April 3, 1934. L. CASPER 1,953,072

REMOTE CONTROL ADVERTISING AND ELECTRIC SIGNALING SYSTEM

Filed Sept. 9, 1930 3 Sheets-Sheet 1

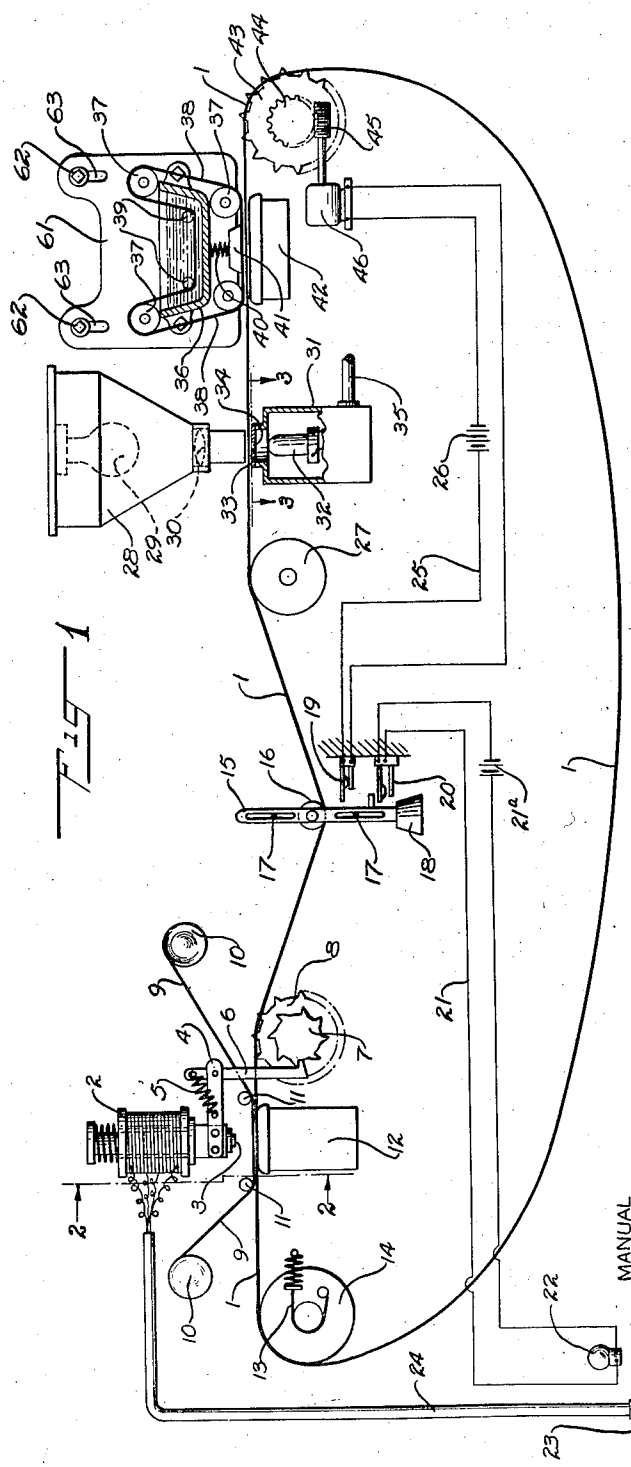


FIG 1

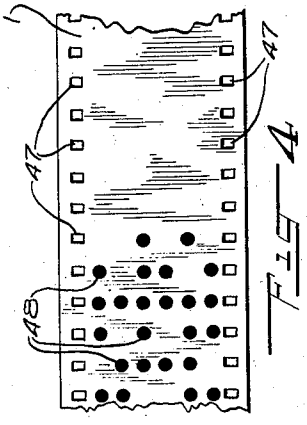


FIG 4

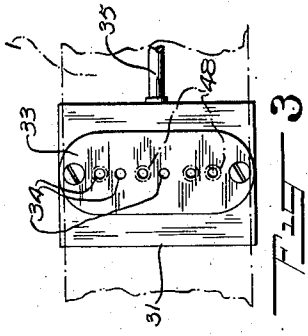


FIG 3

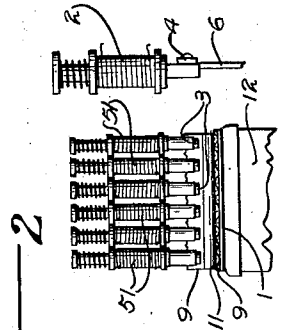


FIG 2

INVENTOR

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REMOTE CONTROL ADVERTISING AND ELECTRIC SIGNALING SYSTEM

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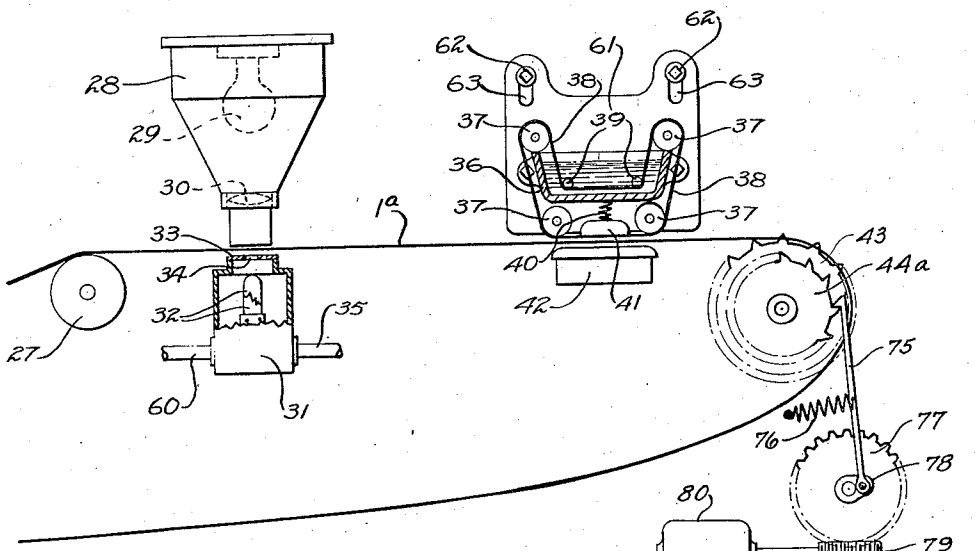


Fig 5

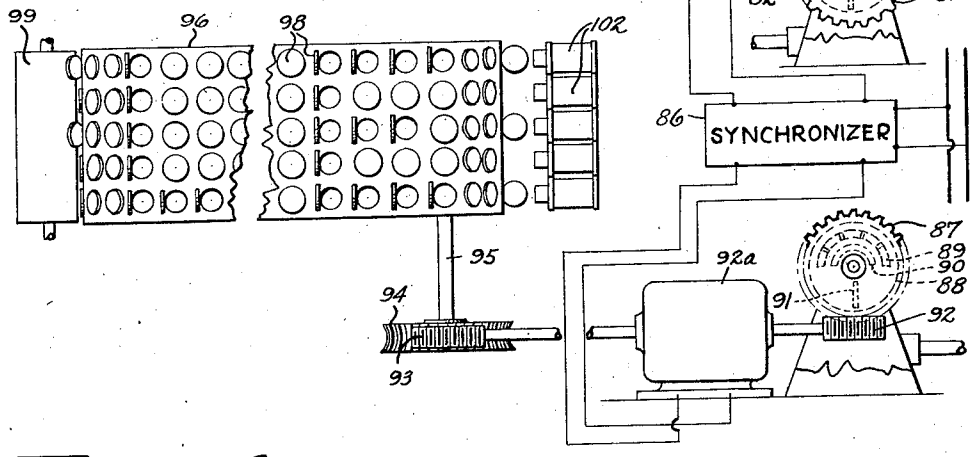
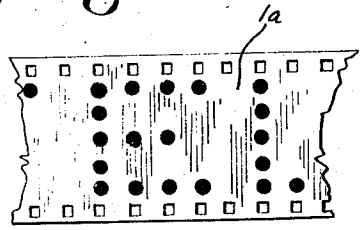


Fig 6



INVENTOR

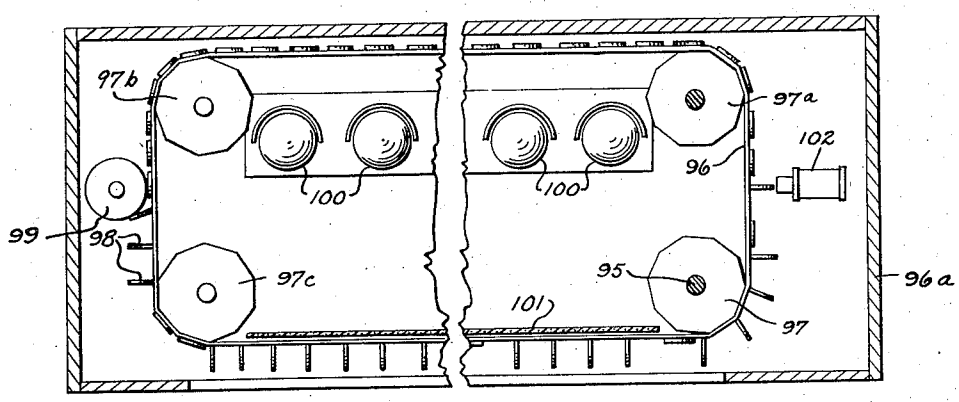
Lewis Casper

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REMOTE CONTROL ADVERTISING AND ELECTRIC SIGNALING SYSTEM

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Fig 7



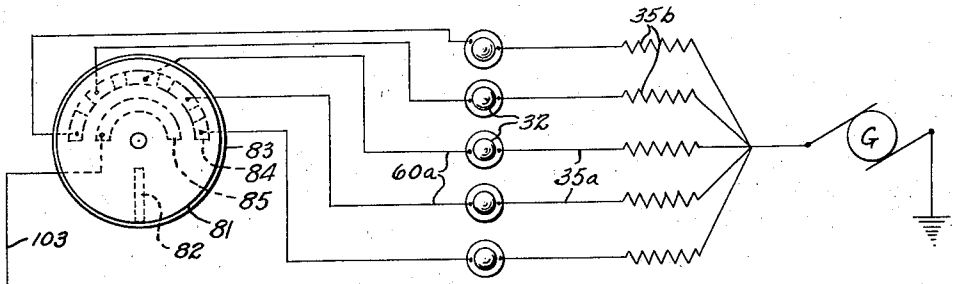


Fig 8

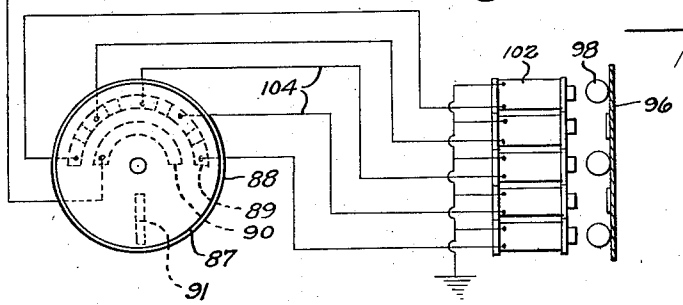
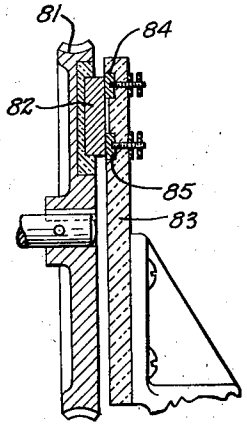


Fig 9



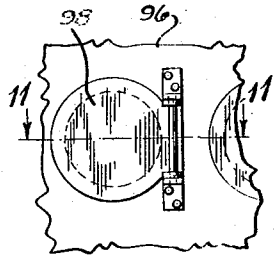


Fig 10

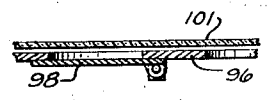


Fig 11

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Patented Apr. 3, 1934 1,953,072

UNITED STATES PATENT OFFICE

1,953,072

REMOTE CONTROL ADVERTISING AND ELECTRIC SIGNALING SYSTEM

Louis Casper, Richmond Hill, N. Y.

Application September 9, 1930, Serial No. 480,683

21 Claims. (Cl. 40—52)

My invention relates to that class of electric signaling and advertising systems whereby letters or characters may be formed and the same kept moving on an illuminated sign for advertising and other display purposes controlled by means of electric signals transmitted at a distance or remote from said advertising or display sign, the signals being formed under the control of an operator. The signals can also be prepared on an endless belt or band made of photographic film or the like at the transmitting station beforehand and the passing of said film or the like through a photo-electric transmitting arrangement which will be hereinafter described, will transmit the same series of signals repeatedly resulting in the repeated reproduction of letters or characters on the display sign.

This invention is also applicable for the receiving and retransmission of electric signals from one line to another, or for direct signal transmission over a line wire controlled by a manually operated keyboard at the transmitting station. When used in this manner the use of perforated tape commonly used for signal transmission in present automatic printing telegraph systems may be eliminated.

In further description of my invention reference is called to the drawings in which, Fig. 1 is a representation of the signal transmission system as a whole. Fig. 2, a detail of the film printing operating magnets on a line 2—2 of Fig. 1. Fig. 3 is a detail of the metal cover plate on a line 3—3 of Fig. 1. Fig. 4 is a section of film with solid circular marks printed thereon. Fig. 5 is a general representation of the system when applied to illuminated display sign operation. Fig. 6 is a detail of the film when used in connection with the illuminated display sign operation. Fig. 7 is a plan view of the display sign proper. Fig. 8 is a diagrammatic representation of the electric transmission scheme between the sending station and the display sign receiving terminal. Fig. 9 is a cross-section detail of either distributor 83 or 87. Fig. 10 is a detail view showing a display band provided with hinged doors. Fig. 11 is a section taken on line 11—11 of Fig. 10.

Referring specifically to Fig. 1, 1 is a strip preferably of non-sensitized film or flexible celluloid band which is formed into an endless belt or loop. The film rests upon wheel 14. The wheel 14 is provided with a tension spring 13 against its shaft by which means the film is held taut between the wheel 14 and the sprocket wheel 8. Mounted above the film are five solenoid magnets with windings 51 and plunger armature 3. The lower end of the plunger armature terminates into preferably a circular steel pin which when operated first strikes the inked ribbon 9 and then the film 1, resulting in a mark or impression upon the film.

The ribbon 9 is impregnated with erasable ink and is wound and unwound on spools 10 in the manner of ribbon feed mechanisms common to most all makes of typewriters that use ribbons for inking type. The rollers 11 assist in holding the ribbon 9 in position with respect to the magnet plunger and the film underneath.

The striking or imprinting on the film by means of the plunger armature 3 makes preferably a circular impression 48 as shown in Fig. 4. The marking or impression printing upon the film 1 can be accomplished by other methods of ink feeding, such as having a hollow piece of metal tubing atached to the lower end of the armature plunger 3 and the ink fed out of the lower end of the tube directly on to the film similar to the ink feed of a fountain pen.

Attached to the plunger 3 is a metal cross-piece 4, the opposite end of which is connected to ratchet lever 6 which is held resiliently against the ratchet wheel 7 by the coiled spring 5. The ratchet wheel 7 is attached to sprocket wheel 8.

In this manner with every downward movement of the solenoid plunger 3, the sprocket wheel 8 is moved forward the space of one tooth and carries the film 1 forward with it precisely that distance. A platform 12 is fixed underneath the film and plunger armature 3 to provide a solid base to assist in making a perfect imprint on the film.

The magnets 2 are controlled by a manual transmitter or keyboard as indicated.

The magnets 2 may also be controlled from a remote distance through the medium of armature tongue contacts of a bank of relays, the number of relays corresponding to the number of magnets 2 that are controlled individually by each relay in the relay bank. The bank of relays in such a case would be operated by the transmission of signals over a distant line, said signals being in effect similar to the control of magnet 2 by the locally operated manual transmitter already mentioned.

The film 1 when in operation moves toward the photo-electric transmitting arrangement shown to the right of Fig. 1. This arrangement consists of an enclosed chamber 28, having an illuminating lamp 29. At the lower end of chamber 28 is a magnifying lens 30. In some cases the magnifying lens may not be necessary. The light rays

from lamp 29 strike through circular apertures 34 on plate 33.

Underneath plate 33 is grouped a series of selenium or photo-conductive units enclosed in chamber 31 that permit the electric current to flow through them when subjected to light rays. When not subjected to light rays, or if light rays are very much restricted, the photo-conductive units or cells offer high resistance to the passage of electric current. Hereinafter all such units will be designated photo-conductive units.

The combination of the photo-conductive units controlled by a moving film having marks printed thereon comprises an important feature of my invention.

Still further to the right on Fig. 1 is shown an ink erasing arrangement held in position by frame 61. The arrangement includes a container 36 which holds the ink erasing fluid. Immersed in this is an endless strip of absorbent cloth or the like 38, moving on four rollers 37, the movement of which is similar to the movement of the typewriter ribbon feed arrangement already described. The absorbent cloth strip is held in resilient pressure against the film by means of pad 41 under pressure of spring 40. The film is held in substantial and even position under wiping cloth 38 by means of base 42.

If it is desired to use markings on the film 1 repeatedly, the ink erasing arrangement is lifted up clear of the film. This is accomplished by loosening the screws 62 and lifting up the ink erasing assembly to the upper limit of the screw slot 63. It is obvious that even more convenient methods can be used to lift up the film erasing arrangement clear of the film, the one described is about as simple as could be devised.

The film 1 is moved in a clockwise direction through the photo-conductive transmitting arrangement by means of sprocket wheel 43 to which is attached a gear wheel 44 driven by worm gear 45 that is attached to the shaft of motor 46. The latter furnishes the prime moving power for the transmission system.

Situated between the sprocket wheel 8 and the idler wheel 27, a switching assembly is suspended on the film 1. This assembly includes a roller 16 which rides on the film 1. The roller 16 fits into a slotted upright bar 15. The pins 17 are fixed permanently in a base behind the slotted bar 15 and holds the latter in position. The bar 15 has a weight 18 fixed at its lower end to maintain proper downward pressure and position on the film. In the event the film 1 sags at this location, the switching assembly will fall to the limit of the sag. If the film becomes taut, the assembly will be lifted on a level with the film. The purpose of this assembly is to provide means for stopping the sprocket wheel 43 when the film becomes taut which occurs at such times when the photo-conductive transmission has caught up with the operation of the printing magnets 2 and their assembly. In such an event the slotted bar 15 is lifted up and in doing so, the pin to the right of the slotted bar 15 lifts the upper contact of switch 19 clear of its companion contact, and in so doing will separate the contacts thus opening circuit 25 with its battery 26 thereby stopping the motor 46.

When the film 1 becomes too slack due to the faster operation of the printing magnets 2 assembly as compared with the movement of sprocket wheel 43, the bar 15 will drop to the limit of the sag of the film and in doing so the pin to the right of the bar 15 will strike the upper contact of switch 20 thereby closing circuit 21 and through the energizing means of battery 21^a and the lamp 22 will glow which is notice to the operator to cease printing and moving the tape forward until the light is extinguished which will occur when the slack on the film 1 is lifted.

The operation of the system so far described is as follows:

An endless transparent film is placed in the system as shown in Fig. 1. In the event it is desired to preserve the film and its markings, or transfer it to some other circuit, the film need not be endless. An operator manipulates the keys on the manual keyboard transmitter. This transmitter is similar to well known types of keyboard transmitters that have a standard keyboard with the usual letter, figure and character keys. As each key is depressed, a selective combination is set up. For instance, in the Baudot 5 unit code, if the letter A was struck, the result would be the selection of the first and second transmitting levers while levers 3, 4 and 5 would remain in their normal position, assuming of course, there are five selecting levers to correspond to the 5 unit code. Therefore, as the operator manipulates the various characters on the keyboard corresponding selections would be made of the magnets 2 in which five are shown in Fig. 2 to correspond as already stated to the Baudot printing telegraph code. The magnet armatures plunge downward thereby making the designated markings on the film by striking thereon through the ribbon 9. The selection of signals for each letter or character is made at right angles to the length of the film as shown in Fig. 4.

With each character selection the film is moved forward a space equivalent to the space required for the proper markings or printing of the dark circular spots on the film. As the operator continues to manipulate the keyboard, the film moves forward correspondingly until the first character selection on the film is directly over the holes or apertures on the plate 33. The light rays from the lamp 28 passes through the film if the film at that particular spot is clear and then through the aperture 34 and thence through the photo-conductive cell unit. This causes a current to flow in a wired circuit passing out of cable or conduit 35. This wired circuit includes the photo-conductive unit, a suitable battery and a relay. The relay would thus be energized and its armature tongue would make contact on its back contact side.

Should a dark circular spot on the film appear directly over one of the apertures 34, the lamp rays would either fail in that case to penetrate or only partially penetrate the photo-conductive unit 32 and as a consequence the wired circuit connected at 35 would be "open" or disconnected due to the high resistance of the photo-conductive unit which is connected in and made a part of the wired circuit as described.

It will thus be seen that it is possible to send by this system either a make and break signal or a reversal of polarity signal on a line wire and such signals can be received at the distant end in the usual manner and is translatable into printed or visible letters or characters.

After the film tape with its markings have passed the photo-conductive transmitter arrangement, the marks are erased or wiped off the film by means of the wiping cloth 38. This is impregnated with a cleaning fluid which is fed on to it by being immersed in the fluid container 36. This section of film is then clean and clear and

ready for another round of markings when that portion of the film shall have reached the position directly under one of the plunger armatures of magnets 2.

If it is desired to repeat the transmission of the markings on the film the erasing and cleaning arrangement is lifted clear of the film in the manner already described.

Referring to Fig. 5, 1^a is a film similar to that described in Fig. 1. The same idler wheel 27 is shown as well as a duplicate of the photo-conductive transmitting arrangement which includes the enclosed chamber 28, illuminating lamp 29, magnifying lens 30, plate 33, circular light apertures 34, photo-conductive cell or unit 32, enclosed in chamber 31. 35 is the conduit or cable for leading out wires 35^a from photo-conductive units to a battery. 60 is a conduit for leading out wires 60^a to the segments 84 (see Fig. 8).

The ink erasing and cleaning arrangement supported by frame 61, already described is shown in Fig. 5 and is substantially the same as in Fig. 1.

43 is a sprocket wheel which engages the film 1^a and moves it through the medium of perforations 47, (Fig. 4).

Secured to the sprocket wheel 43 is a ratchet wheel 44^a. A pawl 75 engages with the teeth of the ratchet wheel 44^a and is held against the former by coiled spring 76 as shown. The pawl 75 is attached eccentrically to gear wheel 77 at 78. The gear wheel 77 engages with worm wheel 79 which is attached to the shaft of motor 80. This motor is synchronized with the motor 92^a through the medium of a synchronizer 86. This will be more fully described hereinafter. The worm wheel 79 also engages with gear wheel 81 which has secured to it the brush holder 82. It will be seen that the sprocket wheel 43 moves and with it moves the film 1^a in synchronism with the movement of the brush holder 82.

83 is a distributor face plate permanently secured on a frame as shown. Mounted on the face plate are 5 metal segments 84 insulated from each other over which the brush on brushholder 82 pass. 85 is a solid metal half circle ring over which the lower brush on brushholder 82 passes. 87 is a gear wheel to which is attached brushholder 91 similar to brushholder 82 as described. The gear wheel 87 engages with worm wheel 92 that is attached to the shaft of motor 92^a. 88 is a distributor face plate similar to that of 83 already described. 89 are five metallic segments insulated from each other and are mounted on the distributor face plate 88 as is also the solid metal half ring 90.

Attached to the shaft of motor 92^a is a worm gear 93 which engages with gear 94 that is attached to and moves shaft 95. The shaft 95 is attached to and moves polygonal cylinder 97, (Fig. 7). This cylinder moves flexible band 96. The band 96 has a number of circular openings or apertures 98. Each of these apertures are provided with a hinged door preferably of flexible magnetizable metal or magnetizable metal combined with some other material. These doors can be seen in Fig. 5 on a line 7—7 of the detail shown in Fig. 10. These doors are influenced magnetically by electromagnets 102 which causes the doors to open whenever the magnets are energized. The doors are caused to close when passing cylinder 99.

Referring to Fig. 7 which shows the advertising or display sign. This sign is encased in a frame 96^a which also houses the shaft 95, gear 94, worm gear 93, motor 92^a, worm 92 and distributor 88 all of which are shown in Fig. 5 and not shown in Fig. 7. 96 is a flexible band containing circular openings 98 and doors connected thereto which open and close under control of the selector magnets 102, the latter opening the doors and the cylinder 99 closing them. The band 96 moves around polygonal cylinder 97 which is revolved by the motor 92^a and also around polygonal idler rollers 97^a, 97^b and 97^c.

100 are illuminating lamps which send light rays through the circular openings or apertures 98 that have no closed doors. 101 is a light diffusing glass in front of the display or advertising sign. This is shown in detail in Fig. 11.

Referring to Fig. 8, 83 is the transmitting distributor located at the remote or transmitting station. Each of the five segments in the distributor 83 is connected to their respective photo-conductive cells or units 32 through circuits 60. From the photo-conductive cells the respective circuits continue and connect with resistances 35^b, thence to generator or battery G and ground. The solid half ring 85 is connected to line wire 103 which extends to the solid half ring in the distributor 88 which is located at the advertising or display sign as stated. The five segments 89 connected to 5 respective magnets 102 and thence to ground as shown in Fig. 8.

The brushholders 82 and 91 operate in synchronism or proper time relation with each other through the medium of synchronizing means that is well known to the printing telegraph art, such as is used in Baudot, Murray, Siemens and Halske and other systems of synchronous telegraphy. Should one of the photo-conductive cells receive a light ray at 34 (Fig. 5) and the brushes on the brushholders 82 and 91 in contact with that particular segment, the circuit would be energized from the generator (grounded on one polarity) through resistance 35, through photo-conductive cell 32, through the segment 84, through brush in contact with the segment 84, through the brushholder 82 to the lower brush in contact with the solid half ring 85 to line 103 thence to solid ring 90 to lower brush of brushholder 91, through brushholder 91 to the segment 89 to circuit 104 and to magnet 102 thence to ground.

This circuit arrangement is presented in its simplest form. In the event that the line 103 is a long one, a telegraph relay may be interposed at the receiving station and the local points of said relay connected to the solid ring 90 including a circuit and local battery.

The operation of the display or advertising sign arrangement is as follows:

The operator at the sending station manipulates the manual transmitter (Fig. 1). This manipulation produces markings on the film 1^a in accordance to what it is desired to display on the illuminated sign. The film moves under the impulse of the sprocket wheel 8, the operator always maintaining operation in advance of the speed of the sprocket wheel 43. In other words the operator stores a certain amount of film in advance of transmission. The film with markings thereon pass between the illuminating arrangement and the photo-conductive transmitter which governs transmission or electric signaling through the respective photo-conductive cells; whichever cell or unit permits current to pass through it closes the circuit 60^a, and that particular circuit in the group being in synchronism through its respective segment in the transmitter distributor, the signal will pass over line 103 to the corre-

sponding segment in the receiving distributor and energizing the magnet 102 to which is connected the particular segment through one of the group circuits 104. The particular magnet 102 in turn will magnetize the door in front of the aperture 98 that will appear in front of the magnet core and thus pull it open. The light rays from the bank of lamps 100 shine through said aperture and is observed through the diffused glass 101. The open apertures properly grouped form letters and characters visible in front of the sign. The visible letters and characters will follow faithfully the designations as indicated on the film 1^a in Fig. 6.

If it is desired to send the same display matter continuously the markings on the film are not erased by the erasing arrangement, but the same is lifted clear of the film and the film is permitted to travel on endlessly impelled by the movement of the sprocket wheel 43 alone, the latter receiving its motive power in the manner already described.

Instead of a grounded line circuit operating between the remote transmitting station and the receiving apparatus located in the display sign proper a metallic circuit may be employed. In this case the generator G, (Fig. 8) will terminate into a return line instead of a ground, and said return line extending to the terminal of the magnets 102 in lieu of the ground as shown in Fig. 8.

It is also possible to operate a number of the display and advertising signs from one master transmitter, the latter operating into a bank of transmitting relays, each relay in control of its respective line. It is also possible to operate a number of signs from one transmission with the receiving apparatus integral to the signs in series.

Synchronism with all branch circuits is maintained in the usual way employed in the operation of forked or branch synchronous printing telegraph circuits.

It will readily be seen that this invention is capable of considerable modification without departing from the spirit thereof. For instance, in Fig. 1, the marking or printing on film 1 and the movement of the latter may be done mechanically but controlled electrically through a magnet similar to magnet 102 shown in Fig. 1.

Now, having described my invention, what I claim is—

1. In an electric signaling system an illuminating element, a photo-conductive element and a transparent ribbon or film having grouped or coded combinations of markings thereon that is caused to move between said illuminating element and photo-conductive element thereby controlling the resistivity of said photo-conductive element to cause signals to flow in an electric circuit including said photo-conductive element; and the movement of said transparent ribbon or film being in proper time relation so that each individual mark of said grouped or coded combinations of markings may pass successively between the aforesaid illuminating element and photo-conductive element; and a receiving element included in the electric circuit in recordable response to said signals and in synchronism therewith.

2. In an electric signaling system, a transparent moving film or the like; means for impressing or printing thereon grouped or coded combinations or markings; photo-conductive or similar means whose resistivity to electric current is affected by light, said means controlled by the markings on said film or the like to cause signals to flow in an electric circuit including the photo-conductive means aforesaid.

3. In an electric signaling system, a transparent film or the like, and a manually operated key board means for impressing or printing grouped or coded combinations of markings thereon that pass between an illuminating means and a photo-conductive means; said grouped or coded combinations of markings controlling the resistivity of said photo-conductive means thereby causing combinations of signals to flow in accordance with the markings on said transparent film or the like in an electric circuit in which the aforesaid photo-conductive means is included.

4. In an electric signaling system a film or the like with grouped or coded combinations of markings impressed or printed thereon; photo-conductive means whose resistivity to electric current is affected by illuminating means operating in connection therewith; said photo-conductive means controlled alternately by the blank or clear film and the grouped coded combinations of markings thereon which pass between said illuminating means and said photo-conductive means; and means for moving said film in proper time relation so that marks on said film may consecutively influence the resistivity of said photo-conductive means thereby effecting the transmission of coded combinations of signals in accordance with the coded combination markings on said film in an electric circuit which includes the photo-conductive means; and a recordable receiving element operating in synchronism with the coded combination of signals aforesaid.

5. In an electric signaling system, photo-conductive means and illuminating means in conjunction therewith; a moving film or the like having marks printed or impressed thereon interposed between said conductive and illuminating means; an electric circuit including said photo-conductive means, and a transmitting distributor included in or auxiliary to said electric circuit, the movement of said distributor being approximately in the same time relation with the film aforesaid.

6. Same as claim 5, and adding, and a line wire connected with said transmitting distributor, and a receiving distributor connected with the opposite terminal of the line wire aforesaid, the said receiving distributor moving approximately in synchronism with the transmitting or sending distributor aforesaid.

7. Same as claim 5, and adding, and a line wire connected through the medium of an auxiliary transmitter with said distributor, and a receiving distributor connected through the medium of a receiving relay with the opposite terminal of the line wire aforesaid, the receiving distributor moving approximately in synchronism with the transmitting or sending distributor; and means for maintaining synchronism between the sending and receiving distributors aforesaid.

8. In an electric signaling system, a moving film or the like; electromagnetic means in conjunction with inking means for marking or printing on said film; photo-conductive means whose resistivity is affected by light, said means controlled by markings or printing on said film and an electric circuit including said conductive means, the latter means controlling the signaling on electric circuit aforesaid.

9. In an electric signaling system, a transparent moving film; means for impressing or printing thereon grouped or coded combinations of

markings; photo-conductive means whose resistivity to electric current is affected by light, said means controlled by the markings on said film to cause signals to flow in an electric circuit including the conductive means aforesaid; and means for permanently erasing at will such markings that it is desired to erase on said film after the signal combinations controlled by said markings had been transmitted and the markings on said film shall have served their purpose.

10. In combination, a normally moving film or the like; means for impressing or printing marks thereon; means for moving said film in correct spacing relation with respect to printing or impressing marks thereon, said moving film moving coincidentally with said printing or impressing means, and means for erasing impressions or printed marks on said film together with means for lifting said erasing means clear of said film, as set forth.

11. In an electric signaling system, a moving film or the like; means for marking or printing thereon; photo-conductive conductor transmitting means in conjunction with illuminating means controlled by the markings upon said film and means for automatically stopping the movement of said film when said film is moving slower through said photo-conductive means than the speed of the marking or printing process upon the film aforesaid.

12. Same as claim 11, adding, and means for automatically signaling the transmitting station manipulating the marking or printing upon said film when an excessive length of marked or printed tape film shall have reached said photo-conductive transmitting means and awaiting transmission, as set forth.

13. In an electric signaling system, a moving film or the like; means for marking or printing on said film; said means consisting of an ink impregnated ribbon mechanism moving said ribbon back and forth under electromagnetic impressing means, and photo-conductive means whose resistivity to electric current is affected by light, said photo-conductive means controlled by the markings on said film as set forth.

14. In an electric signaling system, a transparent moving film or the like; means for impressing or printing grouped or coded combinations of markings thereon; said combinations of markings being affixed transversely or across the width of said film; photo-conductive means whose resistivity to electric current is affected by light; and means for moving said film so that said markings and the blank spaces between said markings may consecutively influence said photo-conductive means for the purpose set forth.

15. In a signaling and advertising system, a signal storing means operating in connection with electric transmission means, a line circuit connected thereto; electric receiving means connected to said line, said receiving means integral to and controlling the operation of a display or advertising sign; means for maintaining synchronism of said electric transmission means with said receiving means.

16. In a signaling and advertising system, a signal storing means operating in connection with electric transmission means, a line circuit connected thereto; electric receiving means connected to said line, said receiving means integral to and controlling the movement of a rotatable endless belt in a display or advertising sign; a series of normally closed apertures on said endless belt; means for selectively exposing or opening up said apertures controlled by said receiving means, and means for maintaining synchronism of said electric transmission means with receiving means aforesaid.

17. In a remote controlled advertising sign having a letter or character bearing element; electro-mechanical means contained in said sign for selecting letters or characters upon said letter or character bearing element; a prime mover operating said letter or character bearing element; a line wire or circuit connected to said electro-mechanical means; signal transmitting means included in said line wire or circuit; a prime mover operating said signal transmitting means in synchronism with the prime mover operating said character bearing element in said sign whereby electro-selective signals transmitted over said line wire or circuit may be in correct time relation with the movement of the letter or character bearing element aforesaid.

18. In combination, an advertising or display sign, a rotatable endless belt having normally closed apertures thereon within said sign; selective means to open or expose said apertures; lighting means in said sign for the purpose of reflecting light through said apertures thus presenting to view visible illuminated conformation of letters, characters or the like, as set forth.

19. Same as claim 18, and adding, and means for closing said opened or exposed apertures.

20. In an electric signaling and advertising system, a signal storing means operating in connection with electric transmission means, a line wire connected thereto; electric receiving means connected to the terminus of said line wire and which is in synchronism with said transmission means, said receiving means initially operated by said storing means through the medium of transmission means aforesaid; said receiving means in turn controlling the selection of letters or characters in a display or advertising sign, and means for illuminating said letters or characters in the sign aforesaid.

21. Same as claim 17, and means for restoring the letter or character bearing element to its initial appearance by the elimination of letters or characters that had been selected after such that appeared on said letter or character element shall have served their purpose, and being made preparatory to the selection of another series of display letters or characters upon the letter or character element aforesaid.

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