

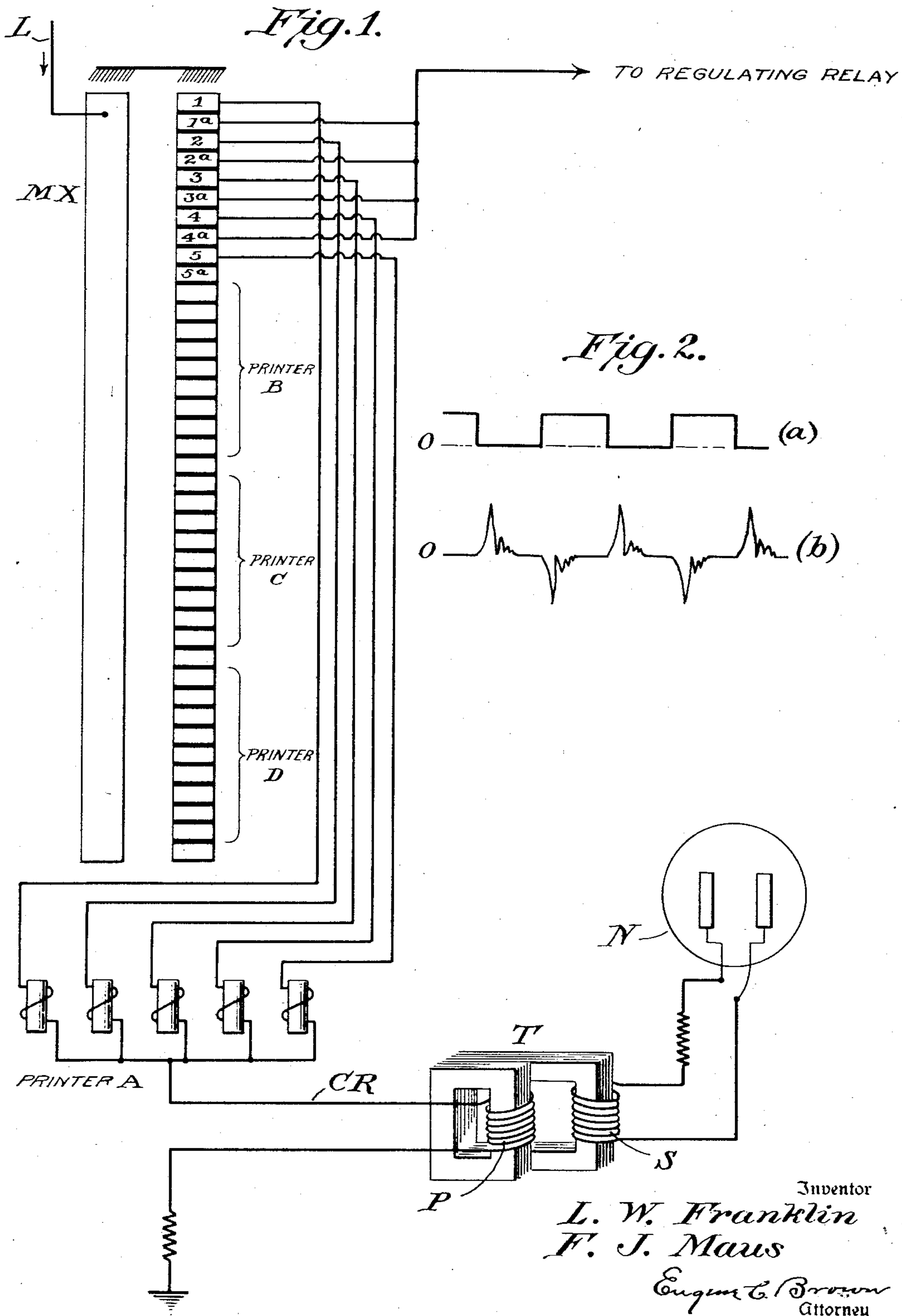
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PILOT LAMP ARRANGEMENT FOR MULTIPLEX TELEGRAPH PRINTERS

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PILOT LAMP ARRANGEMENT FOR MULTIPLEX TELEGRAPH PRINTERS

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This invention relates to an arrangement for the pilot lamps associated with the printing telegraph machines in multiplex systems.

The reliable operation of the printer depends upon the proper functioning of its various circuits, relays and magnets. A failure of some relay to operate or a fault in a circuit might produce a condition which would make the printer inoperative, leaving it in a "dead-locked" or "tied up" condition. In such an event, the distant station might still continue to transmit, but the printer would fail to record the signals. To guard against such loss of messages or to prevent transmission to a "tied up" printer, means are provided for immediately indicating when such a condition exists.

The indicator heretofore employed consisted of a tungsten filament lamp, known as the pilot or "tie up" lamp mounted within each printer in plain view of the operator or attendant and so connected to the distributor circuits, that its filament is energized by each marking impulse intended for that particular printer. The pilot lamp will therefore "flicker" or "flash" in unison with the marking impulses. If the printer is performing its functions properly it will operate in unison with the pilot lamp. Hence, if the printer should remain quiet while the pilot lamp continues to "flash" the attendant will know immediately that there is trouble in the printer.

If the rotary distributor is arranged for four channels, the receiving ring is divided into forty segments. The alternate segments are divided into four channel groups, of five segments each. The remaining five segments in each group are connected together and to one terminal of the pilot lamp, the other lamp terminal being connected to the printer battery. The receiving segments receive only the central portion or half of the receiving impulses. The remaining portion of each impulse is employed to light the pilot lamps.

In certain systems the terminal requirements necessitate the use of the segments heretofore employed to operate the pilot or "tie up" lamps, to operate certain relays. Consequently the pilot lamp has been placed in the

common return of the five printer selector magnets. A lamp filament in the common return is unsatisfactory both because a lamp of sufficiently low resistance will not respond to the signals and because the hazard of the burning out of the filament.

The object of our invention is to overcome the objections above mentioned by providing an arrangement employing tubes of the gas-filled type without filaments, such as the neon glow lamp, and wherein the pilot or "tie up" lamp is inductively connected to the common return circuit of the printer magnets or in the "tie up" segment circuit heretofore employed.

In the following description we shall refer to the accompanying drawing in which Fig. 1 is a diagrammatic illustration showing our invention applied to the common return circuit of the printer magnets; and Fig. 2 illustrates the relation between the flux wave generated in the transformer core by the signal impulses and the sharp peak voltages generated in the secondary and impressed upon the pilot or "tie up" lamp.

The line L is connected to the solid ring of the multiplex distributor MX. The segmented receiving ring is divided into forty segments, ten for each channel. Segments 1 to 5 of the "A" channel are connected respectively to the five selector magnets of the printer A, the alternate segments being connected to the regulating relay.

In the common return circuit CR of the printer selecting magnets, we connect the primary coil P of a transformer T, the secondary coil S being connected to the terminals of a neon flow discharge lamp N. As the voltage induced in the secondary coil is proportional to the rate of change of flux with respect to time, an approximately rectangular flux wave as shown in Fig. 2a would generate a voltage in the secondary coil characterized by sharp peaks, as shown in Fig. 2b, producing instantaneous flashes in the neon lamp. To accentuate the peak of the induced voltage wave, a magnetic circuit constructed as illustrated, with one part of much smaller cross-section than the remainder may

be employed. However, this particular construction is not essential.

The use of a glow lamp possesses many advantages over the filament lamp heretofore employed as a pilot or "tie up" lamp. It has a much longer life and will flash upon an exceedingly short impulse and is thus especially adapted to be inserted in the secondary of a transformer. The primary coil which is inserted in the common return circuit of the printer selecting magnets or in the usual pilot lamp circuit, may be of low resistance so that it does not interfere with the operation of the printer circuits.

We claim:

1. The method of indicating the operation of a printing telegraph machine responsive to signal impulses which consists in producing

an arc discharge in a gaseous path in response to voltages impressed upon the machine by the signal impulses.

2. In a telegraph system, a printer responsive to signal impulses, a gaseous glow lamp in inductive relation to the printer circuits and operated by voltages impressed upon said circuits by the signal impulses.

3. In a telegraph system, a printer having selective magnets responsive to signal impulses, a common return circuit for said magnets, a transformer having a primary coil in said return circuit, and a glow discharge lamp in circuit with the secondary coil of said transformer.

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