W. F. Sprengnether Instrument Co., Inc.
St. Louis, Missouri

DRUM TYPE PHOTOGRAPHIC RECORDER

INSTRUCTIONS

Carefully unpack the recorder by first removing the top of the packing case. Next remove all boxes and packing material in the partitioned end of the case being sure no small packages are discarded with the packing.

Remove sides of shipping box and unbolt the wooden recorder mounting blocks from the base of the shipping box.

Place the recorder across boxes or chairs to raise it well above the floor and unbolt the mounting boards. Save these screws as they are also used as leveling screws.

Remove the screws from the mounting boards and clean the threads to remove wood chips and dirt. Apply a drop of oil on each screw, put on lock nut to within 1/2" from head of the screw. Replace screw and lock nut in the recorder with the pointed end downward. Screw them in until only about one-half inch of thread is exposed below the recorder base.

Place the recorder on the pier with the leveling cups placed under the recorder leveling screws and level the recorder in both planes using a carpenter's level.

Unpack the light source tubes and brackets and inspect the adjustments and construction to better understand its operation. (See Sheet 1-A) The ends of the light source tube can be removed by pulling outward.

Place the light source and mounting bracket on the recorder with the light source aperture below the center of the recorder aperture strips and replace the washers and wing nuts. Set the bracket at the mid-point of its vertical range of adjustment and tighten the wing nuts.

Connect the lead wires to the binding posts on the lamp house and set the lamp adjusting rod in the center of its range of adjustment.

Place the cylindrical lens(es) in the holder(s) with the convex side away from drum being sure the lens is clean. Handle the lens with care when pressing down the lens into the mounting clips and assist the downward motion by moving the lens clip outward with the fingers.

Open the light source aperture both horizontally and vertically by sliding the aperture strips apart.

Turn the light switch to the "on" position and rotate the rheostat to the extreme clockwise position so the lamp is at its maximum brilliance - this will aid in making the preliminary adjustments.

Place the galvanometers approximately one meter from the rear of the recorder and on a line perpendicular to the back of the recorder and projected from the center of the recorder aperture strip.

Set the galvanometer so that the height of the mirror is equal in height to the distance midway between the center of the light source and the slot between the recorder aperture strips.

Adjust the galvanometer leveling screws until the base is level using a small spirit level. Unclamp the suspension very slowly until the clamp reaches its stop. The galvanometer suspension should now be completely free and oscillate at its natural period. If the suspension sticks or does not oscillate at its correct period, it indicates that more precise leveling is required. This can be accomplished more easily by removing the galvanometer lens and using a flashlight to illuminate the galvanometer coil and gap so that the correct centering can be observed. Rotating a galvanometer leveling screw clockwise will cause the coil to move away from that leveling screw. With long period galvanometers this adjustment will be rather small. After the coil is correctly centered and operating at its correct period, replace the lens and rotate until the image at the recorder is vertical.

The light spot should now be adjusted by means of the galvanometer zero adjustment until the light image rests on the center of the horizontal plane of the recorder aperture. (Short the galvanometer terminals to make this adjustment.)

If the light image does not fall on the aperture, it can be raised or lowered by adjusting the recorder light source bracket up or down until the image is centered over the slot. The width of this slot was pre-set at the factory, but should it be necessary to make a change, the aperture strips can be adjusted within a limited range to provide a means of adjusting the slot size to allow more light to fall on the cylindrical lens. This slot should be kept at a minimum to prevent fogging of the recording paper, about 1/16" being the proper gap.

The lamp in the light source is made adjustable so that it can be moved in or out to provide a range of adjustment for focusing the light spot. Loosen the knurled clamp screw which holds the lamp adjusting rod and adjust the rod in or out until the sharpest and narrowest image is obtained on a piece of white paper on the surface of the recording drum. The rod should also be rotated until the filament image at the aperture strip is vertical.

An adjusting screw on the back of the recorder just below the aperture strip is for adjusting the cylindrical lens to obtain the sharpest focus in the vertical height of the recording spot.

ADJUSTMENT OF LIGHT SPOT

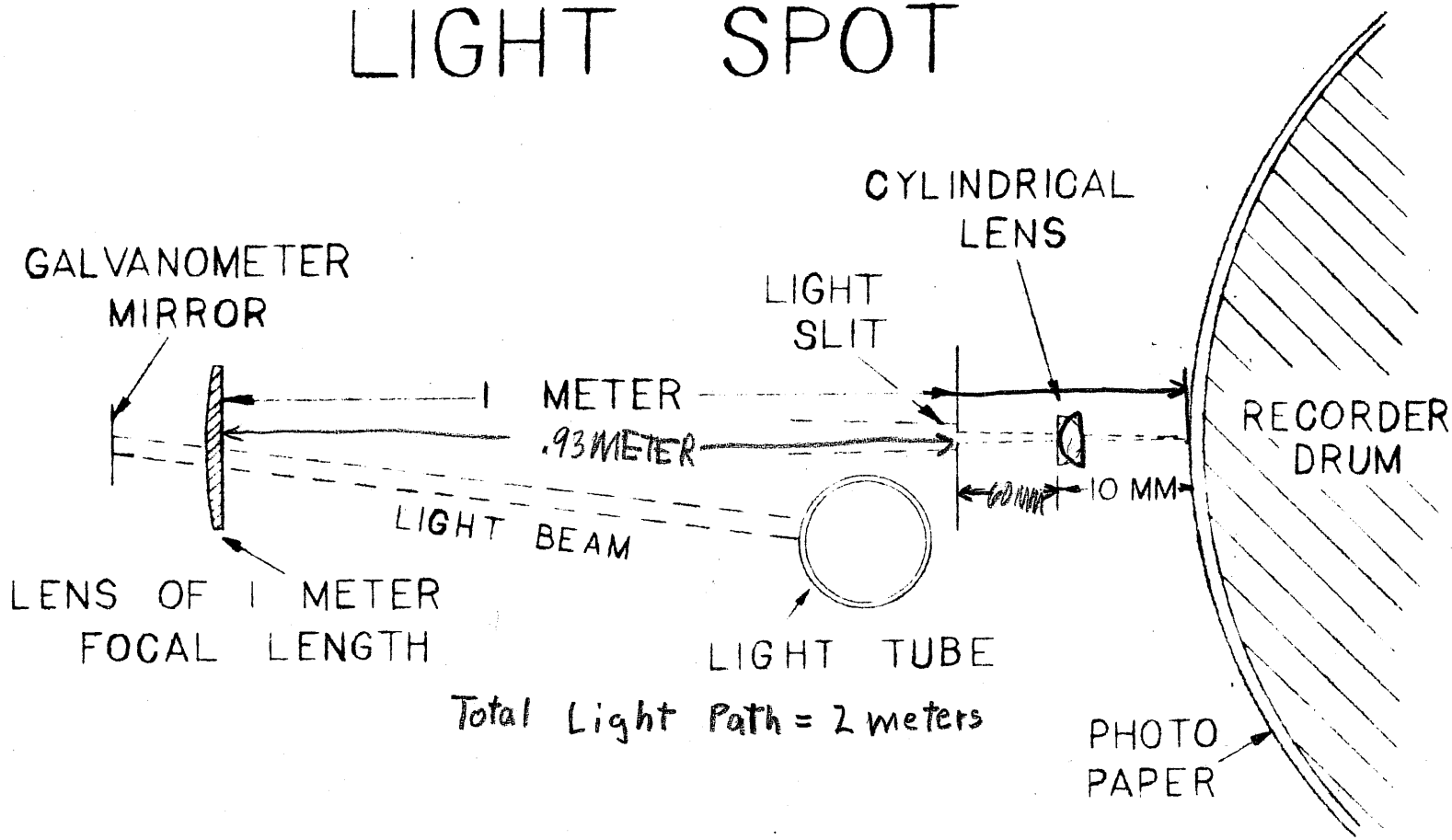
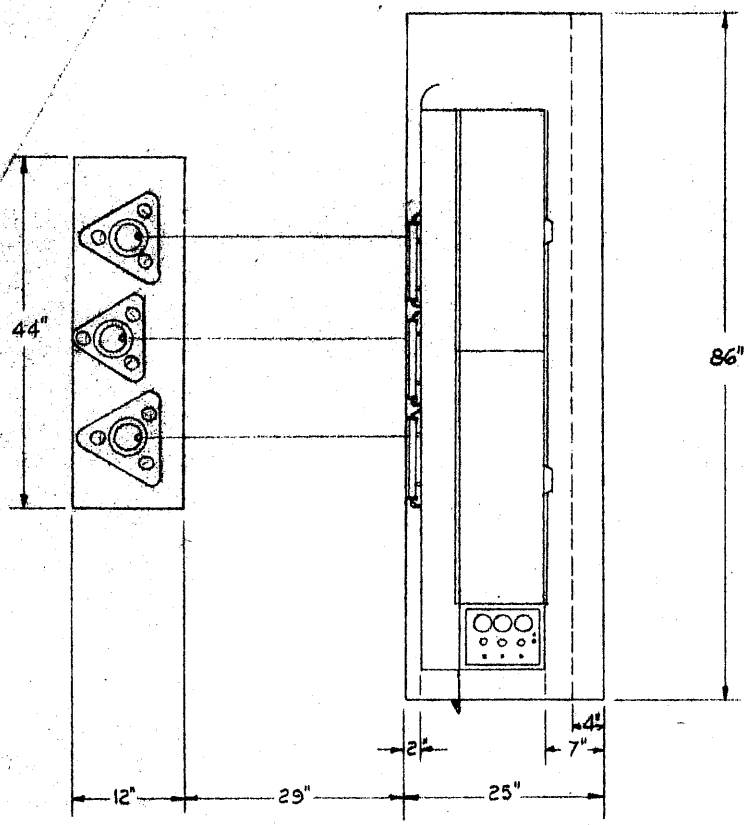


FIG. (7)



PIER ARRANGEMENT
FOR
SPRENGNETHER
THREE COMPONENT RECORDER

SCALE: ½" = 0 12"

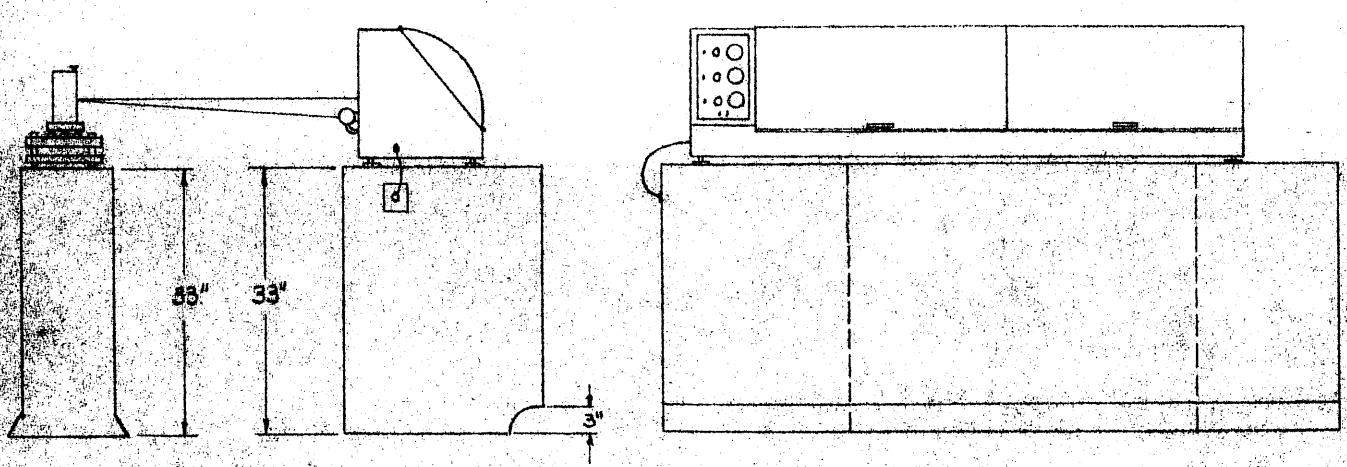


FIG. 7

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ST. LOUIS, MO.
U.S.A.

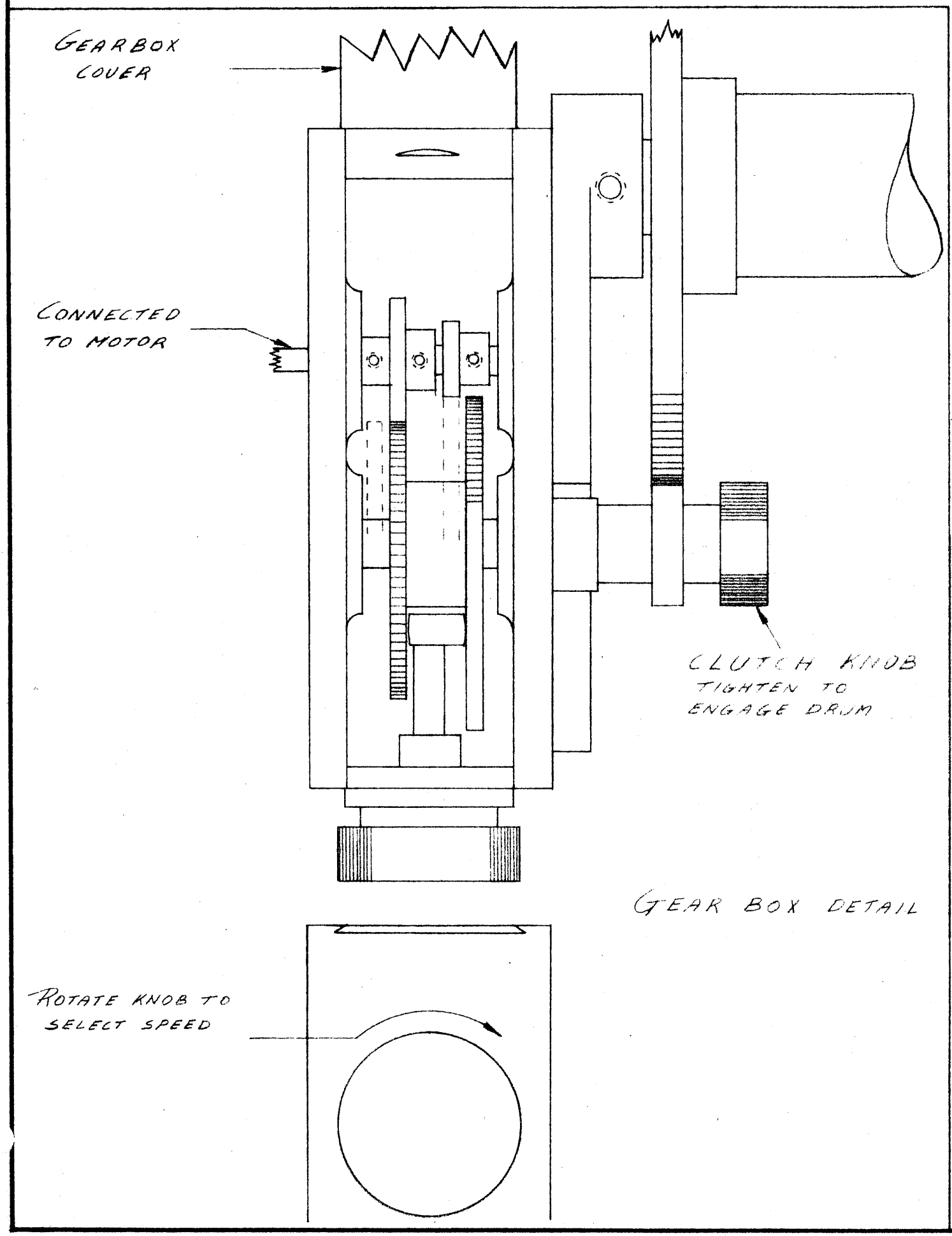

GEARBOX COVER
CONNECTED TO MOTOR
CLUTCH KNOB TIGHTEN TO ENGAGE DRUM
GEAR BOX DETAIL
ROTATE KNOB TO SELECT SPEED

FIG. 6

TIME MARK ADJUSTMENT

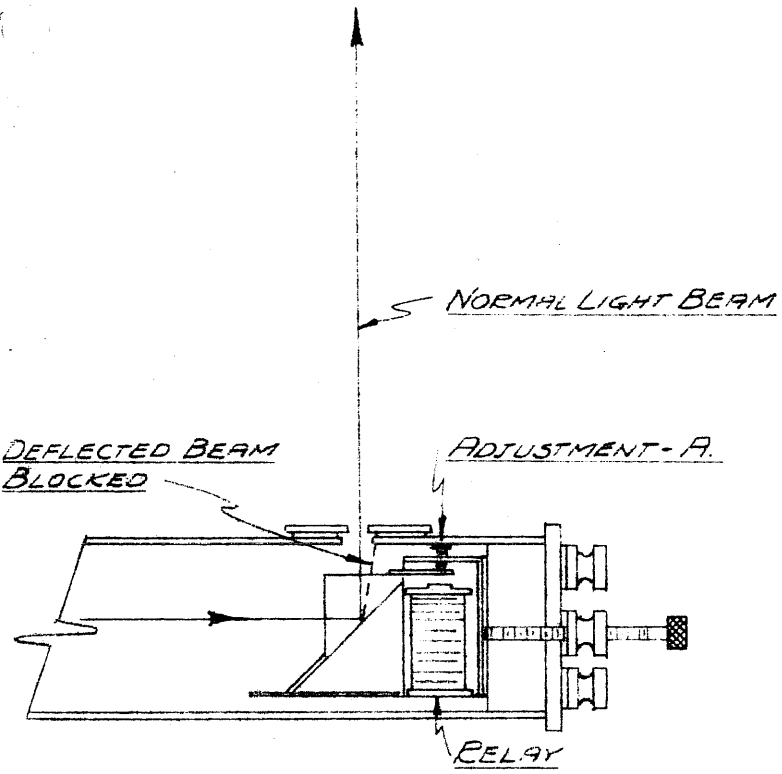
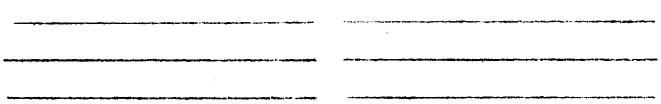


FIG. A



A

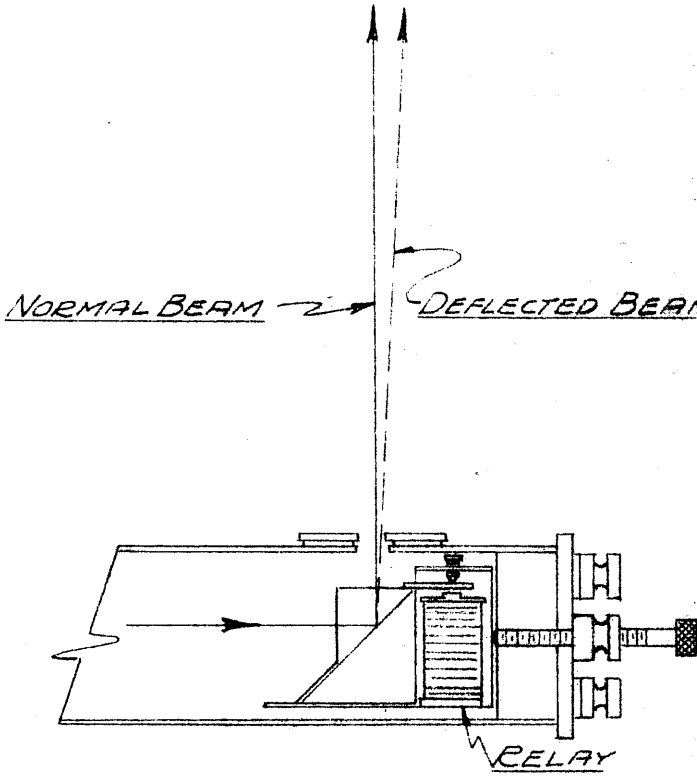
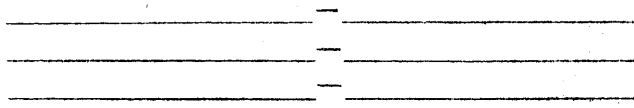


FIG. B.



B

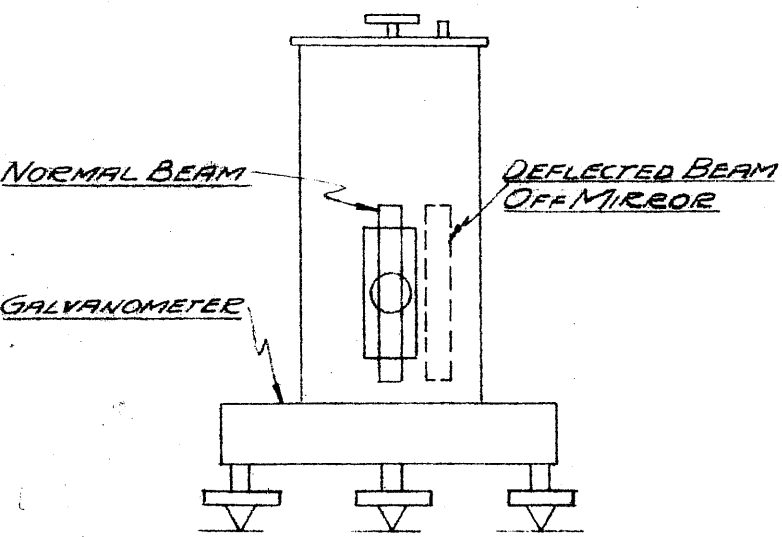


FIG. C

WRONG

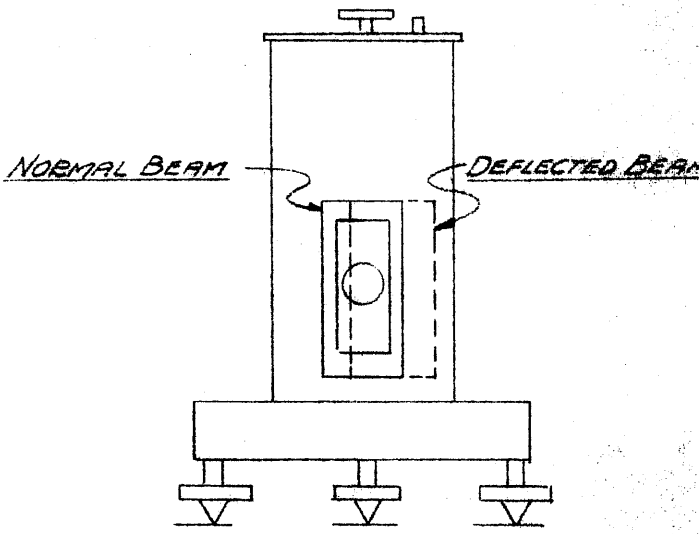


FIG. D.

CORRECT

After the above adjustments are completed, the aperture strips on the light source can be adjusted until the light just covers the face of the galvanometer lens with just enough width that the light spot does not dim or disappear when the time mark prism is deflected. (See Fig. C and D, Sheet 1-A) This deflection can be accomplished by shorting the timer terminal on the recorder.

The time mark deflections should be approximately 1/16" - 1/8" in amplitude as viewed on the surface of the drum. This adjustment is pre-set at the factory and should not require any change. The amplitude of the time mark displacement is adjusted by means of the screw and lock nut "A" (Fig. A, Sheet 1-A) Adjustment can be made by loosening the lock nut on the adjusting screw and turning the screw with a small screwdriver. Clockwise rotation decreases the amplitude - counter-clockwise increases the amplitude on the deflection.

The prism in the light source can be adjusted to compensate for small lateral misalignment of the galvanometer. The adjustment screw is located between the binding post at the prism end of the light source (See Fig. A, Sheet 1-A) This adjustment should not require much change and any large adjustment would indicate that the galvanometer has not been placed correctly behind the center of the recorder aperture and should be re-positioned.

Connect the time mark clock to the "timer" terminals on the recorder. The clock only furnishes circuit closing contacts since the power for the relays is furnished by the power supply in the recorder.

Prepare recording drum for operation:

Remove packing material which held the drum in place during shipment and wipe all dirt from drum drive shaft. Remove the soft lead wire wrapped around the plunger which engages the lead screw. Raise the plunger and rotate one quarter turn so that the index pin rests on the indent on the upper face of the plunger housing. Move the drum to the extreme left-hand position until it stops. On drums having two translation rates, be sure only one plunger at a time is engaged in the lead screw, or the gear box and motor can be damaged.

Reverse the pinion gear on its shaft so that the teeth will engage the large shaft gear. This pinion gear was reversed in shipment to avoid possible damage.

The knurled nut which holds this gear also serves as a clutch and allows the drum to be rotated freely while removing and replacing recording paper. Loosen the nut about one turn with a counter-clockwise rotation to disengage the recorder drum. When tightening, use only enough pressure to assure positive drive.

A spring loaded friction anti-backlash brake is provided to assure smooth even rotation of the drum. A cork pad at the end of the flat spring serves as a friction pad against the side of the large shaft gear.

Pressure on the spring is pre-set at the factory and should not require adjustment for several years. Friction can be adjusted by loosening the lock nut on the screw in the center of the spring strip and tightening the screw about one turn. With the clutch knob loosened so the drum is free to rotate, the friction brake should be adjusted until the drum will stop after a slight rotation without rollingback. This should be tried in several steps through a complete rotation of the drum.

After all the above adjustments are complete, reduce the light intensity to about half of the full brilliance and make a test recording to determine if the trace is sharp and clear and that time marks have correct amplitude. After correct adjustment of light intensity is made the reading on the meter should be noted that it can be easily re-set, should the light intensity be increased for other adjustments. On the Series DH 2 and 3 component recorders these readings are made for each lamp by means of the switch located below the meter, the switch being changed to read the respective voltage for each lamp.

Maintenance:

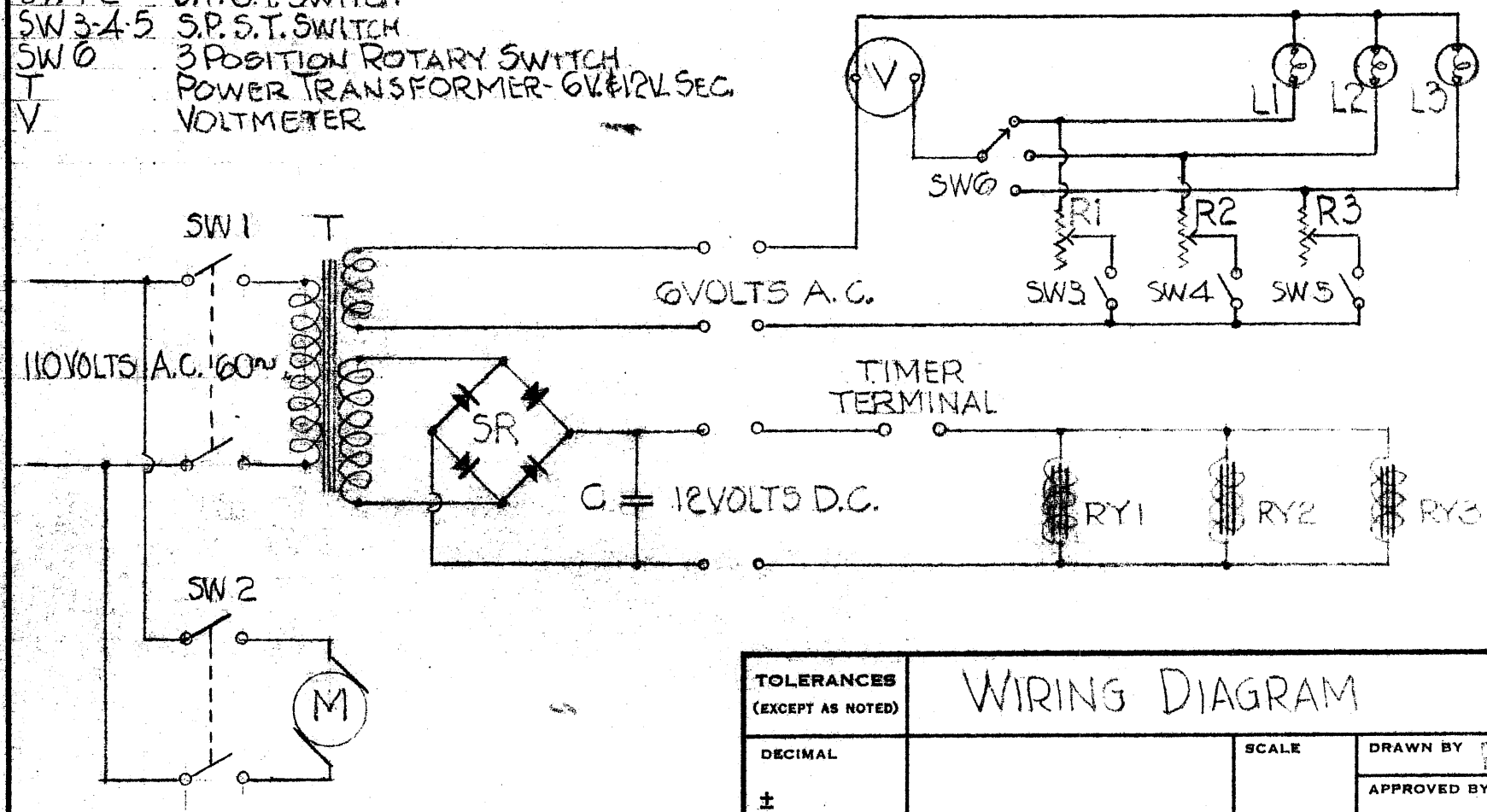
The recorder will require a minimum of maintenance, normal care such as occasional oiling of the gear box and drum plunger and feed screw. Occasionally the drum shaft should be wiped with a clean rag to remove dust and dirt so the drum translates freely.

The main point of wear is the drum plunger tip which engages the feed screw. This plunger tip is made of brass so that the major wear occurs on this tip rather than the screw thread. The tips are replaceable and spare tips can be ordered from the factory at nominal cost.

To replace the tip, remove the four screws fastening the plunger housing to the drum end and remove the complete assembly. Pull the replaceable tip out of the plunger shaft and replace with new tip. Rotate the tip while installing so that the engaging grooves align with the threads when the plunger housing is held flat against the drum end.

LEGEND	DESCRIPTION
C	1000 mfd CAPACITOR
L 1-2-3	GE #63 LAMP
M	DRUM DRIVE MOTOR 110V. A.C. 60~
R 1-2-3	25 ohm RHEOSTAT
RY 1-2-3	DEFLECTION SOLENOID
SR	FULL-WAVE SELENIUM RECTIFIER
SW 1-2	D.P.S.T. SWITCH
SW 3-4-5	S.P.S.T. SWITCH
SW 6	3 POSITION ROTARY SWITCH
T	POWER TRANSFORMER- 6V. & 12V. SEC.
V	VOLTMETER

DATE	SYM	REVISION RECORD	AUTH.	DR.	CK.



TOLERANCES (EXCEPT AS NOTED)	WIRING DIAGRAM		
DECIMAL ±		SCALE	DRAWN BY PRW APPROVED BY RFH.
FRACTIONAL ±	TITLE 3 COMPONENT SERIES DPH		
ANGULAR ±	DATE 22 JULY 60	DRAWING NUMBER	

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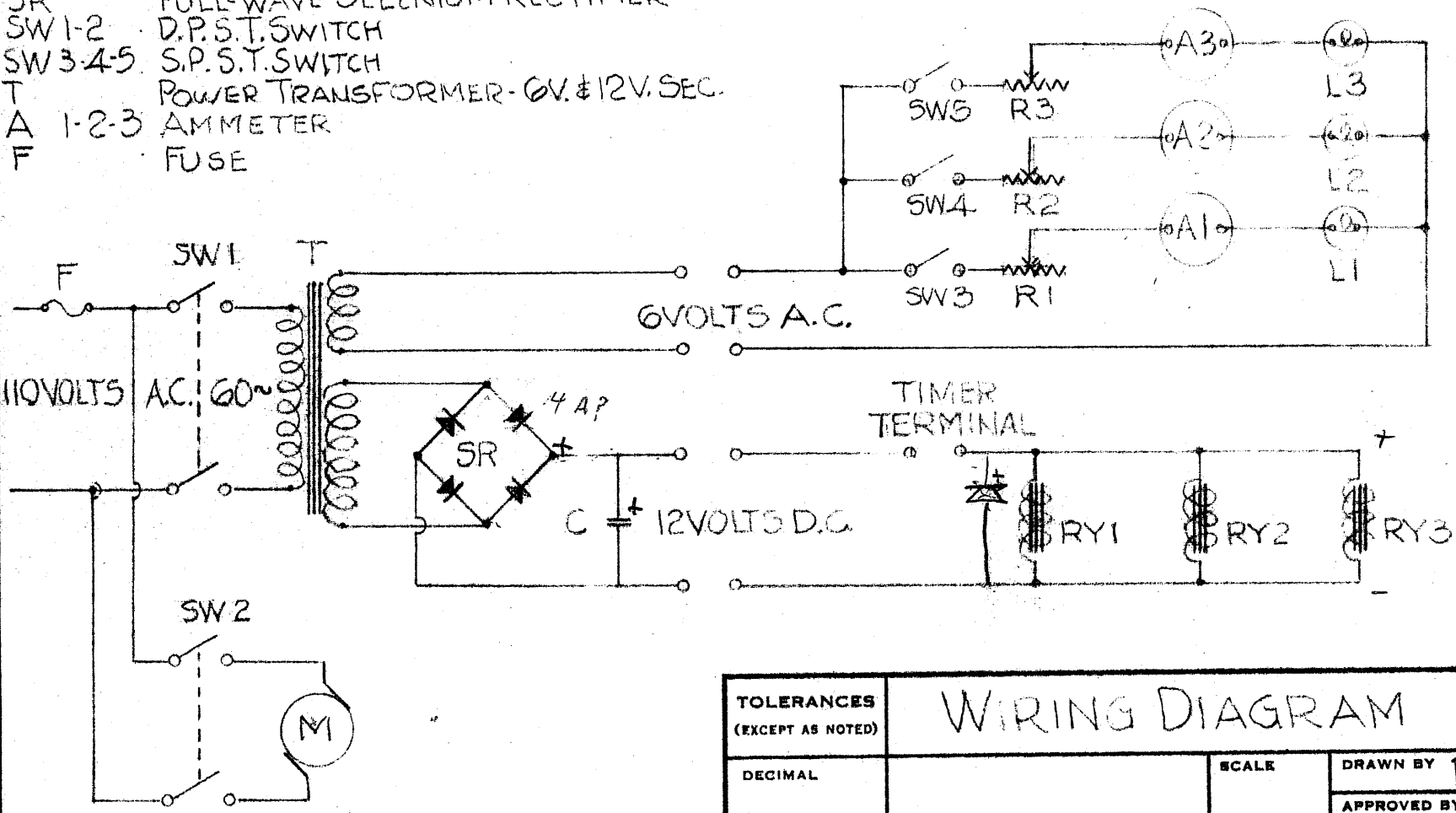
SW 1-2	D.P.S.T. SWITCH
SW 3-4-5	S.P.S.T. SWITCH
T	POWER TRANSFORMER - 6V. & 12V. SEC.
A 1-2-3	AMMETER
F	FUSE

DATE	SYM	REVISION RECORD	APP'D	DR.	CK.



TOLERANCES (EXCEPT AS NOTED)	WIRING DIAGRAM		
DECIMAL ±		SCALE	DRAWN BY PRW
			APPROVED BY R.F.H.
FRACTIONAL ±	TITLE 3 COMPONENT SERIES H		
ANGULAR ±	DATE 22 JULY '60	DRAWING NUMBER	

WARRANTY

We warrant each equipment manufactured by us to be free of defects in material and workmanship under the normal use and service for which the equipments are intended. The obligation of W. F. Sprengnether Instrument Co., Inc. is limited to making good at its factory any part or parts thereof which shall, within ninety (90) days after delivery to the original purchaser, be returned to W. F. Sprengnether Instrument Co., Inc. with transportation charges prepaid, and which its examination shall disclose, to its satisfaction, to have been thus defective. This warranty is in lieu of all other warranties expressed or implied, and does not apply to any products of W. F. Sprengnether Instrument Co., Inc. which have been subject to misuse or abuse. W. F. Sprengnether Instrument Co., Inc. is not liable for any damage or personal injury resulting directly or indirectly from the design, material, workmanship, or installation of any of its products, and neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale of its equipments.

W. F. SPRENGNETHER INSTRUMENT CO., Inc.