Sept. 14, 1937. M. J. MILMOE 2,093,287

FEED REGULATING MECHANISM

Filed Oct. 13, 1934 5 Sheets-Sheet 1

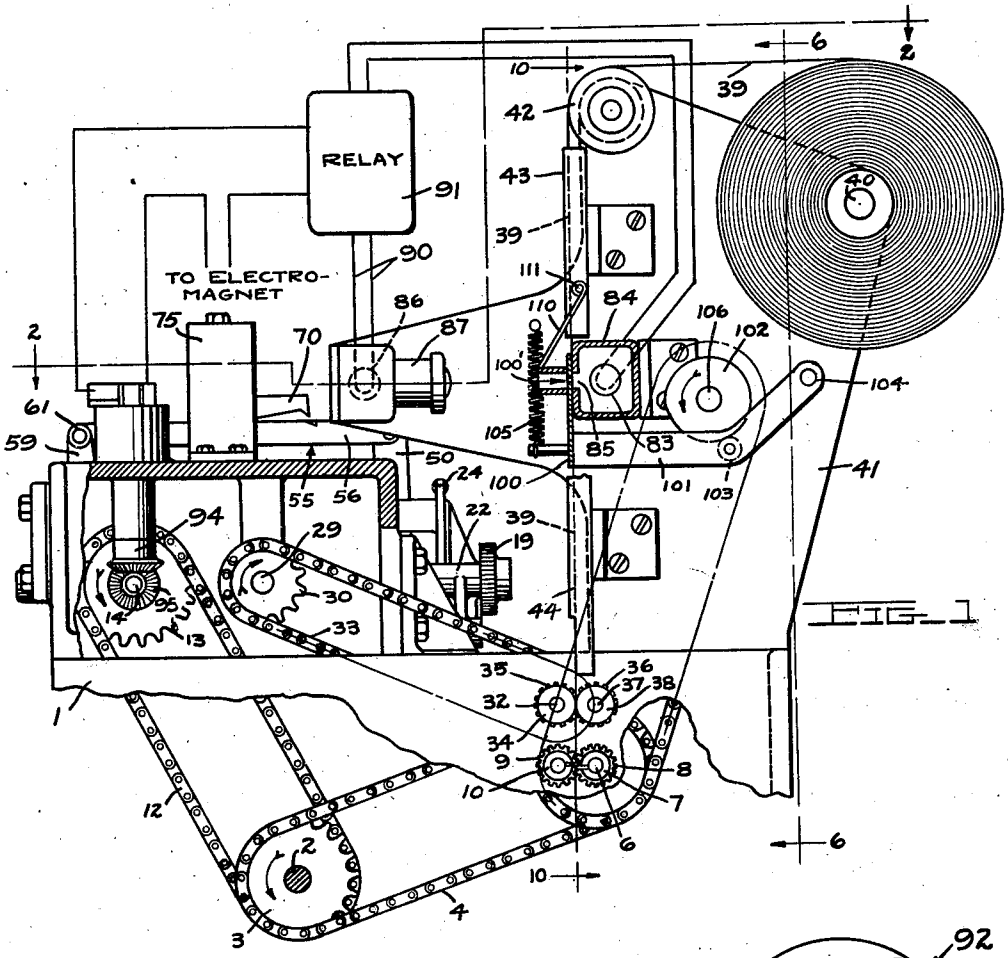


FIG. 1

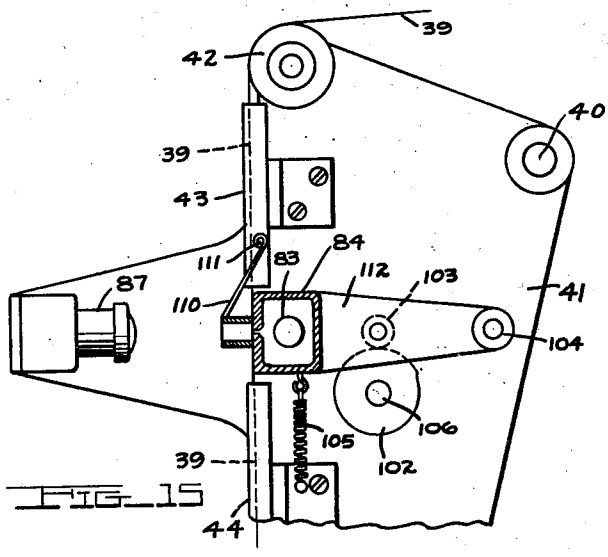


FIG. 15

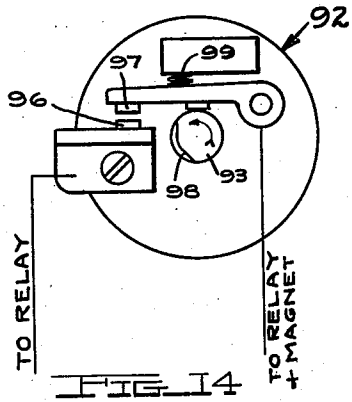


FIG. 14

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FEED REGULATING MECHANISM

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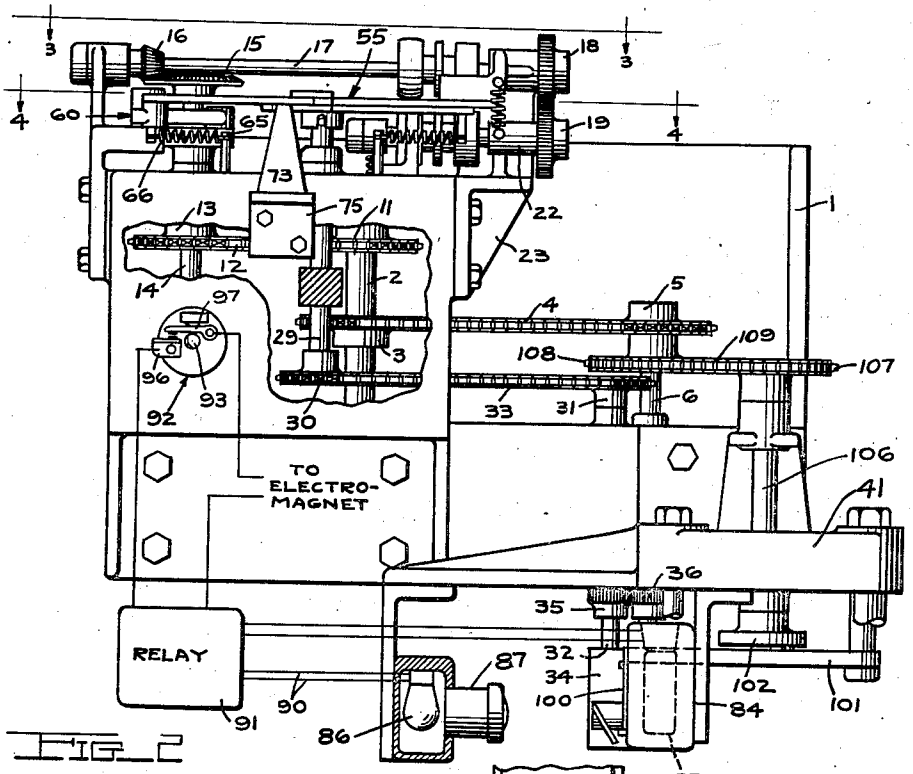


FIG. 2

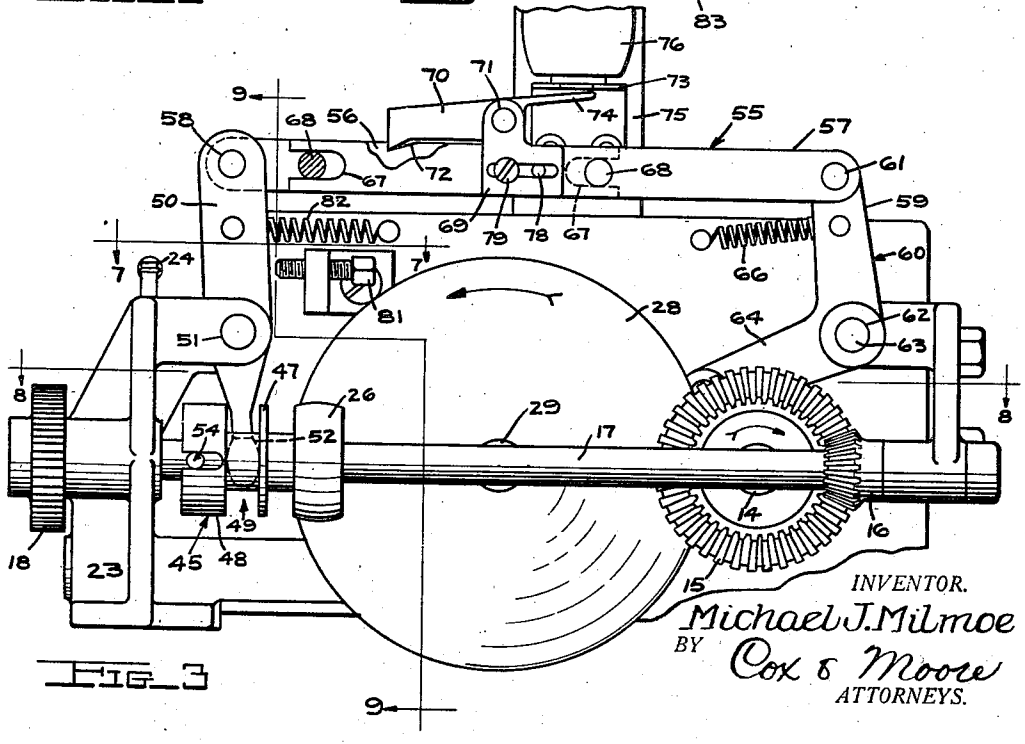


FIG. 3

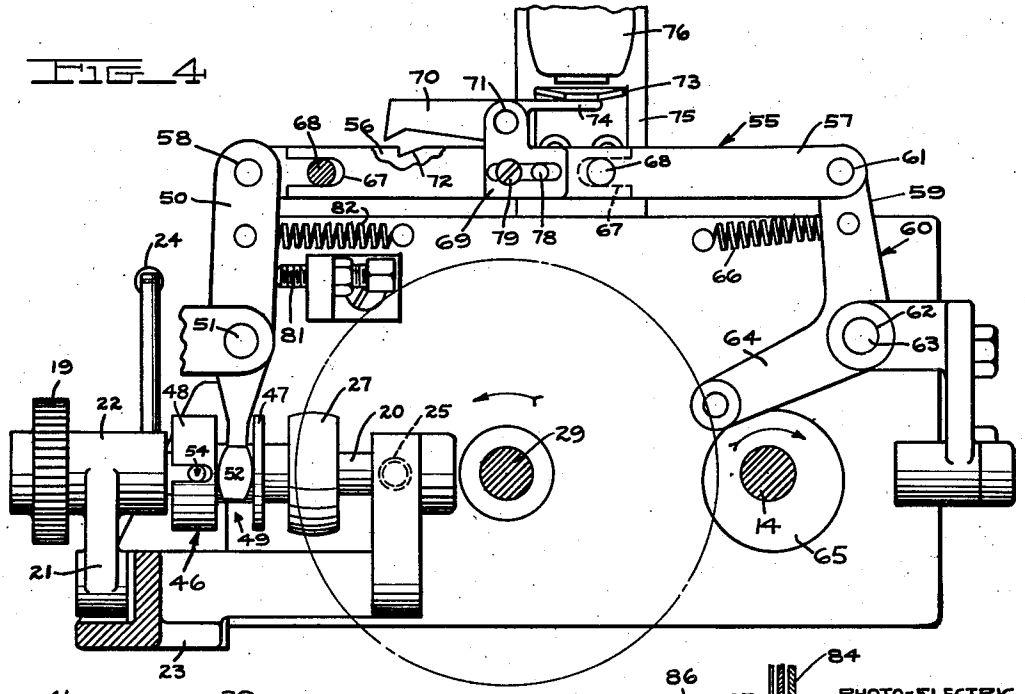
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FEED REGULATING MECHANISM

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FIG. 4



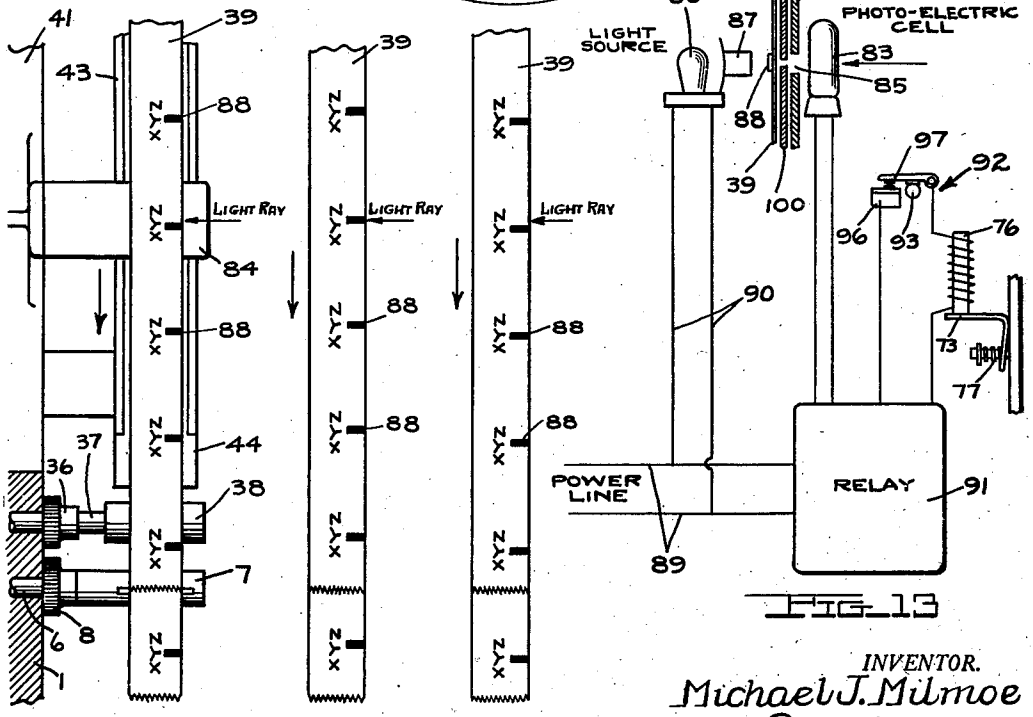


FIG. 10 FIG. 11 FIG. 12 FIG. 13

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FEED REGULATING MECHANISM

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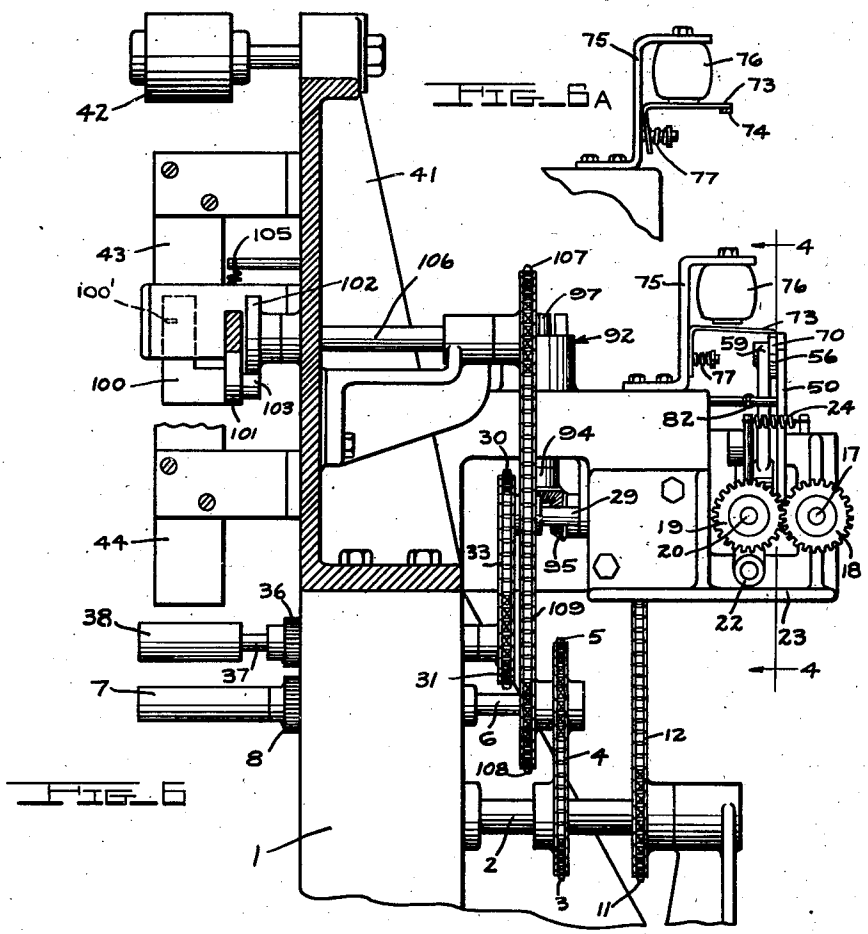


FIG. 6

FIG. 6A

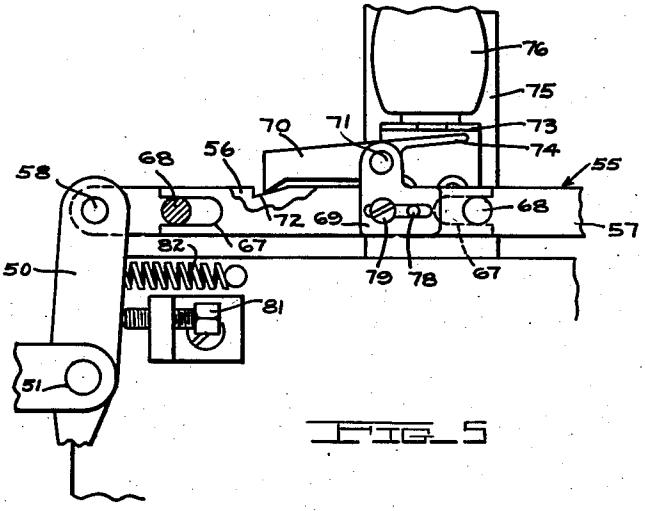


FIG. 5

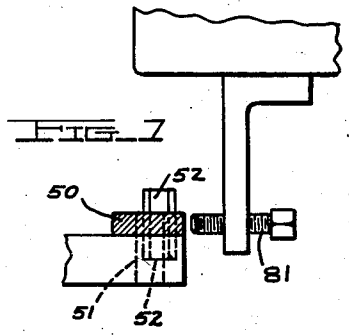


FIG. 7

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FEED REGULATING MECHANISM

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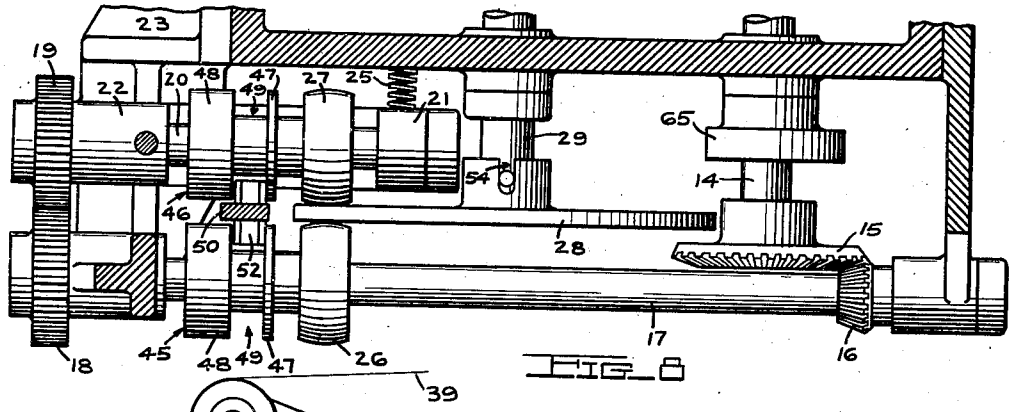


FIG. 8

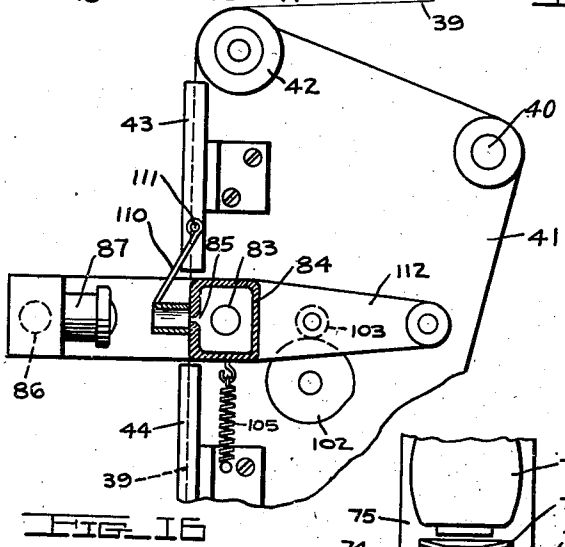


FIG. 16

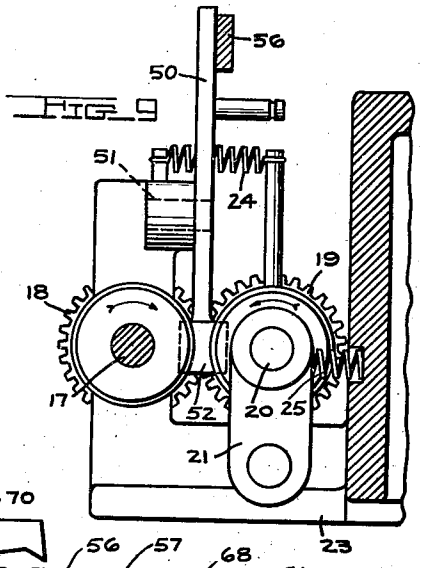


FIG. 9

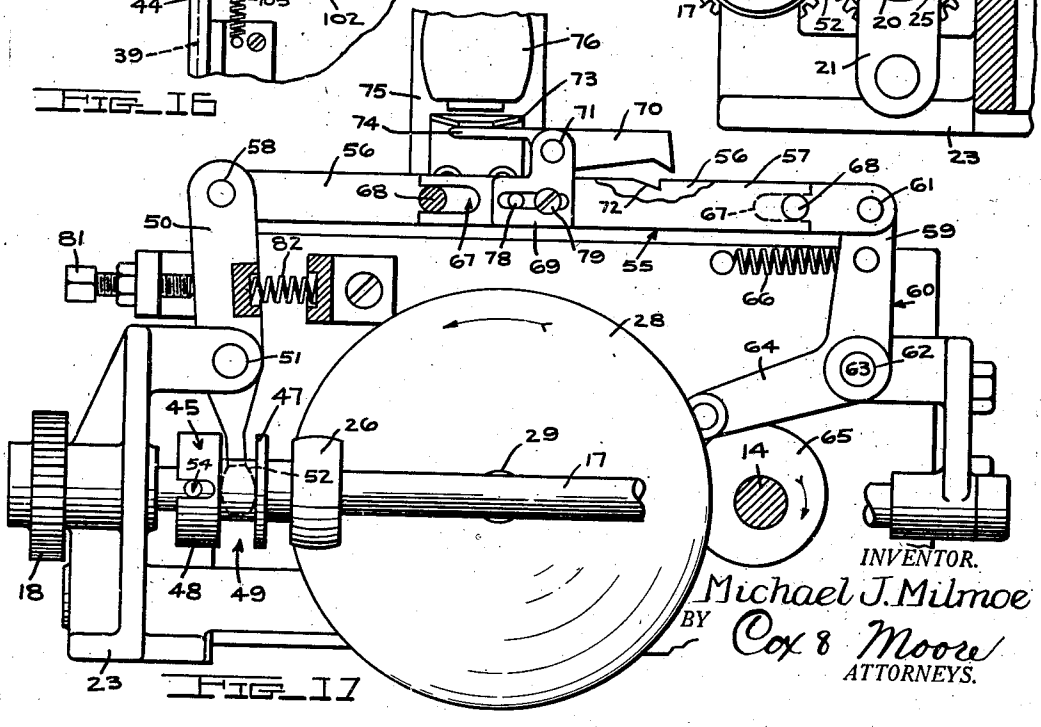


FIG. 17

Patented Sept. 14, 1937 2,093,287

UNITED STATES PATENT OFFICE

2,093,287

FEED REGULATING MECHANISM

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Application October 13, 1934, Serial No. 748,203

18 Claims. (Cl. 164—68)

This invention relates to feed regulating mechanism for feeding properly a web which is to be wrapped about an article.

An important object of the invention is to provide new and improved feed regulating means including a web adapted to be properly positioned in respect to a cutting element so that the proper amount of web will be cut to the proper size in relation to the article to be wrapped.

Another object of the invention is to provide photo-electric cell controlled feed mechanism for feeding a wrapping web to a cutting element, the web having marking or indicia thereon, the electric cell causing the web to properly feed in respect to a cutting element in accordance with the marking or indicia thereon, so that the web will always be cut at the same precise position relative to the marking or indicia.

A further object of the invention is to provide new and novel means for feeding a web to wrapping position and cutting the web at an exact position in respect to marking or indicia thereon in proper timed relationship to the article feeding mechanism.

A still further object of the invention is to provide a web adapted to be moved to a predetermined cutting position, the cutting element being operated in proper timed relationship with respect to the feeding of the web, the web being fed a predetermined amount in accordance with the article to be wrapped, the web having means provided therein for controlling the operation of a photo-electric cell whereby the web will be moved to a proper position relative to the cutting element, the web being cut a proper amount with respect to the article feeding mechanism so that the web will be consecutively cut at positions determined by the position of the means on the web.

Numerous other objects and advantages will be apparent throughout the progress of the following specification when taken in connection with the accompanying drawings wherein

Fig. 1 is a detail front elevation of the machine, certain parts being broken away for the sake of clearness;

Fig. 2 is a detail plan section on the line 2—2 of Fig. 1, showing some of the operating mechanism;

Fig. 3 is a detail end elevation looking in the direction of the arrows 3—3 of Fig. 2 and showing the parts in operable correcting position;

Fig. 4 is a detail sectional view on the lines 4—4 of Figs. 2 and 6, showing the parts in non-correcting position;

Fig. 5 is a detail elevational view showing the parts just prior to the correcting position;

Fig. 6 is a detail elevation, partly in section, on the line 6—6 of Fig. 1;

Fig. 6a is a fragmentary view showing the magnet energized and its effect on a co-operating element;

Fig. 7 is a detail sectional view on line 7—7 of Fig. 3;

Fig. 8 is a detail plan section on the line 8—8 of Fig. 3;

Fig. 9 is a detail sectional view on the line 9—9 of Fig. 3;

Fig. 10 is a detail vertical sectional view on the line 10—10 of Fig. 1, showing the proper position of the web in respect to certain other parts, no correction being necessary in this view;

Fig. 11 is a view of the web showing the web in its retarded position at which point correction is required and will be made;

Fig. 12 is a view similar to Fig. 11, but shows the web immediately after the corrected position and again in normal feeding position;

Fig. 13 is a diagrammatic or schematic view of the electric circuit employed in connection with the photo-electric cell;

Fig. 14 is a detail enlarged plan view of the timer element shown in Fig. 2;

Fig. 15 is a detail sectional vertical view showing a modified form of light and photo-cell mounting;

Fig. 16 is another modified form of light and photo-cell mounting, and

Fig. 17 is a detail elevational view similar to Fig. 3 but showing a modified form of correcting mechanism in non-correcting position.

Figs. 1 to 16 inclusive disclose mechanism used in connection with the present apparatus and includes feed regulating mechanism for feeding a web which normally lags, the web being normally fed slightly slower than required. Means cooperating with and controlled by the movement of the web are employed for periodically advancing the normally lagging web predetermined amounts to properly position the web in respect to a cutting element, whereby the web will be moved to proper position relative to the cutting mechanism for a period of time until the lagging web again requires advancement. The web is cut at the desired plane and the cut piece of web is fed to position in respect to the article to be wrapped, when other mechanism (not shown) is employed to wrap the article in the cut piece of web.

The present mechanism or apparatus embody-

ing the invention comprises a frame 1 upon which there is rotatably mounted a transverse main shaft 2 driven in any suitable manner by means not shown. A sprocket 3 is fixed to the main shaft 2 and directs a chain 4, which, in turn, operates the sprocket 5. The sprocket 5 is operatively fixed to and drives a transverse shaft 6 upon which there is mounted cutter roller 7. A gear 8 is fixed to the shaft 6 and drives a gear 9 which rotates a companion cutter roller 10 (Fig. 1).

The main shaft 2 also has a sprocket 11 fixed thereto which drives the chain 12 which cooperates with a sprocket 13 on the shaft 14 (Figs. 1 and 2). The shaft 14 has a bevel gear 15 fixed thereto (Fig. 2), and this bevel gear drives a bevel gear 16 to rotate the shaft 17. A gear 18 is fixed to the shaft 17 and drives a gear 19 which is fixed to a shaft 20, the shaft 20 being parallel to the shaft 17. The shaft 20 is rotatably mounted in levers or arms 21 and 22 (Fig. 4), which are pivotally connected to a bracket 23 fastened to the frame. Springs 24 and 25 are provided for urging the shaft 20 toward the shaft 17 and maintaining the gears 18 and 19 in mesh (Figs. 4 and 9). Driving rollers 26 and 27 are slidably mounted on and driven by shafts 17 and 20 respectively. A driving disk 28 is arranged between the rollers 26 and 27 (Fig. 8) and is always maintained in contact with the rollers 26 and 27 due to the urging action of the springs 24 and 25, thus during rotative movement of the shafts 17 and 20, the disk 28 is caused to rotate. The rollers 26 and 27 are of the same size and rotate at the same speed. The disk 28 is slidably mounted on a stub shaft 29 (Fig. 8).

A sprocket 30 on shaft 29 drives a sprocket 31 (Fig. 2) on a feed roller shaft 32 through the intermediary of a sprocket chain 33. A feed roll 34 is fixed to the shaft 32 and a gear 35 also fixed to the shaft 32 meshes with and drives a companion gear 36. The gear 36 drives a shaft 37 upon which a companion feed roller 38 is fixedly mounted to rotate with the shaft.

A rolled web 39 is carried by a shaft 40 mounted in a bracket 41. The web 39, which may be of any suitable or desirable wrapping material such as cellulose acetate passes over a guide roller 42 through suitable guiding elements 43 and 44 and through the feed rollers 34 and 38 whereby the web is fed through the cutting rollers 7 and 10. In practice the rollers 26 and 27 are located in respect to the disk 28 so that normally the disk will rotate at a speed slightly less than is required to feed the web a distance equal to the length of the wrapper. Means intermittently operated are therefore provided for speeding up the rotation of the disk and consequently the feeding of the web to compensate for the lagging of the web and to move the web in proper timed relationship with the cutter and to feed the web a distance substantially equal to the length of the cut wrapper. The means for speeding up the rotation of the disk and then returning the disk to its normal operating speed comprises shiftable means for changing the location of the rollers 26 and 27 radially or inwardly and outwardly of the disk. This shiftable means comprises rigid collars 45 and 46 rigidly and integrally formed with the rollers 26 and 27 respectively. The collars 45 and 46 each comprise an annular flange 47 and an end flange 48 spaced apart to provide an annular space or groove 49. A lever 50 pivoted at 51 to a part of the bracket 23 has its lower end 52 arranged in the space 49 between the flanges 47 and 48 and is adapted to shift the rollers 26 and 27 longitudinally of the shaft. The rollers 26 and 27 and their co-operating rigid collars 45 and 46 are slidably mounted on their respective shafts and include a pin and slot connection designated generally by the numeral 54 (Fig. 3). A link 55 (Figs. 2 and 3) comprising the bars 56 and 57 is pivotally connected at one end to the lever 50 as indicated at 58 and at the other end to the arm 59 of the bell crank 60 as indicated at 61, Fig. 3. The bell crank 60 is pivotally mounted at 62 on a stub shaft 63 and has its arm 64 provided with a cam follower which rides on a cam 65. The cam 65 is mounted on the shaft 14 and rotates therewith. Rotation of the cam 65 causes back and forth movement of the bar 57 of the link 55. A spring 66 is provided for urging the cam follower constantly in engagement with the cam 65.

The bars 56 and 57 are slidable in respect to each other, there being slot and pin connections 67 and 68 operatively connecting the two bars, as clearly shown in Fig. 4.

A member 69 is adjustably connected to the bar 57 and carries a pawl 70 at its upper end, which is pivoted thereto at 71. The pawl 70 is adapted to engage the notch 72 formed in the bar 56 to move the bar intermittently and co-extensively with the bar 57.

During normal operation of the machine during feeding of the web, when no correction is required, the parts will assume the position shown in Fig. 4, with the pawl or detent 70 being out of the notch 72. If, however, a correction is necessary, the pawl 70 will be caused to engage the slot or notch 72 to cause the rods 56 to move with the rod 57. Movement of the rod 56 will swing the lever 50 on its pivot 51 and shift the rollers 26 and 27 to the right (Fig. 3) to cause the disk to rotate more rapidly and consequently cause the web to feed faster. The pawl or detent 70 is adapted to be moved into and out of engagement with the slot or notch 72 by an arm 73 which cooperates with the tail piece 74 on the detent or pawl 70 (Figs. 3, 4 and 6a). The arm 73 is movably connected to a bracket 75 as clearly shown in Fig. 6a. The arm 73 is adapted to be raised by the energization of an electro-magnet 76 (Fig. 6a), permitting the forward end of the detent or pawl 70 to drop into its notch 72. When the magnet 76 is de-energized, springs 77 will return the arm 73 to the position shown in Fig. 6, causing the pawl 70 to be raised from its notch 72.

The member 69 to which the pawl or detent 70 is pivoted, is adaptable for adjustable movement along the bar 57 by means of a pin 78 and screw 79 co-operating with a slot formed in the member 69. The movement or adjustment of the member 69 causes the detent or pawl 70 to be moved either toward or away from the notch 72 a predetermined amount, and therefore adjusts the relative movement of the rod 56. This adjustable connection permits the movement of the pawl to be varied in respect to the slot 72.

An adjustable setscrew 81 (Figs. 3, 4 and 7) is adapted to limit the movement of the upper portion of the lever 50 to the right (Figs. 3 and 4), a spring 82 being provided to normally urge the lever 50 toward the end of the setscrew 81. The setscrew 81 permits for adjustment of the lever 50 and the rollers 26 and 27 and consequently regulates the amount of overfeed of the web. In practice, this screw is so set to permit an overfeed of the material, the amount of the overfeed being

regulated or adjusted as practicable. Therefore, a very fine adjustment can be had to determine the amount of overfeed. The member 69 is adjustable and therefore determines the amount of correction. Consequently, the adjustment 81 and the adjustable member 69 provide for the proper overfeed and the proper amount of correction respectively.

The means for controlling the operation of the electro-magnet 76 comprises an electrical circuit including a photo-electric relay mechanism and a timer mechanism, (see Fig. 13). A photo-electric cell 83 is arranged within a casing 84 having an opening 85 provided therein to permit a source of light 86 arranged within a shield 87 to focus a beam of light through the opening 85 and effect operation of the photo-electric cell 83. The web 39 as herein illustrated, is of clear material such as cellulose acetate and is provided with a plurality of evenly spaced, darkened or opaque, light-resisting portions, or other contrasting indicia, provided along the margin thereof. The spacing of the portions or indicia 88 is equal to the length of a wrapper which is to be cut from the web. The opening 85, when direct current is employed and no shutter is used, is relatively small and fine.

A source of electric power comprising conducting leads 89 (Fig. 13) is transmitted to the source of light 86 by the conductors 90. The leads 89 are also operatively and electrically connected to a standard relay 91, which relay is operatively and electrically connected to the photo-electric cell 83.

The aforesaid electrical circuit also includes a timer circuit which is operatively and electrically connected with the relay 91 and the electro-magnet 76.

A timer mechanism 92 (Figs. 1, 2, and 14), comprises a rotary member or shaft 93 which extends through a part of the frame and is driven by a bevel gear 94 meshing with a bevel gear 95 fixed to the shaft 14 (Fig. 1). A contact 96, electrically connected to the relay, is adapted to be intermittently engaged by a pivotally mounted contact arm 97 which is operatively connected to the electro-magnet 76 and the relay 91. The contact between the arm 97 and the contact 96 is intermittently made by rotation of the shaft 93, which is formed with a cammed surface 98 (Fig. 14), spring means 99 being provided to maintain the contact arm 97 in constant engagement with the shaft 93.

The web is arranged between the source of light 86 and the photo-electric cell 83 in such a manner that the ray of light will be along the edge carrying the marks or indicia 88, the marks or indicia being adapted to interrupt the source of light, the web being constantly fed to the cutters 7 and 10 by the feed rolls 34 and 38. As aforementioned, the web is fed slightly slower than the amount required, and inasmuch as it is necessary that the proper length of web be cut, the web must be fed a distance approximately equal to the spaces between the markings or indicia 88; however, due to the variation of friction on the feed rollers and also the elongation or shrinkage of the web by stretching or moisture conditions, and the inability to positively correlate the parts of the machine to operate precisely and exactly, the particular feeding mechanism herein described is employed. It is further necessary that the web be cut at spaced intervals due to the fact that advertising matter, trade name, et cetera, appears on the web and it is desirable that such name or advertising be positioned relatively the same on all packages, therefore, the present means are devised to cause the web to be cut substantially at the precise, same point, relative to the markings or indicia 88. During normal operation, the source of light 86 will pass through the clear web into the photo-electric cell, which creates an impulse in the photo-electric cell, which prevents the energization of the electro-magnet 76, therefore normally the bar 57 which continually moves back and forth by the speed of the feeding mechanism will be unaffected because the pawl 70 will not be engaged with the notch 72. When a portion 88 of the web interrupts the beam of light between the source 86 and the photo-electric cell 83, no impulse will be set up in the photo-electric cell 83 to keep the electro-magnet de-energized, and therefore the electro-magnet will tend to become energized.

To cause the magnet 96 to be energized, it is necessary that the portion 88 of the web be directly between the source of light 86 and the photo-electric cell 83, and that contacts 96 and 97 be closed. Contact of the contact members 96 and 97 is continuous and intermittent and the contacts are closed during each revolution of the machine in timed relationship with the cutters, therefore, if the portion 88 on the web tends to cause energization of the magnet, such energization will not take effect unless the contacts 96 and 97 are closed. Furthermore, the contacts 96 and 97 will have no effect on the mechanism unless the portion 88 of the web intercepts the ray between the source of light and the photo electric cell. When, during the operation of the machine, the contacts are closed simultaneously with the interception of the beam of light by the portion 88, the magnet 76 will become energized causing the arm 73 to be raised. When the arm 73 is raised, the engaging end of the pawl 70 will drop downwardly into engagement with the slot 72 whereby the reciprocal motion of the bar 57 will be transmitted to the bar 56. This transmitted motion will then be transmitted to the lever 50 which will cause the collars 45 and 46 to shift inwardly to the right (Fig. 4) to increase the revolving speed of the disk 28. Inasmuch as the aforesaid apparatus and mechanism is constructed to cause lagging movement of the web, the increased speed of the disk 28 will cause faster feeding movement of the web. The magnet will stay energized only so long as the contacts 97 and 96 are in engagement, therefore, as soon as the shaft 93 rotates a sufficient distance to break the contact between the members 97 and 96, the electro-magnet will again be de-energized and the parts will return to their normal original operable position with the detent again out of engagement with the slot 72, the shifting of the rollers 26 and 27 to their normal positions being accomplished by the spring 82 pulling the lever 50 toward the right (Fig. 4), but against the stop screw 81. This cycle of operation of energization and de-energization of the magnet to cause proper feeding of the web relative to the cutter is continued throughout the operation of the machine. In Fig. 10, the normal operation of the machine is continued because the portion 88 is shown as not intercepting the light ray when the contacts 96 and 97 are in engagement. In Fig. 11 the web is shown in position so that the portions 88 will interrupt the light ray when the contacts 96 and 97 are closed and adjustment is required, this being due to the lagging of the web.

In Fig. 12 the web is shown advanced after the correction has been made and the feeding of the web has been advanced immediately after the interception of the light ray by the portion 88 and the closing of the contacts 96 and 97.

The above-described mechanism will operate with both alternating and direct current. Sometimes, however, where alternating current is employed, and due to the fast operation of the machine, it may be possible that the portion 88 on the web will pass the opening in the photo-electric cell casing 84 so quickly that it will have no effect on the photo-electric cell and consequently the electro-magnet will not become energized, therefore, to overcome such a possibility, it has been found preferable to incorporate a shutter 100 in cooperation with the photo-electric cell housing 84. This shutter has a relatively fine or small opening 100' provided therein, (Fig. 1) which opening 100' communicates with the larger opening 85 in the photo-electric cell housing 84, and moves with the webbing a predetermined distance, and is then caused to return upwardly, this reciprocal movement of the shutter being continuous. The downward movement of the shutter occurs when the contacts 96 and 97 are first brought into engagement, the shutter being in timed relationship with the closing of said contacts. This movement of the shutter is caused by an arm 101 fixed to the shutter 100 (Fig. 1), the movement of the arm 101 being effected by a cam 102 engaging a cam roller 103 on the arm 101. The arm 101 is pivoted to the bracket 41 as indicated at 104 (Fig. 1), a spring 105 being provided to hold the cam roller 103 against the cam 102. The cam 102 is fixed to a shaft 106 (Figs. 1, 2 and 6) which is mounted in suitable bearings carried by the bracket 41. The shaft 106 has a sprocket 107 fixed thereon which is driven by a sprocket 108 on the cutter shaft 6 through the intermediary of a connecting sprocket chain 109, therefore, the shutter 100 is caused to operate in timed relationship with the cutter which is also operated in timed relationship with the timer mechanism 92. The effect of the shutter arrangement is to theoretically lengthen the portion 88, or, in other words, thereby insuring that the beam of light will be broken in sufficient length of time to cause energization of the magnet when necessary, and when the contacts are in engagement.

A shield 110 may be arranged immediately adjacent the photo-electric cell housing 84 to insure proper focusing of the source of light 86 in respect to the photo-electric cell 83 and to prevent any stray source of light from entering the opening in the housing. This shield 110 is pivoted at 111 (Fig. 1) and assists in maintaining the running web in relative contact to the opening 85 in the photo-electric cell housing 84.

In Fig. 15 is shown another modified form of shutter arrangement whereby the photo-electric cell itself is movable, thus eliminating use of separate mechanism for operating the shutter. This arrangement comprises the photo-electric cell 83 being mounted in the housing 84 which is fixed to a pivoted lever 112, the pivotal movement of the lever 112 being caused by the cam 102 and the cam roller 103 as described above.

In Fig. 16, the source of light 86 and the housing 87 therefor are mounted on the lever 112 and moves therewith along with the photo-electric cell 83 and its housing 84. The reciprocal movement of the photo-electric cell and the source of light is accomplished by the cam 102 and the cam roller 103, causing reciprocation of the entire bracket 112 upon which both of the light elements are mounted.

In instances where it is desired to over-feed the web instead of causing the web to lag, as described above, some of the mechanism may be slightly changed in conformance with the construction shown in Fig. 17, wherein the lever is normally urged against the stop to such a position where it is over-feeding. When a correction is necessary, the action of the lever will operate in the opposite direction.

When the mechanism shown in Fig. 17 is employed for over-feeding, and when a correction is desired and the electro-magnet 76 is energized, the pawl 70 will engage the slot or notch 72 to cause operation of the lever 50 moving the end 52 to the left (Fig. 17). This movement will cause the rollers 26 and 27 to likewise move to the left, and therefore retard the rotation of the disk 28 and consequently retard the feeding. This retardation of the disk causes the web to be fed more slowly, and until the contacts 97 and 96 are broken, at which time the parts will again return to their normal operating position as shown in Fig. 17.

Changes may be made in the form, construction, and arrangement of the parts without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. In a wrapping machine for wrapping a piece of web having indicia thereon about an article, a photo-electric cell, means controlled by the photo-electric cell and cooperating with indicia on the web for moving the web, a rotatable disk for controlling the speed of feed of the web, rollers engaging the disk and driving the same, and means controlled by the photo-electric cell and causing movement of said rollers inwardly and outwardly of said disk to vary the speed of the disk and consequently the feeding speed of the web.

2. In a wrapping machine for wrapping a piece of web having indicia thereon about an article, a photo-electric cell, means controlled by the photo-electric cell and cooperating with indicia on the web for moving the web, a rotatable disk for controlling the speed of feed of the web, rollers engaging the disk and driving the same, and electro-magnetic means controlling the position of said rollers relative to the disk whereby the speed of movement of the disk and consequently the feeding speed of the web may be varied upon movement of the rollers in a predetermined position relative to the disk.

3. In a wrapping machine for wrapping a piece of web having indicia thereon about an article, a photo-electric cell, means controlled by the photo-electric cell and cooperating with indicia on the web for moving the web, a rotatable disk for controlling the speed of feed of the web, rollers engaging the disk and driving the same, electro-magnetic means for moving said rollers relative to the disk whereby the speed of movement of the disk and consequently the feeding speed of the web may be varied upon movement of the rollers in a predetermined position relative to the disk, means controlling the operation of said electro-magnetic means, and means for adjusting the amount of movement imparted to said rollers by said electro-magnetic means.

4. In a wrapping machine for wrapping a piece

of web having indicia thereon about an article, a photo-electric cell, means controlled by the photo-electric cell and cooperating with indicia on the web for moving the web, a rotatable disk for controlling the speed of feed of the web, rollers engaging the disk and driving the same, electro-magnetic means controlling the position of said rollers relative to the disk whereby the speed of movement of the disk and consequently the feeding speed of the web may be varied upon movement of the rollers in a predetermined position relative to the disk, means controlling the operation of said electro-magnetic means, and means for limiting the movement of the rollers in one direction whereby a relatively fine adjustment may be had.

5. In a wrapping machine for wrapping a piece of web having indicia thereon about an article, photo-electric means, means controlled by the photo-electric means and cooperating with indicia on the web for moving the web, a disk for causing the web to feed at a speed different from that normally required, and means in adjustable driving engagement with the disk for varying its speed of rotation at periodic intervals.

6. In a wrapping machine for wrapping a piece of web having indicia thereon about an article, photo-electric means, means controlled by the photo-electric means and cooperating with indicia on the web for moving the web, a disk for causing the web to feed at a speed less than normally required, and means controlled by the web when indicia thereon is at a predetermined position relative to the photo-electric means for increasing the speed of the disk, said last named means including a member in adjustable driving engagement with the disk.

7. In a wrapping machine, a disk, rollers engaging opposite sides of the disk, means for rotating said rollers, and means for automatically moving the rollers inwardly and outwardly relative to the center of the disk to vary the speed of rotation of said disk.

8. In a wrapping machine, a disk, rollers engaging opposite sides of the disk, means for rotating said rollers, means for automatically moving the rollers inwardly and outwardly relative to the center of the disk to vary the speed of rotation of said disk, said means comprising a pair of disconnected links, and means for connecting said links together at certain intervals.

9. In a wrapping machine, a disk, rollers engaging opposite sides of the disk, means for rotating said rollers, means for automatically moving the rollers inwardly and outwardly relative to the center of the disk to vary the speed of rotation of said disk, said means comprising a constantly moving arm and a normally stationary arm, and means for locking said two arms together.

10. In a wrapping machine, a disk, rollers engaging opposite sides of the disk, means for rotating said rollers, means for automatically moving the rollers inwardly and outwardly relative to the center of the disk to govern the speed of rotation of said disk, said means comprising a constantly moving arm and a normally stationary arm, means for locking said two arms together, and means for disconnecting said arms when the disk has assumed a predetermined speed.

11. A wrapping machine having wrapper feeding mechanism comprising a rotatably mounted disk, a driving roller engaging said disk to drive the same, a bar for shifting the roller relative to the disk to vary the speed of the disk, a link connected to said bar, a constantly movable link, and means for periodically locking said two links together.

12. A wrapping machine having wrapper feeding mechanism comprising a rotatably mounted disk, a driving roller engaging said disk to drive the same, a bar for shifting the roller relative to the disk to vary the speed of the disk, a link connected to said bar, a constantly movable link, means for periodically locking said two links together, electro-magnetic means controlling the operation of last named means, and means including a photo-electric cell controlling the operation of the electro-magnetic means.

13. In a wrapping machine comprising a web having indicia thereon, web feeding means to feed the web, a photo-electric cell controlling the operation of the feeding means and controlled by indicia on the web, a housing for said photo-electric cell, a shutter for said housing, and means for causing said shutter to move a predetermined distance with the web at predetermined intervals.

14. In a wrapping machine, means for feeding a web of wrapping material, said web having indicia thereon, a photo-electric cell arranged on one side of the web and controlling the web feeding means, a source of light arranged on the other side of the web whereby the operation of the photo-electric cell is controlled by the source of light and the indicia on the web, said photo-electric cell and source of light moving with the web at the same speed thereof at predetermined certain intervals.

15. In a wrapping machine, a station having operating means for operating upon a web, means for normally feeding a web having indicia thereon past the station at a speed slightly different from that required to synchronize the indicia with the operating means, electro-sensitive means controlled by the web, means controlled by said electro-sensitive means for periodically changing the rate of feed of the web after it has deviated a predetermined amount to compensate therefor, said means comprising a disk and a roller having adjustable driving engagement therewith.

16. In a wrapping machine, a station having operating means for operating upon a web, means comprising a cooperating disk and roller in adjustable driving engagement for feeding a web having indicia thereon past the station at a predetermined speed, electro-sensitive means controlled by the indicia on said web, and means controlled by said electro-sensitive means for varying the relative positions of said disk and roller whereby to change the rate of feed of the web.

17. In a wrapping machine having means for feeding an indicia marked web and means for performing an operation on the web in predetermined relation to said indicia, the combination of means for controlling the relative speed of said feeding means and said operation performing means comprising a rotatable disk, a rotatable roller engageable with the face of said disk whereby the roller and disk are constrained for simultaneous rotation, sensing means controlled by the movements of the web, and means controlled by the sensing means for moving the roller toward or away from the axis of the disk whereby to vary the relative driving speed of rotation between the roller and the disk.

18. In a wrapping machine, means for feeding an indicia marked web, said feeding means being continuously operable during the operation

of the machine, means for performing an operation on the web in predetermined relation to said indicia, means for controlling the relative speed of said feeding means and said operation performing means comprising change speed mechanism, sensing means for controlling the change speed mechanism controlled by the movements of the web, and means for reciprocating said sensing means whereby it moves with the web at substantially web speed during the sensing operation.

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