

Nov. 18, 1952

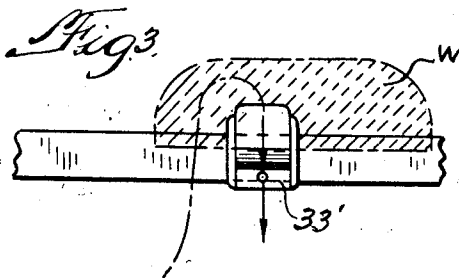
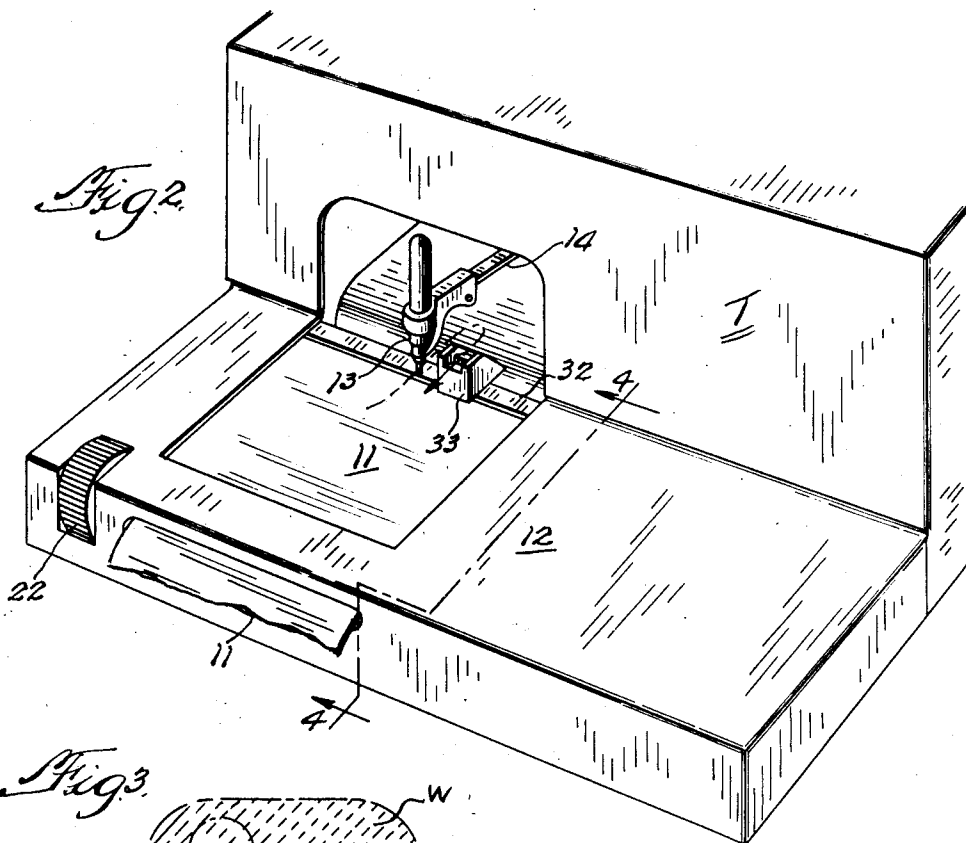
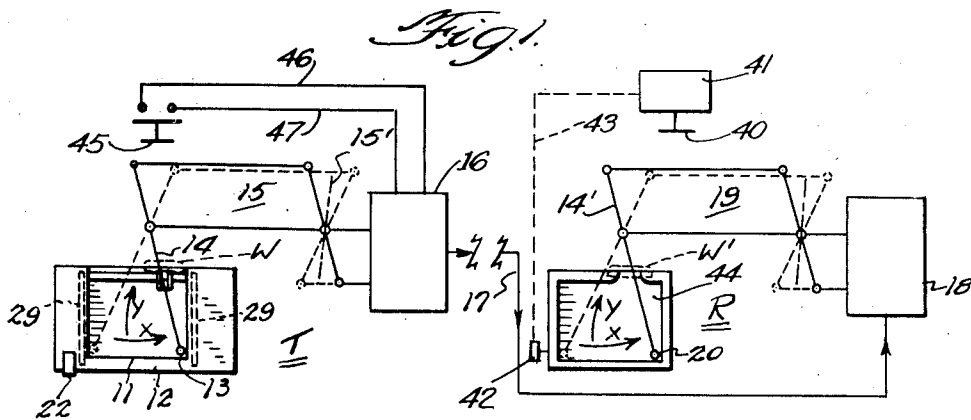
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2,618,704

PAPER FEED SIGNAL CONTROL

Filed April 27, 1950

2 SHEETS—SHEET 1



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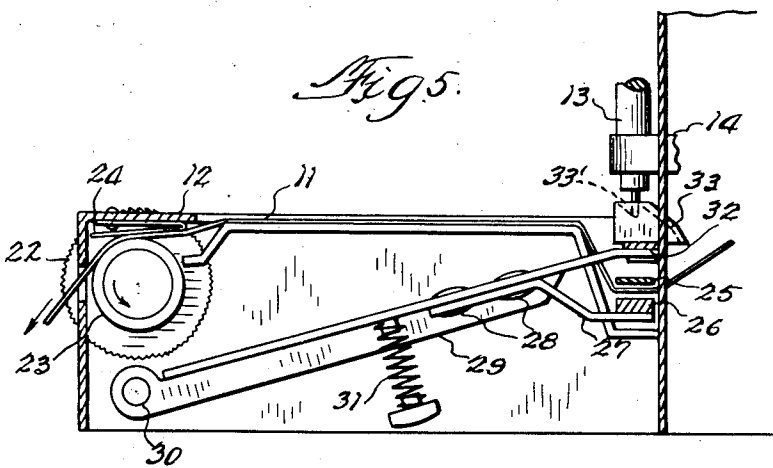
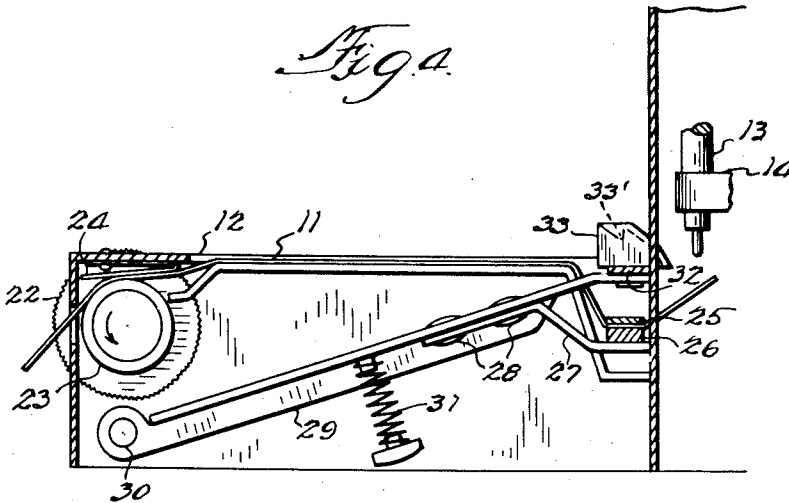
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2 SHEETS—SHEET 2



UNITED STATES PATENT OFFICE

2,618,704

PAPER FEED SIGNAL CONTROL

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Application April 27, 1950, Serial No. 158,567

7 Claims. (Cl. 178—18)

1

This invention relates to paper feed signal control apparatus for an intelligence transmitting system, and more particularly to control apparatus for insuring that an adequate paper feed signal is generated at a transmitting station for transmission to a receiving station when paper is being fed at the transmitter. It is an object of the invention to provide improved control apparatus of this character.

Certain types of intelligence transmitting apparatus, of which a tele-autographic system is an example, require that paper or some form of intelligence bearing medium be fed to the transmitting apparatus at the discretion of the operator, as for example, when the exposed portion of the paper has been filled with writing. When fresh paper is fed to the transmitting apparatus, it is imperative that paper also be fed to the receiving apparatus since otherwise a second message would be superimposed over the first message at the receiving station.

In tele-autographic apparatus such as that disclosed and claimed in the application of Robert Adler, Serial No. 81,709, filed March 16, 1949, now Patent No. 2,583,720, dated January 29, 1952, assigned to the same assignee as the present invention, and entitled "Follow-Up Apparatus and Systems," a paper feed signal may be caused by movement of the transmitter stylus to a designated position beyond the normal boundaries of the writing surface. Where two permanent stations are employed and it is desired that operation be as nearly fully automatic as practical, the signal resulting from such extreme movement of the stylus may be made to cause the feeding of paper at both the transmitting station and the receiving station. Apparatus for accomplishing such automatic paper feeding at both the transmitting station and the receiving station is disclosed and claimed in application Serial No. 166,415, entitled Paper Feed Control Apparatus, filed June 6, 1950 by Thomas I. Ress and assigned to the same assignee as the present invention. The present invention, however, is intended primarily for apparatus including a portable transmitting station in which certain features of automatic operation are omitted in the interest of lighter weight and smaller size of the transmitting apparatus.

One of the automatic features which may readily be omitted, without substantial inconvenience to the operator, is the automatic paper feed. A problem which arises in such case is to insure the transmission of a paper feed signal to the automatically controlled paper feed apparatus of the receiving station when the operator at the transmitting station manually feeds fresh paper to the transmitting apparatus.

2

Accordingly, it is another object of the invention to provide means associated with the transmitting station of an intelligence communicating system which assures generation of an adequate paper feed signal for transmission to a receiving station, where the paper feed apparatus for the transmitting station is manually operated.

In the preferred embodiment of the invention, paper feeding at the transmitting station is accomplished by impositive drive means including a roller which contacts the paper and is arranged to exert a definite predetermined force upon such paper. A spring-loaded brake normally contacts the paper at another point, and when this brake is in its normal position the braking force exerted thereby exceeds the force which may be applied to said paper by the roller. Accordingly, paper cannot be fed by rotation of the roller when the brake is in its normal position.

A brake release device is provided which is actuated by contact of the transmitter stylus therewith. In order to bring about the necessary contact between the stylus and the brake release device to release the paper for feeding, it is necessary to move the stylus into a position outside the normal boundaries of the writing surface and into a zone which causes the generation of a signal, the signal in turn causing the automatic feeding of paper at the receiving station. The use of such control apparatus assures that the stylus will be well within a prescribed area which results in the generation of such paper feed signal each time that paper is fed at the transmitting station. It also assures that the stylus will remain in such prescribed area for a sufficient length of time that the paper feed apparatus at the receiving station can respond to the generated signal.

Accordingly, it is another object of the invention to provide paper feed control apparatus for an intelligence communicating system which prevents the manual feeding of paper at the transmitting station except when the transmitter stylus is moved to such a position as to cause the generation of an adequate paper feed signal for transmission to the receiving station of the system.

This invention, together with further objects and advantages thereof, will best be understood by reference to the following description taken in connection with the accompanying drawings, and its scope will be pointed out in the appended claims.

In the drawings, in which like parts are designated by like reference numerals:

Figure 1 is a schematic plan view, partially in block form, of tele-autographic apparatus incorporating one embodiment of the invention;

3

Fig. 2 is a fragmentary perspective view of the transmitting station shown in Fig. 1;

Fig. 3 is a detailed plan view of a portion of the apparatus shown in Figs. 1 and 2;

Fig. 4 is an enlarged cross-sectional elevational view of the same transmitting apparatus taken along the line 4—4 of Fig. 2;

Fig. 5 is a cross-sectional elevational view the same as Fig. 4 but showing the apparatus in a different operating position.

The tele-autographic apparatus shown in Fig. 1 includes a transmitting station T and a receiving station R. At the transmitting station is a writing space 11 which may be a part of a long roll of paper. While paper is disclosed herein as the intelligence bearing medium, other mediums may be employed without departing from the scope of the invention as long as the medium used may be fed intermittently to the communication apparatus. Where the word "paper" is used herein it to be interpreted as including any and all suitable mediums.

The exposed portion of the paper forming the writing surface 11 is held in place by a framework 12, and a writing head or stylus 13 is arranged for movement to any point within the area encompassed by the framework. The stylus is mounted on an arm 14 which forms a part of a parallel linkage arrangement generally designated 15 which serves to transmit physical signals to electrical apparatus designated 16, these signals corresponding to the position of the stylus 13 on the writing surface 11.

The illustrated and preferred form of the parallel linkage system 15 is in accordance with that disclosed and claimed in the application of Robert Adler, Serial No. 85,236, filed April 2, 1949, now Patent No. 2,583,535, dated January 29, 1952, assigned to the same assignee as the present invention, and entitled "Translating Apparatus and Follow-Up Systems." The apparatus for converting the physical signals transmitted by the linkage system 15 to electric signals for transmission to the receiver station may be of any suitable form, but is preferably in accordance with the apparatus disclosed and claimed in application Serial No. 81,709 referred to above. Since the linkage system and the basic apparatus and circuits of the tele-autographic system may be conventional and are disclosed in one form in the two applications referred to above, they will not be discussed in detail herein.

The individual links of the linkage system are pivotally connected to each other at the various joints and the entire linkage is supported on fixed pivots lying along the indicated axis 15'. With the linkage supported in this manner the main body of the stylus or writing head 13 is maintained at a substantially fixed level above the writing surface.

The electric signals from the apparatus designated 16 are carried over a transmission line 17 to receiver apparatus designated 18, which in turn drives a linkage system 19 at the receiving station and causes a writing head or stylus 20 to move across a writing surface 21 and trace thereon the same markings applied to the transmitter writing surface 11 by the transmitter stylus 13.

In the particular form of the apparatus shown in the drawings, the transmitting station T is a portable unit in which certain automatic operations which would normally be included in a permanent station have been omitted in the interest of making the apparatus as light and

4

as small as possible. One of the automatic operations which might normally be available but which has been omitted in this instance is automatic paper feeding. In the portable transmitting apparatus shown, the paper is fed by manual operation of a knurled or grooved wheel 22. As may best be seen in Figs. 4 and 5, the wheel 22 has connected thereto a roller 23, the outer layer of which is preferably rubber or other material which has a large coefficient of friction. The wheel and roller combination is rotatably mounted in suitable fixed bearings, not shown in the drawings.

The paper passes over the roller 23 and is forced thereagainst by a leaf spring 24 which is secured to the undersurface of the structure 12. The spring 24 forces the paper against the roller 23, thereby assuring substantial friction between the roller 23 and the paper.

A braking system, best seen in Figs. 4 and 5, normally holds the paper with sufficient force to prevent movement of the paper by the wheel 22 and the roller 23. This apparatus includes a fixedly positioned bar 25 which is secured to the structure 12 by any suitable means, not shown in the drawings, and preferably extends over the entire width of the paper in order that a substantial braking force may readily be obtained.

Located immediately below the bar 25 is a brake pad 26 which preferably extends over the entire width of the paper. This pad is supported by a pair of brackets 27, one at each end of the brake pad 26. The brackets 27 are in turn secured by rivets 28 or the like to a pair of arms 29 pivotally mounted on a shaft 30.

A pair of springs 31 is employed to urge the pivoted arms upwardly thereby urging the brake pad 26 against the paper which passes between the brake pad and the fixed bar 25, as shown in Figs. 4 and 5. The force applied by the springs 31 against the brake pad 26 through the arms 29 and the brackets 27, and the coefficient of friction of the brake pad 26 and the fixed bar 25 are so chosen that friction between the paper and this braking apparatus exceeds that between the paper and the roller 23. Accordingly, when the brake pad is in its normal or braking position, the paper cannot be advanced by rotation of the wheel 22 and the roller 23.

Connected between the right-hand ends of the pivoted arms 29, as shown in Figs. 4 and 5, is a strap 32, which may also be seen in Fig. 2. Mounted on the strap 32 at any desired point is a wedge block 33 having a sloping rearward surface, as shown. The stylus 13 may be moved to the rear of the wedge block, as suggested by the dotted arrow in Figs. 2 and 3, and forwardly over the sloping rearward surface of the wedge block 33. Since the stylus is maintained at a substantially constant level, as stated above, this causes depression of the wedge block and the arms 29 against the action of the springs 31.

On the upper surface of the wedge block there is a V-shaped groove 33' for receiving the tip of the stylus 13. It will now be apparent that if the stylus 13 is moved around the wedge block 33 to the rear thereof and then forwardly, the pressure of the stylus against the wedge block will release the braking action of the brake pad 26 and this condition may be maintained for an indefinite period by engagement of the stylus with the V-shaped groove 33'. Accordingly with the stylus 13 so positioned, the paper can be advanced by rotation of the wheel 22.

As is explained in applications Serial Nos.

81,709 and 85,236, referred to above, movement of the transmitter stylus 13 along the indicated axis, as seen in Fig. 1, causes the generation of a signal resulting in a corresponding movement of the receiver stylus 20 along the indicated X axis. Similarly, movement of the transmitter stylus 13 along the indicated Y axis, as viewed in Fig. 1, causes the generation of a signal resulting in movement of the receiver stylus 20 along the indicated Y axis. However, when the transmitter stylus 13 moves beyond the upper boundary of the writing surface, as viewed in Fig. 1, the nature of the Y signal may be so altered (for example, by change of frequency) that the receiver apparatus distinguishes this signal and causes operation of the automatic paper feed at the receiver station. The area in which the stylus 13 must be located to produce this paper feed signal may be the shaded area W, shown in Fig. 3.

The paper feed signal referred to immediately above might in the broadest sense be, for example, a simple visual or audible signal energized by a switch which is in turn actuated by movement of the stylus into the shaded area W, the operator at the receiving station being required to feed paper manually when such signal is received. Preferably, however, paper feeding at the receiving station is automatic, and one form of apparatus for producing such automatic feeding upon movement of the stylus into the shaded area is disclosed and claimed in application Serial No. 166,415 referred to above.

As more particularly described in the application Serial No. 166,415, when the transmitting stylus 13 is moved into the area W, the receiving stylus is moved into a corresponding area W'. This movement can cause automatic paper feeding to take place.

Thus in Fig. 1, when the stylus 20 is moved into the area W', due to corresponding movement, first, by stylus 13, the end of arm 14' engages the push button 40, which energizes suitable apparatus including a motor shown schematically by the rectangle 41. Energization of the apparatus 41 drives a pulley 42 by means of a chain, belt or the like, shown schematically by the broken line 43, the pulley being part of the roll upon which the paper 44 is wound. The operation described should take place due to the ordinary operation of signal-generating apparatus 16. However, to insure that an adequate paper feed signal is generated, the end of arm 14 is adapted to engage a push button switch, or the like, 45 when the transmitting stylus 13 moves into the area W. A closure of the contacts by the switch 45 completes a circuit by means of conductors 46 and 47 to the signal-generating apparatus 16. By this means an exaggerated movement signal is caused to be generated by the apparatus 16 and is transmitted to apparatus 18, where, in turn, the received exaggerated signal causes the arm 14' to move against the push button 40 with considerable vigor. In consequence, the apparatus 41 cannot fail to operate.

Other means for producing a suitable paper feed signal when the stylus is moved into the shaded area W will be apparent to those skilled in the art.

It will be apparent, then, that in order to bring the stylus 13 over the sloping rear surface of the wedge block 33 and into the V-shaped groove 33', and in order to release the braking apparatus and permit manual feeding of paper at the transmitter station, it is necessary to pass the stylus

through the zone W, and consequently a paper feed signal of substantial duration, for automatic operation of the paper feed apparatus at the receiving station, is assured. It will be noted in Fig. 3 that when the stylus is engaged in the groove 33', it lies outside the shaded area W and, accordingly, the paper feed signal is discontinued. This arrangement is preferred in order to avoid the continuous generation of the paper feed signal in the event that the transmitter stylus is allowed to remain in the groove 33' for a prolonged period of time.

After the manual feeding of paper at the transmitting station has been completed, the stylus is moved forward over the forward sloping surface of the V-shaped groove 33'. The stylus is then located within the normal boundaries of the writing surface and is in condition to transmit a further message, while the wedge block 33 is raised by the springs 31 and the brake pad 26 returns to its normal or braking position.

Thus it is seen that in communication apparatus incorporating the invention, proper operation of manual paper feeding apparatus at the transmitting station assures the generation of an adequate signal for initiating automatic paper feeding at the receiving station and eliminates the possibility of inadvertently feeding paper at the transmitting station without generating such a signal.

While a particular embodiment of the invention has been shown, it will be understood, of course, that the invention is not limited thereto since many modifications may be made, and it is, therefore, contemplated to cover by the appended claims any such modifications as fall within the true spirit and scope of the invention. The invention having thus been described, what is claimed and desired to be secured by Letters Patent is:

1. In an intelligence communicating system including a transmitting station and a receiving station, automatic means at such receiving station for intermittently advancing an intelligence bearing medium thereat, and means located at such transmitting station for generating a signal to which such automatic means is responsive; manually operable impositive drive means at such transmitting station for advancing such intelligence bearing medium thereat, brake means normally preventing advancement of such medium by said drive means, and means associated with said signal generating means for releasing said brake means only after said signal generating means has generated a signal for actuating said automatic means at said receiving station.

2. In an intelligence communicating system including a transmitting station and a receiving station, automatic means at such receiving station for intermittently advancing a strip of intelligence bearing medium thereat, and means located at such transmitting station for generating a signal to which such automatic means is responsive; manually operable friction drive means at such transmitting station for advancing such intelligence bearing medium thereat, brake means normally preventing advancement of such medium by said drive means, and means associated with said signal generating means for releasing said brake means only after said signal generating means has generated a signal for actuating said automatic means at said receiving station.

3. In an intelligence communicating system including a transmitting station and a receiving

station, automatic means at such receiving station for intermittently advancing an intelligence recording strip of paper thereat, and means for generating at such transmitting station for transmission to such receiving station a signal to which such automatic means is responsive; manually operable friction drive means at such transmitting station for advancing such strip of paper thereat, releasable brake means for restraining such strip of paper from movement by said drive means, spring means urging said brake means into paper restraining position, and means associated with said signal generating means for mechanically releasing said brake means against the action of said spring means only after said signal generating means has generated a signal for actuating said automatic means at said receiving station.

4. In a tele-autographic system including a transmitting station and a receiving station, a writing surface of defined area at each of said stations, automatic means for intermittently advancing an intelligence recording medium over said writing surface at said receiving station, a stylus at each of said stations, said styluses being electrically interconnected whereby the movements of the transmitter stylus are automatically traced by the receiver stylus, and means located at said transmitting station for generating a signal to which said automatic advancing means at said receiving station is responsive, said signal generating means being actuatable by movement of said transmitter stylus to any point within a predetermined area outside the defined area of the associated one of said writing surfaces; manually operable impositive drive means at said transmitting station for advancing an intelligence recording medium over said writing surface thereat, brake means normally preventing advancement of said last-mentioned medium by said drive means, and a brake release device actuatable by said transmitter stylus only when said stylus is moved toward said device through said predetermined area.

5. In a tele-autographic system including a transmitting station and a receiving station, a writing surface of defined area at each of said stations, automatic means for intermittently advancing an intelligence recording paper strip over said writing surface at said receiving station, a stylus at each of said stations, said styluses being electrically interconnected whereby the movements of the transmitter stylus are automatically traced by the receiver stylus, and means located at said transmitting station for generating a signal to which said paper advancing means at said receiving station is responsive, said signal generating means being actuatable by movement of said transmitter stylus to any point within a predetermined area outside the defined area of the associated one of said writing surfaces; manually operable impositive drive means at said transmitting station for advancing an intelligence recording paper strip over said writing surface thereat, brake means normally preventing advancement of said last-mentioned paper strip by said drive means, and a brake release device including a cam having one sloping surface, said device being actuatable by said stylus only when said stylus is moved over said sloping surface, said sloping surface lying at least closely adjacent said predetermined area whereby said stylus can be brought to said sloping surface only after movement through said predetermined area.

6. In a tele-autographic system including a transmitting station and a receiving station, a writing surface of defined area at each of said stations, automatic means for intermittently advancing an intelligence recording paper strip over said writing surface at said receiving station, a stylus at each of said stations, said styluses being electrically interconnected whereby the movements of the transmitter stylus are automatically traced by the receiver stylus, and means located at said transmitting station for generating a signal to which said paper advancing means at said receiving station is responsive, said signal generating means being actuatable by movement of said transmitter stylus to any point within a predetermined area outside the defined area of the associated one of said writing surfaces; manually operable impositive drive means at said transmitting station for advancing an intelligence recording paper strip over the writing surface thereat, brake means normally preventing advancement of said last-mentioned paper strip by said drive means, and a brake release device including a cam having one sloping surface, said device being actuatable by said stylus only when said stylus is moved over said sloping surface, said sloping surface lying at least partially within said predetermined area whereby said stylus can be brought to said sloping surface only after movement through said predetermined area.

7. In a tele-autographic system including a transmitting station and a receiving station, a writing surface of defined area at each of said stations, automatic means for intermittently advancing an intelligence recording paper strip over said writing surface at said receiving station, a stylus at each of said stations, said styluses being electrically interconnected whereby the movements of the transmitter stylus are automatically traced by the receiver stylus, and means located at said transmitting station for generating a signal to which said paper advancing means at said receiving station is responsive, said signal generating means being actuatable by movement of said transmitter stylus to any point within a predetermined area outside the defined area of the associated one of said writing surfaces; manually operable impositive drive means at said transmitting station for advancing an intelligence recording paper strip over said writing surface thereat, brake means normally preventing advancement of said last-mentioned paper strip by said drive means, and a brake release device including a cam having one sloping surface, said device being actuatable by said stylus only when said stylus is moved over said sloping surface, said sloping surface lying at least partially within said predetermined area whereby said stylus can be brought to said sloping surface only after movement through said predetermined area, said cam also having a stylus-engaging recess, said recess lying outside said predetermined area.

THOMAS I. RESS.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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2,415,718	Wilson et al.	Feb. 11, 1947