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PAPER SPACING DEVICE
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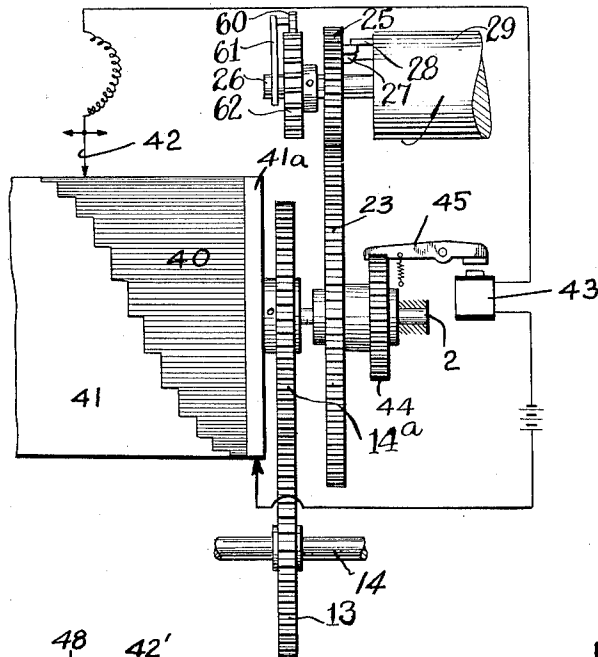


FIG. 1.

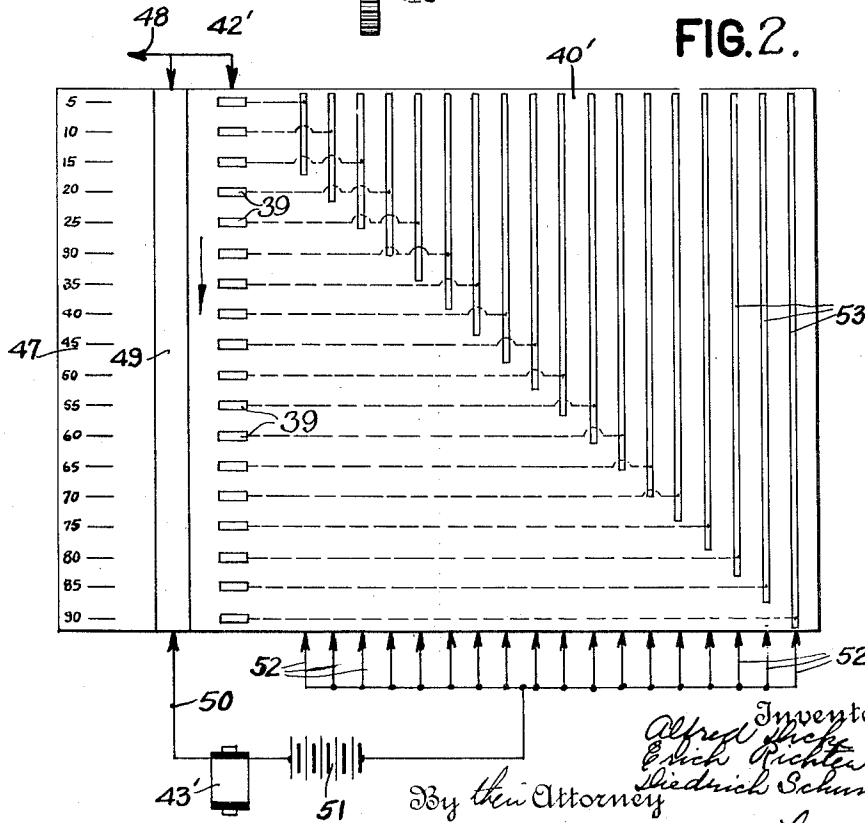


FIG. 2.

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PAPER SPACING DEVICE

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8 Claims. (Cl. 197—114)

This invention relates to printing mechanisms and more particularly to the paper feeding mechanisms thereof whereby the paper may be spaced in predetermined amounts.

5 The principal object of this invention is to provide adjustable paper spacing devices to automatically advance a record sheet to a predetermined position.

10 Another object of the invention is to provide a device for automatically advancing a record sheet to a predetermined position subsequent to a totaling operation of the machine.

15 The record may be in the form of a continuous tape and the apparatus may be so constructed that when all the separate amounts have been automatically entered upon the record, totaling operations take place. During such totaling operations the tape is moved the distance of the unused part of the finished form and beyond the 20 heading or head space of the following form.

25 The invention provides that the platen which carries the record tape, presents during one revolution thereof the total number of item receiving lines of a form step by step and during totaling the tape is spaced to complete the uncompleted portion of such revolution plus the adjusted distance required for head spacing the next form.

30 Various other objects and advantages of our invention will be obvious from the following particular description of one form of mechanism embodying the invention or from an inspection of the accompanying drawing; and the invention also constitutes certain new and novel features of construction and combination of parts herein- 35 after set forth and claimed.

In the drawing:

Fig. 1 is a plan view of the adjustable electrical device for determining the length of feed on totaling operations.

40 Fig. 2 illustrates a further modification of an electrical device for determining the length of the feed.

45 The record sheet is adapted to be fed by a platen 29 (Fig. 1) mounted on a suitably supported shaft 26. The platen 29 is advanced step-by-step as items are listed upon the record strip by a pawl 60 pivotally carried by an arm 61 rotatably mounted on the shaft 26 cooperating with a ratchet 62 secured to the shaft 26. The arm 61 50 is given an oscillatory movement at each item printing operation of sufficient extent to rotate the ratchet 62 and the platen 29 one step in the direction indicated by the arrow in Figure 1. Any conventional means may be utilized to operate the arm 61, consequently none is illustrated.

At each step-by-step rotation of the platen 29 the stop 28 thereon moves away from the stop 27 on the gear 25 so that when this gear is rotated one complete rotation on total taking operations the stop 27 picks up the stop 28 and rotates the platen forwardly to its normal position, thus feeding the record sheet a distance determined by the adjustable electrical device illustrated in Figure 1 or the modified embodiment thereof illustrated in Figure 2.

65 Fig. 1 shows an electrical embodiment of the invention. A commutator 40 may be secured upon a shaft 2 and caused to make a complete revolution during the operation of the totaling mechanism. In order to rotate the commutator 40, a 70 gear 14a also secured to the shaft 2 meshes with the gear 13 secured on a total taking shaft 14. This shaft makes one complete rotation at each total taking operation of the machine. Any suitable device may be employed to drive the shaft 14, none therefore being illustrated. The commu- 75 tator is provided with a stepped contact segment 41 of conducting material, electrically connected to a ring 41a. A brush 42 is shown diagrammatically as being adjustable axially to cooperate with the various steps of the commutator. The dura- 80 tion of contact between brush 42 and segment 41 determines the length of feed in the following manner. A gear 23 and a ratchet 44 rigidly joined by a hub are frictionally mounted on shaft 2 and are normally restrained against turning there- 85 with by a latch 45. During the rotation of commutator 40 the closure of the circuit by brush 42 energizes magnet 43, rocks latch 45 out of en- 90 gagement with the ratchet 44 and thus permits gears 23 and 25 to actuate the platen 29 through stops 27 and 28 in a familiar manner.

95 In Fig. 2 is shown a modified form of an electrical embodiment of the invention wherein the brush 42' is adjustable circumferentially upon a commutator 40' which is shown in development. The brush is adjustable to connect any one of a series of inserts 39 with a common ring 49. A pointer 48 cooperates with graduations 47 to in- 100 dicate the setting of the brush 42'. The inserts are connected electrically with conductor strips 53 which are in line with fixed brushes 52. The strips 53 are of varying lengths and consequently, upon rotation of the commutator, they maintain 105 the circuit through magnet 43' for various periods for the purpose stated above. This circuit may be from a source 51 to the magnet 43', wire 50, ring 49, brush 42', the selected insert to the 110

corresponding strip 53, brush 52, and back to source.

The commutator (Fig. 2) may be secured to or from the circumferential surface of a cylinder.

5 As this cylinder rotates in the direction of the arrow the leading ends of the strips 53, which are of progressively different lengths, come successively into contact with their brushes 52. The brush 42' is mounted to rotate with the commutator 40' but is adjustable circumferentially about
10 said commutator to bridge the gap between the ring 49 and any one of the inserts 39.

As the commutator rotates the circuit through the magnet 43' is completed and this magnet is energized at the time the selected strip 53 comes
15 into contact with its particular brush 52. This removes the latch 45 from the ratchet 44 thus permitting rotation of the platen by its drive mechanism so long as the selected strip 53 is in
20 contact with its brush 52. When the selected strip 53 moves out of contact with the brush 52 the circuit through the magnet 43' is opened de-energizing the magnet and allowing the latch 45 to reengage the ratchet 44 to arrest rotation of the
25 platen, the amount of rotation imparted to said platen being determined by the length of the selected strip 53.

While there has been shown and described and pointed out the fundamental novel features of the
30 invention, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.
35 It is the intention therefore to be limited only as indicated by the scope of the following claims.

What is claimed is:—

1. In a machine of the class described, the combination with a platen, of a driving means therefor adapted to frictionally drive said platen, a
40 commutator having contact strips of various lengths thereon, an adjustable brush cooperating therewith to selectively complete an electric circuit including one of said strips, a magnet in said
45 circuit, and means controlled by said magnet for permitting said driving means to frictionally drive said platen.

2. In a machine of the class described having a platen roll and a totaling mechanism, the combination of a brake mechanism and a manually
50 adjustable commutator device including a plurality of contact strips of various lengths associated with said totaling mechanism, said brake mechanism being adapted to permit said totaling mechanism to advance said platen roll under control
55 of said commutator device.

3. In a machine of the class described capable of being controlled to make item entering and total taking operations, the combination with a
60 platen adapted to be rotated step-by-step on item entering operations, of a normally idle drive means to rotate the platen on total taking operations, a commutator including contacts of different lengths, an adjustable brush cooperating with
65 said commutator, and means operated under the control of said commutator to render the driving means active on total taking operations to rotate

the platen a distance commensurate with the length of the contact selected by the adjustment of the brush.

4. In a machine of the class described capable of being controlled to make item entering and total-taking operations, a combination with a
80 platen adapted to be rotated step-by-step on item entering operations, of a normally restrained drive means to rotate the platen a variable distance on total taking operations, a commutator adapted
85 to rotate on total taking operations, means controlled by the commutator to release the drive means, and an adjustable brush cooperating with the commutator to determine the duration of effectiveness of the drive means.
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5. In an accounting machine capable of item entering and total taking operations, the combination with a platen adapted to be spaced as an
95 incident to item entering operations, of normally idle means to drive the platen a variable distance on total taking operations, electrically controlled means to restrain the drive means, a stepped commutator rotated as an incident to total taking
100 operations, and means including an electromagnet and an adjustable brush cooperating with the commutator to operate the restraining means to permit the drive means to rotate the platen to distance determined by the setting of the brush.

6. In a machine of the class described capable of item entering and total taking operations, said
105 machine having a rotatably mounted platen adapted to be line-spaced as an incident to item entering operations, the combination of the normally idle drive means to frictionally rotate the platen a variable distance on total taking operations, means to restrain the drive means on item
110 entering operations, electromagnetic means to render the restraining means ineffective, a commutator having a plurality of differentially spaced contacts, said commutator being adapted to be rotated as an incident to total taking operations, and a manipulative brush cooperating with the commutator to determine the extent of rotation of the platen on total taking operation.
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7. In a machine of the class described, the combination with a platen, and driving means therefor, of a commutator having a plurality of
120 different length contacts thereon, an adjustable brush to selectively place the contacts in an electrical circuit, a magnet in the circuit, means controlled by the magnet to normally prevent the drive means from rotating the platen and to permit the drive means to rotate the platen upon energization of the magnet an extent determined by the length of the selected contact.
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8. In a machine of the class described, the combination with a platen, and driving means therefor, of a commutator having a plurality of different length contacts thereon, means to selectively place the contacts in an electrical circuit, a magnet in said circuit, and means controlled by the magnet to release the drive means to rotate the platen for a duration determined by the length of the selected contact.
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