

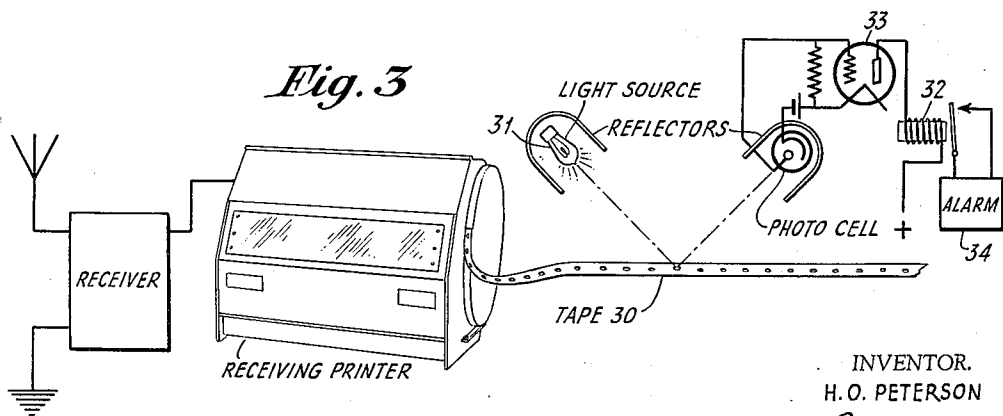
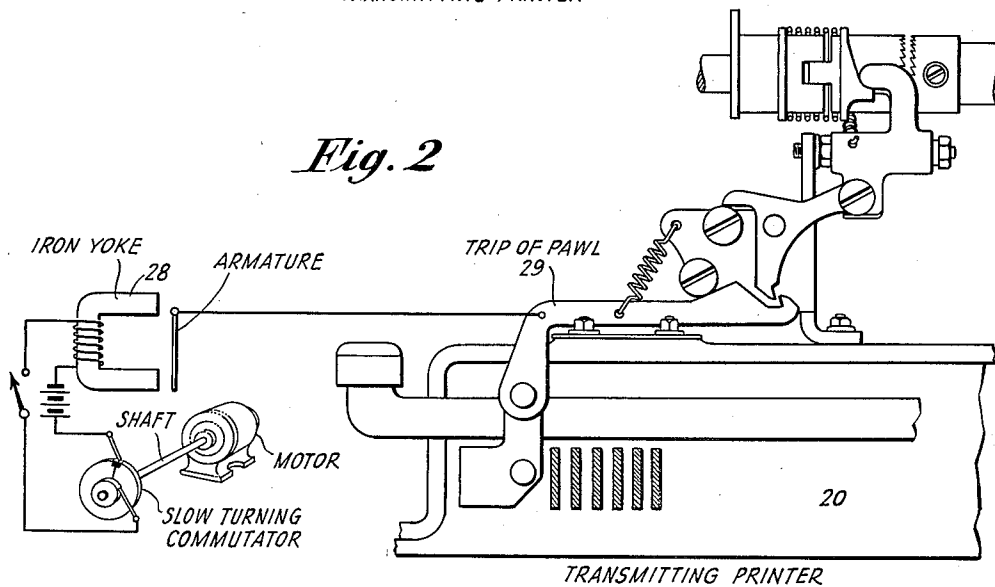
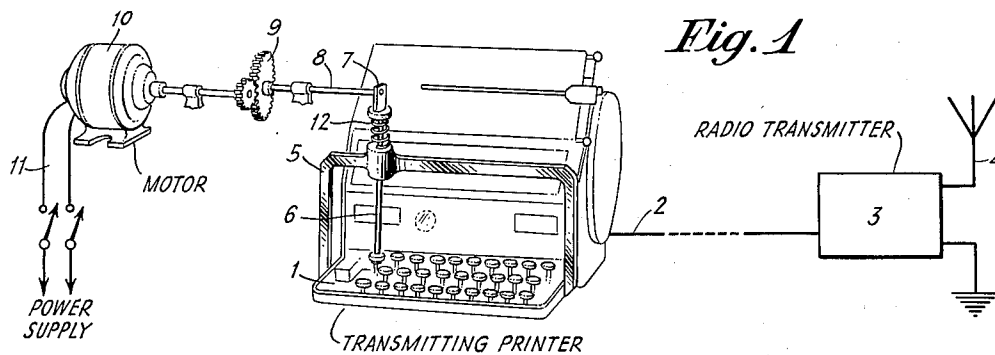
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IDLE TIME KEYING

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IDLE TIME KEYING

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5 Claims. (Cl. 178-69)

This invention relates to idle time keying cir-
cuits for use with printing telegraph apparatus
on radio circuits. This application is a division
of my U. S. application Ser. No. 703,783, filed Dec.
23, 1933 now Patent No. 2,055,985, issued Sept.
29, 1936.

In communication by radio, it is frequently
necessary in order to maintain circuit contact,
for the attendant at the receiving station to
check the tuning adjustment of the receiver with
the transmitter. When message signals are being
sent over the radio channel, it is the practice to
utilize these same signals for the supervision of
the circuit, but during idle periods it is customary
to transmit frequency test signals to maintain a
continuous assurance that the overall circuit is
functioning; otherwise, some adjustment of
either the transmitter or receiver might change
during the idle period, a condition which might
consequently result in no response at the receiver
when the transmitter resumes operation.

Heretofore, in the use of automatic Morse code
telegraph transmitters, it has been customary to
send V's, dots, ABC's or call letters at spaced
intervals during idle periods. Such procedure,
however, has not proven convenient on printer
circuits; consequently, it has been the practice to
use reversed keying. In this type of operation,
the marking impulses appear as spaces on the
transmitted signal. Thus, a steady dash will be
sent during the intervals between transmissions.
While the radiation of a steady dash between
transmissions proves to be a very effective way of
maintaining circuit contact, it has been found
to constitute a continuous dissipation of power
and wear and tear on the transmitter tubes.

It is the primary object of the present inven-
tion to provide means whereby circuit contact
may be maintained without such objectionable
dissipation of power and wear on transmitting
equipment.

According to the present invention, it is pro-
posed to transmit letters from the printer equip-
ment at even intervals at a rate of approximately
24 letters per minute, a number which it is found
maintains satisfactory contact over the circuit.
The keying is arranged so that the transmitter
radiates energy only during the marking impulses
from the printer. Since the full speed transmis-
sion rate for a typical printer is 372 letters per
minute, and since the marking impulses represent
only a portion of the signaling time, it will be
seen that a considerable saving of power and tube
life may be obtained by the use of a device for
sending a reduced number of letters, let us say,

approximately 24 spaced letters per minute. The
number of these spaced letters per minute may,
of course, be varied to suit circuit conditions and
in some cases the number considerably reduced.

The invention is accomplished, in accordance
with one embodiment, by the provision of auto-
matic apparatus for causing the transmission of
the test letters, this apparatus being attached
directly to the keyboard for movement of any let-
ter key. In a specific embodiment, apparatus is
connected to the mechanical or the electromechanical parts of the printer itself whereby the
desired letters are transmitted by the automatic
operation of the clutch lever or the "trip-off
pawl" of the mechanism. Other embodiments
will readily suggest themselves from a reading of
the specification.

One feature of the invention is an indicator
arrangement in the form of a photoelectric scan-
ning device at the receiver for actuating an alarm
whenever there are received letters other than
the predetermined test letter.

The invention is described in more detail in the
accompanying specification which is accompanied
by a drawing wherein:

Figures 1 and 2 schematically illustrate differ-
ent embodiments of the invention; and

Fig. 3 shows an alarm device at the receiver
for attracting the attention of the attendant
whenever the successive printing of test letters is
interrupted.

Referring to Fig. 1, there is shown a standard
printer 1 in circuit with a line 2 extending to a
radio transmitter 3 arranged to radiate energy
over an antenna 4. Fixedly attached to the
printer by means of a suitable bracket frame sup-
port 5 is a plunger device 6 which acts on any
desired letter key. This plunger is operated upon
by a cam 7 which is located on a shaft 8 geared
through reduction gears 9 to a motor 10, current
for which is supplied over leads 11. The end
of the plunger is covered with a soft material,
such as rubber, and its position is adjusted so
as to depress the key a desired amount. A spring
12 serves to return the plunger to normal.

In the operation of the device during idle time
intervals, rotating cam 7 functions to periodically
cause the plunger to depress the desired key a
certain number of times per minute whereby test
letters are transmitted by the printer over line 2
to the distant radio transmitter from which the
signals are sent out to the antenna 4.

Figure 2 illustrates a further modification
wherein the idle time keying device operates on
the mechanical parts of the well known Klein-

schmidt printer 20. Since the printer itself forms no part of the invention per se, only that portion of the printer is shown which is necessary for a proper understanding of the invention. The drawing shows in part a vertical cross-section of the printer wherein an electromagnet 26 acts to pull forward the "trip-off pawl" 29, whereupon the printer transmits the test character as determined by the last setup of the selector bars which remain in the position determined by the last letter sent out by the printer by the operation of the printer keys in the normal manner.

Similarly, it is possible to cause, by means of an electromagnet or a mechanically actuating device, periodic deflections of the clutch lever pawl which would cause transmission of spaced letters.

The electromagnet 28 is controlled by means of a commutator driven by a motor, as shown. The actuating impulses as applied to the electromagnet 28 may, if desired, be derived from any suitable generator as, for example, a multivibrator circuit, a glow tube oscillator, or the like. It is also evident that the same effect can be obtained by mechanical means such as, for example, pneumatic drives, mechanical links, etc.

In Fig. 3, is shown a photoelectric scanning device for automatically actuating an alarm whenever the receipt of test letters is interrupted. Assuming in this case that the test character is the punctuation mark "period", the photocell will receive sufficient light reflected by a strip of tape 30 (bearing a string of spaced black dots representing periods) from a source of light 31 to cause the energization and operation of a relay 32 in the anode circuit of an amplifier 33. When other characters such as letters appear on the tape the amount of black markings will increase and less light will be reflected, upon the occurrence of which the anode current in the amplifier will be reduced and relay 32 will fall back to close a circuit operating the alarm 34.

The embodiments of the invention illustrated and described herein have been selected for the purpose of clearly setting forth the principles involved. It will be apparent, however, that the invention is susceptible of being modified to meet different conditions encountered in its use, and it is, therefore, aimed to cover by the appended claims all modifications within the spirit and scope of the invention.

What is claimed is:

1. In combination, a transmitting printer, a

transmission system connected therewith, periodically operated means operatively associated with said printer for causing said printer to transmit idle period impulses at intervals greater than the normal intervals between impulse characters used when said printer is transmitting intelligence bearing signals, the character of said idle period impulses being determined by the last setup of the printer in the transmission of signal message characters, and means for putting said periodically operated means in operation during idle periods.

2. In combination, a transmitting printer, a periodically operated electromagnet operatively associated with said printer for causing said printer to transmit idle period characters at intervals greater than the normal intervals between characters used when said printer is transmitting intelligence bearing message signals, said idle period characters being determined by the last setup of the printer in the transmission of message signals, and means for putting said periodically operated means in operation during idle periods.

3. In combination, a transmitting printer, periodically automatically operated means operatively associated with said printer for causing said printer to transmit idle period characters at intervals greater than the intervals between characters used when said printer is transmitting intelligence bearing message signals, said characters being determined by the last character sent out by the printer in the transmission of message signals, and means for putting said periodically operated means in operation during idle periods.

4. In combination, a transmitter-printer including keying mechanism for producing impulses characteristic of messages to be transmitted, said mechanism comprising a tripoff pawl, and means for sending out impulses at relatively long intervals during idle periods of said printer including an electromagnet comprising a winding which may be periodically energized, an armature associated with said magnet, and a link connecting said armature to said tripoff pawl.

5. In a start-stop printing telegraph system, circuit arrangements for transmitting code signals in response to the actuation of the keys of said system, means operatively connected to said circuit arrangement for slowly repeating the final code signal of a message during idle periods of said system, and manually control means for rendering the repeating means effective.

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