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INK RIBBON FEEDING AND REVERSING MECHANISM

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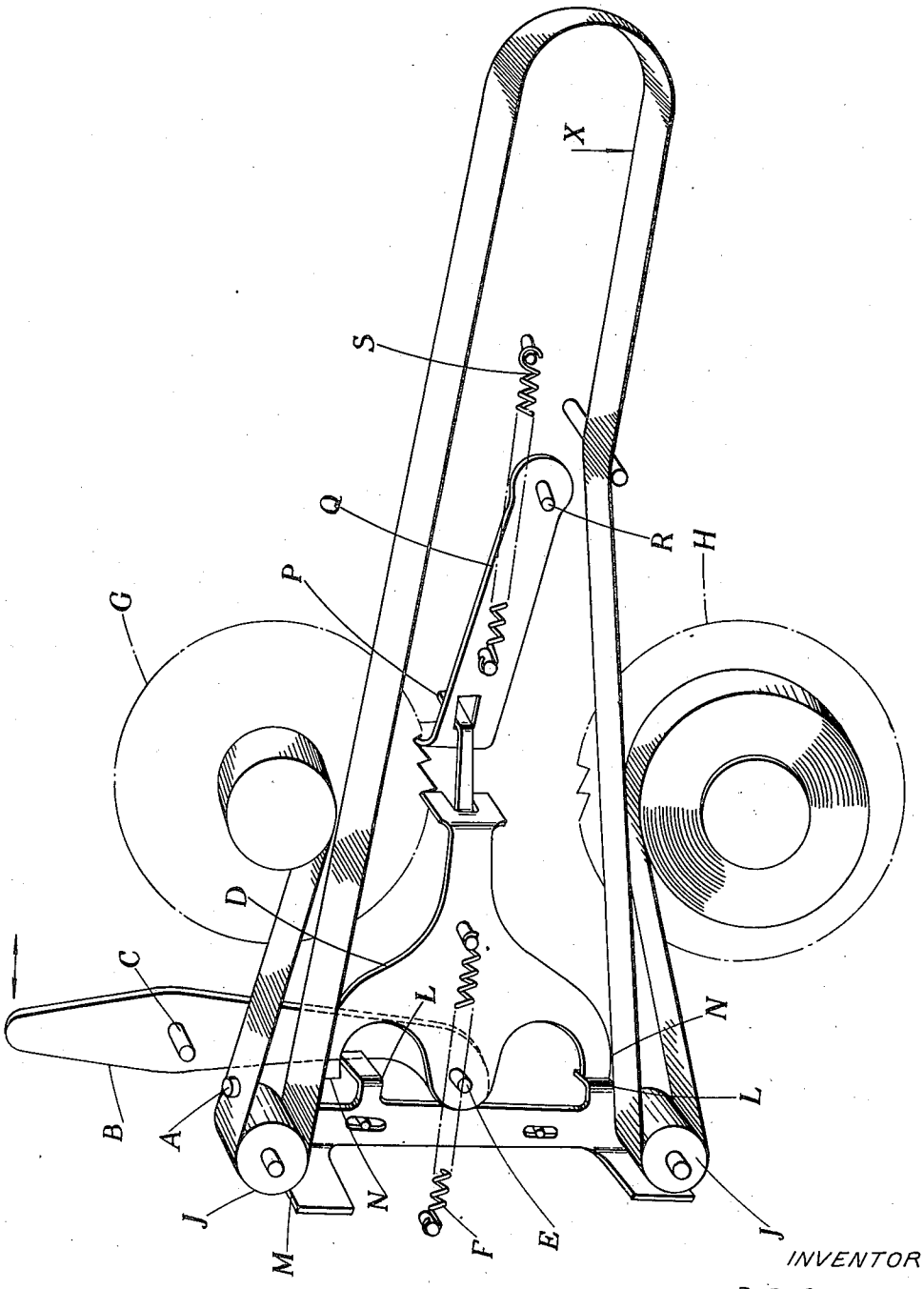

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INK RIBBON FEEDING AND REVERSING MECHANISM

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5 Claims. (Cl. 197—165)

In typewriters, teleprinters and the like, the ink ribbon mechanism is provided with means for reversing the direction of movement of the ribbon, alternatively as each ribbon spool becomes unwound. In general, this mechanism has been in the past somewhat delicate in operation, and has required a critical adjustment or accurate manufacture.

The object of the present invention is to provide means which shall be positive in operation, easy of adjustment and simple to manufacture.

According to this invention ink ribbon feeding and reversing mechanism comprises ratchet wheels for effecting motion in the respective directions, a feeding pawl adapted to act upon either ratchet wheel and means actuated by the ribbon near the end of its travel in either direction for moving the feeding pawl from one ratchet to the other.

The invention will be better understood from the following description of one embodiment thereof as applied to a teleprinter, taken in conjunction with the accompanying drawing.

The ink ribbon spools G and H are provided with ratchet teeth cut in their periphery, adapted to be engaged by a feeding pawl D carried on a pivot E mounted on the lower end of a two-armed lever B pivoted at C. The pawl D is provided with two arms NN adapted to co-operate with projections L on a slidably mounted frame M. The pawl is acted upon by a spring F anchored to a fixed support. A projection P on the pawl D passes through a large slot in the retaining pawl Q. The retaining pawl Q is pivoted at R, and is acted upon by a spring S also anchored to a fixed support. The ink ribbon passes over two rollers J, and around the printing point X, and is provided at either end with a small button A.

Lever B is oscillated to and fro once for each printing operation, and causes pawl D to feed either the spool G or H through an angular distance equal to one or more ratchet teeth.

It will therefore be seen that the feeding operation occurs when the lower end of lever B moves from left to right. It will also be seen from the following description that the reversing motion takes place when the lower end of lever B moves from right to left. The distance between the two projections L on the frame M is less than the distance between the two arms N on the pawl D so that it is only possible for one arm N to engage one projection L at any one time. The arm N which is engaged depends upon the upwards or downwards position of the frame M; thus if the frame M is in its most downward position the lower arm N will be engaged by the lower projection L, so that when the lower end of lever B moves to the left the pawl D will be rotated in an anti-clockwise direction so as to engage with the upper spool G, and if the frame M is in its uppermost position the upper extension L will engage with the upper arm N, so that when the lower end of lever B moves in a left-hand direction the pawl D will be rotated in a clockwise direction so as to engage with the lower spool H. When the upper spool becomes unwound the button A comes into view, and passes round roller J so as to engage with the end of frame M, to move it in a downwards direction, thus causing the pawl D which was in engagement with the lower spool, to rotate in a clockwise direction when the lower end of lever B moves towards the left to engage with the upper spool, so that upon the next feeding operation the ink ribbon will move in the reverse direction. It will thus be seen that there is no tendency for the feeding pawl to come out of engagement with the ratchet wheel until the button A has positively moved the frame M into such a position that the projection L engages with the arm N. This will take place during the movement of the lower end of lever B towards the right, so that the next time the lower end of lever B moves towards the left a positive reversal of the feeding pawl will take place.

In order that the retaining pawl shall follow the movement of the feed pawl a projection P on the feed pawl extends through a large hole in the retaining pawl. This hole is large enough to permit free and independent movements of the two pawls during the normal feeding operation, but if the feed pawl moves out of engagement with one spool into engagement with the other, it positively carries the retaining pawl with it.

What is claimed is:

1. Ink ribbon feeding and reversing mechanism comprising in combination spools for winding up the ink ribbon in the respective directions, ratchet wheels for rotating said spools in the appropriate directions, stop members carried by the ink ribbon near the respective ends thereof, a slidable frame adapted to engage said stop members and to be moved thereby, projections on said slidable frame, a tiltable frame carrying a single feeding pawl, two projections on said tiltable frame so positioned as to engage selectively with one of the projections on the slidable frame according to its position on the reciprocation of said tiltable frame, means for reciprocating said tiltable frame so that the projections thereon engage the pro-

jections on the slidable frame and thereafter the said feeding pawl engages one of said ratchet wheels.

2. Ink ribbon feeding and reversing mechanism comprising in combination spools for winding up the ink ribbon in the respective directions, ratchet wheels for rotating said spools in the appropriate directions, a single feeding pawl carried by a frame having a pair of spaced arms, a movable feeding lever pivotally connected to said frame at a point intermediate said spaced arms, a pair of projections each of which is adapted separately to engage one of said arms, means for drawing said frame resiliently toward said projections and means for moving a selected one of said projections into cooperating relation with one of said arms and moving the other of said projections out of engagement with the other of said arms in order to change the direction of ribbon feed.

3. Ink ribbon feeding and reversing mechanism according to claim 2 wherein said projections are attached to a second frame and spaced apart a distance less than the distance between said two arms, said second frame is slidably mounted for movement toward one arm and away from the other so that said projections may be brought into cooperative relation with a selected one of said arms, and means attached to said ribbon for sliding said frame.

4. Ink ribbon feeding and reversing mechanism comprising a pair of ribbon receiving spools, a ratchet wheel for driving each spool, a single pawl carried by a frame which is pivotally mounted so that said pawl will engage with either of said ratchet wheels, means for reciprocating said frame longitudinally to cause step by step rotation of a selected one of said ratchet wheels, spring means adapted to hold said pawl in engagement with either one of said ratchet wheels, said frame having a pair of arms, and means for moving a projection into the path of movement of a selected one of said arms to change said pawl from active engagement with one of said ratchet wheels to active engagement with the other of said ratchet wheels and thereby reverse the direction of ribbon feed.

5. Ink ribbon feeding and reversing mechanism comprising a feeding pawl and a retaining pawl mounted substantially in alignment one with another with their adjacent ends arranged to cooperate with the same single ratchet wheel, said retaining pawl having an elongated opening therein and said feeding pawl having a finger projecting through said opening, whereby said retaining pawl is caused to move toward and away from said ratchet wheel in unison with said feeding pawl.

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