VIDOR LIDO—*Continued*

automatic bias being developed on C5 with R3 as leak resistor.

Anode reaction voltages are obtained inductively from L4, connected in series with limiter R4 to oscillator anode (g2, g4) of V1, the HT for which is obtained from V2 screen dropper R6 decoupled by C8.

IF amplifier operates at 475kc/s. Secondary L7, C11 of IFT1 feeds signal and AVC voltages decoupled by R5, C17 to IF amplifier V2. Screen voltage is obtained from R6 decoupled by C8. Suppressor is internally strapped to negative side of filament. Primary L8, C12 of IFT2 is in the anode circuit.

Signal rectifier. Secondary L9, C13 of IFT2 feeds signal to diode anode of V3. R10 the volume control is the diode load and R9, C14, C15 form an IF filter.

AVC. The DC component of the rectified signal developed across R9, R10 is applied through decoupling networks R8, C4 and R5, C17 to g3 of V1 and g1 of V2.

AF amplifier. C16 feeds rectified signal across volume control R10 to pentode section of V3. A small negative bias for g1 is developed on C16 with R11 as leak. Screen voltage is obtained from R14 decoupled by C19. Suppressor is internally strapped to negative side of filament.

R13 is anode load and R15, C21 provide decoupling of HT to both anode and screen of V3. C18 is anode RF bypass.

Output stage. C20 feeds signal from anode V3 to pentode output valve V4. Grid is biased approximately 5V negative by virtue of its filament being at the high potential side of LT supply. When operating from batteries the total HT current is slightly reduced (to prolong life of battery) by increasing the negative bias by returning grid resistor R16 to chassis through HT negative biasing resistor R17.

Screen voltage is obtained direct from HT line, being decoupled by C25. Primary L10 of output matching transformer OP1 is in the anode circuit. C22 gives fixed tone control. Secondary L11 of OP1 feeds signal to a 5-in. PM speaker L12.

Warning tone. When lid is closed down S5 is closed and C23 is connected between anode V4 and screen of V3 to give positive feedback, thus producing AF oscillation, which is audible at full strength in **speaker** irrespective of setting of volume control **R10.**

HT of 90V is provided by a Vidor L5039 heavy duty or L5512 lightweight type battery or alternatively from the mains. S2 switches the receiver HT line to whichever source of supply is desired. C25 decouples the HT battery and functions as smoothing capacitor on mains generated HT.

Mains HT is provided by MR1, MR2 coupled in a fullwave rectification circuit, the rectifier voltages being obtained from secondary L13 of mains input transformer MT1. Resistance-capacity smoothing is given by R22, C25, C27.

Reservoir smoothing capacitor C27 should be rated to handle 150mA ripple.

LT of 7.5V for the series-connected filaments of V1 to V4 is provided by a Vidor L5058 battery or, if the receiver is operated from the mains, from the rectified and smoothed HT supply through droppers R20, R21. S3, which is ganged to S2 and to wavechange switch S1, switches receiver filament line to appropriate source of supply.

R2, R7, R12, R19 decoupled by C9, C24 are current bypass resistors to maintain correct voltage across each individual valve filament, C26 gives LT line smoothing.

Primary L14 of mains input transformer MT1 is tapped for voltages of between 200 and 250V AC.

S4, which is ganged to S1, to S3, is mains ON/OFF switch.

S2, S3 apart from switching HT and LT lines to battery or mains also serve as ON/OFF switch when receiver is battery operated.

Chassis removal. Open lid by pressing thumbs on inner ends of handle brackets. Remove bottom cover of case by undoing the two milled nuts. Remove batteries and take off the three control knobs and etched Perspex escutcheon. Remove fibre protecting cover over chassis, etc.

Unsolder the accessible lead from lid switch and the other switch lead from chassis. Also unsolder leads from LS. Prise off protecting cover panel over frame aerials on inside of lid and unsolder the three leads from frame aerial tags. Unscrew and remove the four chassis bolts marked "A" and loosen bolts marked "B."

TRIMMING INSTRUCTIONS

Apply signals as stated below	Tune Receiver to	Trim in Order stated for Max. Output
(1) Remove receiver chassis from case and connect to frame aerial. Also connect an output meter across primary L10 of OP1		
(2) 475 kc/s to g3 of V1 via C2	MW band	Cores L9, L8, L7, L6
(3) With gang fully meshed, adjust pointer to agree with calibration on dial plate		
(4) 600 kc/s to frame aerial via loop in close proximity	500 metres	Cores L5, L3
(5) 1.5 mc/s as above	200 metres	T3, T1. Repeat (4) and (5)
(6) 250 kc/s as above	1200 metres	T4, T2

NOTE: For re-alignment of RF sections only, it is not necessary to remove receiver chassis from cabinet

BEETHOVEN TV50, TV50M.

THE following, supplied by Beethoven Electric Equipment, Ltd., is a better description of the special line thyratron bias circuit in their models TV50, TV50M, than we gave in the review in the March supplement :—

A special circuit on the line timebase feeds a large bias voltage to the grid of the thyratron during most of the line period. The voltage is reduced rapidly just before the time sync. pulse is due to arrive. This bias prevents judder at the top of the picture normally due to the line timebase running at twice frequency during the framing pulse and also renders the thyratron insensitive to interference except during the last portion of the line just before the sync. pulse arrives, thus reducing the effect of tearing of portions of the picture under conditions of bad interference.

'NO-CORD' IRON—*from p. 21.*

the sockets. The switch is fitted with silver contact studs.

A unique feature is the patented iron-locking mechanism fitted to enable the iron to be stowed away with the board. A lever protruding at side of board operates a claw positioned on either side of front edge of recess. The claws fit over bevel edge on iron soleplate and with corner plate, fixed to rear of recess, securely hold iron in position. The locking mechanism is coupled to trestle legs to prevent board being folded up before iron is locked safely in rest position.

Bottom of rest is fitted with a removable asbestos mat.

Board is primrose enamel finished and supplied with felt overlay and washable slip-on cover.

MAINTENANCE

Replacement of element.—Remove heat-control knob by loosening its grub screw and then undo and remove hexagonal nut on spindle bush. Next turn iron on its side and remove the two name-plate fixing screws (Fig. 3). Body can now be lifted off by carefully easing it from rear end first.

Remove asbestos shield and disconnect heater element and circuit switch straps from contact blade terminals. Undo and remove the locking and adjusting nuts on bi-metal link pin. Remove ceramic insulating bush.

Remove the two switch-block fixing bolts. Carefully remove switch assembly so that other heater element strap can be disconnected from contact with lower switch blade. Remove the three clamp plate bolts. Clamp plate with element and asbestos gasket can now be lifted off and separated (Fig. 5).

Replace element with one of correct voltage rating and reassemble in reverse order without replacing body—make sure the mica squares are placed on top of and below rivets adjacent to element straps.

Adjustment of thermostat.—Place iron on platform of soleplate tester and connect mains supply of correct voltage to centre and righthand contact blades (viewed from rear). Temporarily refit heat-control knob and set cam to a position corresponding to 1—ART SILK on body. Switch on mains supply and allow iron to heat—the temperature of this first heating is false and should not be used for any adjustments. Adjust nut on bi-metal link pin so that maximum temperature reached is between 180 and 190 degrees F.

Turn heat-controlled knob to 6—LINEN—and check to see that temperature does not exceed 420 to 430 degrees F. After completion of above tighten all screws, particularly the three clamp plate fixing screws, and complete reassembly.

Removal of indicator lamp.—This lamp is illuminated only when iron is taking current, i.e., when thermostat circuit switch is closed because iron has cooled to a temperature below that of setting, or when first heating up to desired setting. Bulb is a 6.5V .3A MES and is accessible for replacement on unscrewing the red plastic dome.

Adjustment of anti-flash switch.—Remove asbestos mat on bottom of iron-rest and undo the two bolts positioned half an inch from rear wall. Next undo the two self-tapping screws located on rear of protective cover under board—this allows socket panel to be withdrawn for examination on bench.

Check switch contacts and clean by polishing if necessary. Also check to see that outer socket springs are not "opened" too much—if so bend inwards with a suitable pair of thin flat-nosed pliers. Adjust lower spring on centre socket so that switch contacts are open by 1/32in.

Remove protective cover below board by undoing its two fixing screws and then temporarily refix socket panel in position. Replace asbestos mat and put iron in rest position on board. Centre socket switch should now be closed—if not, carefully readjust lower switch blade.

Finally remove socket panel—replace protective cover in position and then refix socket panel—tighten bolts fastening it to bottom of chute but before tightening the two rear screws pull socket panel downwards so that screws are positioned in bottom of slots—this ensures correct clearance under board.

PYE BV30

A NEW Pye BV30 came in with the complaint of intermittent vision sensitivity. At times the set could be used with the contrast control advanced approximately half way, at other times the control had to be fully advanced with a resultant poorer quality picture.

On test the set behaved unusually for about an hour when contrast suddenly reduced with a slight drop in sound volume.

All valves and voltages in the RF section were checked and found to be correct. Alignment was checked with a pattern generator and whilst adjusting the core of T3A (maker's sheet) it was found that on pushing the core to one side the set behaved normally.

The coil was checked for dry joints and the fixed padders replaced without effecting a cure. Eventually I stripped the coil down, carefully noting the turns and rewound same using new wire. After alignment the set was restored to normal.

The fault must have been shorted turns in the vision band-pass section of T3A (where the vision and sound are separated), but careful examination of the old winding revealed no break in insulation. —K. BELL, Liverpool.

JUNE
1951

SERVICE ELECTRICAL and RADIO TRADING CHARTS

WALTER 'NO-CORD' IRON

Metal primrose-enamelled folding ironing board with cordless thermostatically controlled electric iron finished in highly-polished chromium. Models for 110-120, 200-210, 220-230, 240-250*V AC. Made by J. & H. Walter Ltd., Gloucester House,* 19 *Charing Cross Road, London, WC*2

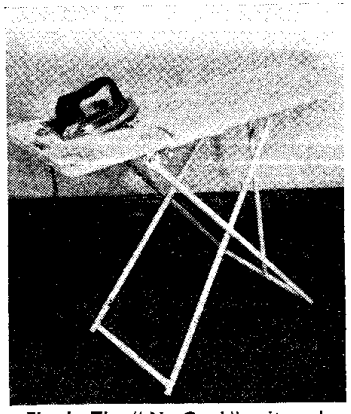

Fig. 1—The "No-Cord" unit ready for ironing. When folded it is stored with the iron still in position

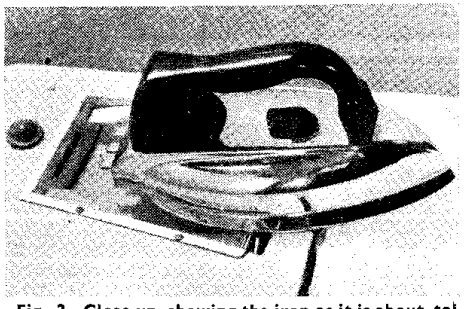

Fig. 2—Close-up showing the iron as it is about to slide back into the rest, thereby connecting its internal heater to the mains sockets that are visible

Fig. 3—If element or thermostat needs repair, first step in removing the plated body is the taking out of two screws holding the name plate

THE Walter "No-Cord" electric ironing unit (Fig. 1) consists of a folding all-metal ironing board and a thermostatically controlled electric iron. The board has a sloping, recessed iron-rest, the rear panel of which contains a shielded mains socket. Contact blades at the rear of the iron slip into the sockets on the board.

At the commencement of an ironing session the iron is allowed to heat up to a temperature determined by the setting of its thermostat. In use, the iron is disconnected from the mains as soon as it is removed from the recess and thus begins to lose heat. During pauses in ironing, the iron is placed in the rest, whereupon it slides back, makes contact with the mains socket and is reheated.

The iron is fitted with a high wattage element for quick heating during the brief periods it is in the rest and has a heavy soleplate to provide good heat retention during ironing.

At the end of ironing the hot iron can be locked in position in the rest and the board immediately folded up and stowed away.

CONSTRUCTION

The iron (Fig. 2) has a $\frac{7}{16}$ in. thick cast-iron soleplate with bevelled edge. The plate is machine ground and chromium plated; the bottom surface and bevelled edges are highly polished.

The body is of streamlined design and made o pressed mild sheet steel. Exterior finish is highly polished chromium and interior is matt-chrome. The well-shaped black moulded Bakelite handle is attached to body by two screws at front and three screws at rear.

Body is retained on soleplate by hexagonal nut on thermostat spindle bush and by two nameplate fixing screws which pass through holes in rear of element clamp plate into tapped screw holes on bracket mounted on underside of body (Fig. 3).

The heat-control knob is attached to thermostat spindle which projects up through body underneath forward part of handle. Heat calibrations, which range from art silk to linen, are stamped on top of body. Range of temperature covered is from 180 to 450 degrees Fahrenheit approximately.

The thermostat consists of a bi-metal strip positioned in a deep recess in soleplate, the free end of bi-metal being coupled by an insulated adjustable link pin to the upper blade of a circuit switch mounted on ceramic insulating gaskets bolted to element-clamp plate. The lower switch blade is fitted with a small ceramic roller at its extreme end and this bears against shaped cam attached to heat-control spindle (Fig. 4). Switch blades are nickel silver with silver contact studs.

The manual heat control spindle with cam attached rotates in a brass bush fastened by a large hexagonal nut to a metal bridge bolted on to a reinforcing strip spot welded to clamp plate (Fig. 4). Metal bridge is insulated from fixing bolts by ceramic bushes.

The heating element is tape wound on high grade spotted mica and has a rating of 900W. It is held in close contact with soleplate by a pressed black-dyed steel clamp plate. An asbestos gasket is placed between clamp plate and element to reduce heat losses.

Connecting straps of element are brought through clearance holes in gasket and clamp plate—one strap is clamped by switch block in contact with lower circuit switch blade, whilst other strap is fastened to outer of the three contact blades mounted on ceramic insulating block at rear of clamp plate. Centre contact blade is connected by brass strap to upper circuit switch blade. The other outer contact blade is not used. A shaped asbestos shield is placed over soleplate assembly to reduce heat transmission to body, handle, etc.

Ironing board has a pressed mild steel top supported on a folding tubular steel trestle. The rear portion of top is fitted with the asbestos-lined iron-stand. The stand is in the form of a sloping chute (Fig. 2) and is positioned so that the iron is slid without effort or thought into it during the brief non-use periods. A roller is fitted to leading edge and a second roller a little further down the slope, to ensure iron slides fully back into recess and that contact blades are inserted well home into spring sockets mounted behind the three apertures in rear wall.

The sockets (Fig. 6) are made from high grade phosphor-bronze spring strip riveted on to a bakelite support bridge which is in turn bolted on to a mild steel plate forming the bottom cover of a protective box mounted underneath board just behind rear panel of recess.

A 6.5V .3A indicator lamp, which is connected across a low-resistance coil in series with neutral lead to socket, is mounted on a brass bracket on top of socket assembly and projects into red plastic dome on top of board. The lamp is illuminated only when iron is in rest and when iron thermostat switch is closed.

Centre mains socket incorporates an anti-flash switch (Fig. 6). This connects live lead through to socket spring only when iron contact blade is inserted into socket. Likewise when iron is withdrawn from the rest, the switch opens a fraction of a second before the contact blades on iron leave

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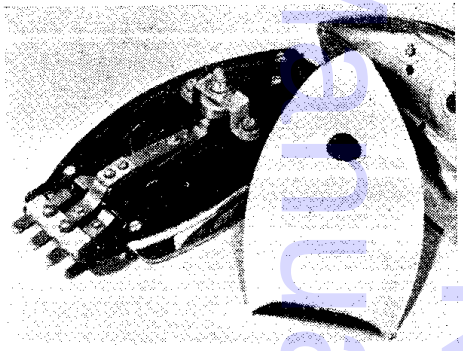

Fig. 4—With body and asbestos shield removed, the thermostat is accessible. To replace the element, the switch assembly and the black-dyed steel clamp plate have to be removed

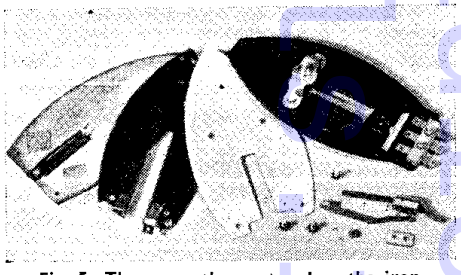

Fig. 5—These are the parts when the iron is dismantled sufficiently for replacement of the element and for most adjustments to the thermostat

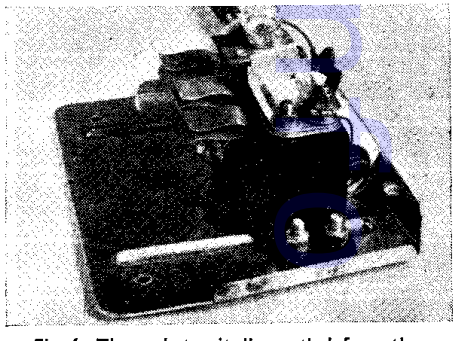

Fig. 6—The socket-unit dismantled from the ironing board. Underneath the centre socket is the anti-flash switch that breaks the circuit just before the pin leaves the socket