Dec. 1, 1931. J. A. SMALE 1,834,076

TELEGRAPH INSTRUMENT

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Fig. 1

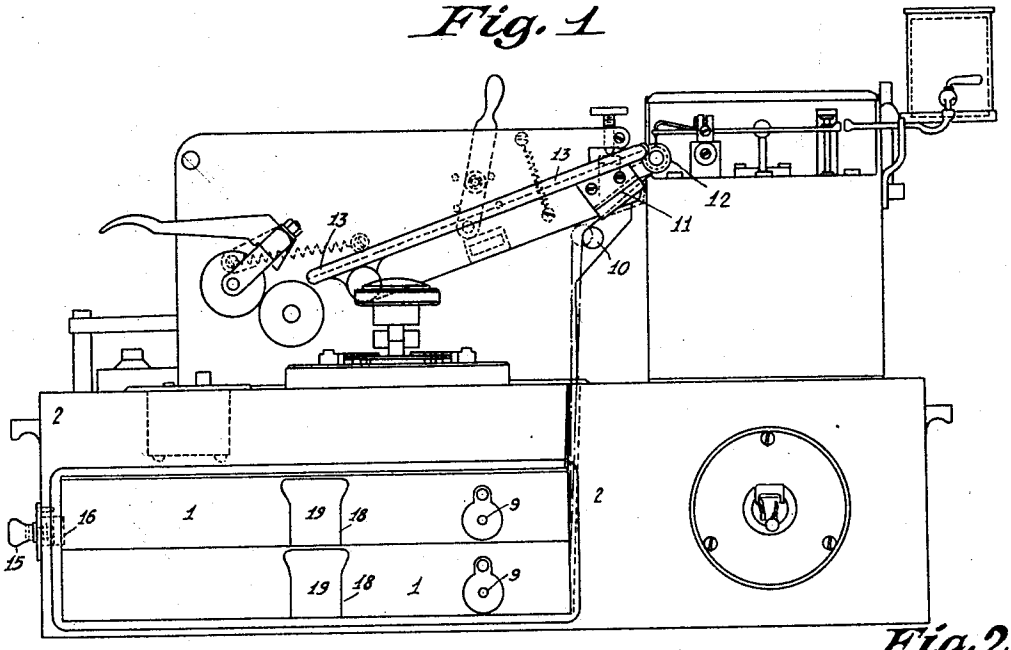
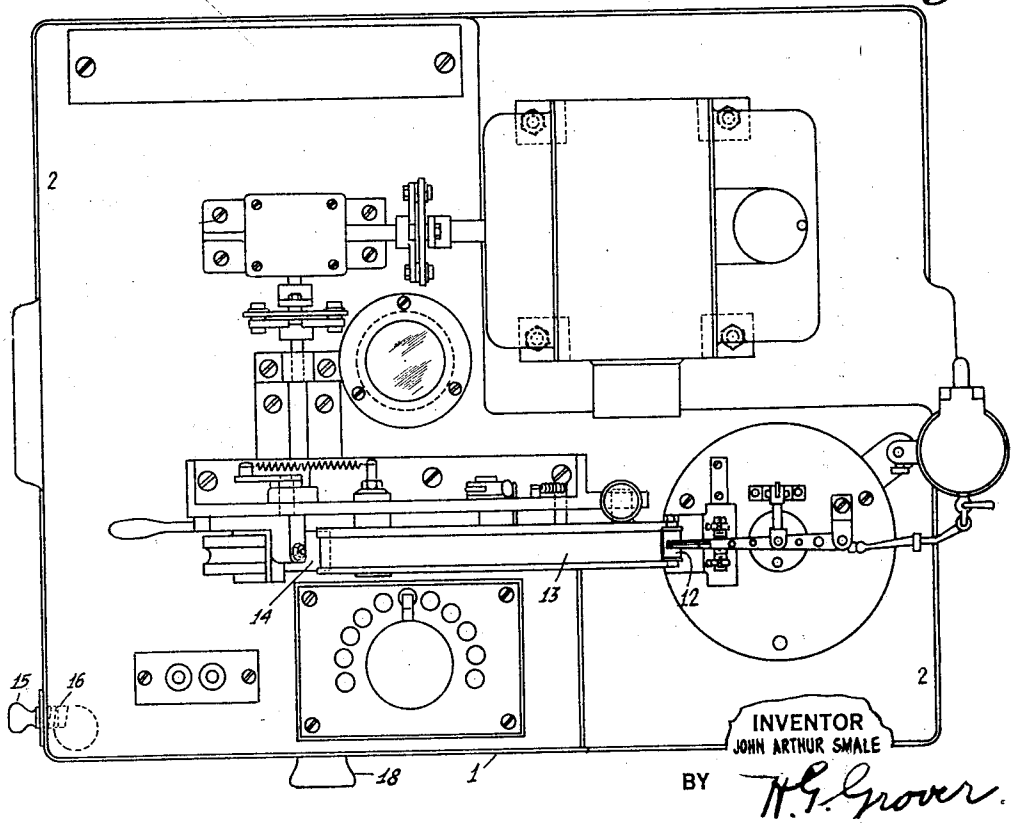



Fig. 2




INVENTOR
JOHN ARTHUR SMALE
BY H. G. Grover.
ATTORNEY

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Fig. 3

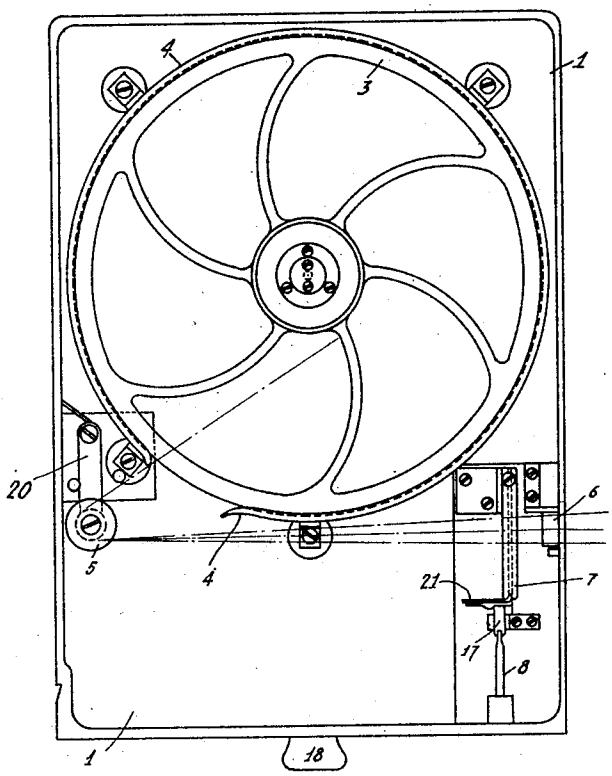



Fig. 4

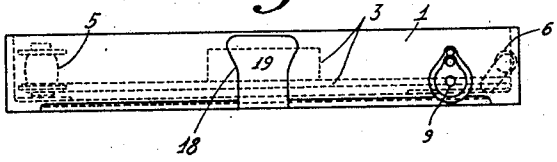



Fig. 5

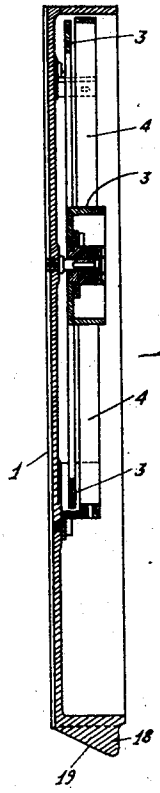
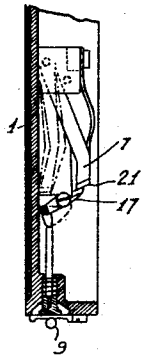



Fig. 6




INVENTOR
JOHN ARTHUR SMALE
BY
ATTORNEY

Patented Dec. 1, 1931

1,834,076

# UNITED STATES PATENT OFFICE

JOHN ARTHUR SMALE, OF BRENTWOOD, ENGLAND, ASSIGNOR TO RADIO CORPORATION OF AMERICA, A CORPORATION OF DELAWARE

## TELEGRAPH INSTRUMENT

Application filed February 17, 1930, Serial No. 428,875, and in Great Britain February 25, 1929.

This invention relates to telegraph instruments, and more particularly to telegraph instruments such as undulators in which signals are inscribed upon a tape or slip. Such tape or slip is generally in the form of rolls. In most known telegraph instruments, and more particularly in undulators (in which the writing point does not leave the writing surface), it is necessary to stop the instrument when one roll has been used, in order to insert a new roll. The present invention has for its principal object to obviate this disadvantage and to provide a telegraph instrument capable of operating continuously.

According to this invention a telegraph instrument comprises two magazines for retaining paper slip or the like, one above the other, the arrangement being such that when the lower magazine (from which paper or the like is normally fed) is removed, the upper falls into the place previously occupied by said lower magazine.

In one form of construction an undulator which, as regards its general arrangement, may be of any known kind, is provided in its base with two similar drawers, each adapted to retain a roll of paper tape. These drawers are arranged one above the other, in such manner that when the lower drawer is pulled out, i. e. removed, the upper falls into the lower position. Means are provided for preventing the drawer in the upper position from being pulled out and for preventing said drawer from falling too suddenly when the drawer in the lower position is removed. The writing platform, i. e. the part at which signal inscription occurs, is constituted by a roller, a flat platform or guide extending from said roller (the writing roller, as it is commonly termed) to the pulling roller, i. e. the roller which frictionally engages the strip or tape and pulls it through the machine.

In use the slip is normally fed to the machine from the bottom drawer, a fresh roll being inserted in the top drawer. When the roll being used is nearing exhaustion (an occurrence which is generally indicated by suitable marking on the strip) the end of the paper from the roll in the top drawer is pushed under the writing roller under the slip passing out of the bottom drawer, and is dragged along by said slip until it reaches the pulling roller which then proceeds to pull both slips. After the free end of the exhausted roll has passed the writing point the bottom drawer is pulled out, and the top drawer falls into the position said bottom drawer occupied. A new roll of slip may now be placed in the said bottom drawer, which is ready to be pushed into the machine in the position previously occupied by the top drawer.

In cases where the inner end of a roll of slip is gummed to a cardboard centre, it is, of course, necessary to break the said slip before the roll is completely exhausted and the said slip pulled taut. This may be done by hand, or preferably by means of a small guillotine located one in each drawer and adapted to cut the slip without exerting drag thereon. Alternatively, a single guillotine may be fixed in the base to operate in the lower position only.

The invention is illustrated in the accompanying drawings which show one form of construction in accordance with the said invention.

In the drawings Figure 1 is a schematic elevation and Figure 2 a plan of a high speed undulator embodying the invention; Figure 3 is a plan, Figure 4 a side elevation, and Figure 5 is a section of one of the drawers incorporated in the undulator, while Figure 6 shows in greater detail the guillotine mechanism contained in each of the drawers.

Referring to the drawings the undulator is provided with two cast metal drawers 1, mounted one above the other in the cast metal base 2 of the undulator and each carrying a tape wheel 3, a tape guard 4, pulleys 5 and 6 for guiding the tape and a guillotine 7 operated by a push rod 8 from a button 9.

The base 2 is slotted at an angle to the vertical at the place at which the tape is led through, so that said tape in passing from the bottom drawer to a guide roller 10 clears the top drawer.

11 is a guide chute, 12 a writing roller, 13 a guide trough, and 14 a pulling wheel, the tape in use travelling out of the bottom draw-

ers, over the guide roller 10 and then past the parts 11, 12, 13 and 14 in succession.

The roll of tape in the drawer shown in the upper position acts as a replacement for that in the lower position when said lower roll is nearing exhaustion. A spring catch 15 co-operating with a notch 16 in the drawer serves to prevent the accidental withdrawal of a drawer when in the upper position.

When the tape in the lower drawer is nearing exhaustion (an occurrence generally indicated by markings on the tape) that from the upper drawer is fed over the roller 10 through the chute 11 until it engages between the writing roller 12 and the running tape (i. e. that from the lower drawer) which being in tension, frictionally engages the new tape and pulls it along through the chute 13 to the pulling roller 14. When the new tape is feeding properly that from the lower drawer is cut by pressing the button 9 which releases the trigger 17 of the guillotine 7. The action of the guillotine is sufficiently rapid to prevent dragging of the tape and consequent distortion of the signal.

The lower drawer is now pulled out (the catch 15 preventing the upper drawer from following it) and the tape therein is replenished. When the lower drawer is pulled out the upper, of course, falls into the lower position. A rapid fall of the upper drawer and consequent drag upon the tape is prevented by the fact that the handles 18 of the drawers are so shaped that while the lower drawer is being withdrawn the back thereof slides over the inclined underside (19) of the handle of the upper drawer thus giving a gradual lowering effect. The possibility of drag on the tape is also guarded against by providing in each drawer a spring loaded arm on which is carried the guide roller 5.

When the lower drawer, which has now been removed, is refilled, the guillotine is reset by lifting the bar 21 and the said drawer is inserted in the top position.

Should the guillotine in a drawer in the top position be operated in error the drawer can be removed by releasing the spring catch 15 and the tape threading operation reperformed.

If desired the guillotines may be provided with inclined knives so as to cut the tape at an angle and if desired also the said guillotines may be arranged to be operated automatically when the drawers are withdrawn, i. e., the action of pulling out the lower drawer may operate the guillotine therein.

The remainder of the apparatus shown in the drawings is known per se and forms no part of the present invention.

It will be seen that with apparatus in accordance with this invention a continuous "feed" may be obtained, while the necessity for stopping the machine or removing the writing point from the slip is obviated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a telegraph instrument, a plurality of drawerlike magazines for retaining recording material positioned one above the other, the upper magazines being supported by the lower, and means when any one of said magazines is removed for slowly lowering each one of the magazines directly above to the position formerly occupied by the magazine next below.

2. In a telegraph instrument a plurality of closure members for retaining recording material arranged one above another, recording points, means for feeding recording material from the lowermost of said closure members adjacent said recording points and means cooperating with said lowermost member when said lowermost member is removed for lowering each of the other members to the position formerly occupied by the member next below.

3. In a telegraph instrument, a plurality of means for retaining recording material arranged one above another, recording means, means adjacent said recording means for feeding recording material from the lowermost one of said first named means to said recording means, means for lowering each of the upper retaining means to the position formerly occupied by the means next below when the recording material in said lowermost means is exhausted, and means on each of said retaining means and co-operating with the retaining means directly below it only when said means directly below is being removed for controlling the lowering action of itself and all the other of said first named means above it.

4. In combination with telegraphic means a plurality of magazines for retaining recording material arranged one above the other, recording devices, means for feeding recording material from the lowermost one of said magazines past said recording devices, means when said lowermost magazine is removed for lowering each one of the other magazines to the position formerly occupied by the magazine directly below it and means in each of said magazines for cutting off the recording material being fed therefrom.

5. A telegraph instrument comprising two drawerlike magazines each adapted to contain a roll of paper or the like, guide rolls or the like, for guiding said paper from said magazines and a guillotine for cutting said paper, said magazines being arranged one above the other, the arrangement being such that when the lower magazine from which paper or the like is normally fed is removed the upper falls into the place previously occupied by the lower, substantially as described.

6. An instrument as claimed in claim 5 and in which the guillotines are arranged to be operated automatically by withdrawing the appropriate drawer, substantially as described.

7. An instrument as claimed in claim 5 in which means are provided for preventing too sudden a fall of the upper magazine when the lower magazine is withdrawn.

8. An instrument as claimed in claim 5 in which the drawers are provided with handles having inclined undersides cooperating with the magazine being removed for preventing the upper magazine from falling abruptly.

9. An instrument as claimed in claim 5 and comprising a spring catch for preventing accidental withdrawal of the upper magazine, substantially as described.

JOHN ARTHUR SMALE.