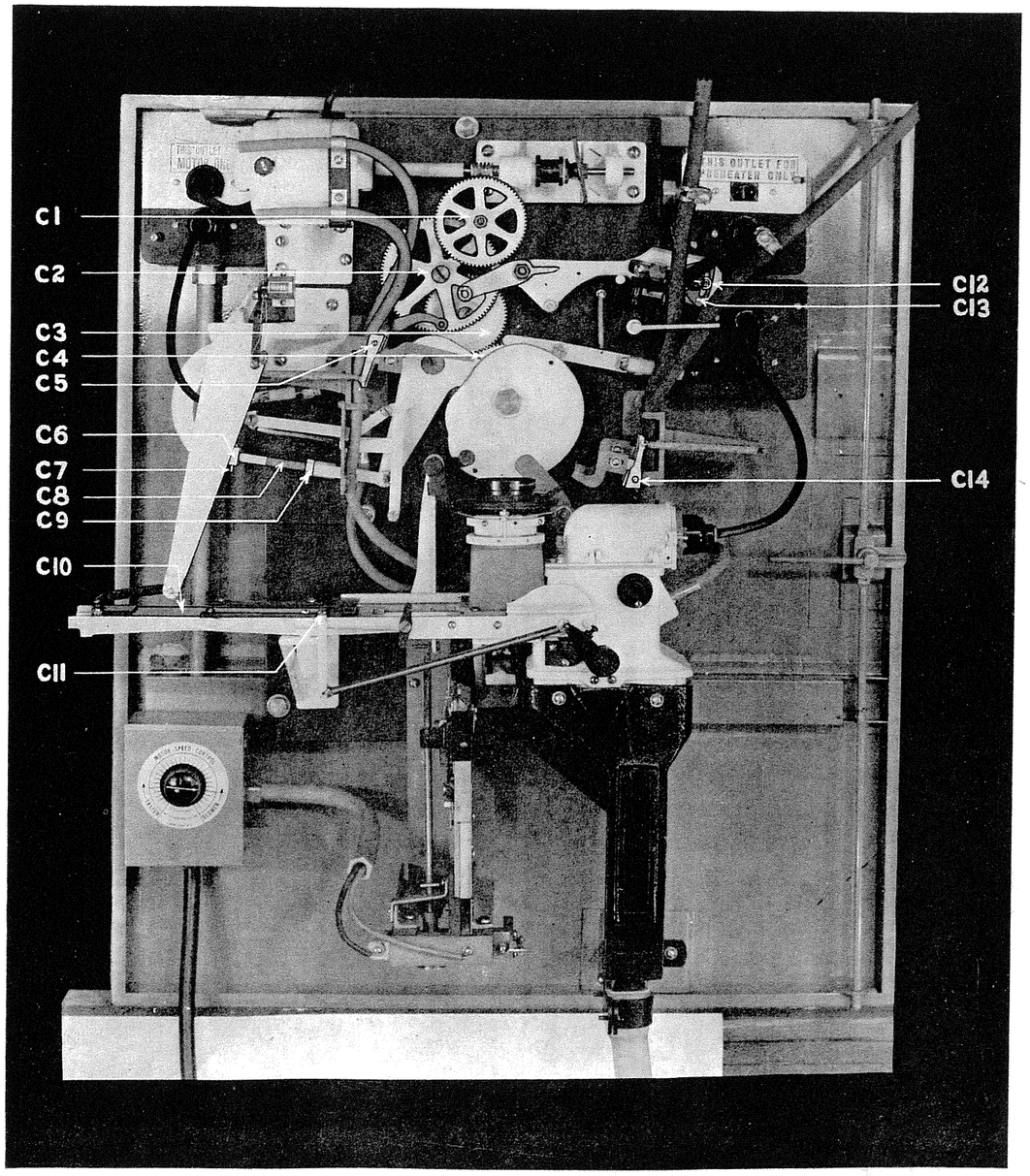

DIAGRAM C

Front view of mechanism; preheater, magazine and cam disk removed.

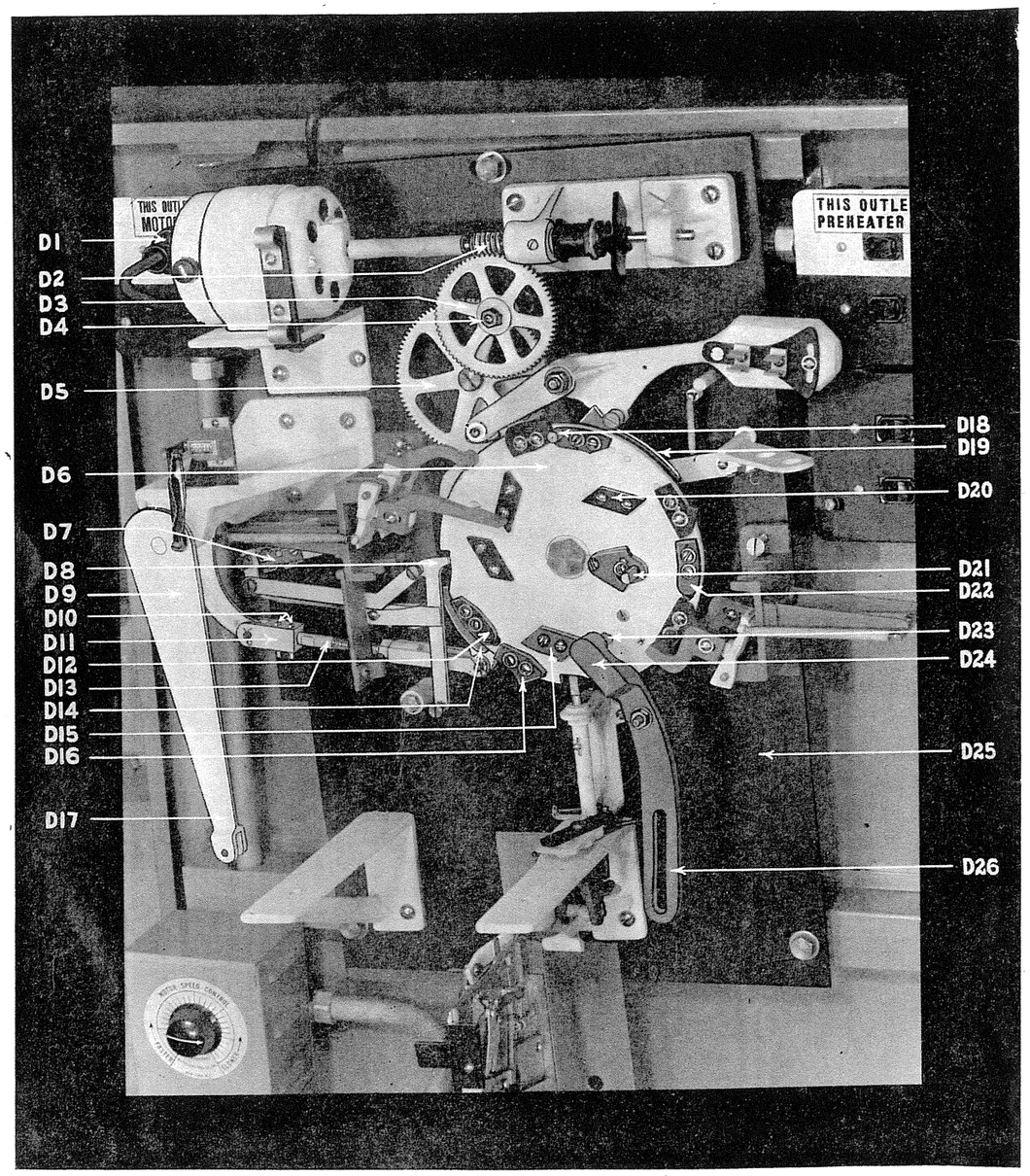

DIAGRAM D

Front view of mechanism; preheater, magazine and slide-frame removed.

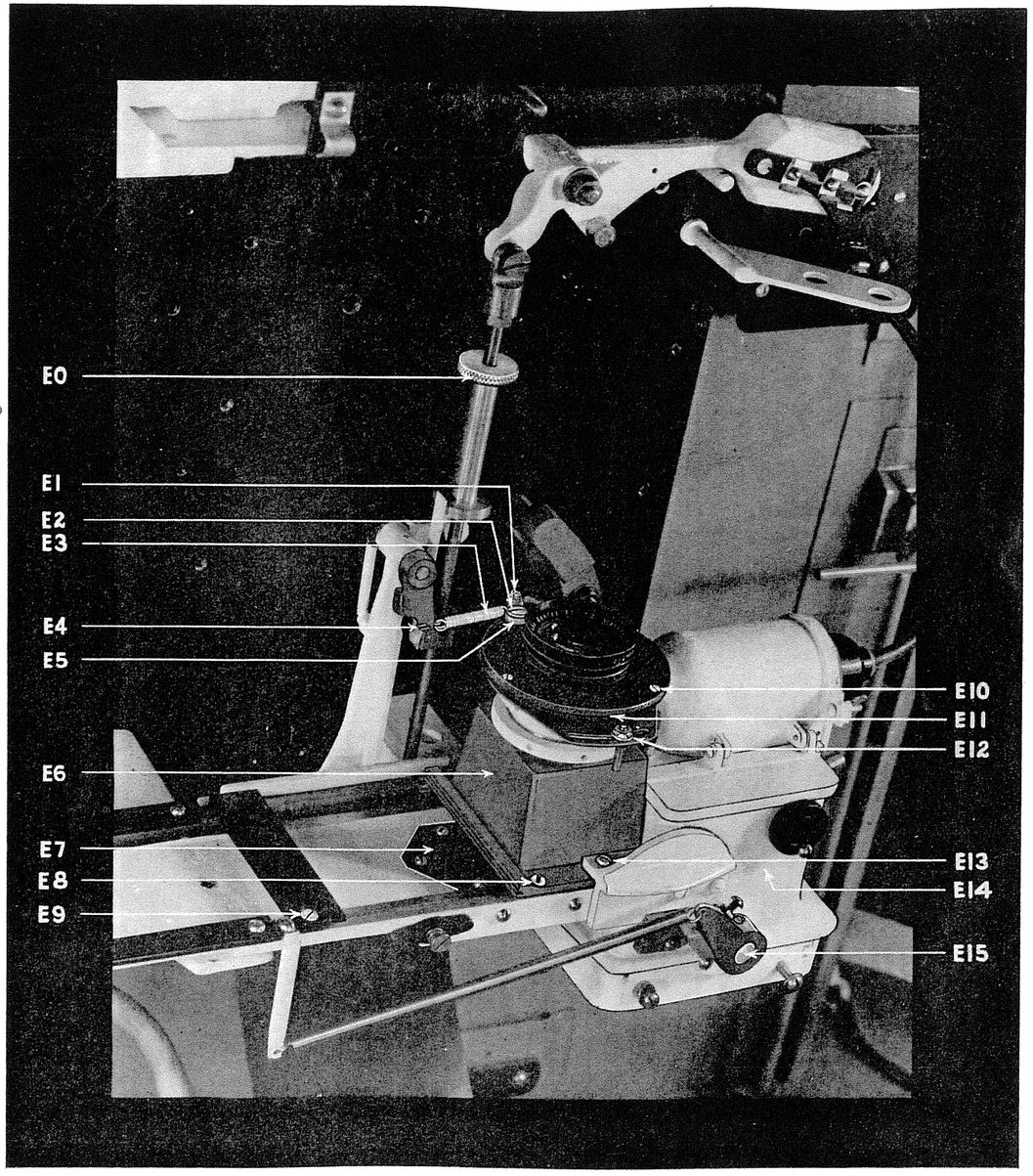

DIAGRAM E

Lens mechanism

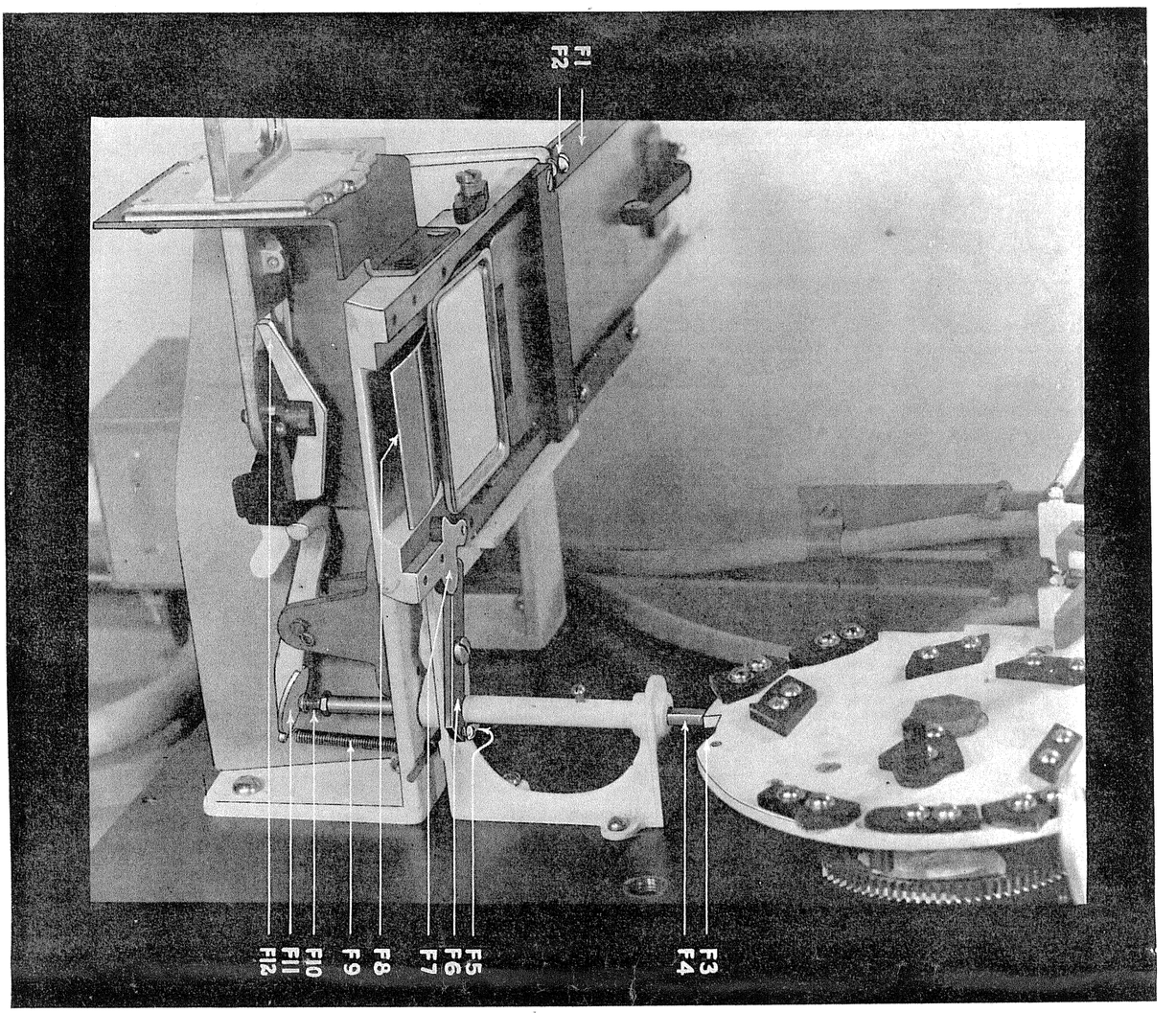

DIAGRAM F

Slot lock mechanism

WIRING DIAGRAM