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CARBON FEED CONTROL MECHANISM

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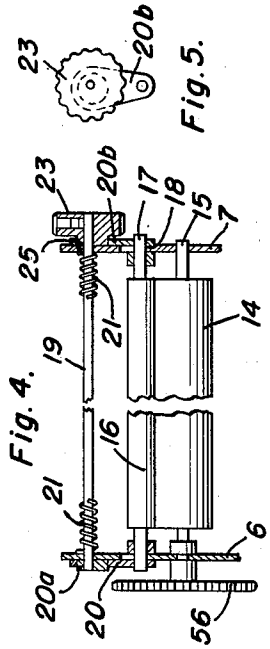

Fig. 5.

Fig. 4.

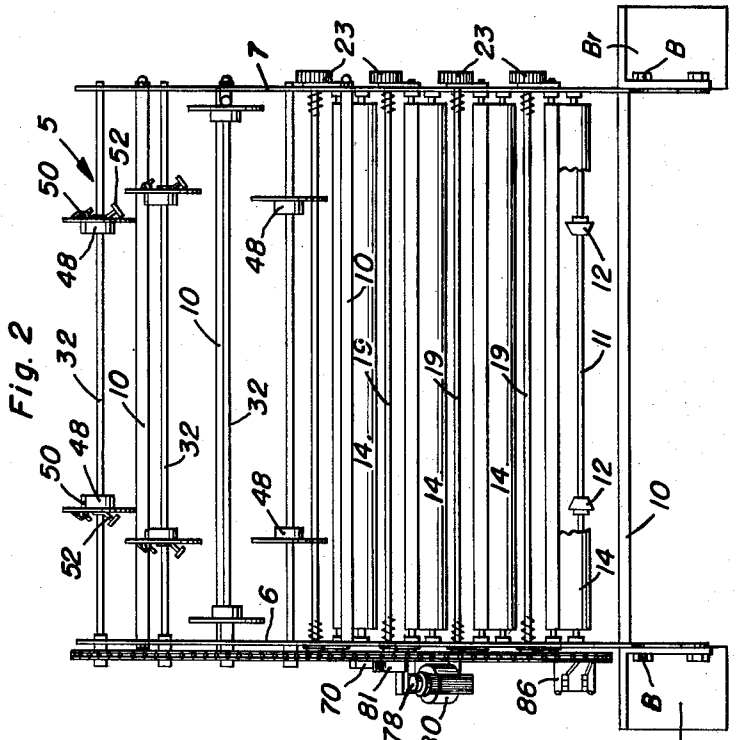

Fig. 2

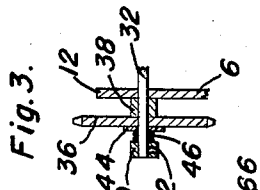

Fig. 3.

Fig. 1.

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CARBON FEED CONTROL MECHANISM

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6 Claims. (Cl. 197—134)

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This invention relates to new and useful improvements in carbon feeding and spacing attachments for tabulating or other printing and typewriting machines and the primary object of the present invention is to provide a self-powered carbon rewind and feed attachment for tabulating machines that is quickly and readily attached to or removed from a tabulating machine in a convenient manner.

Another important object of the present invention is to provide an attachment for tabulating machines that will feed single or multiple carbons from one or more rolls simultaneously with the feeding of one or more forms to the printing unit of a tabulating or typewriting machine.

A further object of the present invention is to provide a carbon feeding and spacing attachment for tabulating and typewriting machines including electromagnetic actuated drive means for the rollers forming part of the attachment, and wherein the electromagnet of the drive means is electrically connected to the plug board of a tabulating machine to effect actuation of the drive means in response to the spacing action of the machine.

A still further aim of the present invention is to provide a carbon feeding and spacing attachment of the aforementioned character that is simple and practical in construction, strong and reliable in use, neat and attractive in appearance, efficient and durable in operation, inexpensive to manufacture, install and service, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a fragmentary side elevational view of a tabulating machine and showing the present invention applied thereto;

Figure 2 is a front elevational view of Figure 1, showing the attachment removed from the tabulating machine, and with the lowermost of the feed rollers broken away to show the lowermost of the supply rollers;

Figure 3 is an enlarged detail sectional view taken substantially on the plane of section line 3—3 of Figure 1;

Figure 4 is a fragmentary vertical sectional view showing one of the feed rollers, the pressure roller associated therewith and the means for urging the pressure roller against the feed roller; and,

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Figure 5 is an end view of one of the spring tensioned shafts and the means for connecting the same to a pressure roller.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 5 represents the carbon feeding and spacing attachment generally, including a pair of spaced parallel side walls 6 and 7 having lateral projections 8 at their lower forward corners that are formed with slots 9 for accommodating holding bolts B on angle brackets B1 which are removably secured to a tabulating machine M by bolts B. The walls 6 and 7 are connected together and retained in spaced parallel relationship by a suitable number of horizontal cross bars 10.

A plurality of vertically spaced horizontally disposed supply rollers or shafts 11 are rotatably supported between the side walls 6 and 7 and the ends of the shafts 11 are removably received in vertically inclined slots 13 at the rear edge of the side walls. A pair of substantially conical holders 12 are longitudinally received on the shafts 11 for holding a roll of carbon therebetween. The supply rollers 11 are disposed alongside of and behind a plurality of vertically spaced horizontally disposed feed rollers 14 whose supporting shafts 15 are rotatably supported on the side walls.

A plurality of vertically spaced horizontally disposed pressure rollers 16 are disposed adjacent the feed rollers 14 and the ends of their supporting shafts 17 are received in slots 18 in the side walls 6 and 7 for movement of the pressure rollers toward or away from the feed rollers.

Means is provided for mounting the pressure rollers 16 and for urging the same against the feed rollers. This means comprises a plurality of horizontal rods 19 whose ends enter apertures in the side walls 6 and 7 above the pressure rollers. An eccentric 20*a* is fixed on the end of each of the rods 19 that projects outwardly from wall 6 and the eccentrics 20*a* are journaled in openings in arms 20. The arms 20 are provided with apertures that receive the ends of the shafts 17 that project outwardly from wall 6. The ends of rods 19 that project outwardly from wall 7 have hand grips 23 secured thereon. The hand grips 23 are provided with eccentric hubs 25 that are journaled in openings in arms 20*b*. Arms 20*b* are provided with apertures that receive the shafts 17.

In this manner, each rod 19 will be connected to a shaft 17 by two arms 20, 20*b*. By rotating the rods 19, the rollers 16 may be raised. Coil

springs 21 are disposed about the end portions of the rods 19 and are terminally secured to rods 19 and side walls 6 and 7 to tension the rods and yieldingly urge the pressure rollers downwardly against the feed rollers.

A plurality of vertically spaced horizontally disposed rewind shafts 32 extend between and are rotatably removably supported in slots 34 in the side walls 6 and 7, and parallel the feed rollers and the pressure rollers. The ends of the shafts 32 that project outwardly from side wall 6 rotatably support sprockets 36, spacer collars 38 and slip connectors or clutches 39. The slip connectors each include collars 40 with self contained set screws 42, friction discs 44 and compression springs 46 biased between the discs 44 and collars 40, as shown in Figure 3.

Rewind shafts 32 each slidably and adjustably support a pair of holders 48 having thumb clips 50 for engaging carbons. Set screws 52 carried by the holders engage the shafts 32 to permit longitudinal adjustment of the holders on the rewind shafts in a convenient manner.

The ends of the feed roller supporting shafts 14 that project outwardly from the side wall 6 fixedly support sprockets 56 that engage an endless sprocket chain 58. Chain 58 also engages under the sprockets 36 on the rewind shafts 32 and further engages idler sprockets 60, 62 and 64 journaled on the side wall 6.

The sprocket secured to the lowermost of the rewind shafts is designated by the numeral 66 and constitutes a spacer sprocket. The spacer sprocket 66 supports a ratchet 68 that engages a vertically swingable pawl 70 pivoted to the side wall 6. The pawl 70 is pivoted to a supporting arm 72 having an end that extends between adjustable stop 74 on the wall 6 and a spring 76 is biased between one of the stops and the arm 72 to urge the arm 72 away from the core 78 of an electromagnet or solenoid 80 suitably mounted on wall 6. A leaf spring 81 is attached to the arm 72 and engages the pawl 70 to hold the pawl against the ratchet 68.

Wires 82 connected to the plug board of the machine M are connected to common line current wires 84 in a relay 86, carried by the wall 6, and the relay is further electrically connected to the electromagnet by wires 88 to permit closing of the circuit to the electromagnet when the spacer mechanism of the machine M is actuated.

A brake sprocket 90 is journaled on the side wall 6 and engages the chain 58 to hold the chain in operative position. An adjustable braking means 92, including a spring raised lug 92*a* is mounted on wall 6 for engaging the sprocket 90 to prevent all sprockets from turning except when the electromagnet is energized for spacing.

In practical use of the present invention, each carbon is threaded from a supply roller and extends over a feed roller and under a pressure roller. The carbon then extends to the platen or printing unit of the machine M where it comes in contact with the paper forms. The used carbon next extends to the rewind rollers where the ends of the carbon are secured by the clips 50.

As the electromagnet is energized, the pawl will be pulled downwardly toward the electromagnet to rotate the ratchet, in a clockwise direction shown by arrow in Figure 1, and the spacer sprocket 66 will rotate in a similar direction. Since chain 58 is engaged with the spacer sprocket 66 the chain will move and cause all of the sprockets to rotate slightly, whereby carbon will be pulled from the supply rollers and rewound on the rewind rollers.

We claim:

1. In a tabulating machine a carbon feeding and spacing attachment for the machine comprising a pair of side plates, means joining and retaining the side plates spaced parallel to each other, said side plates being releasably secured to the tabulating machine, a supply shaft supported horizontally between said plates, a feed roller supported horizontally between said plates and alongside of said supply shaft, a pressure roller paralleling said feed roller, means securing the ends of the pressure roller to the plates and yieldingly urging the pressure roller against the feed roller, a rewind shaft supported horizontally between said plates above the pressure roller, a drive connection between said feed roller and said rewind shaft for rotation of the same as a unit and including a slip drive connected to the rewind shaft, a solenoid supported on one of said plates and operatively connected to the plugboard of the tabulating machine, and means supported on said one plate and actuated by the solenoid for sequentially engaging and actuating the drive connection.

2. In a tabulating machine a carbon feeding and spacing attachment for the machine comprising a pair of side plates, means joining and retaining the side plates spaced parallel to each other, said side plates being releasably secured to the tabultaing machine, a supply shaft supported horizontally between said plates, a feed roller supported horizontally between said plates and alongside of said supply shaft, a pressure roller paralleling said feed roller, means securing the ends of the pressure roller to the plates and yieldingly urging the pressure roller against the feed roller, a rewind shaft supported horizontally between said plates above the pressure roller, a spacer ratchet rotatably supported on one side plate, a sprocket secured on each of said feed roller and rewind shaft, a slip drive connecting the rewind shaft to the sprocket thereon idler sprockets supported on said one side wall, an endless sprocket chain engaging each of said sprockets including said idler sprockets and said ratchet, a mechanism supported on said one plate for sequentially engaging and rotating said spacer ratchet, and a solenoid mounted on said one plate and operatively connected to the plugboard of the tabulating machine for actuating said mechanism.

3. The combination of claim 1, wherein said means securing the ends of said pressure roller to said plates comprises a horizontal spring tensioned rod supported between said side plates above the pressure roller, and eccentrics connecting the ends of the rod to the ends of the pressure roller.

4. In a tabulating machine, a carbon feeding and spacing attachment for the machine, said attachment comprising a pair of spaced parallel vertical side walls having lower slotted ends for mounting the attachment on the machine, bars connecting and spacing said walls, a plurality of vertically spaced horizontally disposed supply rollers rotatably supported between said walls, a plurality of vertically spaced horizontally disposed feed rollers rotatably supported on and between said walls and located alongside of said supply rollers, a plurality of vertically spaced horizontally disposed pressure rollers disposed adjacent the feed rollers, means mounting the ends of the pressure rollers on the walls and yieldingly urging the pressure rollers against the feed rollers,

a plurality of vertically spaced horizontally disposed rewind shafts extending between and rotatably supported by said walls and paralleling the supply rollers, the feed rollers and the pressure rollers, a sprocket on one end of each of said rewind shafts, slip drives connecting the rewind shafts to their sprockets, a sprocket secured on one end of each of said feed rollers, a spacer sprocket rotatably supported on one side wall of said attachment and being coplanar with the sprockets of said rewind shafts and the sprockets of said feed roller, a ratchet forming part of said spacer sprocket, a swingable pawl on said one side wall and engaging the ratchet, an endless sprocket chain engaging the sprockets on each shaft and feed roller and also engaging said spacer sprocket, and a solenoid supported on said one side wall and electrically connected to the plugboard of the machine, said solenoid having an operating core facing said pawl for actuating the pawl to rotate the spacer sprocket and hence said feed rollers and said rewind shafts.

5. The combination of claim 4, and means supported on said one side wall for varying the swinging movement of said pawl, said means comprising a pair of stops adjustable on the said one side wall.

6. A self-powered carbon rewind and feed attachment for tabulating machines, said attachment comprising a pair of spaced parallel vertical side walls, bars connecting and spacing the walls, a horizontally disposed supply roller rotatably supported on and between the walls, a horizontally disposed feed roller also rotatably supported on and extending between said walls alongside of said supply roller, a pressure roller terminally attached to said walls and yieldingly

urged against said feed roller, a horizontally disposed rewind shaft rotatably supported on and extending between said walls above said supply, feed and pressure rollers, a sprocket, a slip drive connecting said sprocket to one end of said rewind shaft, another sprocket secured to one end of said feed roller, a spacer sprocket rotatably supported on one of said walls, the sprockets on said rewind shaft, said feed roller and said spacer sprocket being coplanar, an endless sprocket chain supported for movement on said one side wall and engaging the sprockets on said rewind shaft and said feed rollers and also engaging said spacer sprocket, a ratchet secured to said spacer sprocket, a pawl swingably mounted on said one side wall and engaging said ratchet, and a solenoid supported on said one side wall for sequentially imparting swinging movement to said pawl to rotate the spacer sprocket and hence said rewind shaft and said feed roller.

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