

Aug. 23, 1927.

S. A. NEIDICH

1,639,746

INK RIBBON STOP MECHANISM

Filed Aug. 6, 1925

2 Sheets-Sheet 1

FIG. I

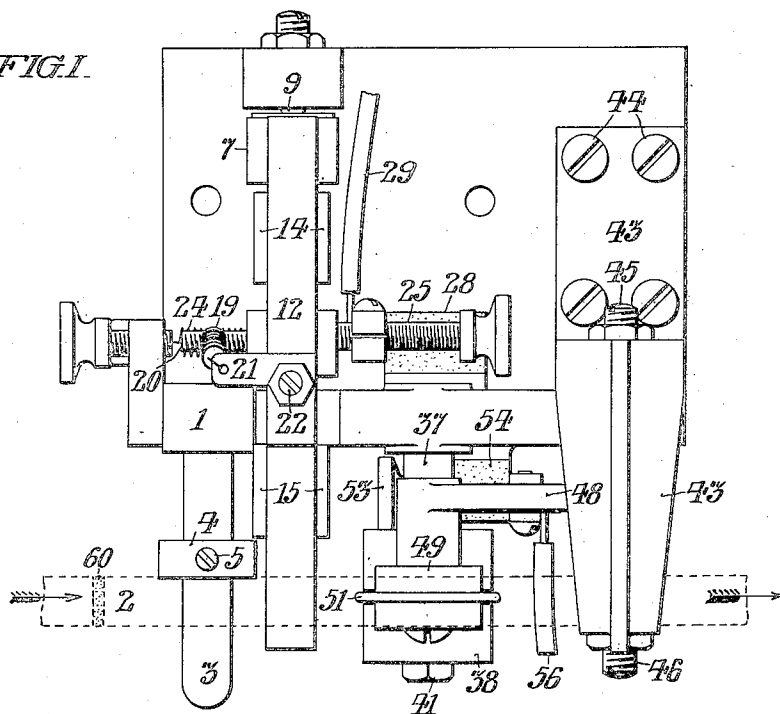
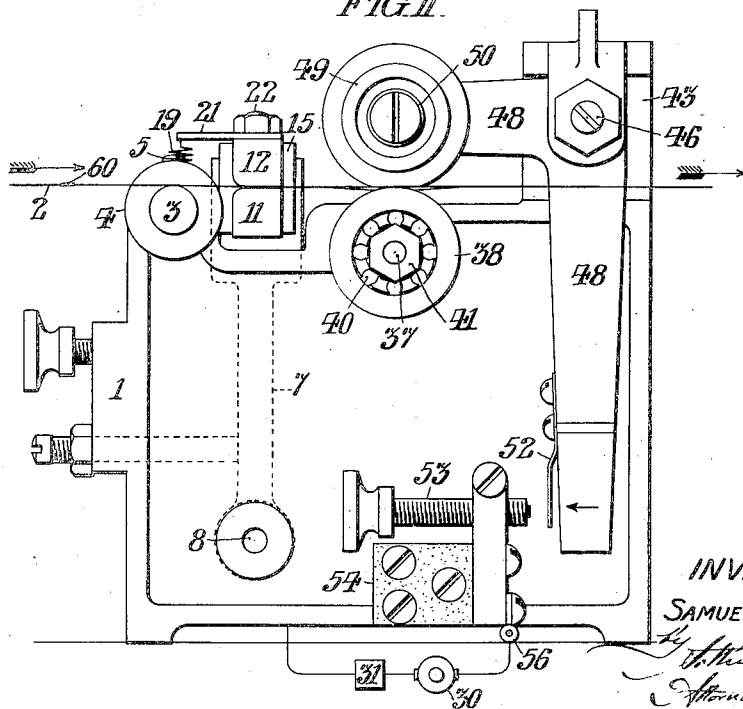


FIG. II



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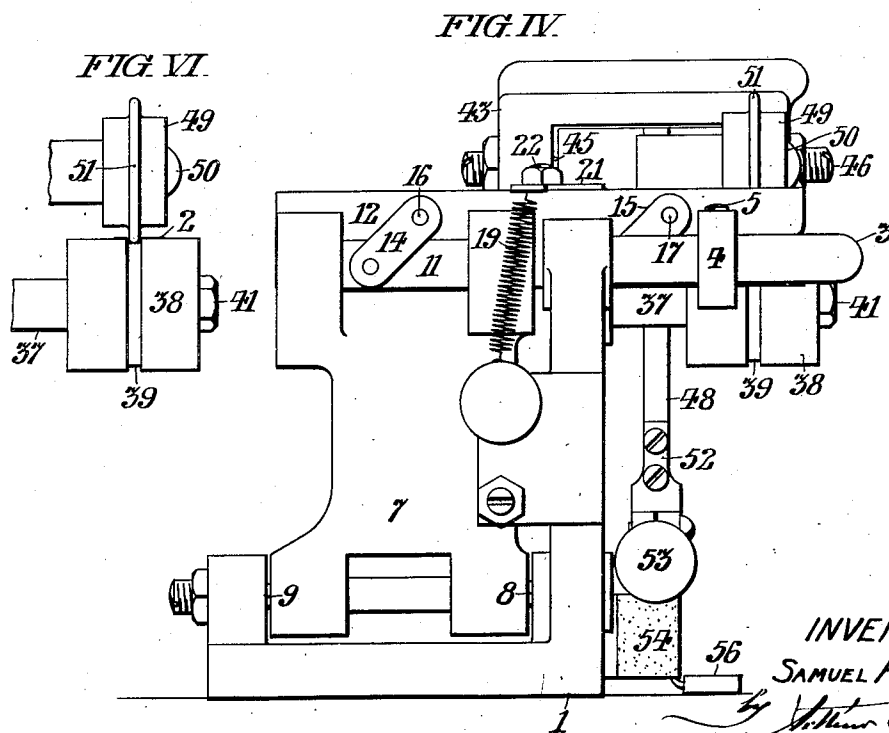
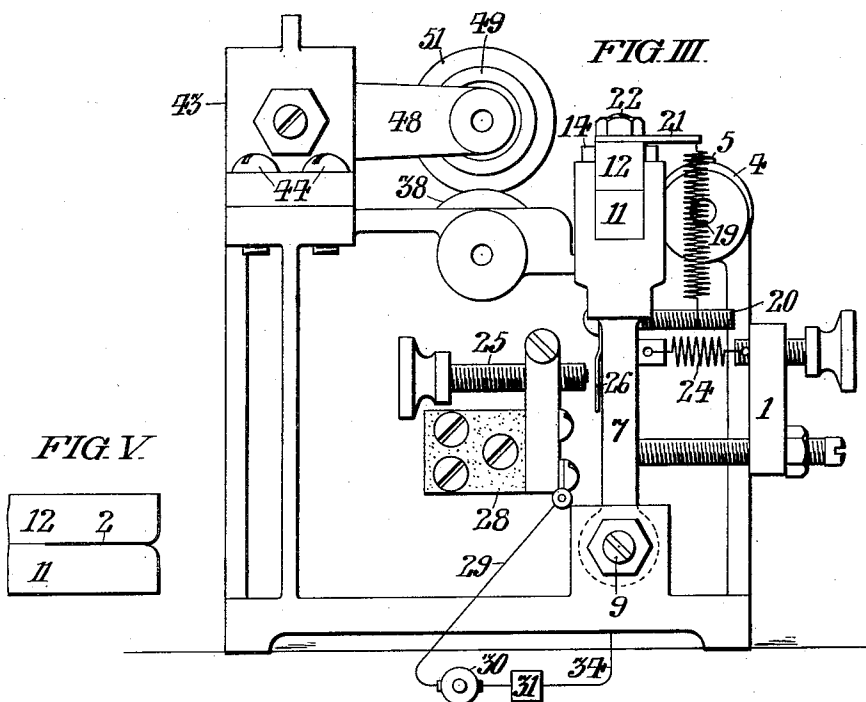
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INK RIBBON STOP MECHANISM

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

SAMUEL A. NEIDICH, OF EDGEWATER PARK, NEW JERSEY.

INK-RIBBON STOP MECHANISM.

Application filed August 6, 1925. Serial No. 48,686.

It is an object and effect of my invention to detect any defect or modification in the normal texture of ink ribbons formed of strips of textile fabric and particularly of the narrow form used in typewriting machines, and during the operation of winding the same on individual spools, and to indicate when each proper length has been wound.

Such ribbons are cut from textile fabric woven one yard wide and folded, alternately back and forth, at one yard intervals. I paint a stripe, with shellac or glue, across such fabric at intervals of the length of ribbons desired; say twelve yards, and slit the fabric, lengthwise, to form the ribbons, say one half inch wide, and each thus including such cross marks, which, incidentally, render the fabric abnormally stiff and thick.

The defects include joints between primarily separate lengths of fabric, curly and raveled edges, knots and holes; the latter having curled edges, and, ordinarily, detection thereof depends upon the eyes or fingers of the operators. However, I find that all such defects and marks increase the normal thickness of the fabric, and I take advantage of that fact to effect the automatic operation of my invention.

In the form of my invention hereinafter described; I provide two distinct but cooperatively related couples, respectively a pair of parallel finger bars and a pair of parallel rollers, between which such a ribbon is directed, so that passage of any abnormal portion of such ribbon with respect to said couples is effective to operate an electric switch to stop the traverse of the ribbon and thus permit the operator to cut it, and eliminate the defective portion thereof, and to make each ribbon of the proper length. In that form of my invention; said switches are arranged to close an electric circuit including a tripping device arranged to stop the motor whereby the ribbon is progressed.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In said drawings: Fig. I is a plan view of a mechanism embodying my invention.

Fig. II is an elevation of the right hand side of said mechanism.

Fig. III is an elevation of the left hand side of said mechanism.

Fig. IV is a front elevation of said mechanism.

Fig. V is a fragmentary front elevation of said parallel finger bars.

Fig. VI is a fragmentary elevation of said parallel rollers.

In said figures; the base frame 1 is provided with an adjustable guide for the ribbon 2, comprising the horizontally extending cylindrical stud 3 fixed in and projecting from said frame 1, and the collar 4 which is axially adjustable on said stud and provided with the set screw 5 by which it may be secured in any desired position of adjustment in accordance with the width of the ribbon 2 which is to be tested. The swing frame 7 is pivoted at its lower end in said base frame 1 between the cone pointed bearings 8 and 9 and carries the finger bar 11 at its upper end extending parallel with said guide stud 3. A second finger bar, 12, extends parallel with said first bar 11 and above the latter, as best shown in Figs. II and IV, and said bars are operatively connected, so that the upper bar 12 may be raised and lowered in parallel relation with the lower one, by means including two pairs of links 14 and 15 pivotally connected at their opposite ends to said bars, conveniently by rivets 16 and 17 which are tight in the links and turn loosely in the bars.

The spring 19, shown in Fig. III, is connected at its lower end to said swing frame 7 by the screw 20 and is connected at its upper end to said finger bar 12 by the plate 21 which is held by the screw 22; so that said upper finger bar is spring pressed downwardly to press said ribbon 2 between said bars. Moreover, the spring 24 which, as shown in Fig. III, extends from said base frame 1 to said swing frame 7 is arranged to normally hold said swing frame in the position shown in the drawings, in opposition to the stress of said ribbon 2 passing between said finger bars 11 and 12.

The adjustable electric circuit terminal 25 is mounted on said base frame 1, as shown in Fig. III and arranged to be touched by the spring contact 26 on said swing frame 7 when the latter is displaced from its normal position in the direction of the traverse of

said ribbon 2 between said finger bars. Said terminal 25 is insulated from said base frame 1 by the block 28, upon which it is mounted, and is provided with the conductor 29 in the circuit including the source of current 30 and tripping device 31; the opposite side of said circuit being completed through said base frame 1 and its appurtenances by way of the conductor 34, as indicated in Fig. III.

Referring to Figs. II and IV; the stationary roller stud 37 projects from said base frame 1 in parallel relation with said guide stud 3 and finger bars 11 and 12 and supports the idle roller 38 which has the annular groove 39 and is conveniently provided with the roller bearing 40 and held thereon by the nut 41 engaging the end of said stud 37 so that the said ribbon 2 passes over said roller 38 in the position indicated in Fig. I, II and VI. The bearing bracket 43 is detachably rigidly connected with said base frame 1, conveniently by the screws 44 shown in Fig. I, and is provided with cone pointed bearings 45 and 46 for engagement with the roller frame comprising the bell crank lever 48 which is thus fulcrumed in said base frame bracket. Said roller frame carries the roller 49 which rotates idly upon the stud 50 which is detachably fixed in said frame 48, in parallel relation with said roller 38. As best shown in Fig. VI; said roller 49 has the annular rib flange 51 adapted to register in said annular groove 39 in said roller 38, and the weight of said roller 49 suffices to normally depress it to the position shown in the drawing wherein, as best shown in Fig. VI, it rides intermediately of the width of the normal ribbon 2, and slightly depresses it into said groove. However, upon presentation of any of the length line marks 60 in said ribbon between said rollers 38 and 49, the latter is lifted, because the normal ribbon is stiffened and thickened by such marking. Such lifting movement swings said roller frame in the direction of the arrow marked thereon in Fig. II so as to bring its contact spring 52 into electrical contact with the adjustable terminal 53 which is supported by said base frame 1 but insulated therethrough by being mounted upon the insulating block 54. Said terminal 53 is included in said electrical stop circuit by the conductor 56 which leads to said source of current 30 and tripping device 31 as indicated in Fig. II; the opposite side of said circuit being completed through said conductor 34, as above described. Therefore, it is to be understood that said circuit is arranged to be closed by movement of either, or both, said finger bar swing frame and said roller frame; whenever a ribbon 2 passing between said finger or roller couples presents a defect or mark increasing the normal stress of the ribbon upon said bars or the normal thickness of the ribbon. That is to

say; said finger bar frame is arranged to be operated by abnormal stress of the ribbon upon said finger bars 11 and 12, in the direction of the length of the ribbon, whereas, said roller frame is arranged to be operated by abnormal stress between said rollers in a direction perpendicular to the plane of the ribbon; so that said two devices cooperate to detect defects of respectively different character.

Although I have found it convenient to employ the form of my invention herein shown; it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

I claim:

1. In a ribbon stop mechanism, the combination with a base frame; of an adjustable ribbon guide comprising a stationary stud in said frame, and a collar axially adjustable on said stud; a swing frame pivoted at its one end in said base frame and carrying a rigid finger bar at its other end, extending parallel with said guide stud; a loose finger bar extending parallel with said rigid bar; means operatively connecting said bars for relative movement; a spring connected at one end to said swing frame and at its other end to said loose finger bar and arranged to press a ribbon between said bars; a spring connecting said base frame with said swing frame, arranged to normally hold the latter in opposition to the stress of the ribbon passing between said finger bars; means forming an electric circuit gap on said base frame, arranged to be closed by movement of said swing frame, when the latter is displaced from its normal position in the direction of the traverse of said ribbon between said finger bars; said electric circuit including a tripping device arranged to stop the traverse of said ribbon; a stationary roller stud projecting from said base frame in parallel relation with said guide stud and finger bars; an idle roller mounted on said roller stud and having an annular groove in its circumference; a roller frame, comprising a lever fulcrumed on said base frame and carrying a roller in parallel relation with said other roller; said second roller having an annular rib flange adapted to register in the annular groove in said first roller; means forming another gap in said circuit on said base frame and arranged to be closed by movement of said roller frame; whereby, said circuit is arranged to be closed by movement of said finger bars and swing frame whenever a ribbon passing between said bars presents a defect increasing the normal stress of the ribbon upon said bars, in the direction of the length of said ribbon, and said circuit is also arranged to be closed by movement of said roller frame whenever a ribbon

passing between said rollers presents a mark increasing the normal thickness of said ribbon and thereby lifts said flanged roller, in a direction transverse to the length of said ribbon.

2. In a ribbon stop mechanism, the combination with a base frame; of an adjustable ribbon guide on said frame; a swing frame pivoted at its lower end in said base frame and carrying a finger bar at its upper end, extending parallel with said guide stud; a second finger bar extending parallel with said first bar and above the latter; means operatively connecting said bars including two pairs of links pivotally connected at their opposite ends to said bars; a spring arranged to press said fingers together; a spring arranged to normally hold said swing frame in opposition to the stress of the ribbon passing between said finger bars; a circuit closer arranged to be operated by movement of said swing frame, when the latter is displaced from its normal position in the direction of the traverse of said ribbon between said finger bars; an electric circuit including said closer and means arranged to stop the traverse of said ribbon when said circuit is closed; an idle roller mounted on said base frame and having an annular groove in its circumference; a roller frame, pivoted on said base frame and carrying a roller in parallel relation with said other roller; said second roller having an annular rib flange adapted to register in the annular groove in said first roller; another circuit closer mounted on said base frame and arranged to be operated by movement of said roller frame; whereby, said circuit is arranged to be closed by movement of said finger bars and swing frame whenever a ribbon passing between said bars presents a defect increasing the normal stress of the ribbon upon said bars, in the direction of the length of said ribbon, and said circuit is also arranged to be closed by movement of said roller frame whenever a ribbon passing between said rollers presents a mark increasing the normal thickness of said ribbon and thereby lifts said flanged roller, in a direction transverse to the length of said ribbon.

3. In a ribbon stop mechanism, the combination with a base frame; of an adjustable ribbon guide, on said frame; a couple of parallel finger bars arranged to direct a ribbon between them; spring means pressing said finger bars together upon a ribbon; means supporting said bars for limited movement in the direction of traverse of such ribbon; spring means arranged to normally hold said bars in opposition to the

stress of the ribbon passing between them; an electric circuit closer on said base frame arranged to be operated by movement of said bars in the direction of the traverse of said ribbon between them; means including said closer in an electric circuit with means arranged to stop the traverse of said ribbon when said circuit is closed; a couple of parallel rollers arranged to direct a ribbon between them; another circuit closer mounted on said base frame and arranged to be operated by relative movement of said rollers; whereby, said circuit is arranged to be closed by movement of said finger bars whenever a ribbon passing between said bars presents a defect increasing the normal stress of the ribbon upon said bars, in the direction of the transverse of said ribbon, and said circuit is also arranged to be closed by movement of said rollers whenever a ribbon passing between said rollers presents a mark separating said rollers to an abnormal extent, in a direction transverse to the traverse of said ribbon.

4. In a ribbon stop mechanism, the combination with a base frame; of a couple of parallel finger bars arranged to direct a ribbon between them; means supporting said bars for limited movement in the direction of traverse of such ribbon; spring means arranged to normally hold said bars in opposition to the stress of the ribbon passing between them; an electric circuit closed on said base frame arranged to be operated by movement of said bars in the direction of the traverse of said ribbon between them; and means including said closer in an electric circuit with means arranged to stop the traverse of said ribbon when said circuit is closed by movement of said couple consequent upon presentation of a defective portion of the ribbon thereat.

5. In a ribbon stop mechanism; the combination with a base frame; of a couple of relatively movable members arranged to direct a ribbon between them, one of said members normally extending within the other of said members; whereby, said ribbon is deformed between said relatively movable members and any defect in said ribbon causes a correspondingly greater relative movement of said members; a circuit closer arranged to be operated by relative movement of said members; and means including said closer in an electric circuit arranged to stop the traverse of said ribbon when said circuit is closed.

In testimony whereof, I have hereunto signed my name at Burlington, New Jersey, this twenty first day of July, 1925.

SAMUEL A. NEIDICH.

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CERTIFICATE OF CORRECTION.

Patent No. 1,639,746.

Granted August 23, 1927, to

SAMUEL A. NEIDICH.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: In the grant, title of invention, for the word "Mechanisms" read "Mechanism"; page 3, line 79, claim 3, for the word "transverse" read "traverse"; same page, line 94, claim 4, for the word "closed" read "closer"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of October, A. D. 1927.

Seal.

M. J. Moore,
Acting Commissioner of Patents.