Aug. 9, 1949. R. J. WISE ET AL 2,478,218

TELEGRAPH SERVICE EQUIPMENT

Filed April 21, 1945

4 Sheets-Sheet 1

FIG. 5

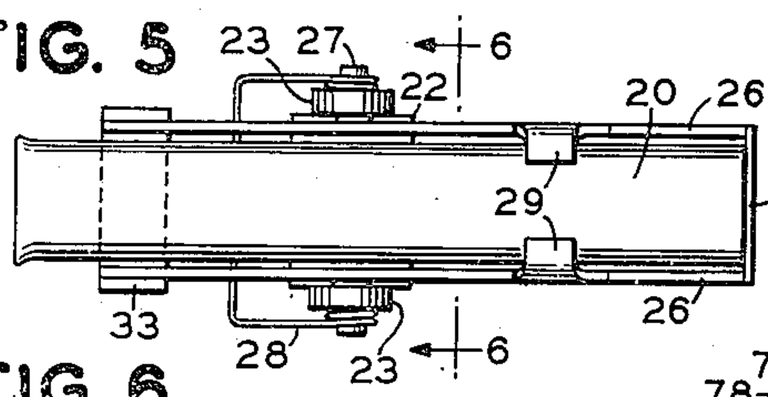


FIG. 6

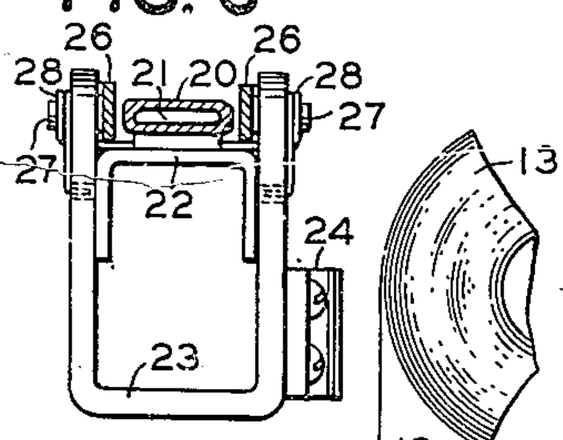


FIG. 1

FIG. 4

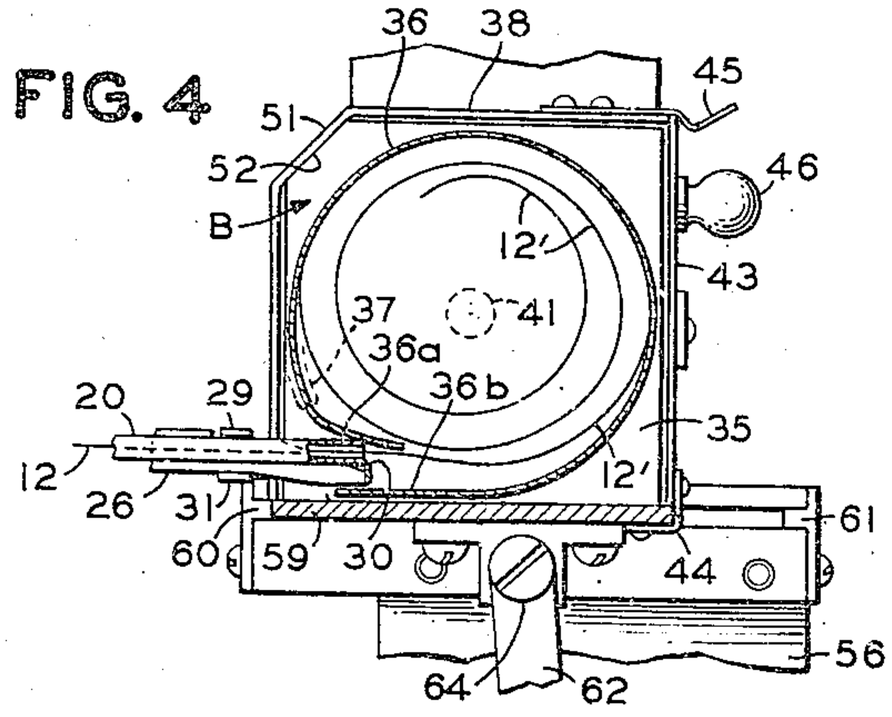
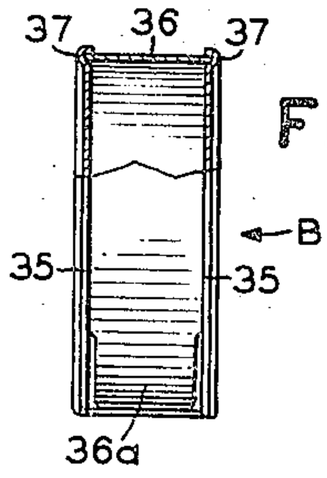


FIG. 7



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TELEGRAPH SERVICE EQUIPMENT

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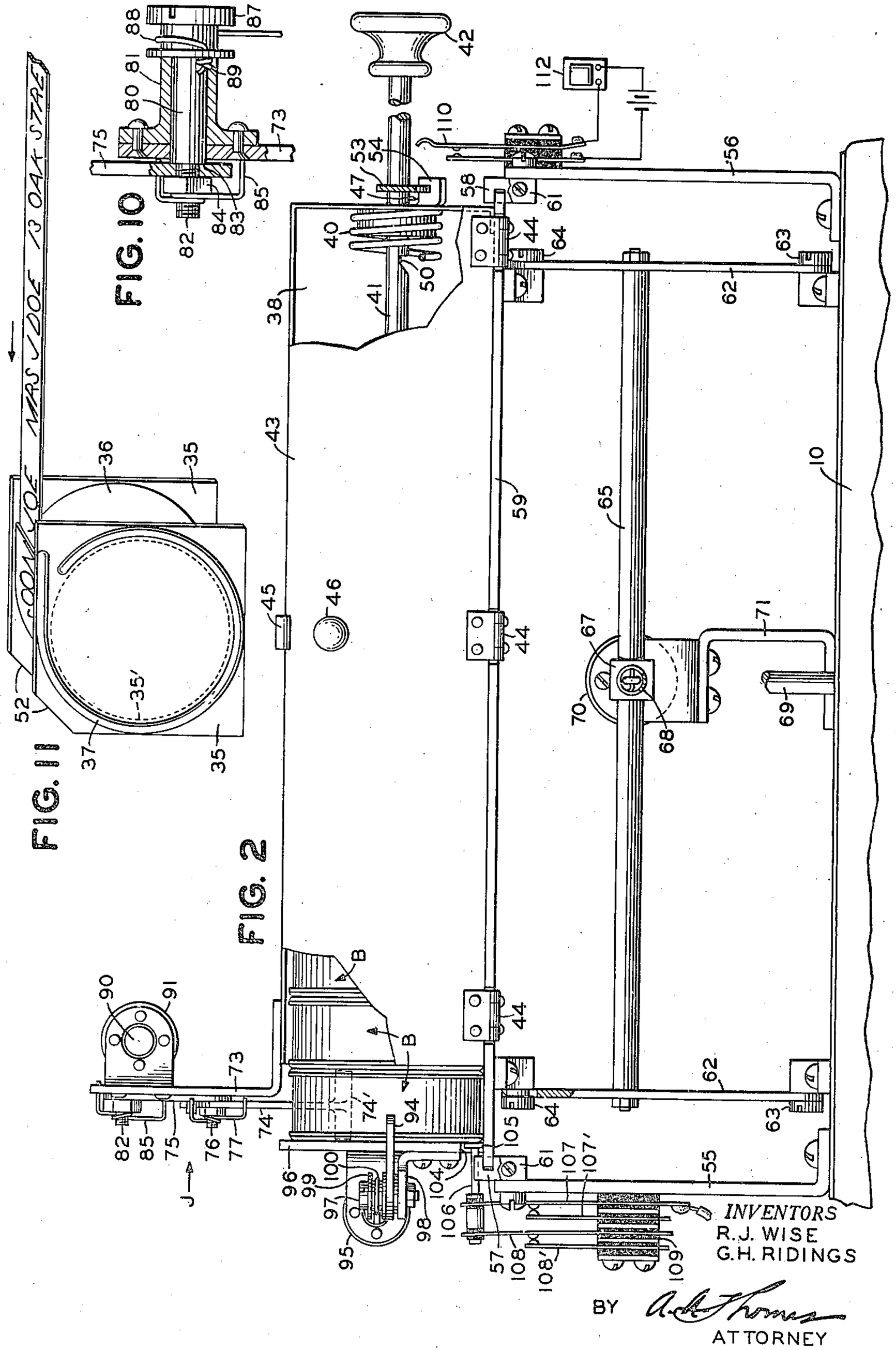

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TELEGRAPH SERVICE EQUIPMENT

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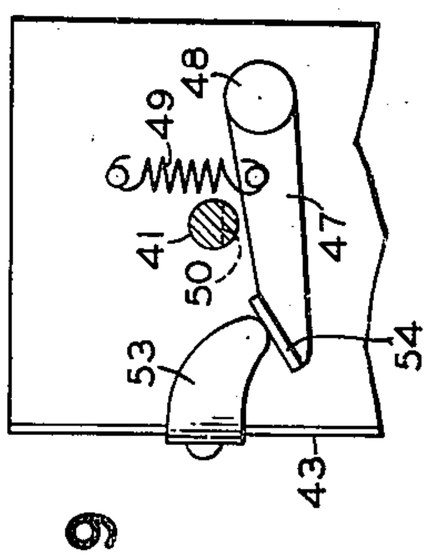

FIG. 9

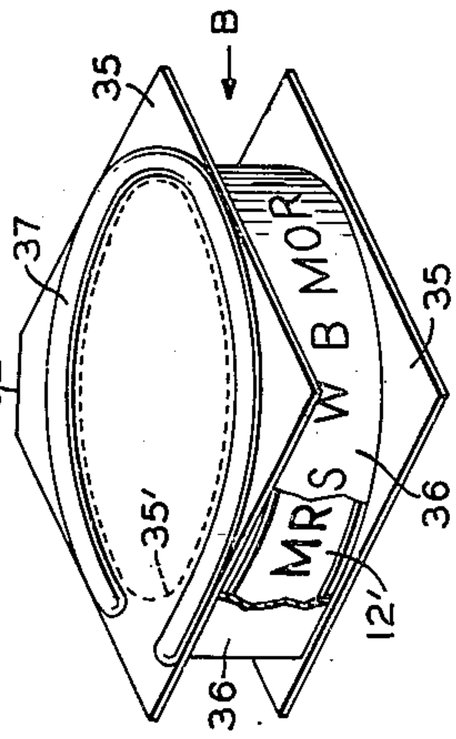

FIG. 8

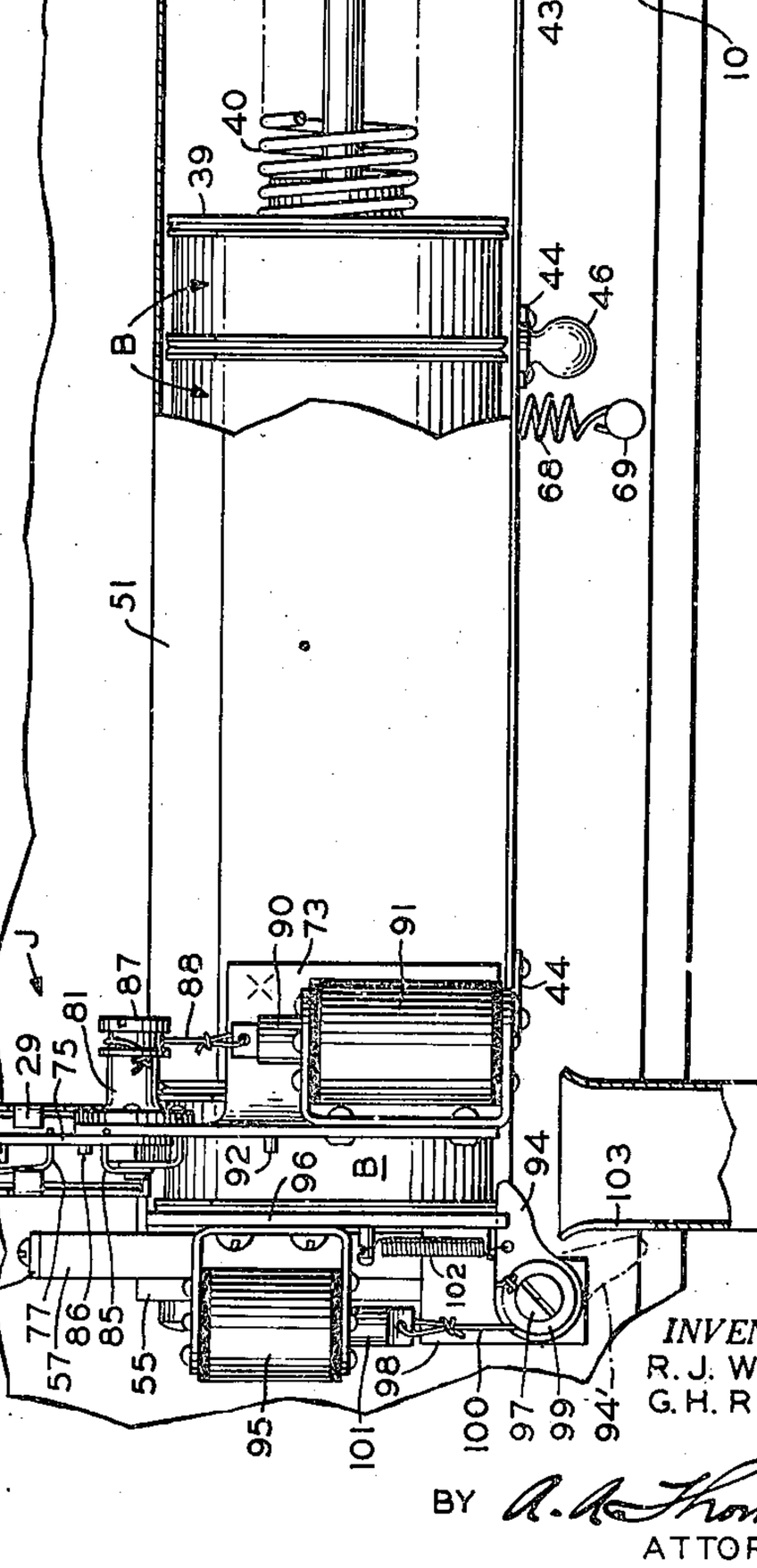

FIG. 3

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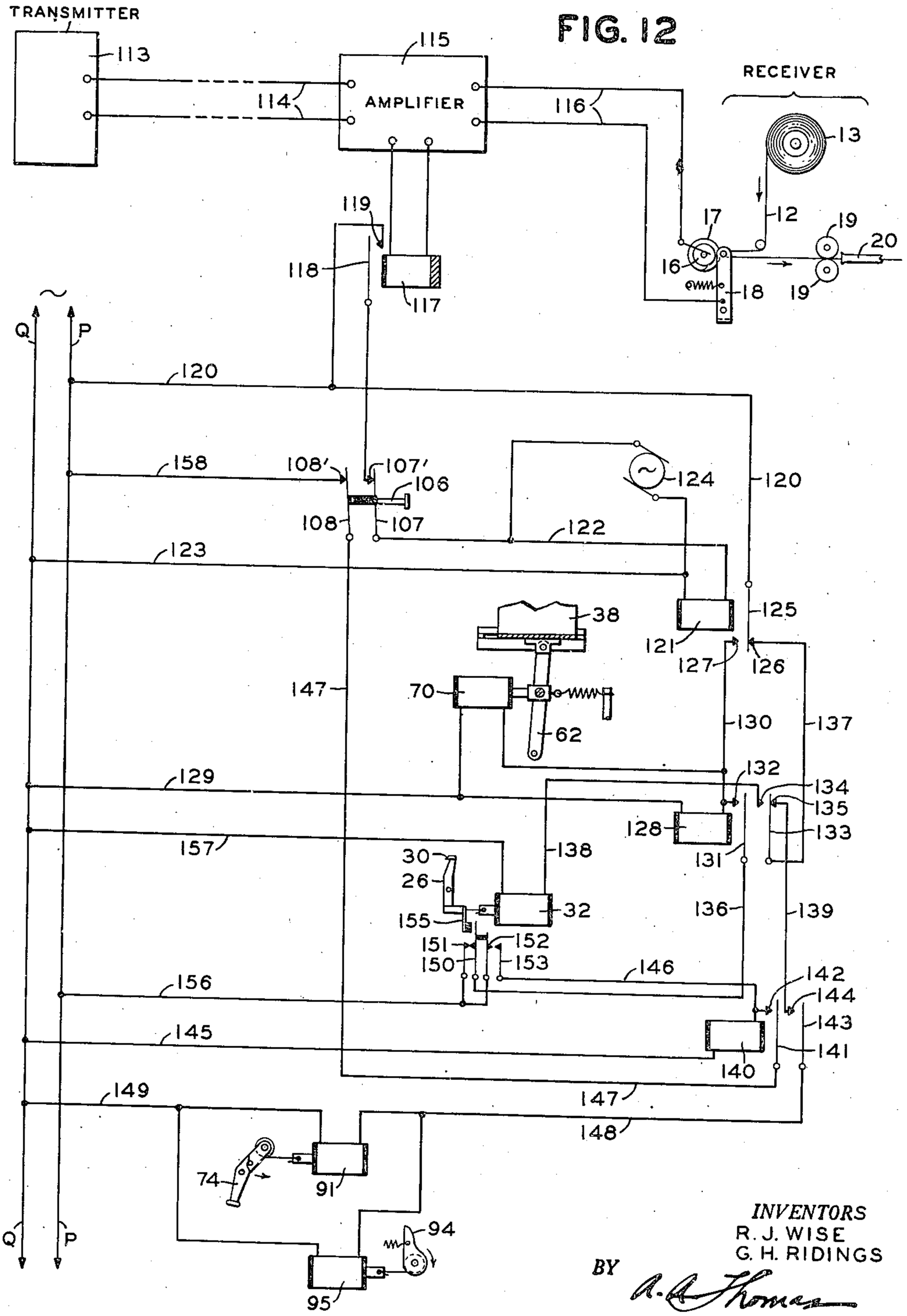
FIG. 12



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Patented Aug. 9, 1949

2,478,218

UNITED STATES PATENT OFFICE

2,478,218

TELEGRAPH SERVICE EQUIPMENT

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Application April 21, 1945, Serial No. 589,482

13 Claims. (Cl. 178—37)

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Our invention relates to the handling of telegraph messages recorded at automatic receiving stations and its main object is to provide novel means for preserving the secrecy of transmitted messages at the place where they are received for delivery.

It has been proposed to expedite telegraph service in small towns by placing automatic telegraph receivers at convenient points, such as drug stores, hotel lobbies and even private homes. These locations thus become telegraph agencies where the received messages are delivered by the person in charge of the agency, who may be a store attendant, hotel clerk, housewife or anybody authorized to deliver the messages. In large cities, these machines may be placed in apartment houses and office buildings with one of the employees in charge.

The telegraph receivers installed at such agencies are usually of the facsimile type and the received messages are recorded on tape or other suitable blank. In some cases, these machines also operate as transmitters, where the sender simply drops the message into a slot for automatic transmission.

It is important, especially in small towns, that the messages received on these machines shall be kept secret, so as to remove the fear of gossip or spying into personal affairs. To assure full privacy of the received message for delivery is the chief purpose of our invention.

The basic idea of this invention involves the automatic handling of a recorded message inside the machine in such a way that when the message is taken out for delivery the text of the message is completely hidden and the only portion visible is the address. The messages are removed from the machine in sealed condition to guard against tampering.

In a preferred embodiment of our invention, a telegraph receiver of the tape recording type is provided with means for automatically feeding the recorded tape into a delivery container so constructed that only the address of the enclosed message is visible, and the addressee is thus assured that no prying eyes have seen a word of the message.

In the broad aspect of our invention, the message may be recorded on tape or on sheets either by facsimile or teleprinting method. When the message is recorded on tape, the container for receiving it may be a small shallow box something like a pill-box in which the recorded tape automatically coils up as it is fed into it from the recorder with the message side out. After

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the recorded message is completely enclosed, the tape is cut inside the box, which has a transparent section for reading the address on the outer portion of the coiled-up tape. The text of the message on the inner coils of the tape is fully concealed by the opaque ends of the box.

To enhance the practical value of these machines, we provide a magazine for holding a number of containers, one of which is always in message-receiving position. After a container has received a recorded message, it is automatically ejected from the magazine and another one takes its place for the next message. Unless a container is in message-receiving position the machine will not operate.

Other novel features and practical advantages will be apparent from a description of the accompanying drawings, in which—

Fig. 1 shows a side view of a facsimile recording machine embodying our invention, certain parts being broken away for clearness;

Fig. 2 is a view looking at Fig. 1 from right to left, showing the delivery magazine and associated parts;

Fig. 3 represents a top plan view of the apparatus shown in Figs. 1 and 2;

Fig. 4 is a detached view showing the magazine in tape-receiving position during the recording operation;

Fig. 5 is an enlarged plan view of the tape-guiding chute and associated cutter;

Fig. 6 is a section on line 6—6 of Fig. 5;

Fig. 7 shows an edge view of a tape receiving box adapted for use in the machine of Figs. 1, 2 and 3;

Fig. 8 is a perspective of a sealed box containing a tape-recorded telegraph message for delivery to the addressee;

Fig. 9 shows a detail associated with the follower in the magazine;

Fig. 10 illustrates a structural detail of the box ejecting mechanism;

Fig. 11 shows a modified form of box for receiving a telegraph message recorded on tape by a teleprinter as distinguished from facsimile recording; and

Fig. 12 is a diagrammatic representation of the circuits that control the various electric devices used in our machine.

The recording and message sealing mechanism of our invention is housed in a suitable cabinet, not shown, which is placed in a convenient location, as previously mentioned. This mechanism may be mounted as a unit on a base plate 10 removably positioned in the cabinet. It will not

be necessary to show or describe the structural details of the tape recorder which we have selected by way of example for use in conjunction with the message sealing mechanism, for that type of recorder is well known and does not by itself form part of this invention. It suffices to say that the electrosensitive tape 12 is fed from a supply reel 13 over guide rollers 14 and 15 to a recording device 16 which has a helical scanning rib 17 in point contact with the tape. The latter is constantly held against the metallic scanning rib 17 by a spring pressed rocking arm or frame 18 which carries the conducting roller 15. The tape passes between a pair of feed rollers 19 which are operated at the proper speed relatively to the speed of the recording member 16.

As to the operation of the recording device, we need only explain that the incoming facsimile signals are impressed upon the helical rib 17 and produce markings on the tape 12 to duplicate the transmitted message. A recording blank suitable for this purpose is disclosed in Wise Patent No. 2,294,146, issued May 28, 1935. The helical scanner 16 and the feed rollers 19 are operated by an electric motor through suitable connections such as disclosed in Wise Patent No. 2,205,450, issued June 25, 1940. It will be understood that in the broad view of our invention any practical form of recorder may be used.

From the feed rollers 19, the recorded tape 12 passes through a chute 20 which is a flat tube with a smooth slot 21 for easy passage of the tape. The chute 20 is supported in fixed relation to the feed rollers 19 in any practical way. In Figs. 1, 5 and 6, the chute 20 is attached to a bracket 22 which is mounted between the arms of a U-shaped frame 23, and this frame in turn is secured to an arm 24 projecting from the post 25 on the base plate 10. The chute carrying frame 23 may also be used to support a tape cutter comprising a pair of arms 26 arranged on opposite sides of chute 20 and pivoted on pins 27 at the upper end of frame 23. A U-shaped wire spring 28, fastened at its ends in frame 23 and coiled around the pivot pins 27, passes under the tape cutter arms 26 and normally tends to rock the same clockwise, as viewed in Fig. 1. This movement is limited by stops 29 arranged to engage the top of chute 20, as seen in Fig. 5.

A knife blade 30 is attached to the free ends of arms 26 and normally lies below the tape slot 21 of chute 20 so as not to interfere with the free movement of the recorded tape through the chute. When the rear ends of arms 21 are rocked downward against the action of spring 28, the knife blade 30 is thrown up and cuts the tape. The adjacent end of chute 20 cooperates with blade 30 to shear the tape off cleanly at that point. The upward movement of blade 30 is but a small fraction of an inch and may be limited by stops 31 on the arms 26 engaging the underside of chute 20.

The cutting movement of arms 26 is produced by an electromagnet 32 mounted on post 25 and operatively connected to the cutter arms in any practical way. In Fig. 1, the rear ends of arms 26 carry a depending bracket 33 to which the movable core 32' of magnet 32 is connected by a rod or wire 34. When the magnet is energized, the arms 26 are rocked counterclockwise (as viewed in Fig. 1) and the blade 30 moves up to cut the tape. As will be explained later, the cutter magnet 32 is automatically energized at the right moment after completion of the message.

The recorded tape 12 passes from the chute 20

directly into a container B which is adapted to receive the outlet end of the chute and allows the released tape to coil up automatically inside the container, as indicated in Fig. 4. The spiral 12' represents the coiled up tape on which the complete message has been recorded, including the name and address of the sendee. The cutting of the tape takes place within the container while the parts are still in the position shown in Fig. 4.

The novel container B is so constructed as to permit the entry and withdrawal of the cutter blade and to conceal the enclosed message completely, leaving only the address to be read by the attendant of the machine. In the illustrated form of our invention, the container B is of pillbox shape comprising a pair of opaque end pieces 35 of stiff paper or like material and a transparent central section 36 of cellophane or similar material available in the market. The end pieces 35 are provided with hollow ribs 37 which form grooves for receiving the ends of the transparent strip 36. By cementing these edges into the grooves of ribs 37 the parts are firmly connected, the ribs adding to the strength of the box.

The central strip 36 terminates in a tongue 36*a* which is free of the holding ribs 37 and acts like a resilient flap to close the box. As seen in Fig. 1, the tip of tongue 36*a* normally rests against the fixed lower end 36*b* of strip 36, thereby completely closing the box. When the latter is moved toward the chute 20 by a mechanism to be presently described, the chute pushes the tongue 36*a* up, as shown in Fig. 4, to provide an opening for the passage of the tape into the box. The tape enters the box in a direction substantially tangential to the glassy cylindrical wall of strip 36, which therefore causes the entering tape to coil up automatically into a spiral. When the box is moved away from the chute after the cutting operation, the spring tongue 36*a* automatically moves to closing position, whereby the message is sealed within the box. If desired, a separate seal bearing a distinctive mark can be applied to the transparent wall 36 over the tongue 36*a*.

In the particular embodiment which we have illustrated, the recorded message is at the bottom of the tape as it passes through the chute 20 into the box. Accordingly, the message is on the outer side of the tape coils in the box, but the only recording visible on the outer coil through the transparent wall 36 is the name and address of the person for whom the message is intended, as may be seen in Fig. 8. Since the address portion of the tape goes last into the box, the facsimile message must be recorded backward. However, if the message is recorded by teleprinter, the recording is done in the usual way except that the address is put at the end of the message, as shown in Fig. 11. In this case, the recording is on the upper side of the tape which is, therefore, inserted into the box at the top, so that the address is on the outer side of the last coil, the same as in Fig. 4. Otherwise what has been said for the box in Fig. 8 applies to the box in Fig. 11.

It should be noted that the automatic transfer of the received telegraph message from the recorder into box B takes place inside the cabinet of the machine unseen by anybody, and when the sealed box with the enclosed message is removed from the machine, the only thing visible through the transparent wall of the box is the address

portion of the message. The text is fully concealed by the opaque ends 35, even if the tape is loosely coiled up, for the inside of the box is only slightly wider than the tape. By cutting the tape off inside the box, the closing of flap 36*a* prevents withdrawal of the tape.

It will thus be seen that the received message remains concealed from the time it leaves the recorder until it is delivered to the addressee in the sealed container in which it was automatically wrapped inside the receiving cabinet. This handling of the message to preserve its secrecy constitutes one of the main advantages of our invention. For easy removal of the message from the box by the addressee, one of the end pieces 35 in the box may have a perforated circular line 35′ where the box can be ripped open with the thumb nail.

In the present machine, we have provided a magazine for holding a number of boxes and feeding them one at a time into message-receiving position. Referring to Figs. 2 and 3, a horizontal magazine 38 is adapted to receive a certain number of boxes side by side. A follower 39 operated by an expanding coil spring 40 normally tends to push the boxes to the left. The end box is the only one in tape-receiving position opposite the chute 20, as seen in the plan view of Fig. 3. The follower 39, which may be a disk or plate engaging the last box, is connected to a rod 41 which passes through the magazine and terminates in a knob 42 for manually withdrawing the follower to the right when the magazine is filled.

The magazine 38 is closed by a door 43 hinged at 44 along the lower edge and held closed by a spring latch 45. A handle 46 projects from the door for easy manipulation. As shown in Fig. 9, a latch 47 is pivoted on a pin 48 projecting from the end wall of the magazine and a spring 49 normally pulls the latch up. The rod 41 has a slot or notch 50 (see Fig. 2) arranged to receive the latch 47. To fill the magazine, the door 43 is swung down and the knob 42 is pulled out until the spring-pressed latch 47 snaps into the notch 50 on rod 41. This holds the follower 39 in withdrawn position, so that the boxes can be readily inserted.

It is necessary that the boxes be correctly positioned in the magazine; that is to say, the tape inlet closed by the flap 36*a* must be opposite the outlet of chute 20, as shown in Fig. 1. We have provided means for compelling the correct insertion of the boxes into the magazine. The top rear edge of the magazine is formed with a slanting face 51 (see Figs. 3 and 4) adapted to receive a correspondingly bevelled corner 52 on box B. It is only when these two angular surfaces engage that the box goes fully into the magazine and only then is the box in correct position, as will be clear from Fig. 4. Should the attendant carelessly put a box into the magazine the wrong way, it will be impossible to close the door 43. Therefore, when the door can be closed it indicates the correct positioning of all the boxes in the magazine.

We may also provide means for automatically releasing the follower 39 when the door 43 is closed. A lug 53 projecting from the door strikes the end 54 of latch 47 when the door is closed and, therefore, moves the latch out of the notch 50 on rod 41. The coil spring 40 thereupon moves the follower 39 against the last box and maintains the follower in operative position until all the boxes have been removed from the magazine

by ejector mechanism to be described later on.

The magazine 38 is slidable as a unit toward and away from the outlet of the stationary chute 20. Any practical form of mounting may be used for slidably supporting the magazine. By way of example, we have shown a pair of upright plates or standards 55 and 56 secured to the base 10 and carrying at their upper ends a pair of slotted rails 57 and 58, respectively. The ends of the bottom plate 59 of the magazine extend into the slots of rails 57 and 58, as best shown in Fig. 2, whereby the magazine is supported for transverse sliding movement. To limit this movement, which need not be more than a half-inch, stop pieces 60 and 61 are attached to the opposite ends of rails 57 and 58. The magazine 38 moves toward the chute 20 until the base plate 59 strikes the stops 60, while the stops 61 limit the reverse movement of the magazine, as will be clear from Figs. 4 and 1, respectively.

We will now describe the mechanism for moving the magazine 38 from one position to the other. Referring to Figs. 1, 2 and 4, two spaced links 62 are pivoted at the lower ends on pins 63 carried by the main base 10 and the upper ends of these links are connected to pins 64 projecting from the bottom plate 59 of the magazine. The links 62 are rigidly connected by a cross-rod 65 which carries an arm 66 preferably at or near the center of the rod. The arm 66 has a hub 67 through which the rod 65 passes. A coil spring 68, connected at one end to hub 67 and at the other end to post 69 on base 10, normally holds the mechanism in withdrawn position against the stops 61, as shown in Fig. 1. The magazine 38 is moved toward the tape chute 20 by an electromagnet 70 mounted on a bracket 71. The movable core 72 of this magnet is connected to the arm 66. When the magnet 70 is energized, the core 72 is pulled in and the magazine 38 is shifted from the position shown in Fig. 1 to that shown in Fig. 4, where the outlet of chute 20 and the cutting blade 30 are inside the box B. The magnet 70 remains energized to hold the box in tape receiving position until the tape has been cut after completion of the message. When the magnet 70 is deenergized, the spring 68 pulls the magazine to the withdrawn position shown in Fig. 1. The control of magnet 70 will be explained in the description of Fig 12.

After the message bearing tape has been fully enclosed in box B, the latter is automatically removed from the magazine by ejector mechanism indicated as a whole by J. This mechanism is mounted on top of the magazine by means of a bracket 73. An ejecting finger 74 is pivoted to the free end of an arm 75 by a pin 76. A wire spring 77 coiled around the pin 76 normally holds a projection 78 on finger 74 against a pin 79 on arm 75, as shown in Fig. 1. In this way the ejecting finger 74 forms a rigid extension of the arm 75 when the latter swings counterclockwise. However, during the return movement of the arm 75, the finger 74 is free to rock on its pivot 76. For convenience we may refer to the connected members 74—75 as an ejecting lever.

The upper end of arm 75 is pivotally mounted on the bracket 73 by means of a pin 80 (Fig. 10) which turns in a bushing 81 carried by the bracket. The pivot pin 80 has a screw threaded extension 82 which forms a shoulder 83 at the inner end of the pin, this shoulder projecting slightly beyond the face of the bracket 73. A nut 84 clamps the arm 75 rigidly against the shoulder 83 so that the arm and pin always op-

erate as a unit. A wire spring 85, coiled around the pin extension 82, is attached at one end to the bracket 73 and at the other end it engages the lower edge of arm 75, whereby the spring normally holds the arm against a stop 86 on the bracket. The pivot pin 80 carries at its outer end a pulley 87 on which is wound a cord or wire 88. One end of this cord is fastened to the pulley, as indicated at 89, and the other end is connected to the movable core 90 of an electromagnet 91 mounted on the bracket 73. When the magnet 91 is energized the core 90 turns the pin 80 and the ejecting lever 74—75 is swung toward and over the magazine to the dotted line position J' in Fig. 1 until the arm 75 strikes a stop 92. Upon deenergization of magnet 91 the spring 85 moves the lever 74—75 back to normal position.

The ejecting finger 74 terminates in a lateral bar 74' arranged in alignment with the box that is in tape receiving position, as shown in Fig. 3. The width of the bar 74' is preferably such that it engages the sides 35 of the box during the ejecting operation, which is completed when the lever 74—75 reaches the dotted line position J'. The door 43 of magazine 38 does not cover the end box that receives the message, so that this box is free to be pushed out of the magazine into a chute 93 which guides the message holding box to a suitable point in the cabinet for removal. The action of ejecting magnet 91 may be slowed down, as by a dashpot arrangement, so that the bar 74' will not strike the box with too hard a blow.

As soon as the message holding box B has been ejected from the magazine, the spring-pressed follower 39 pushes the next box into message receiving position, and this may take place before the ejecting lever 74—75 has started on its return movement. In that event the finger 74 rocks on its pivot 76 and is dragged by the arm 75 over the new end box without disturbing the latter. In other words, while the lever 74—75 acts as a single rigid member during the ejecting operation, it collapses to permit return of the parts to normal position.

Ordinarily the pressure of spring 40 in the magazine will be sufficient to hold the end box firmly in operative position. However, to guard against a possible displacement of the box when it is pushed against the chute 20 into tape receiving position, we provide a positive stop 94 which extends across the rear edge of the box (see Figs. 2 and 3) and locks it in the magazine. It is necessary, of course, to withdraw the stop 94 prior to the ejecting operation and that is done automatically by an electromagnet 95 mounted on the end plate 96 of the magazine. The stop 94 is a pawl pivoted on a vertical pin 97 carried by a bracket 98 on the plate 96. A pulley 99 rotatably mounted on pin 97 is attached to the stop 94, so that these two parts always turn together. A cord or wire 100 connects the pulley 99 to the movable core 101 of magnet 95. A coil spring 102 normally holds the stop 94 in box engaging position, as shown in Fig. 3. When the magnet 95 is energized, the stop 94 is instantly swung out of the way to the position 94'. A slot 103 in delivery chute 93 allows free movement of the stop.

It is necessary to prevent operation of the recording mechanism unless a box is in message receiving position. For this purpose we provide means whereby the end box in the magazine holds certain switches closed to maintain the recording mechanism in its operative condition. Referring to Figs. 1 and 2, the end plate 96 of the magazine has a bottom slot 104 adapted to receive a bar or strip 105 carried by a pin 106. This pin is connected to a pair of switch arms 107 and 108 which are associated with contacts 107' and 108' respectively. The pin 106 is insulated from the switch arms 107 and 108, which are shown as spring blades inherently tending to move away from their respective contacts. The switch members 107—107' and 108—108' are carried by an insulating block 109 which is mounted on the upright plate 56. It is clear from Fig. 2 that when a box is in message receiving position, it engages the bar 105 and thereby holds the switch arms 107 and 108 pressed against their contacts 107' and 108'. However, when no box is in message receiving position, the spring arms 107 and 108 move to open position and break the circuits controlled by those two switches. As long as this condition prevails, the recording mechanism cannot operate, as will be explained more fully in connection with Fig. 12.

The switch arms 107 and 108 move to open position during the momentary interval between the ejection of a box and the positioning of the next one, but when the magazine is empty, the switches 107—107' and 108—108' remain open to prevent operation of the machine until the magazine is filled again. It is desirable to inform the attendant of the fact that the magazine is empty. One way of doing this is shown in Fig. 2, where the knob 42 on the follower rod 41 closes a normally open switch 110 after the last box has been ejected from the magazine. The closing of switch 110, which may be mounted on the standard 56, operates a suitable signal 112, such as a buzzer or a light, to let the attendant know that the magazine needs replenishing. At the same time the operation of signal 112 informs the attendant that the machine in his charge is not in message receiving condition.

We now come to the automatic control circuits of Fig. 12 to explain the timed operation of the magazine shifting magnet 70, the tape cutter magnet 32, the ejector magnet 91, and the unblocking magnet 95. The signal impulses that operate the recording device 16 may be assumed to originate in a transmitter 113 which is connected by lines 114 to an amplifier 115. The output circuit 116 of the amplifier is connected to the recording device 16 for producing a facsimile record of the transmitted message, as will be clear without further explanation.

The lines P and Q represent a source of alternating current for the various electrical devices in our new machine, and this source of power is primarily controlled by a relay 117 connected to the amplifier 115. This relay is of the delayed or slow action type so that it remains energized for a certain length of time after the cessation of signal impulses in circuit 114. The tongue 118 of relay 117 is connected to contact 107' and the contact 119 of the relay is connected to the power line P through a conductor 120. The tongue or switch arm 118 is normally open and is in series with the switch 107—107' which is held closed by the end box in the magazine, as previously described.

A relay 121 is connected to switch arm 107 by a wire 122 and to the power line Q by a wire 123. A motor 124 is connected to conductors 122 and 123 in shunt to relay 121. It is to be assumed that this motor drives the recording device 16 and the tape 12 through properly geared connections. The tongue 125 of relay 121 has a break contact

126 and a make contact 127, the tongue being connected to the power line P through conductor 120.

A relay 128 is connected at one side to the power line Q by a wire 129 and at the other side to the relay contact 127 by a wire 130. This relay has a tongue 131 with a make contact 132 and a second tongue 133 with a make contact 134 and a break contact 135. The tongue 131 is connected to a wire 136 and the tongue 133 is connected by a wire 137 to the break contact 126 of relay 121. The make contact 132 of relay 128 is connected to a wire 130, the make contact 134 is connected by a wire 138 to the cutter magnet 32, and the break contact 135 is connected to a wire 139.

A relay 140 has a tongue 141 with a make contact 142 and a second tongue 143 with a make contact 144. One side of this relay is connected to the power line Q by a conductor 145 and the other side is connected to a wire 146. The tongue 141 is connected by a wire 147 to switch arm 108 and the contact 142 is connected to wire 146. The tongue 143 is connected to a wire 148 which goes to one side of the ejector magnet 91. The other side of this magnet is connected to the power line Q by a wire 149. The make contact 144 of relay 140 is connected to wire 139 and is therefore in series with the break contact 135 of relay 128. The unblocking magnet 95 is connected to wires 148 and 149 in shunt to the ejector magnet 91 whereby these two magnets always operate simultaneously.

The tape cutter magnet 32 operates a pair of switches represented by contacts 150—151 and 152—153. The members 150 and 152 are insulated spring arms connected to operate as a unit. The switch 150—151 is normally closed and the switch 152—153 is normally open. As best shown in Fig. 1, the switch arm 150 extends into the path of an insulated button 154 on the end of a finger 155 which is mounted on the bracket 33 of the cutter frame 26. When the cutter magnet 32 is energized, the switch arm 150 is opened and the other arm 152 is closed. The switch arm 150 is connected to the tongue 131 of relay 128 by wire 136. The contact 151 and tongue 152 are connected to the power line P by a wire 156. The contact 153 is connected to wire 146 which goes to relay 140.

The various relay switches in Fig. 12 are shown in their normal position, that is, when the relays are not energized. The switch arms 107 and 108 are shown closed because it is assumed that there is a box in message receiving position in the magazine. It is clear that as long as the relay 117 is deenergized, the circuits of all the electrical devices remain open. When signal impulses are generated in transmitter 113 and pass through amplifier 115, the relay 117 is energized and closes the switch arm 118. This energizes the relay 121 and the motor 124 through the following connections: from power line P, wire 120, closed contacts 118 and 107 in series, wire 122, through motor 124 and relay 121 in parallel, and through wire 123 to line Q.

The energized motor 124 drives the recording device 16 and the tape feed rollers 19. The energized relay 121 closes its make contact 127, thereby energizing the magnet 70 and the relay 128 through circuit connections which go from the power line P, wire 120, relay contact 127, through magnet 70 and relay 128 in parallel, and through wire 129 to line Q. The energized magnet 70 shifts the magazine into message receiving position, as shown in Fig. 4, so that the machine is now in operative condition. That is to say, the transmitted message is being recorded and the tape is automatically fed into the delivery box. At this time the energizing of relay 128 performs no other function than to break the contact 135 and close the two make contacts 132 and 134. This locks the magazine magnet 70 and the relay 128 in energized condition independently of relay 121. This locking circuit goes from the power line P, through wire 156, closed switch 150—151, wire 136, closed contact 132, through magnet 70 and relay 128, and by wire 129 to line Q. The magnets 32, 91 and 95 remain in open circuit because the relay 140 is still deenergized.

When the entire message has been recorded, the trailing or final portion of the recorded tape which carries the address is still outside the container B, this trailing portion being the length of tape between the recorder 16 and the container, as will be clear from Fig. 1. It is, therefore, necessary after cessation of signal impulses from the transmitter to keep the motor 124 running long enough to feed the final length of the recorded tape into the container. In the present instance, this is accomplished by means of the delayed action relay 117. After completion of the message at the transmitter 113, when no more signal impulses pass through the amplifier 115, the relay 117 remains energized to hold the circuit of motor 124 closed until the final portion of the recorded tape has been fed into the container before the tape is cut off. We should explain here that the brief cessation of signal impulses during the scanning of the message in the transmitter is not sufficient to deenergize the control relay 117. It is only the cessation or absence of impulses after completion of the message that causes deenergization of the relay. When this happens, the motor 124 stops and the relay 121 is deenergized, breaking the contact 127 and closing the other contact 126. The opening of contact 127 has no effect on the circuits of magnet 70 and relay 128, because these remain closed through the make contact 132 of the relay.

The closing of contact 126 upon deenergization of relay 121 closes the circuit of the cutter magnet 32 as follows: from power line P, conductor 120, closed relay switch 125—126, wire 137, closed relay switch 133—134, wire 138, through magnet 32, and wire 157 to line Q. The energized magnet 32 operates the blade 30 to cut the tape inside the box, as already explained, while the magazine is still held in forward position by the energized magnet 70. The downward movement of the core of magnet 32 causes the finger 155 to open the switch contact 151 and close the contact 153. The opening of contact 151 breaks the circuit of relay 128 and magnet 70, whereupon the magazine is moved back to withdraw the message holding box from the chute and cutter. The deenergization of relay 128 opens the make contact 134 and thus breaks the circuit of cutter magnet 32. This occurs after the energized magnet has operated the associated switches 150—151 and 152—153.

The closing of contact 153 by the cutter magnet 32 energizes the relay 140 through a circuit from power line P, wire 156, closed switch 152—153, wire 146, relay 140, and wire 145 to line Q. The energized relay 140 closes its make contacts 142 and 144, whereby the relay is locked independently of the switch 152—153 by way of contact 142, wire 147, closed switch 108—108' and wire 158 to line P. The closing of make contact

144 closes the circuit of ejector magnet 91 and unblocking magnet 95 from the power line P, wire 120, closed relay switch 125—126, wire 137, closed relay switch 133—135, wire 139, closed make contact 144, wire 148, through magnets 91 and 95 in parallel, and wire 149 to power line Q. The energized magnet 95 removes the stop 94 from the box containing the message and the energized magnet 91 operates the finger 74 to eject the box from the magazine. During the brief interval between the ejection of the message holding box and the movement of the next box into message receiving position, the switch arm 108 automatically opens the contact 108' and thereby breaks the circuit of relay 140 to deenergize the magnets 91 and 95. All the circuits are now open, the various movable parts have returned to normal position, and the machine is again in condition to receive the next telegraph message from the transmitter.

It will be apparent from the foregoing description that we have provided a telegraph receiving machine which is wholly automatic in recording messages and sealing them inside a container for delivery to the addressee. The only personal attention that the machine requires is the removal of the message holding container and the refilling of the magazine when empty.

Although we have described an embodiment of our invention utilizing a tape for recording the messages, it is clear that any other practical form of recording medium can be employed. For example, if the messages are recorded on sheets, the container may be of tubular or cylindrical shape, wide enough to receive the message bearing sheet and allow it to coil up like the tape in box B. Or, the container may be in the form of an envelope arranged to receive the recorded sheet and having a transparent portion for the address of the message. Various other changes and modifications may be resorted to without departing from the scope and nature of the invention as defined in the appended claims.

We claim as our invention:

1. In telegraph tape recording apparatus, a sealed shallow box for receiving a tape coiled up in spiral form and bearing an addressed telegraph message, said box having a pair of opaque sides and a central circular wall comprising a transparent strip, and a resilient flap inside the box adapted to close a slot through which the tape is inserted into the box, said flap being movable inward for insertion of the tape and automatically closing itself to seal the message inside the box, said transparent strip exposing the address portion of the message on the outer coil of the spiral tape while said opaque sides conceal the text of the message on the inner coils.

2. A telegraph machine provided with mechanism for recording an addressed message on a blank, a message delivery box supported in operative relation to said mechanism, said box being closed and having a slot, a device for automatically feeding a recorded blank through said slot into the box as the blank leaves said mechanism, a curved surface in said box having an end portion so arranged with respect to said slot that the message blank enters the box in a direction substantially tangential to said curved surface which automatically coils up the message blank as it enters the box, and a transparent section on said box arranged to expose only the address of the message for reading, the message itself remaining concealed within the box which is removable for delivery to the addressee.

3. A telegraph receiver having mechanism for recording an addressed message on a blank, a message delivery box arranged to receive a recorded blank, a device for automatically feeding a recorded blank from said mechanism into said box which is constructed to conceal the message and expose only the address, said box having an element automatically operated after insertion of the message for sealing the box in which the message is delivered in secret condition to the addressee.

4. Telegraph apparatus comprising mechanism for recording messages on an endless tape, a box for receiving the recorded tape through a slot, a device for feeding the recorded tape through said slot into the box, a shear member extending through said slot into the box for cutting off the recorded tape, connections for automatically withdrawing said shear member from the box after a cutting operation, and closure means inside the box for automatically sealing the slot upon withdrawal of said shear member.

5. Telegraph apparatus provided with mechanism for recording addressed messages on an endless tape, a box positioned to receive the recorded tape through a slot, a device for automatically feeding the recorded tape from the recording mechanism through said slot into the box, means inside the box for automatically coiling up the tape as it is fed into the box by said device, a shear member arranged between said feeding device and the box for cutting off the recorded tape fed into the box, a magnet for operating said shear member, and timed connections for automatically energizing said cutting magnet only after the entire message has been fed into the box, which is removable for delivery to the addressee.

6. Telegraph apparatus comprising mechanism for recording messages on an endless tape, a box removably mounted on a support for receiving a recorded message as it leaves said mechanism, a shear member for cutting off the tape when the complete message is enclosed in the box, an ejector for removing the message containing box from said support, a magnet for operating said shear member, a second magnet for operating said ejector, and circuit connections for automatically energizing said magnets at predetermined intervals after insertion of a completed message in said box.

7. Telegraph apparatus comprising mechanism for recording a message on a blank in accordance with received signals, a box removably mounted on a support, a device for feeding a recorded blank into said box as the blank leaves said mechanism, an ejector for removing the message holding box from its support, a magnet for actuating said ejector, and means including an electric circuit controlled by the absence of signal impulses for a predetermined time after a recording operation for energizing said magnet, whereby said box is automatically ejected after a recorded message has been enclosed therein by said feeding device.

8. Telegraph apparatus comprising mechanism for recording a message on a blank, a motor for operating said mechanism, a box mounted on a support for receiving a recorded blank from said mechanism, said box being provided with means for automatically coiling up the message blank as it comes from the recording mechanism, and a switch controlled by the presence of said box on its support to prevent operation of said motor unless the box is in message receiving position.

9. Telegraph apparatus comprising mechanism for recording messages on a blank, a magazine for holding a plurality of flat rectangular boxes side by side, each box being adapted to receive a recorded message and only the end box being in message receiving position, a device for feeding a recorded message from said magazine into said end box, and cooperating surfaces on said magazine and boxes for compelling correct insertion of the boxes into the magazine so that they will be in message receiving position.

10. A telegraph recording machine having mechanism for recording messages on a tape, a magazine for holding a plurality of boxes adapted each to receive a recorded message, only one of said boxes being in receiving position at a time, means for feeding a recorded length of tape from said mechanism into the receiving box, a shear member automatically operated at a predetermined moment after the recording of a message to cut off the tape fed into said box, a device automatically actuated after said cutting operation to eject the message containing box from said magazine, and automatic means for moving another box into message receiving position upon ejection of the previous box.

11. Telegraph recording apparatus having mechanism controlled by incoming signals for recording messages on a strip, a box arranged at a distance from said mechanism for receiving the recorded strip, a device for feeding the recorded strip into said box, a motor for operating said device, a relay operated by incoming signals for energizing the motor, means for supporting the end portion of the message recorded on the length of strip that still remains outside the box upon completion of a recording operation, and an electrically controlled timing device for keeping said motor energized after the cessation of incoming signals to feed said end portion of the recorded message into the box in which the message is delivered to the addressee.

12. Telegraph apparatus comprising mechanism for recording addressed messages on a continuous strip in accordance with incoming signals, a box for receiving a recorded strip, a guide through which the recorded strip passes from said mechanism into said box for delivery to the addressee, a device for feeding the recorded strip

through said guide in a continuous movement, a shear member arranged at the outlet end of said guide to cut off the recorded strip, a motor for operating said device, a relay energized by incoming signals to close the circuit of said motor, said relay being constructed to remain energized after the cessation of incoming signals for a definite interval whereby the motor operates the feeding device until the complete recorded message has passed into the delivery box, and connections automatically operated in response to the deenergizing of said relay to actuate said shear member which cuts off the tape only after the complete recorded message has been fed through said guide into the box.

13. Telegraph apparatus comprising mechanism for recording messages on an endless tape, a box positioned to receive the recorded tape through a slot, means for feeding the recorded tape into the box, a shear member, connections for producing relative movement of said box and shear member to insert the latter through said slot into the box after the complete message has been fed into the box, automatic means for operating said shear member to cut the tape at a point inside the box, and automatic means for operating said connections after a cutting operation to withdraw the shear member from the box.

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