

Nov. 3, 1942.

L. S. WILLIAMS
RIBBON-FEED MECHANISM

2,300,755

Filed July 25, 1941

4 Sheets-Sheet 1

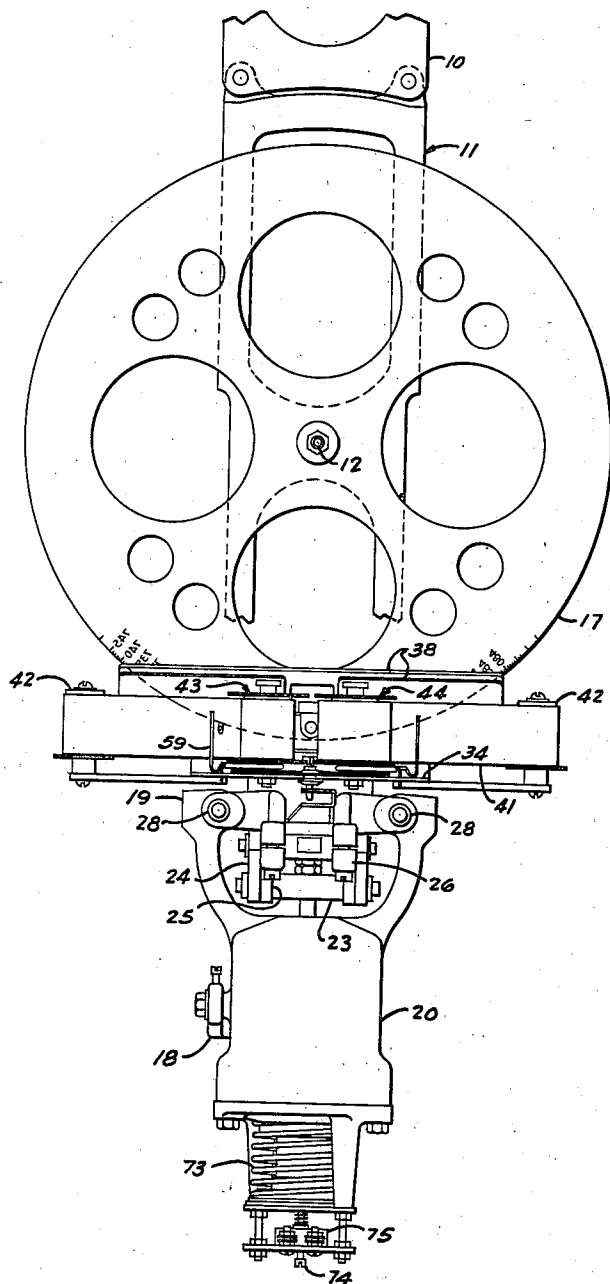


Fig. I

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4 Sheets-Sheet 2

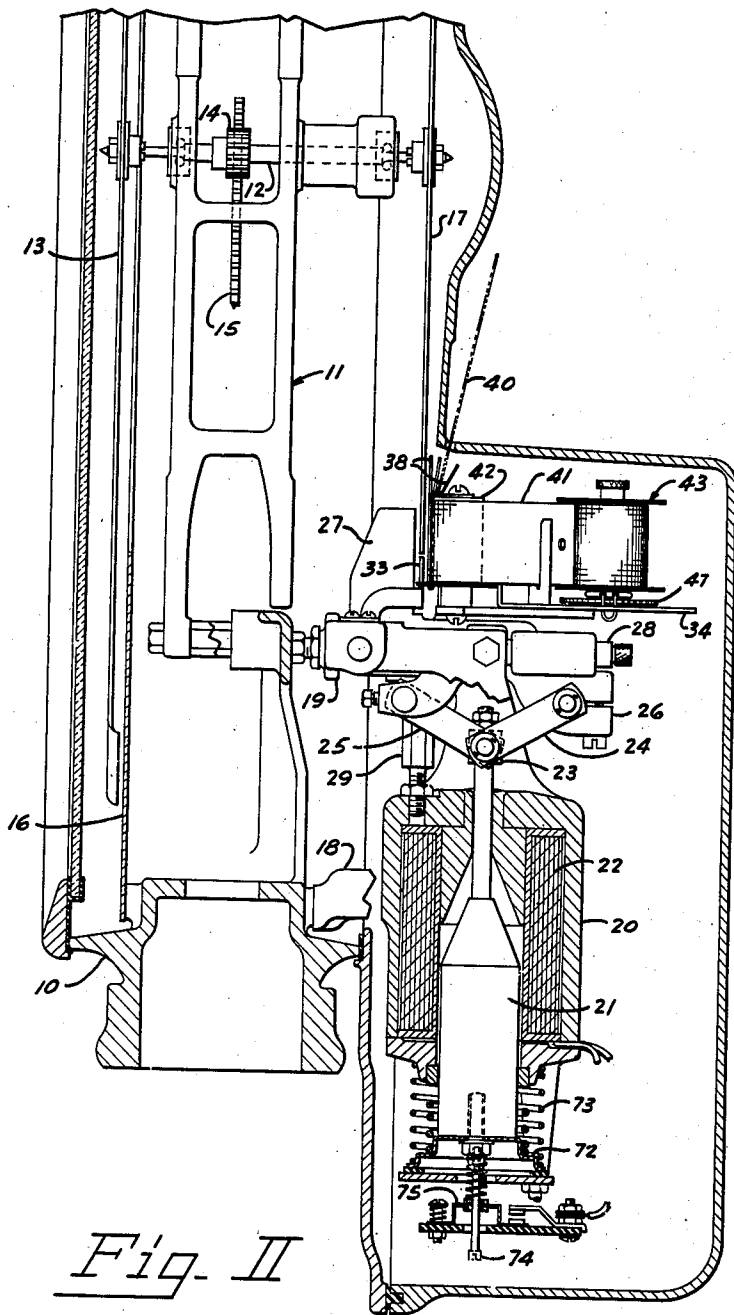


Fig. II

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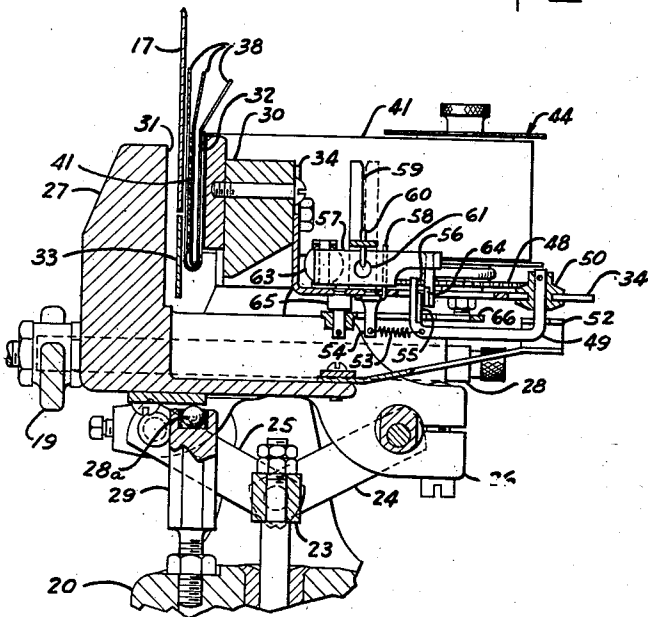
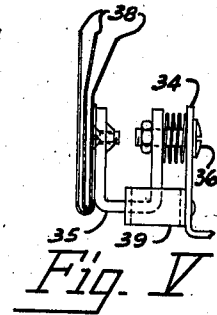
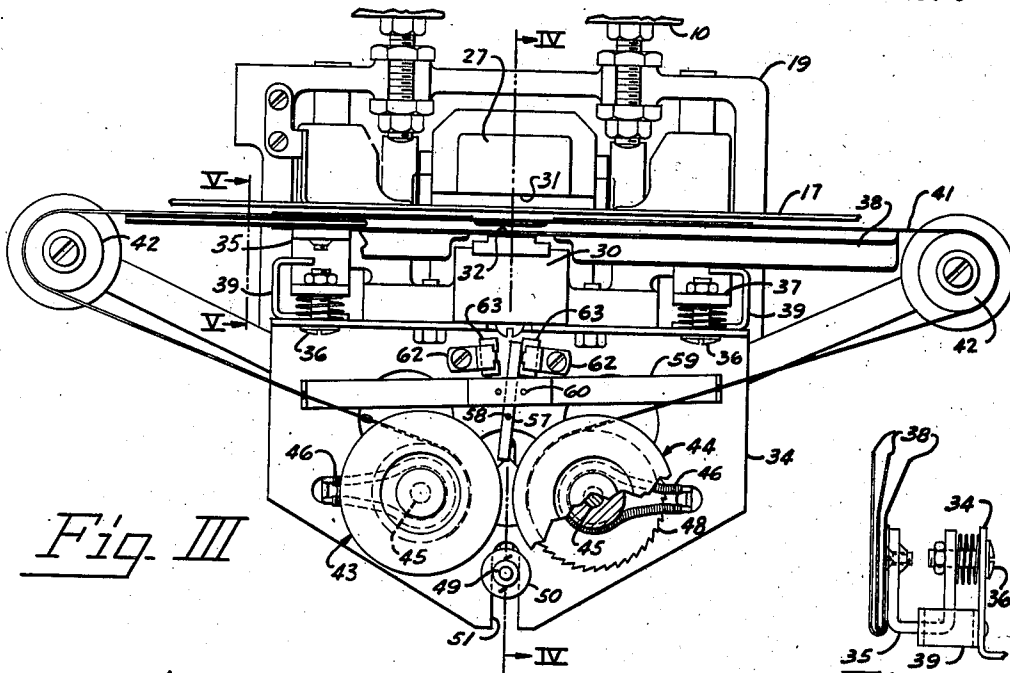
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4 Sheets-Sheet 4

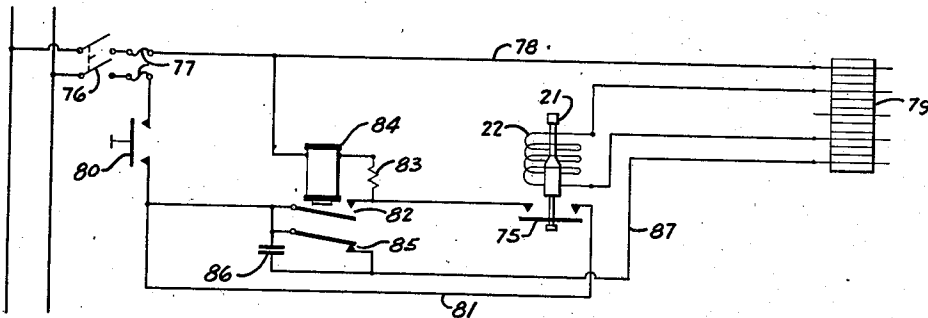
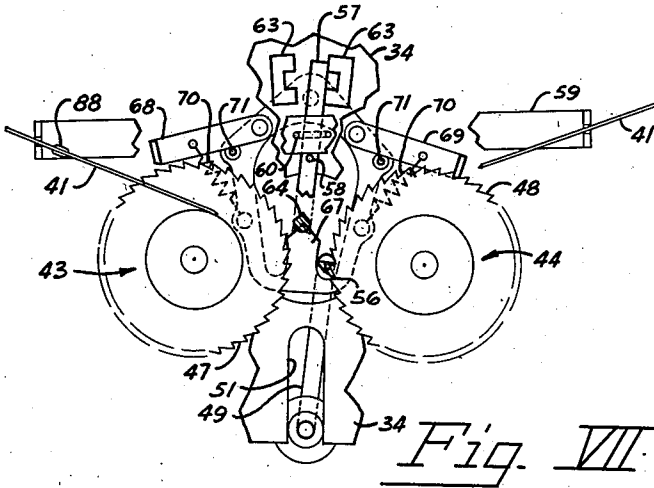
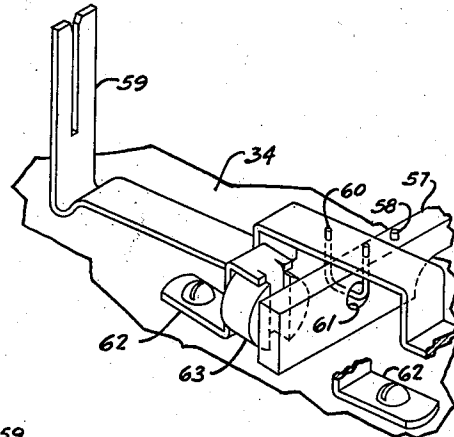
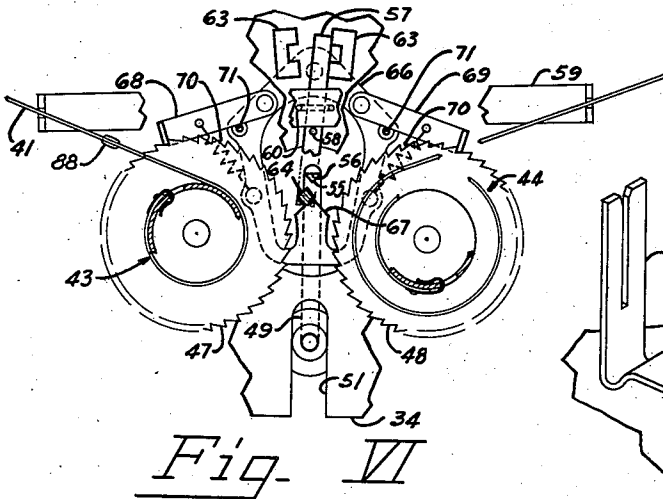


Fig. IX

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2,300,755

RIBBON-FEED MECHANISM

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Application July 25, 1941, Serial No. 404,051

12 Claims. (Cl. 101—336)

This invention relates to ribbon-feed mechanisms of the type which automatically reverse the direction of feed of the ribbon when it has been fed past the printing mechanism for substantially its full length, and more particularly to means for effecting such reversal of feeding direction.

Most ribbon-reversing mechanisms are constructed so that the direction of feed of the ribbon is changed by moving a feeding pawl, or a pair of feeding pawls, out of engagement with one ribbon spool and into engagement with the other at the time the reversal of direction of feed is desired.

The bodily shifting of the feeding pawl, or pawls, has a serious disadvantage if a mechanism operated in this way is to be used with any device which applies pressure to the ribbon, and the medium which is to receive the impression, from both sides. In a device of this type, the ribbon is held stationary at the moment of impression. If the feeding pawl shifts to the other spool and attempts to feed the ribbon during the impression, the ribbon is very likely to be torn. If this is prevented by having the ribbon less tightly held, then movement of the ribbon will cause a smeared impression. Since the ribbon is usually fed during the same cycle as when the impression is taken, the timing of the feeding and the impression taking must be very carefully adjusted to prevent either one of these two undesirable results.

Further difficulties arise in most ribbon-reversing mechanisms due to the employment of a toggle-type over-center device to move the pawl from one spool to another and to hold it in engagement. Over-center devices of this type compress a spring as they approach dead center and must be carried past dead center by the force created by the shifting device operated by the ribbon so that the extension of the spring can be employed to shift the feeding pawls to change the direction of feed of the ribbon. If any friction exists in such an over-center device, since it is pulled only to dead center, it may very easily remain there and the mechanism will fail to feed in either direction. This failure to change over properly is the cause of most of the trouble encountered in ribbon feeding mechanisms using over-center devices to bodily move the feeding pawls from one ribbon spool to the other.

One type of ribbon-reversing mechanism often used is the so-called "bulk" type in which a rider is pressed against the surface of the ribbon being

wound on a spool and which rider, being pivoted, is swung away from the center of the spool by the increase in the bulk of the ribbon being accumulated on the spool. As the rider is swung away from the center of the spool, the toggle member is moved toward dead center, and when a sufficient bulk has accumulated on the spool, should snap over to the other side of center.

Operation, however, is often far from satisfactory, since the friction mentioned above may be aggravated by disadvantages peculiar to the "bulk" type of mechanism which include the softening of the mass of the ribbon as it winds on the spool and the wasting of some of the feeding stroke and the built-up tension in the ribbon to tighten the ribbon on the feeding spool rather than to feed the ribbon. This softening is, of course, cumulative and, as the ribbon on the winding spool assumes more and more mass, the tension necessary to feed the ribbon becomes increasingly great. This means that, as the ribbon approaches the point at which it is to be reversed, and the drag of the reversing mechanism is taken up by the ribbon, it usually snubs more tightly around the spool and may cause irregularities and unevenness in the subsequent feeding.

This unevenness of tension is particularly undesirable where a reversing mechanism employing a toggle-like spring-actuated over-center device is used.

To overcome some of the disadvantages of the "bulk" type of mechanism, there is sometimes used the so-called "eyelet" type of mechanism. In this device a small eyelet, clipped into the ribbon near its end, actuates the reversing mechanism as, or shortly after, it leaves the unwinding spool. As in the bulk type, though, if the usual spring-actuated toggle-like over-center device is used, the ribbon tension must compress the spring in the toggle and, if friction exists, it may easily stick at "dead center."

To eliminate some of these difficulties, mechanisms have been designed which are operated in one direction only and which, when moving forward, coil a spring, the tension of which will return the ribbon after it has been fed its full length in one direction. This, however, causes rapid deterioration of the ribbon because of the high speed of return when the coiled spring is released and so shortens the ribbon life as to make the total result less desirable than with the reversing type of feeding mechanism.

Because of these many difficulties encountered in the construction of ribbon-feeding and ribbon-

reversing mechanisms, the usual one is quite complicated, subject to mechanical failure, uneven in operation and will not work satisfactorily where the feeding stroke and the return stroke of the feeding pawls are not substantially harmonic. Since many devices, incorporating ribbon-feeding and reversing mechanisms, do not have even feeding and returning strokes, the use of such mechanisms in such devices has been relatively unsatisfactory.

It is an object of this invention to provide a ribbon feeding and reversing mechanism, the operation of which is positive and which will not interfere with the necessity for holding the ribbon during a printing cycle.

It is another object of this invention to provide a ribbon feeding and reversing mechanism which will not move the ribbon during the time that an impression is being taken from it and will thus neither tear the ribbon nor smear the impression.

Another object of this invention is to provide a ribbon mechanism which is relatively simple in construction and yet durable and not liable to get out of adjustment.

It is still another object of this invention to provide a ribbon mechanism which is fed in both directions by means of a pawl but which does not bodily move the pawl to change the direction of feeding.

It is yet another object of this invention to provide a ribbon feeding and reversing mechanism which changes the direction of feed of the ribbon by changing the path through which the feeding pawl may move rather than by changing the position of the feeding pawl itself and its subsequent motion.

It is still another object of this invention to provide an over-center device for changing the direction of feed of a ribbon mechanism which is actuated by the ribbon itself and held on one side or the other of center by magnetic means.

It is a more specific object of this invention to provide a magnetically detained over-center device for varying the path of movement of a feeding pawl to reverse the direction of feed of a ribbon mechanism.

Another more specific object of this invention is to provide a ribbon mechanism which can be used in connection with a printing disk and is adapted to feed the ribbon before the disk, the impression receiving medium and the ribbon are squeezed together to make an impression.

More specific objects and advantages are apparent from the description, in which reference is had to the accompanying drawings illustrating a preferred form of ribbon feed mechanism embodying the invention.

In the drawings:

Fig. I is a front elevation of a preferred embodiment of the invention as shown in connection with the type carrying wheel of a printing scale.

Fig. II is a view in vertical section on a larger scale, taken from the left side of the mechanism illustrated in Fig. I.

Fig. III is a plan view on an enlarged scale of a ribbon mechanism embodying the invention.

Fig. IV is a vertical sectional view, taken on the line IV—IV of Fig. III.

Fig. V is a fragmentary vertical sectional view, taken on the line V—V of Fig. III.

Fig. VI is a still further enlarged fragmentary plan view of the ribbon feeding and reversing portion of the mechanism shown in Fig. III.

Fig. VII is a view similar to Figure VI, showing

the mechanism in a different position in its operating cycle.

Fig. VIII is an enlarged fragmentary view in perspective of a portion of the mechanism illustrated in Fig. III.

Fig. IX is a schematic wiring diagram of a printing scale embodying the invention as illustrated in Fig. I.

These specific drawings and the specific description that follows merely disclose and illustrate the invention and are not intended to impose limitations upon the claims.

Mounted within a dial housing 10 (Fig. II), on a subframe 11, is an indicator shaft 12 having an indicator 13 attached to one end. Fixed on the shaft 12 is a pinion 14, which is driven by a rack 15 attached to the load counterbalancing mechanism (not shown). The indicator 13 sweeps over a dial 16 to indicate the weights placed upon the scale. Attached to the opposite end of the shaft 12, from the indicator 13, is a type bearing disk 17.

Mounted on a bracket 18 and supported by a secondary bracket 19, attached to the housing 10 (Fig. II), is a solenoid housing 20. A vertically movable core rod 21 is located within a solenoid 22 in the housing 20. The upper end of the core rod 21 has attached thereto a cross head 23. Pivoted on the cross head 23 are links 24 and 25. The links 24 are pivoted in a lower portion 26 of a horizontally slidable abutment 27 (Fig. IV). The abutment 27 slides on rods 28, which are fastened in the secondary bracket 19. A bearing ball 28a is held in the upper end of a support stud 29, which is screwed into the top of the solenoid housing 20, and serves to support the rear of the abutment 27. The link 25 is similarly pivoted in the lower portion of a horizontally slidable platen 30.

When the solenoid 22 is energized, the core rod 21 is thrust upwardly pushing outwardly on the lower portions of the opposed abutment 27 and platen 30 and moving an inner face 31 of the abutment 27 and an inner face 32 of the platen 30 towards each other.

The lower edge of the type bearing disk 17 extends downwardly between the opposed faces 31 and 32 of the abutment 27 and the platen 30. Also interposed between the faces 31 and 32, and adjacent the periphery of the disk 17, is a metallic strip 33 bearing a character in the form of a pointer which is positioned to indicate the weight on the scale by pointing to the figure printed from the disk 17.

The vertical portion of a ribbon mechanism support plate 34 is fastened to the platen 30 and the plate has a horizontal shelf-like portion extending backward from the platen 30. A U shaped support member 35 (Fig. V) is resiliently attached, by means of a spring encircled bolt 36, to the vertical portion of the support plate 34 at one side of platen 30. A similar U shaped supporting member 37 is mounted on the opposite end of the support plate 34. Metallic guides 38 are supported by the other arm of the U shaped supporting members 35 and 37 and extend between the platen 30 and printing disk 17 (Fig. IV). U clips 39 (Figures III and V) are fastened to the support plate 34 and have one bifurcated arm in the legs of which the U shaped support members 35 and 37 are horizontally slidable. The center of the metallic guides 38, that is those portions actually passing between the printing surfaces of the abutment 27 and platen 30, have apertures therein to permit the platen

30 to force a card 40 (Fig. II), or other impression receiving substance, into contact with a ribbon 41 also passing through the guides 38 and thus to print an impression of the type on the disk 17 on the surface of the card.

In order to secure a firm impression of the type on the disk 17, the abutment 27 and platen 30 are brought firmly towards each other. Since the guides 38 must be kept in relatively the same position to receive the card 40, and should not move back and forth with the platen 30, because such movement would bend or crease the card, their connection through the U shaped support members 35 and 37 to the support plate 34, and thus to the platen 30, is through the spring encircled bolts 36 which, being resilient, permits movement on the part of the support plate 34 and still holds the guides 38 in position. The clips 39 prevent any sagging of this resilient connection.

The ribbon 41 passes around out-rigger spools 42, and thence to ribbon feeding spools 43 and 44. The spools 43 and 44 are rotatable upon vertical axles 45 which are fastened on the support plate 34. Springs 46 are clipped in the support plate 34 and pass around the peripheries of the spools 43 or 44. These springs 46 serve as tension brakes on the spools 43 and 44 to prevent back lash of the ribbon 41. Also mounted on the axles 45, of spools 43 and 44, are ratchet wheels 47 and 48 respectively.

A U shaped driving pawl 49 (Fig. IV) has one arm mounted in a bushing 50, which is slidable in a slot 51 in the support plate 34. The same arm of the pawl 49 passes through a clip 52, which is attached to the abutment 27 and which is adapted to slide the pawl 49 in the bushing 50 in a direction opposite to the movement of the platen 30 and the support plate 34. The lower portion of the pawl 49 is attached, by means of a spring 53, to a stud 54 attached to the underside of the support plate 34. The other arm of the pawl 49 has a sharpened edge 55 extending part way up its length and a flattened portion 56 extending above the level of the support plate 34. The edges of the flattened portion 56 are adapted to engage the teeth of either the ratchet wheel 47 or the ratchet wheel 48.

A toggle member 57 is pivotally mounted on a finger 58, which extends upwardly through the support plate 34. A walking arm 59 (Figures III, VII) is mounted upon the arms of a vertical staple 60, the body of which passes through a horizontal hole 61 bored transversely through the toggle member 57. The walking arm 59 has up-turned bifurcated ends through which the ribbon 41 passes. Mounted in small brackets 62, one on each side of the forward end of the toggle member 57 and with their faces in vertical planes converging on the pivot finger 58 of the toggle member 57, are small horseshoe magnets 63.

The end of the toggle member 57, which is opposite to that extending between the magnet 63, has mounted therein a downwardly extending stud 64, the forward edge of which is knife-shaped and opposed to the sharp edge 55 of the pawl 49 (Fig. IV). Pivoted on a stud 65, which extends downwardly from the support plate 34, is a horizontally disposed guiding plate 66 (Figures IV and VI). The guiding plate 66 has an open center through which the arm of the pawl 49 extends which has the sharp edge 55 and the flattened surface 56. The guiding plate 66 has a spear point projection 67 which extends forwardly into the opening in the plate 66. The

downwardly extending stud 64, mounted in the toggle member 57, is positioned above and slightly in front of the spear point projection 67. Pivotally mounted on the guiding plate 66 are back pawls 68 and 69, which engage the ratchet wheels 47 and 48 respectively to prevent their being turned in the wrong direction. Springs 70 hold the back pawls 68 and 69 against the teeth of the ratchet wheels 47 and 48 and against limit studs 71, which project upwardly from the guiding plate 66.

The lower end of the solenoid core rod 21 (Fig. II) has attached thereto a plate 72 and is surrounded by a spring 73 which, when the core rod is moved upwardly, upon energization of the solenoid 22, is compressed between the plate 72 and the solenoid housing 20. When the solenoid is de-energized, the spring 73 serves to return the solenoid core rod to its lower position. A vertical switch actuating rod 74 is attached to the lower end of the core rod 21 and extends downwardly through a switch contact 75. The contact 75 is closed when the solenoid core rod 21 approaches the limit of its upward stroke and is opened shortly after it has started its return stroke.

In Figure IX, there is shown a wiring diagram of a printing scale embodying the invention. Power is introduced into the mechanism from a power line, through a main switch 76, fuses 77 and a lead 78 to one side of a rectifier 79. The output leads of the rectifier are connected to the solenoid 22. The other side of the power input passes through the main switch 76, one of the fuses 77 to a push button 80. From the push button 80, a lead 81 is connected to one side of the solenoid operated contact 75. The opposite side of the solenoid operated contact 75 is connected to one side of a normally open contact 82 and through a resistance 83 to one side of a relay coil 84, the other side of which is connected to the lead 78. The push button 80 is also connected to one side of the normally open contact 82 and through a normally closed contact 85, protected by a condenser 86, through a lead 87, to the other side of the rectifier 79.

The operation of the ribbon feeding and reversing mechanism, as used in connection with the printing scale illustrated in Figure I, will now be described. When the printing disk 17 has come to rest with the proper type character positioned over the platen 30, the operator closes the push button switch 80. Current flows from the line through the switch 80, the normally closed contact 85 to the rectifier 79 and then to the solenoid 22. The solenoid core rod 21 (Fig. II) is moved upwardly which, through the connections on the cross head 23, moves the faces of the platen 30 and the abutment 27 towards each other by means of the links 24 and 25. A card or slip 40, having been inserted between the platen 30 and the printing disk 17, receives an impression of the type on the disk 17 positioned above the indicating type on the strip 33.

At the same time, the movement of the abutment 27 towards the rear of the mechanism has moved the clip 52, and through it, the pawl 49. In Fig. VI, the mechanism is shown with the pawl 49 in the position which it would occupy just after the beginning of the upward stroke of the solenoid core rod 21. The ribbon 41 is almost entirely unwound from the ribbon spool 43 and an eyelet 88, clipped into the ribbon 41 near its end, has almost reached the end of the walking arm 59 through which the ribbon 41 passes.

The toggle member 57 is still located in the

position which it occupies when the ribbon mechanism is feeding onto the spool 44. Thus the knife edge stud 64 is positioned above and slightly to the left of the spear point projection 67 on the guiding plate 66. The guiding plate 66 is positioned normally with the point of the spear point projection 67 directly on the center line of travel of the pawl 49. As the pawl 49 is moved towards the rear, the knife edge 55, in its up-turned end, approaches the point of the spear point projection 67 but is guided to one side or the other of the spear point projection 67 by the knife edge stud 64 which depends from the toggle member 57. The toggle member 57 is, of course, positioned either to one side or the other of the spear point projection 67 by being retained against one or the other of the magnets 63. As the knife edge 55 of the pawl 49 strikes the sides of the knife edge stud 64, it is guided to one side of the spear point projection 67. In Fig. VI, subsequent movement of the pawl will bring the two knife edges toward each other and their slanting faces will guide the pawl 49 to the right of the spear point projection 67. Since the clearance between the vertical edges of the spear point projection 67 and the teeth of the ratchet wheel 48 is not sufficient to permit the entry of the arm of the pawl 49, one edge of the flat portion 56 engages a tooth on the ratchet wheel 48 and the opposite edge acts as a cam to pivot the guiding plate 66 in a clockwise direction (Fig. VII). The pivoting of the plate 66 swings the limit stud 71, fastened thereto, which disengages the back pawl 68 from the teeth of the ratchet wheel 47 to permit counterclockwise rotation of the ribbon spool 43 to allow the ribbon to be unwound from that spool. The pawl 49 has now approached the limit of its rearward stroke, and the spool 44 has wound on an additional amount of the ribbon 41. The back pawl, engaged in the teeth of the ratchet wheel 48, is snapped up by the teeth of the wheel 48 to permit the spool 44 to rotate in a counter-clockwise direction and wind on the ribbon.

The solenoid core rod 21 (Fig. IX), now having reached the upward limit of its stroke, closes the contact 75, which energizes the relay coil 84, and closes the normally open contact 82 and opens the normally closed contact 85. The circuit through the rectifier 79 is now open and the core rod 21 begins to descend. The resilient construction of the connection between the core rod 21 and the switch 75 holds the switch 75 closed for a short time during descent. Thus current passes through the solenoid coil 84 for a sufficiently additional length of time to prevent the switch 85 from reclosing until the operator releases the button 80 which he should do immediately upon the printing of the weight. If, however, the operator should fail to release the push button 80, current will continue to flow through the coil 84, the contact 82 and the push button 80, thus holding the contact 82 closed even after the contact 75 has been broken and preventing the contact 85 from closing which would start a second printing cycle. This is a safety circuit which prevents the repetition of printing cycles, no matter how long the button 80 is held closed. If the push button 80 is now released, the coil 84 is de-energized, the contact 82 snaps open and the contact 85 is closed to prepare the circuit for a subsequent printing operation.

When the solenoid core rod 21 starts its descending stroke, the platen 30 and the abutment 27 are moved back to their original positions.

The pawl 49, through its connecting clip 52, is also returned to its original position. The guiding plate 66, under tension of the spring 70 connected to the back pawl 69 and working against the ratchet wheel 48, is swung in a counterclockwise direction back to the center position shown in Fig. VI.

If the feeding of the ribbon in the feeding stroke is sufficient to bring the eyelet 88 into contact with the end of the walking arm 59 (the next stroke after that illustrated in Figures VI and VII), the tension on the ribbon 41 will pull the walking arm 59 bodily to the left. This movement, through the staple 60, will pivot the toggle member 57 on the finger 58 which will swing its forward end away from that one of the magnets 63, against which it is being held, and far enough towards the other magnet 63 for the magnetic force to seize it and pull it against the other magnet 63. The toggle member 57 will thus be rotated in a counterclockwise direction on the finger 58 and positioned against the other magnet 63 than that against which it is shown positioned in Figures VI and VII. This will swing the knife edge stud 64 to the right (Fig. VI) and in subsequent strokes of the pawl 49, its edge 55 and flat portion 56 will travel on the left-hand side of the spear point projection 67 engaging the teeth in the ratchet wheel 47 to feed the ribbon on the spool 43 and in the opposite direction from that in which it is fed in the stroke illustrated in Figures VI and VII. The cycle of feeding will now be exactly the same as that described but the flat portion 56 of the pawl 49 will be moved through a different path.

Thus the reversing movement of the ribbon mechanism does not bodily move the pawl 49 out of engagement with one ribbon spool and into engagement with another, but rather changes the path through which the latching edge of the flat portion 56 of the pawl 49 moves to cause the pawl to engage the other ribbon spool and does not change the direction of stroke of the pawl actuating members. It is impossible for the toggle member 57 to be moved to dead center and left there since if it were moved to dead center only a very slight force would be needed to break the balance between the magnetic pull of the two magnets 63 and such slight contact is always afforded on the return stroke of the pawl 49 and the return rocking motion of the guiding plate 66.

The embodiment of the invention that has been disclosed may be modified to meet various requirements.

Having described the invention, I claim:

1. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of alternately drivable spools on which said ribbon is adapted to be wound, spool driving mechanism, means for shifting said spool driving mechanism from driving relation with one of said spools to driving relation with the other of said spools and magnetic means for retaining said spool driving mechanism in driving relation with one of said spools until moved by said shifting means into driving relation with the second of said spools, said magnetic means then retaining said spool driving mechanism in driving relation with the second of said spools.

2. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, spool driving mechanism, means for conditioning said spool driving mechanism for driv-

ing one of said spools, magnetic means for retaining said mechanism in condition to drive such spool and means operable when a definite portion of said ribbon is wound on such spool for causing said conditioning means to condition said mechanism for driving the second of said spools, said magnetic means then operating for retaining said mechanism in condition to drive the second of said spools.

3. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, spool driving mechanism, means for conditioning said spool driving mechanism for driving one of said spools, magnetic means for retaining said mechanism in condition to drive such spool and ribbon actuated shifting means for shifting said conditioning means to condition said mechanism for driving the second of said spools, said magnetic means then operating for retaining said mechanism in condition to drive the second of said spools.

4. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, spool driving mechanism, means for conditioning said spool driving mechanism for driving one of said spools, magnetic means for retaining said mechanism in condition to drive such spool and ribbon actuated shifting means operable when a predetermined amount of said ribbon is wound on such spool for shifting said conditioning means to condition said mechanism for driving the second of said spools, said magnetic means then operating for retaining said mechanism in condition to drive the second of said spools.

5. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, spool driving mechanism, alternately positionable guiding means for deflecting said driving mechanism into one of two paths, each leading to engagement with a different one of said spools and means operable when a definite portion of said ribbon is wound on such spool for moving said alternately positionable guiding means from one of its alternate positions to the other.

6. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of alternately drivable spools on which said ribbon is adapted to be wound, means for driving said spools, alternately positionable guiding means for guiding said driving means through either of two paths, each leading to engagement with a different one of said drivable spools, ribbon actuated means for shifting said guiding means and magnetic means for retaining said guiding means in one of its alternate positions until moved to the other by said ribbon actuated shifting means.

7. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, spool driving mechanism, alternately positionable guiding means for deflecting said driving mechanism from its path of movement through either of two alternate paths, each leading to engagement with a different one of said spools, means operable when a definite portion of said ribbon is wound on such spool for moving said alternately positionable guiding means from one of its alternate positions to the other and an over-center device for retaining said alternately positionable guiding means in either of its

positions until moved to the other by said means operable when a definite portion of said ribbon is wound on such spool.

8. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, spool driving mechanism, means for conditioning said spool driving mechanism for driving one of said spools, a magnet for retaining said mechanism in condition to drive such spool, actuating means operable when a definite portion of said ribbon is wound on such spool for causing said conditioning means to condition said mechanism for driving the second of said spools and a second magnet for retaining said mechanism in condition to drive such second spool, said first and second magnets in association with said conditioning means forming an over-center device for controlling said actuating means and said conditioning means.

9. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, spool driving mechanism, an alternately positionable guiding member adapted to be positioned to guide said spool driving mechanism into engagement with one or the other of said spools, ribbon actuated means for positioning said guiding member, and magnetic means for retaining said guiding member in one of its positions until moved to the other by said ribbon actuated means, said magnetic means then retaining said guiding member in the other of its positions.

10. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, spool driving mechanism, a guiding member having alternate pathways through which said mechanism is adapted to be moved, each of said pathways leading said mechanism to operative engagement with a different one of said spools, ribbon actuated means for conditioning said spool driving mechanism to follow one or the other of said paths and magnetic means for retaining said ribbon actuated means in position to condition said mechanism to drive one of said spools until said ribbon actuated means is moved to the other of their positions, said magnetic means then retaining said ribbon actuated means in its other position.

11. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, a spool driving pawl having a knife edge and a driving edge, an alternately positionable guiding bar having a knife edge adapted to be moved from one side to the other of the line of movement of the knife edge of said driving pawl whereby when said guiding arm is in one of its alternate positions such knife edges will guide said pawl through one path of movement and lead such driving edge into engagement with one of said spools and when said arm is in the other position such knife edges will guide said pawl through a second path of movement and lead such driving edge into engagement with the second of said spools and means for shifting the position of said guiding bar when a specified amount of ribbon is wound on such spool.

12. In a ribbon feeding and reversing mechanism, in combination, a ribbon, a pair of spools on each of which said ribbon is adapted to be wound, a spool driving pawl having a knife edge and a driving edge, an alternately positionable

guiding bar having a knife edge adapted to be moved from one side to the other of the line of movement of the knife edge of said driving pawl whereby when said guiding arm is in one of its alternate positions such knife edges will guide said pawl through one path of movement and lead such driving edge into engagement with one of said spools and when said arm is in the other position such knife edges will guide said pawl through a second path of movement and lead

such driving edge into engagement with the second of said spools, means for shifting the position of said guiding bar when a specified amount of ribbon is wound on such spool and magnetic means for retaining said guiding bar in one of its positions until moved by said shifting means to its other position, said magnetic means then retaining said guide bar in its second position until reshifted by said shifting means.

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