April 8, 1947. T. L. CORWIN 2,418,464

WEB CONTROLLED INDICATOR

Filed Aug. 26, 1942

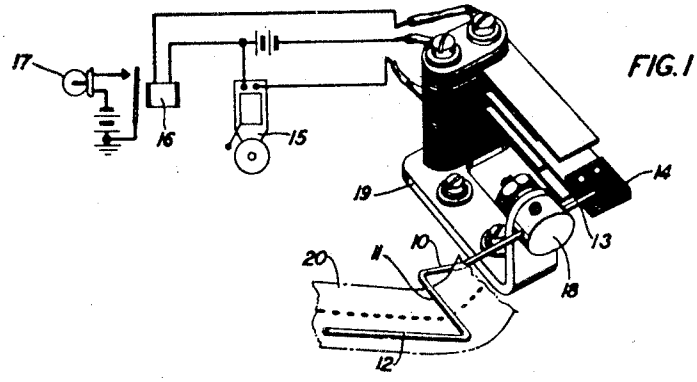


FIG. 1

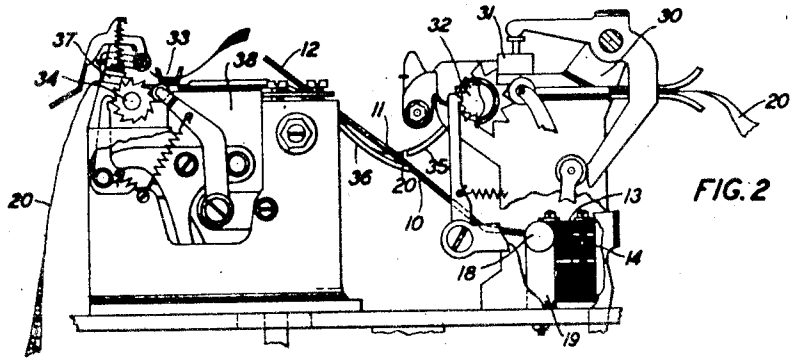


FIG. 2

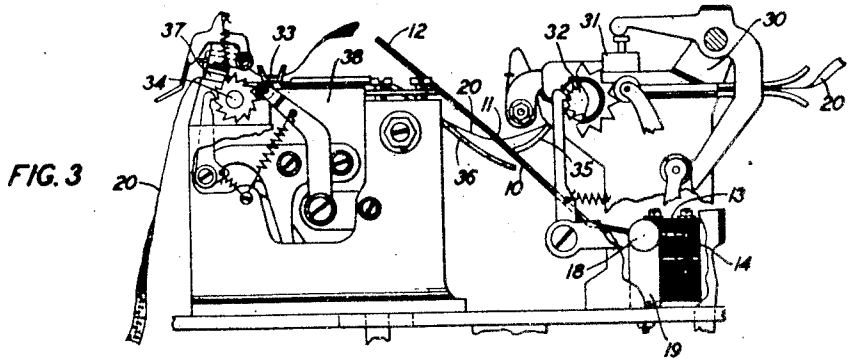


FIG. 3

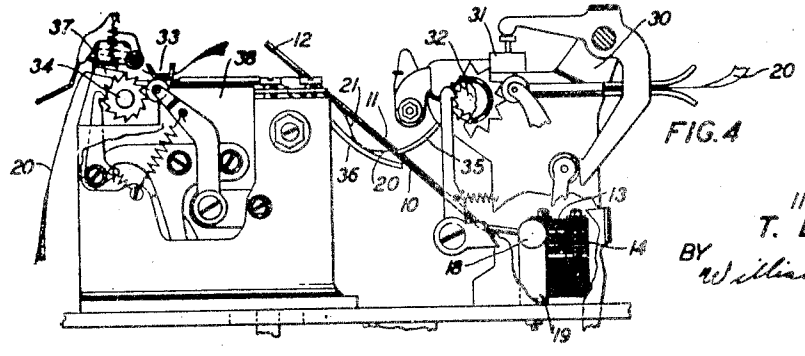


FIG. 4

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WEB CONTROLLED INDICATOR

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Application August 26, 1942, Serial No. 456,206

5 Claims. (Cl. 177—311)

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This invention relates to tape or stationery advancing apparatus and more particularly to telegraph apparatus in which some form of stationery, record medium, or tape passes through two or more tape advancing mechanisms or positions in its journey through the apparatus or equipment.

In accordance with this invention a contact and operating lever are arranged to cooperate with the stationery, record medium or tape in such a manner as to actuate a contact in the same manner either when the supply of record medium between two control points is reduced below a predetermined minimum quantity or when it exceeds a different predetermined maximum quantity.

In the past when it has been necessary or desirable to limit the quantity of tape or record medium between two points in a telegraph apparatus or system it has been necessary to provide at least two different sets of contacts or switching apparatus and control equipment therefor, or else operate the same apparatus or equipment in two different manners or to two different positions, one to determine when the supply of tape between the two points is reduced below a predetermined minimum and the other to determine when the supply of tape between these two points exceeds a predetermined maximum.

In accordance with the present invention the same contacts or switching device responds in the same manner to both a reduction in quantity of the tape between the two points in the mechanism or system and also to excess of the tape between these points.

The foregoing objects of this invention may be more readily understood by reference to the drawing which illustrates a typical embodiment of the invention as applied to a telegraph recording instrument. It is to be understood that this invention is not limited to the specific application of it to the typical recording instrument described herein but may be applied to other types of stationery or record-employing devices as will be well understood by those skilled in the art. The novel features of the invention are specifically set forth in the claims appended hereto.

Referring to the drawing:

Fig. 1 shows a perspective view of the contacts and control arrangement;

Fig. 2 shows the arrangement as applied to the typical recording instrument with the contact and control lever in the normal condition;

Fig. 3 shows the contact and control lever applied to the same recording instrument but actuated by a reduction in the supply of tape between the two fixed points; and

Fig. 4 shows the manner in which the control lever and contacts are actuated by excess of tape between the specified points.

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The specific embodiment of the invention shown in the drawings has been applied to a recording device described in greater detail in an application of Branson et al., Serial No. 448,878, filed June 27, 1942, the disclosure of which application is hereby made a part of the present specification as if fully included herein.

Figs. 2, 3 and 4 show the control arrangement in accordance with the present invention applied to the printing reperforator described in the above-identified copending application and show a portion of Fig. 92 of that application to which the contact and control arrangement in accordance with this invention have been applied.

Corresponding portions of each of the Figs. 1 through 4 have been designated by like reference characters in an effort to facilitate the understanding of this invention.

Referring now to Fig. 1, 14 represents an extension of switching apparatus represented by a transfer contact arrangement, that is, a contact provided with both a break contact and a make contact. With the contact member 14 at its normal position a circuit from battery is maintained through the winding of relay 16 for maintaining this relay energized.

In order to actuate the contacts, the contact control member 10 is rotated in a clockwise direction as viewed in Fig. 1. The end 13 of the control lever 10 will then move member 14 downward, interrupt the circuit through the winding of relay 16 and complete a circuit through the alarm device 15. The release of relay 16 will complete an obvious circuit for lighting the indicating lamp 17.

It is to be understood that any suitable type of indicator other than the alarm device 15 or lamp 17 may be employed and the indicators may be controlled either by closing or opening the circuit as may be desired in any specific instance as is well understood by those skilled in the art. Similarly, these contacts may be employed to open or close any other suitable circuit.

Control member 10 is supported in a pivot 18 free to rotate under control of the tape 20. The control member 10 is provided with an offset portion 11 which rests upon or above the tape and an extension arm 12 which also cooperates with tape 20 as will be described hereinafter. As pointed out above, extension 13 of control member 10 cooperates with the contact actuating member 14. The member 14 is preferably made of insulating material and attached to a movable member of the contacts or switching apparatus to be controlled.

As shown in Figs. 2, 3 and 4, this control device is attached to the printing reperforators disclosed in the above-identified copending application. As disclosed in said copending application, the tape or stationery 20 passes through

a feed-hole punch mechanism 30 having a feed-hole punch block 31 and a feeding mechanism 32. The tape then passes over guides 35 and 36 to a printing and code perforation apparatus shown generally at 38. The printing position is illustrated at 33 and the code perforation punch block indicated by reference numeral 37. A second tape feeding mechanism 34 is employed to advance the tape through the printing and code perforating positions in the recording instrument.

The control member 10 is mounted upon the base of this instrument in such a manner that both the offset portion 11 of control member 10 and extension 12 rest on or above the tape.

As shown in Fig. 2 the control members 10 and the tape 20 are shown in the normal position with the extension 12 of control member 10 resting upon guide 36. Generally the extension 12 of the control member rests upon this guide with the paper or tape 20 between the extension 12 and guide 36.

It sometimes happens that for some reason or other one or the other of the feed mechanisms fails to properly advance the tape 20 through the recording mechanism so that the supply of tape 20 between the feed-hole perforating mechanism 30 and the message recording mechanism 38 either becomes reduced below a predetermined minimum or else exceeds some predetermined maximum quantity.

If the supply of tape 20 is interfered with, the feed mechanism 32 will generally tear the tape between the feed holes. This will interfere with the normal advancing of the tape through the feed-hole perforating mechanism 31 and inasmuch as the feed mechanism 34 will continue to operate under normal conditions the supply of tape between the feed punch in block 31 and the code punch block 37 will be reduced. This condition is shown in Fig. 3. The reduction of tape between these two positions in the machine will cause the control member 10 to rotate in a clockwise direction about pivot 18 due to the tape engaging the offset portion 11 of control member 10 and lifting this portion. The rotation of member 10 in a clockwise direction will cause the extension 13 to engage the contact actuating member 14 and actuate the switching apparatus to cause the contacts to open or close, or both, as shown in Fig. 1. The operation of the contacts causes alarm device 15 to be actuated or lamp 17 to be lighted or any other suitable indicating device actuated to attract the attention of an attendant or operator. The attendant or operator will then cure the difficulty at which time the member 10 will rotate in a counter-clockwise direction to its normal position and restore the alarm, indicating circuits or switching circuits to their idle condition.

If the tape 20 becomes stuck in passing through the recording or perforating apparatus 38 instead of during the passage through the perforating mechanisms 30 as described above, an excess of tape will accumulate between the feed-hole perforating mechanism and the message recording mechanism as shown in Fig. 4. When this occurs the tape will bulge and form a loop due to the action of member 10 and guides 35 and 36 as shown at 21 due to the action of the guide members 35 and 36. The bulge 21 will engage the extension 12 of the control member 10 and again rotate this member in a clockwise direction and cause the contacts controlled by member 14 to be actuated in the same manner as when the supply of tape between the feed-hole punch position and the recording position was reduced to a predetermined minimum quantity.

Thus the contacts controlled by member 14 are actuated in the same manner both by reduction in the normal amount of tape between these two points and by an excess of tape between them.

What is claimed is:

1. In tape-employing teletypewriter apparatus, a flexible tape supplied by one mechanism to pass through another mechanism, a single tape controlled element mechanically engaging and actuated directly by pressure of a loop of tape between said mechanisms and an electrical contact operated by said single element in such a manner that the contact is actuated in the same direction by too much slack or too little slack in the tape.

2. A stationery supply system comprising two different stationery advancing mechanisms, an indicating device, contacts for controlling said indicating device, and a single member touching and mechanically moved by said stationery between said advancing mechanisms for actuating said contacts when the stationery between said mechanisms is reduced below a predetermined amount and for actuating said contacts in the same manner when the stationery between said mechanisms exceeds a predetermined amount.

3. In combination web feeding apparatus comprising a first web advancing device, a second web advancing device, web guides between said devices, and a single control member engaging said web as it passes over said guides and actuated in the same direction by direct pressure between said single control member and said web both when the supply of web between said devices is either reduced or increased from a predetermined quantity.

4. A first tape advancing means, a second tape advancing means, a single control element engaging the tape between said means and actuated in one manner by a reduction in the tape between said means, and tape guides between said means for cooperating with said control element and the tape to form a loop in the tape to actuate said control element in the same manner by an increase in the tape between said means.

5. In combination with two different apparatus through which a flexible web proceeds in succession, a control element having a normal position, a single operating element touching and mechanically operable directly by said web to operate said control element, and interconnections between said operating element and web whereby said operating element moves said control element away from said normal position in the same manner or direction in response to the existence of either too much or too little web between said two apparatus.

THOMAS L. CORWIN.

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