

**DEVELOPMENTS
IN THE
ELECTRICAL INDUSTRY
DURING 1937**



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**GENERAL ELECTRIC COMPANY
SCHENECTADY, NEW YORK**

January, 1938

GED-673

master station requires connection for power as the remote stations are energized and controlled from it.

Electric Heat Gun

An electric heater has been attached to the exhaust orifice of a hand vacuum cleaner to produce an electric heat gun for use in service stations and garages. The new device offers a simple method for thawing out transmissions, differentials, carburetors, and radiators, as well as for drying out wet ignition systems. The curved nozzle fits into the differential or transmission case and supports the heater. With the nozzle detached, the heater is used for frozen radiators, gas and oil lines, etc.

RADIO EQUIPMENT

Police Transmitter

A new 1-kw medium-high-frequency radiotelephone transmitter (FIG. 128) was developed for use in the 1500- to 3000-kc police band. With the exception of the speech-input equipment and the antenna-tuning

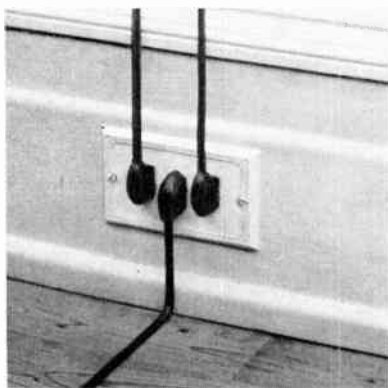


Fig. 126. Molded-rubber angle plug



Fig. 127. Intercommunication system: (upper) master station; (lower) remote speaker-phone station

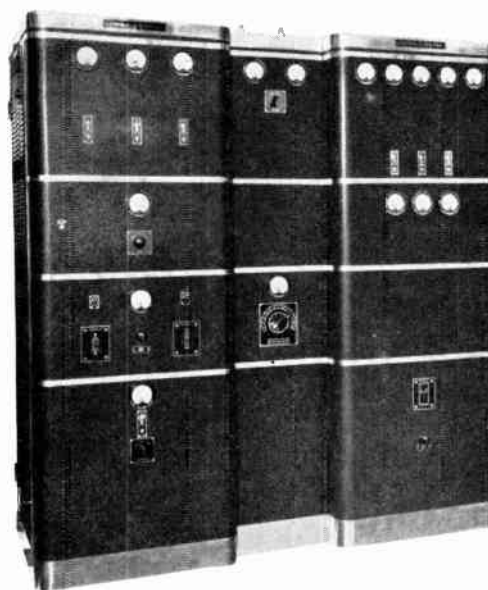


Fig. 128. One-kilowatt, medium-high-frequency radiotelephone transmitter

apparatus, this transmitter is completely self-contained, comprising an exciter unit and a radio-frequency amplifier. Frequency stability is maintained well within plus or minus 50 cycles over a wide range of ambient temperature by a new type of low-temperature-coefficient type of quartz crystal mounted in an improved design of temperature-controlled crystal cell. A transmission-line-terminating and antenna-tuning unit provides means for terminating correctly either the open-wire or concentric-tube type of transmission line and for tuning any conventional antenna. Fidelity equal to broadcast-transmitter quality is obtained.

Fireboat Communication

A new application of radio-communication equipment has been made by the marine division of the New York City Fire Department, which now has two-way radiotelephone communication between each of its nine fireboats and the Manhattan fire-alarm central office. A special filter unit at the main transmitter location permits a single antenna to simultaneously receive ultra-high frequencies from the boats and transmit medium-high frequencies to them. The 500-watt medium-high-frequency transmitter incorporates features usually found only in broadcast equipment.

Motorcycle Receiver

A new ultra-high-frequency receiver for police motorcycles (FIG. 129) employs metal tubes and has many features of the larger ultra-high-frequency receivers, and in addition has the sturdiness, compactness, and light weight required for this difficult service.

Radio Receivers

A unique feature found in 1938 radio receivers is automatic tuning, which requires merely the pressing

of a button to tune-in a desired station. The automatic tuning mechanism (FIG. 130) makes use of a new 6-volt reversible capacitor motor the circuit of which is connected through a relay to push buttons on the front panel of the receiver. When a particular station button is pushed, the motor begins to rotate the tuning condenser. A movable contact rotates on the condenser arm past a series of stationary contacts mounted on a fantail at the rear of the condenser. When the sliding contact reaches the stationary contact corresponding to the button depressed, a relay is energized, breaking the motor circuit and stopping the rotation. The stopping contacts are



Fig. 129. Ultra-high-frequency receiver for police motorcycles

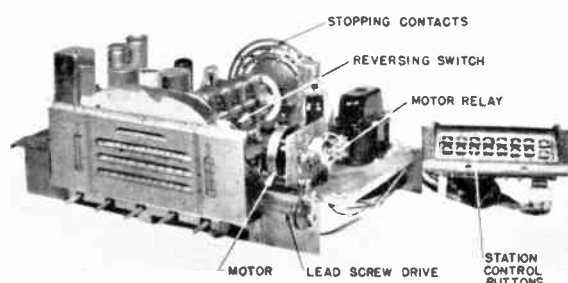


Fig. 130. Automatic tuning applied to 10-tube chassis

preset for desired stations, of which as many as 13 may be set up. The automatic tuning receivers make use of the automatic frequency-control circuits developed the previous year.

Variations in calibration resulting from changes in size as a result of variations in humidity have been eliminated in a new scale for radio receivers by punching them from metal, with the individual scales laid back at an angle (FIG. 130). The printing is done directly on the metal flaps. Addition of band, volume, and tone-control indicators results in added utility to the user.

Decidedly better connections in radio receivers have been achieved by the use of a capacitor welder (FIG. 131) to replace the conventional soldered connections. Welding pliers are used to make the connection, and their use on production lines has reduced the number of poorly made connections to practically zero.

A new radio power transformer (FIG. 132) weighs $5\frac{1}{8}$ instead of $6\frac{5}{8}$ lb, has a core loss approximately 40 per cent less, is free from lamination vibration,

has the leads brought out at chassis level, and has an improved appearance. It measures about $2\frac{7}{8}$ by 5 by $4\frac{7}{8}$ in.

Radio Outlet

A convenient outlet (FIG. 133) for noise-reducing or doublet antennas eliminates the usually unsightly wiring connections characteristic of most radio



Fig. 131. Capacitor welder on radio receiver production line, for welding of connections

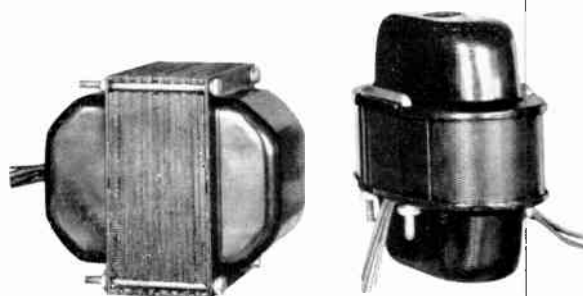


Fig. 132. Improved radio power transformer at right, compared with one of earlier design

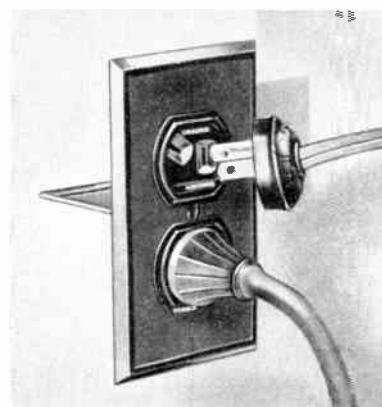


Fig. 133. Radio outlet for doublet antennas