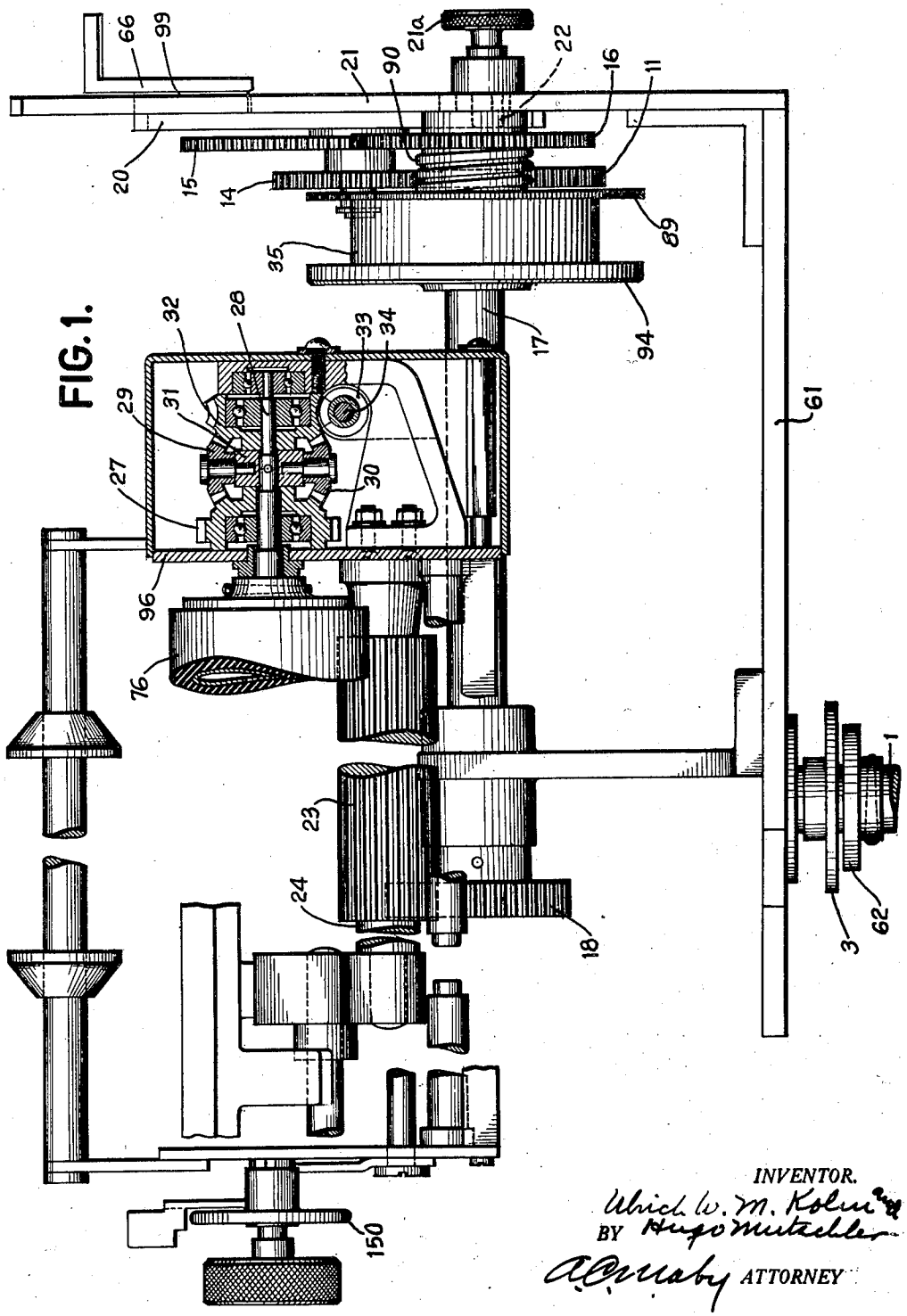
Oct. 4, 1938. U. M. W. KÖLM ET AL 2,131,895

PAPER FEEDING DEVICE

Filed Dec. 18, 1934 5 Sheets-Sheet 1

FIG. 1.



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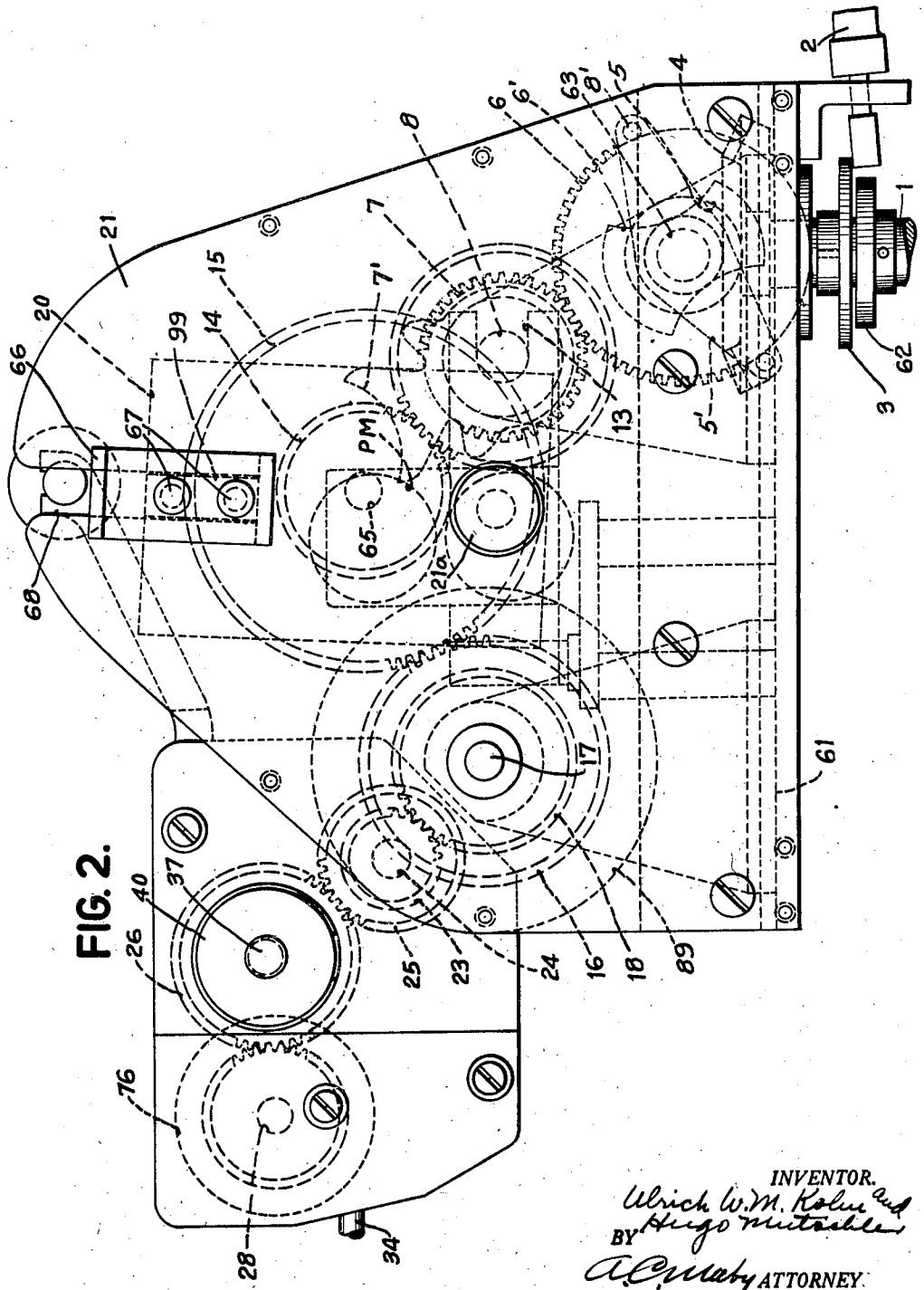


FIG. 2.

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FIG. 3.

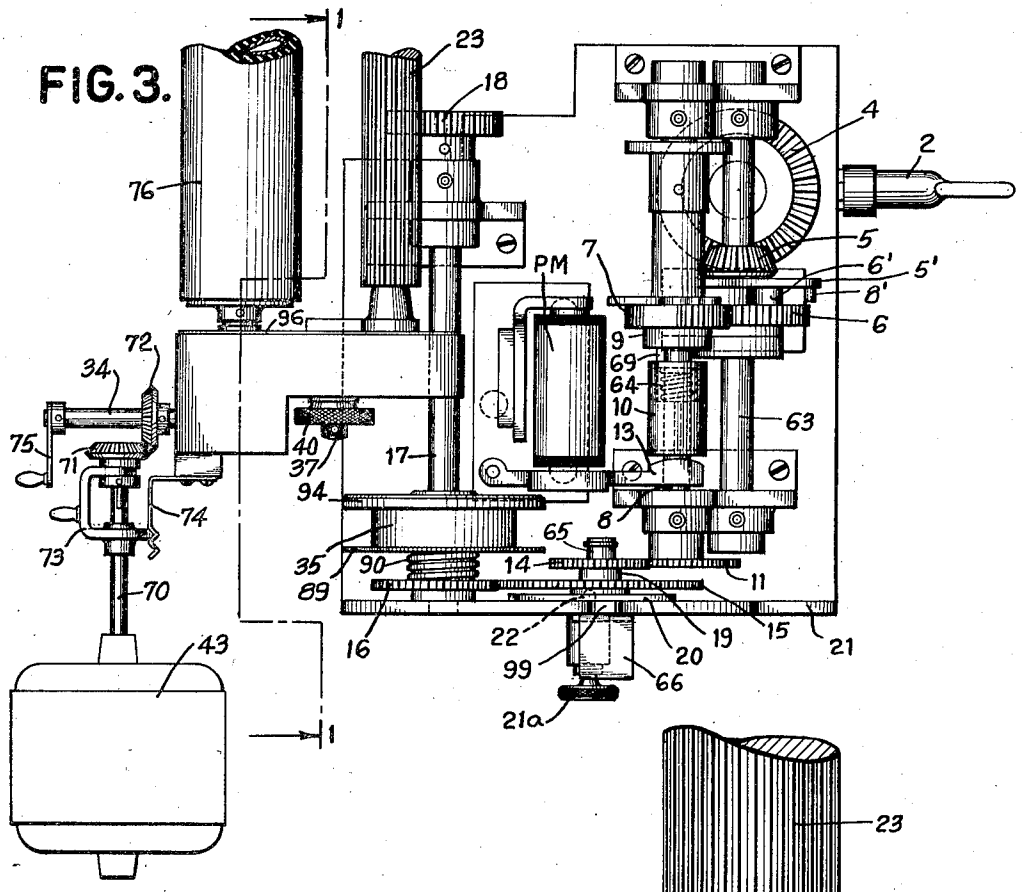
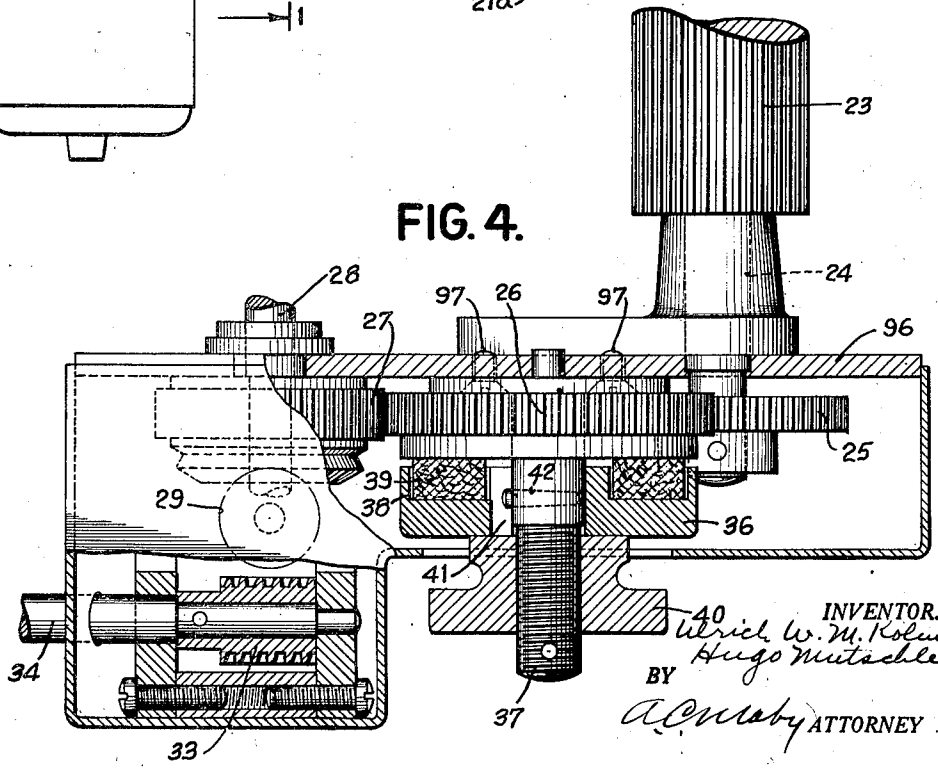


FIG. 4.



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Filed Dec. 18, 1934 5 Sheets-Sheet 4

FIG. 5.

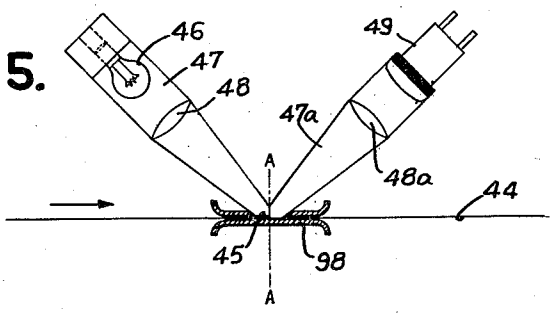


FIG. 6.

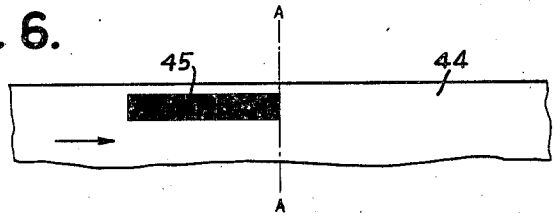
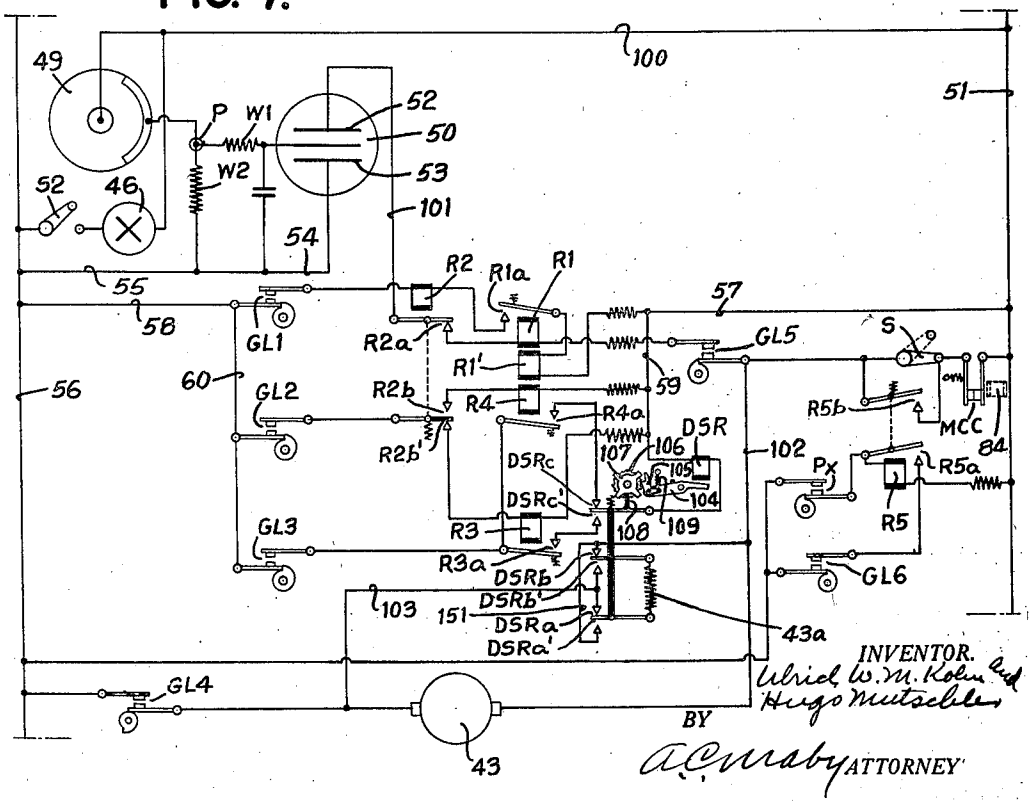


FIG. 7.



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FIG.8.

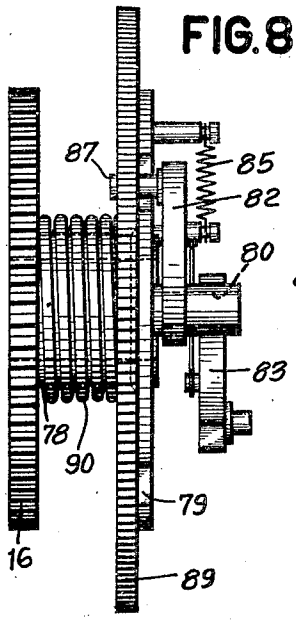


FIG.9.

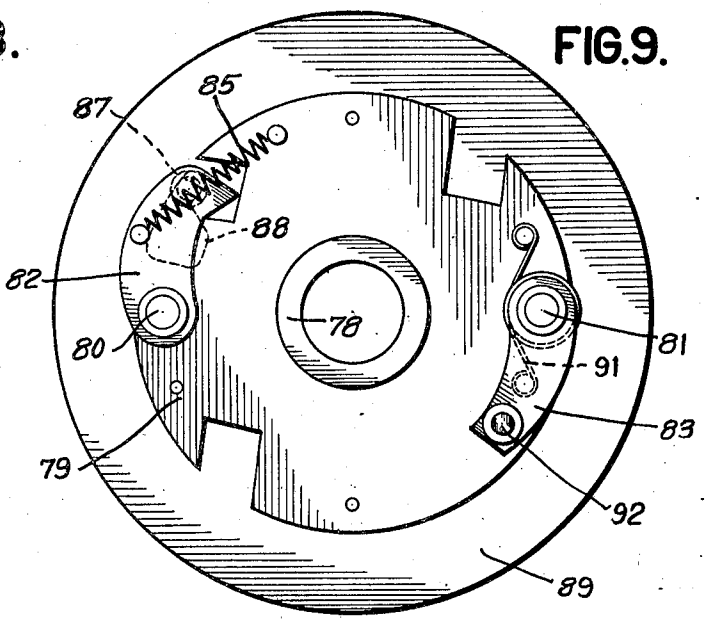


FIG.10.

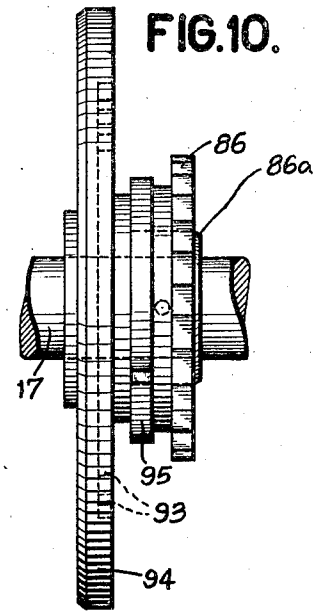
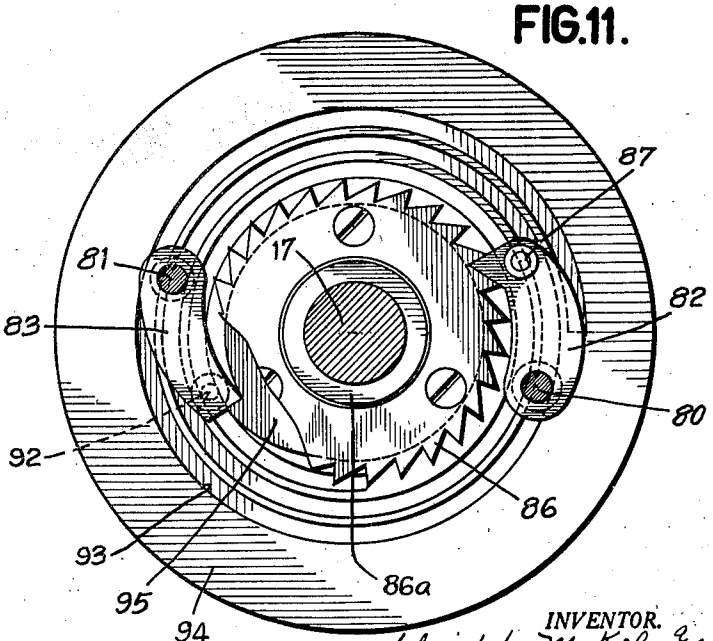


FIG.11.



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Patented Oct. 4, 1938 2,131,895

UNITED STATES PATENT OFFICE

2,131,895

PAPER FEEDING DEVICE

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Application December 18, 1934, Serial No. 757,990
In Germany March 27, 1934

10 Claims. (Cl. 197—133)

This invention relates to an improved form of paper feeding device.

An object of the invention is to provide means for moving a record sheet back or forth to correct irregularities in the spacing of the sheet during operation of the machine.

In recording business transactions on a continuous record sheet divided into forms, difficulty is often experienced in maintaining regular spacing so that the printing positions coincide on all forms. The devices of the present invention are adapted to give either a continuous sheet or separate record sheets a correcting movement either manually or automatically and in either direction as the machine is operated. The advantage of correcting the spacing of the record sheet as the machine is operating is of special value in a record card controlled tabulator where continuous operation is otherwise possible because of the automatic control of the cards and the automatic printing and shifting from form to form without any manual operation between forms. Heretofore in order to correct the position of a record sheet, the machine would have to be brought to rest.

A feature of the invention is the provision of differential gearing which is connected to the record sheet feeding platen so that the ordinary driving mechanism may function therethrough and another correcting mechanism may act simultaneously to turn the platen forward or reversed.

Another object of the present invention is the provision of a braking device between the paper spacing mechanism and the paper carrier. This mechanism is provided so that a correcting movement directed through one side of the differential mechanism is applied to the platen shaft instead of turning the other side of the differential.

Another object of the invention is the provision of means for sensing a mark or perforation on a record sheet and thereby controlling the actuation of mechanism for spacing the sheet backward or forward in correcting the position of the sheet for the reception of data impressions.

Another feature of the present invention is the provision of a mechanism for imparting a correcting movement to a platen without a return movement towards the correcting source when the platen is moved by another agency.

The invention is illustrated in a set of drawings which accompany and form part of the present specification. In the drawings:

Fig. 1 is a front elevation view of the paper feeding devices showing a section through the differential gearing taken along the line 1—1 of Fig. 3.

Fig. 2 is a side elevation view showing the gear connections for driving the platen shaft.

Fig. 3 is a plan view of the paper feeding devices.

Fig. 4 is a plan view partly in section showing the braking mechanism associated with the platen drive gears.

Fig. 5 is a detail view of the light-sensitive photocell control devices.

Fig. 6 is a detail view of a portion of the record sheet showing the control mark thereon or perforation cut therein.

Fig. 7 is a wiring diagram of the electrical connections and relays controlled by the light-sensitive device for energizing a platen spacing motor.

Fig. 8 is a side view of the driving mechanism in a coupling device.

Fig. 9 is a front view of the parts shown in Fig. 8.

Fig. 10 is a side view of the driven portion of the coupling.

Fig. 11 is a front view of the parts shown in Fig. 10.

Referring to Fig. 1, it is seen that the carriage frame includes a base plate 61 and a side frame 21 upon which the carriage drive gearing is supported. A constantly rotating vertical shaft 1 carries a friction disk 62 near the upper end. Above the disk 62 there is slidably mounted another friction disk 3 keyed to a bushing carrying a bevel gear 4 (Fig. 2) and adapted to connect the bevel gear for movement in synchronism with shaft 1 when a handle 2 is operated to bring the friction disks together. The bevel gear 4 meshes with a smaller bevel gear 5, Fig. 3, connected to a gear 6 on shaft 63. Between the gear 6 and another gear 7 loosely mounted on adjacent shaft 8, there is formed a Geneva driving connection. The side of gear 7 is formed with a notched collar 9 providing one side of a clutch. The other part of the clutch is formed as a collar 10 which is keyed to shaft 8 but slidable axially thereon to insert a projection 69 in the notch in collar 9. A spring 64 normally holds the collar 10 in a retracted position. Cooperating with the opposite end of collar 10 is an armature lever 13 which is adapted to force the collar to a clutch closing position when the associated paper spacing magnet PM is energized. This magnet is usually energized between total printing operations, but may be energized be-

tween items if a separate record form is desired for each item entry.

The Geneva driving connection referred to hereinbefore, Fig. 2, is provided between gears 6 and 7 to cause a dwell in the driving operation during which the magnet PM may become effective to close the clutch. In certain sections of the gears 6 and 7 the teeth are removed from the periphery of the gears. When these sections of the gears coincide, a concentric disk 6' on gear 6 is brought into cooperation with a complementarily formed plate 7' fastened to gear 7. These parts 6' and 7' act to hold the gear 7 and the connected shaft 8 in a fixed position during the interval of time that the gears are disengaged and before one of a pair of studs 8' mounted on a crank 5' adjacent gear 6, strikes the side of plate 7' to start the gear 7 rotating in mesh with gear 6.

When the clutch collar 10, Fig. 3, is moved into engagement with hub 9, a driving connection is established between the drive gear 4 and a gear 11 attached to shaft 8. The gear 11 meshes with a pinion 14 attached to a gear 15 on a bushing 19. The pair of gears 14 and 15 are mounted on a stub shaft 65 located in a removable plate 20 assembled alongside the side frame 21. A finger-piece 66 is attached to a rectangular guide strip 99 and plate 20 by means of a pair of studs 67, Fig. 2. This same strip 99 acts as a locating means for the plate 20 in cooperating with a slot 68 cut in the top of side frame 21. After the plate 20 and the assembled gears 14 and 15 are lowered into driving position they may be locked therein by the insertion of a spring plunger 22, Fig. 3, operated by a knob 21*a*.

The reason for the provision of a removable gear holder is to provide means for changing the size of the gears and the ratio between the driving and driven gears and thus varying the space from form to form on the record sheet.

The driving connections continue through the meshing of gear 15 with another gear 16 loosely mounted on a shaft 17, but connected thereto through a pawl coupling 35, described more fully hereinafter. Shaft 17 carries a gear 18 meshing with a pinion 23 (Fig. 4) formed on shaft 24 which at its other end carries a gear 25. An idler gear 26 acts to transmit the motion of gear 25 to a gear 27 loosely mounted on platen shaft 28. This gear 27 forms part of the differential gearing shown in Fig. 1, and it is seen that the side of gear 27 is formed with bevel gear teeth cooperating with a pair of bevel pinions 29 and 30 turning on pivots attached to a bushing 31 secured to the platen shaft 28. The bevel pinions 29 and 30 cooperate with another set of bevel gear teeth in a worm wheel 32 also loosely mounted on shaft 28. Cooperating with worm wheel 32 is a driving worm 33 fixed to shaft 34. It is through this worm drive that a correcting movement is imparted to the platen shaft 28. The gearing is self-locking in the direction of shaft 34 so that although motion may be imparted through 34 to the platen shaft 28 no motion will be imparted to shaft 34 when the platen shaft is driven by the spacing mechanism through gear 27.

A frictional brake device is provided to cooperate with the idler gear 26, Fig. 4, which is located between the driving gear 25 and the gear 27 forming one train of connections to the differential mechanism. This brake is provided to insure that the correcting movement imparted to shaft 34 will be transmitted through pinions 29 and 30 to the platen shaft 28, rather than act to turn gears 27, 26, and 25 and so on back through the driving connections. The brake acts to lock gear 27 so that the correcting movement is properly directed, while at the same time it does not interfere with the positive drive of the regular spacing movement from the constantly rotating drive shaft. Cooperating with the side of gear 26 is a leather ring 39 mounted in a groove 38 cut into the side of a brake disk 36. Although the disk 36 is keyed to a trunnion 37 by a pin 42 extending into a key slot 41 cut in disk 36, the disk is free for axial movement along the trunnion. The trunnion is fixed in position on the side plate 96 by means of screws 97 and acts as a bearing for gear 26, disk 36 and a nut 40 cooperating with a thread cut in the end of trunnion 37. The nut 40 is formed with a knurled head which may be grasped and turned to vary the pressure of the leather ring 39 against the side of gear 26, thus adjusting the frictional resistance which gear 26 must overcome in order to rotate. If the paper feeding devices are to be operated without the correcting feature, the pressure against gear 26 may be relieved by turning nut 40.

In Figs. 1 and 3 it is noted that shaft 28 carries a platen 76 extending across the carriage. At the end of the platen removed from the differential gears, a ratchet gear 150 is provided for ordinary operation. The device of the present invention may be incorporated in a record controlled machine, such as that shown in Patent No. 1,762,145, issued June 10, 1930, to G. F. Daly et al., where the paper feeding devices are adapted for a simple line-spacing operation in listing or group controlled tabulating operation where paper spacing is controlled to function only in connection with total printing.

The pawl coupling 35 referred to hereinbefore is shown in detail in Figs. 8 to 11, inclusive. Referring to Fig. 8, it is noted that the drive gear 16 is attached to a plate 79 by means of a bushing 78. Mounted on the side of plate 79 (Fig. 9) are a pair of studs 80 and 81 acting as pivots for pawls 82 and 83. The pawl 82 is urged by a spring 85 into cooperation with a ratchet gear 86 (Fig. 11). The pawl is held in this position when a large spacing movement is desired on each operation of the machine.

Such spacing operations may occur between the printing of items or the printing of totals. The pawl 82 may be cammed out of engagement with ratchet 86 when it is desired to feed the paper through a long distance only after the printing of a series of items with short line spacing between items. The pawl is provided with a stud 87 (Fig. 9) protruding through a cam slot 88 cut in the side of a disk 89 adjacent the plate 79.

The disk is knurled on the outer edge so that it may be grasped by the operator and turned to shift the position of pin 87 and pawl 82. The disk is held in adjusted position by a compression spring 90 occupying the space between gear 16 and disk 89 and forcing the disk into frictional contact with plate 79.

Turning to Fig. 10 it is noted that the ratchet 86 is secured to a bushing 86*a* pinned to the platen drive shaft 17. Also mounted on bushing 86*a* is a single toothed wheel 95 and a plate 94, the side of which is cut with a spiral box cam groove 93. Wheel 95 and plate 94 cooperate with the pawl 83 mounted on plate 79.

In Fig. 9 it is noted that a coil spring 91 urges the pawl 83 in a clockwise direction. This brings

the end of the pawl into cooperation with the tooth on wheel 95. A pin 92 on pawl 83 cooperates with the groove 93 cut in the side of plate 94. If the plate 94 is turned in a counterclockwise direction (Fig. 11) the groove 93 will gradually move the end of the pawl 83 out of engagement with the tooth on wheel 95. Not only will the tooth be separated from the pawl in a movement along an arc, but the end of the pawl will be moved outwardly away from the tooth in a radial direction so that after one complete revolution of the plate 94 the pawl will miss the tooth, even if it is opposite it. The turning of plate 94 takes place when the platen and the connected shaft 17 are turned in line spacing.

An example may be taken to illustrate clearly the cooperation between pawl 83 and parts 94 and 95. Supposing that the interchangeable gears 14 and 15 (Fig. 2) are proportioned so that an operation of the paper feeding mechanism causes two revolutions of the plate 79. Then assume that the shaft 17 and the attached wheel 95 and plate 94 are turned through one and one-half revolutions through the recording of a series of items and accompanying line-spacing of the platen between the printing of the items. Then, when the magnet PM is energized, and gear 16 and attached pawl 83 start to rotate through the two revolutions, the pawl 83 will be separated from wheel 95 because of the previous one and one-half revolutions of plate 94 and the consequent camming of pin 92 by the spiral groove 93 so that the end of the pawl misses the tooth on wheel 95. After one-half a revolution of the plate 79, pawl 83 will be opposite the tooth but separated therefrom because of the position held due to the spiral groove 93. It is only after another revolution of the driving parts that the pawl catches up to the wheel and drives it through the remaining one-half revolution. Thus, the record sheet will be fed a constant amount after each operation of the control magnet PM whether or not there are any intervening movements of the sheet for short line spaces.

Turning now to Fig. 3 it is noted that the correction shaft 34 projects out towards the front of the machine. As soon as the operator of the machine notices that the record paper is not properly positioned for the reception of a line of print, he may adjust the paper either forward or backward by turning crank 75 extending from tne front of shaft 34. He may do this at any time during the operation of the machine without stopping the machine. The adjustment or correction may even be made during the feeding of the paper. This is possible because of the differential gear connections discussed hereinbefore.

Other devices are provided for adjusting the record paper to the proper printing position without any attention on the part of the operator. This automatic feed correction mechanism includes a motor 43 (Fig. 3) the shaft 70 of which carries a bevel gear 71 meshing with a bevel gear 72 fixed to shaft 34. The gear 71 is keyed on shaft 70 but is movable axially and may be shifted into or out of mesh with gear 72 by a manipulative frame 73 in order to select automatic control. A spring 74 cooperates with a cam projection on frame 73 to hold the gear 71 in either of the two adjusted positions. The motor is selectively energized to rotate the shaft 70 backward or forward under control of a light sensitive photo-cell switching device.

The photocell 49 (Fig. 5) is arranged to be influenced by a mark or perforation 45 (Fig. 6) printed on or punched in the record sheet 44 in the form of a blank field or opening interrupting the white surface of the paper. An opening in the sheet 44 may reveal a portion of the paper guide 98 which is painted black on the surface under the sheet. Such a mark or opening 45 is provided within each section or form into which the record sheet is divided, and may appear either at the top or the bottom of a section.

Light rays emitted from a light source such as a lamp 46 (Fig. 5) are concentrated by a lens 48 within a tube 47 and fall at the line A—A upon the record sheet. The rays are reflected from the paper and up through tube 47*a* and lens 48*a* and directed upon the photocell 49. The photocell controls the energization of a glow relay 50 (Fig. 7), depending upon the condition of the paper surface at the point A—A and the amount of light reflected thereby. If a dark surface at A—A fails to reflect enough light, photocell 49 will not furnish sufficient current for the energization of the glow relay 50.

As long as the paper forms or sections follow each other with such a spacing that the light emitted by the lamp 46 falls upon the black field 45, the reflected rays falling upon the photocell 49 are too weak to establish sufficient current for the energization of the glow relay 50.

However, if the light falls on a white surface, then the exposure of the photocell is increased and the current will change. This causes a change in potential at the resistance W2 (Fig. 7) and a change in potential at the distributing point P in series with the photocell. At the point P the electrode of the relay 50 is mounted under the interpolation of a resistance W1. If the potential is changed at the junction P under the influence of the photocell, the reversible tension of the glow relay 50 is exceeded and the following circuit will be closed: from line 51, contacts MCC (operated by a magnet such as magnet 84 shown in Patent No. 1,762,145), switch S, cam contact GL5 closed late in each cycle, relay R1, relay contact R2*a* normally closed, wire 101, anode 52 and cathode 53 of the relay 50 and over the wires 54 and 55 to the other side of the line 56. When the relay R1 is energized, the associated contact R1*a* is closed and the following circuit is established: from line 51, through wire 57, relay R1', contact R1*a*, relay magnet R2, cam contact GL1 closed a short time before contact GL5 is closed, and through conducting wire 58 to the other line 56. The energized relay R2 opens the associated contact R2*a* and breaks the circuit through relay 50 and magnet R1. The circuit through the relay R2 remains in force through the closed contact R1*a* because the energized relay R1' is mounted on the same core with the winding of relay R1 in alignment with contact R1*a*.

Another contact R2*b* associated with the relay R2 is reversed in position upon the energization of the latter to assume a position opposite to that shown in the drawings so that at the time the cam contact GL2 is closed the following circuit will be established: from the line 51, through wires 57, 59, relay R4, upper contact R2*b*, cam contact GL2 and wires 60 and 58 to line 56. Thus it is seen that the relay R4 is energized when the relay 50 is affected due to sensing of a white surface on the record sheet 44. If the relay 50 is not affected in this way due to the sensing of the mark or symbol 45 (Fig. 6) the relay R2 remains deenergized and the lower con-

tact R2*b'* is effective and in condition for an energization of the other relay R3.

The relays R3 and R4 are provided with contacts R3*a* and R4*a*, respectively, arranged in a circuit containing a double-stepped relay DSR which controls three contacts DSR*a*, DSR*b*, and DSR*c*. The two contacts DSR*a*, and DSR*b* are wired in series with the field winding 43*a* in the correction drive motor 43 shown in Fig. 3.

Assuming that the relay DSR is in such a condition that the associated contacts are positioned as shown in the drawings and that on the closing of cam contact GL4 the motor will rotate in such a way that the record strip 44 will be moved in reverse of the usual direction. The circuit through the field winding 43*a* may be traced on Fig. 7; through line 51, contacts MCC, switch S, wire 102, contacts DSR*b*, winding 43*a*, contacts DSR*a*, line 103, contacts GL4 and line 56.

Then, should the relay R4 be energized due to the action of the relay 50, the following circuit is established when the cam contact GL3 is closed: from line 51, a circuit continues through wires 57 and 59, through relay DSR, upper contact DSR*c*, contact R4*a*, cam contact GL3 and wires 60 and 58 to line 56. The energization of magnet DSR serves to rock an armature lever 104 and draw pawl 105 down into a retracted position alongside a cooperating ratchet gear 106. Mounted alongside the gear is a cam 107 cooperating with a projection 108 fixed to one of the connected set of cam contacts DSR*a*, DSR*b*, and DSR*c*. As soon as the magnet DSR is deenergized by the opening of cam contact GL3, lever 104 is released so that spring 109 actuates the cam 107 and forces all the DSR contacts into a lowered position. A circuit through the field winding 43*a* then follows a path along wires 102 and 151, through contacts DSR*a'*, winding 43*a*, contact DSR*b'* and wire 103. Thus, the passage of the current through the field winding 43*a* is reversed with the effect that the motor 43 is turned to cause a forward rotation of the record sheet 44. When the DSR contacts are so arranged for the forward rotation of motor 43, it is noted that relay magnet DSR is connected in series with the contacts R3*a* through the closed contact DSR*c'*.

If it is assumed that on the next paper feeding operation the correct printing position has not yet been reached and the glow relay 50 is again energized, this does not change the condition of the relay DSR because it is already adjusted to cause forward rotation of the motor 43.

Because of the concentration of the sensing light rays, the photocell device 49 may be made very sensitive to slight changes in feeding which bring the pencil of light close to either side of line A—A and changeable when not far from line A—A. In this way, change of corrective direction of the feed may occur on alternate operations to keep the printing position of the sheet very close to a point wherein line A—A appears at the midpoint of the sensing light. Although the devices only tend to correct large errors in feeding, such errors should be rare and it may be assumed that ordinarily the feeding devices bring the line A—A close to the rays of sensing light so that subsequent operation of the correction device brings the record sheet in proper printing position.

Even though the relay R4 is energized as soon as the relay 50 reacts, the action of relay R4 does not change the connections since the upper contact DSR*c* is open. It is only when a mark or opening 45 is again sensed by the photocell devices that the connections are reversed by an energization of relay R3 due to the failure of magnet R2 to cause a change in the position of contacts R2*b'*. When the relay R3 is energized due to the failure of a reaction in relay 50, the contacts R3*a* close and magnet DSR is energized over a circuit including wires 57, 59, relay DSR, contacts DSR*c'*, contacts R3*a* and cam contacts GL3. Thus the armature lever 104 is rocked and when cam contacts GL3 open, the lever is restored by spring 109, cam 107 permits the upward movement of the DSR contacts into the position shown in the drawings and the motor 43 is again conditioned for backward rotation. The connections described are effective to correct the position of the record sheet before the printing operation so that the first printing line on each section of the record sheet is in a proper position before printing is initiated.

It is assumed in the foregoing section of the description that the machine is conditioned for item printing operations wherein each cycle of operation of the machine involves the printing and spacing of the record sheet for one line or from form to form where a separate form is desired for each item.

For such operation the switch S is closed and magnet 84 holds contacts MCC closed during item entry. In another type of operation known as tabulating, the amounts on a group of record cards are accumulated without being listed and only the group number and the total are printed. During such operation the paper sheet is spaced only between total recording. Therefore, correction of the paper spacing may be eliminated in the intervening cycles while accumulation takes place. For the latter mode of operation the switch S is opened and a contact R5*b* controlled by relay R5 is relied upon to close the opening caused by the movement of switch S. This relay R5 is energized at the proper time during tabulating operation by the intermittent closing of cam contact P*x*. This happens during the passage of the first card of a group, at which time it is well to correct the position of the record sheet before the printing of the group number and the total amount accumulated from the group of record cards. The difference between listing and tabulating operations is set forth in detail in the previously mentioned Patent No. 1,762,145. The cam associated with contact P*x* may be mounted on a shaft to be operated only upon initiation of the listing operation shown and described in said patent, while the other cams may be mounted on constantly running shafts. When relay R5 is energized by the closure of contact P*x*, the circuit therethrough is picked up and maintained by the closing of contact GL6 which holds the relay energized until after the contact GL3 is opened.

Having now particularly described and set forth the nature of the invention, and in what manner the operations of the same may be performed, the following is claimed:

1. In a machine of the class described, a differential mechanism operable through two trains of connections for feeding a sheet through a third train of connections, means for operating one train of connections to feed the sheet, means for operating the other train of connections to feed the sheet, and an adjustable brake cooperating with one of said operating trains of connections to retard the same and direct the opera-

tion of the other train through said third train to feed the sheet.

2. In a machine of the class described, means adapted for feeding marked forms for line spacing, other means for feeding a new form after a variable number of line spacing operations of the previous form, means for sensing the position of the mark on each form, means for disabling said sensing means during line spacing, means for rendering said sensing means again effective after line spacing, and means under control of said sensing means for shifting each form back or forth according to the position of the mark.

3. In a machine of the class described, means adapted to line space a continuous sheet divided into perforated forms, other means for feeding the sheet from form to form after a variable number of line spacing operations, means for sensing the position of a perforation on each form, means under control of said sensing means for shifting a form back or forth according to the position of the perforation, and means for suspending operation of said shifting means during line spacing operation.

4. In a record card controlled machine, means controlled by changes in classification designations identifying the controlling cards, record sheet feeding means, other feeding means for imparting a final correcting movement to said sheet, and means under control of said first mentioned means for calling said correcting means into operation when a change occurs in card classification.

5. In a machine operated for item entering and total printing cycles, means for feeding a record sheet, means for shifting said sheet back or forth into correct printing position, and means operated only on total printing cycles for selecting said shifting means for operation.

6. In a printing machine operated for item entering and total printing cycles, a platen for holding a record sheet which is provided with position registering marks, means for operating the platen intermittently to feed the sheet, means operable when said feed operating means is at rest for sensing the position of a mark on the sheet with relation to the platen, and means under control of said sensing means and operable only on total printing cycles for moving said platen and said sheet back or forth toward a correct total print receiving position.

7. In a record card controlled machine, means controlled by changes in classification designations identifying the controlling cards, an intermittently operated sheet feeding means operated under control of said first-mentioned means for feeding a marked sheet when a change occurs in card classification, other means for shifting said sheet, a motor for operating said other means, a photo-cell for sensing the presence or absence of the mark on the sheet at a certain position after each intermittent feeding operation, and means under control of said photo-cell for selectively changing the direction of operation of said motor.

8. In an accounting machine of the class described, means for line spacing a continuous sheet divided into perforated forms, other means operable intermittently for feeding the sheet from form to form after a variable number of line spacing operations, means for shifting said sheet, a motor for operating said shifting means, a photo-cell operative after each intermittent feeding operation for sensing the presence of a perforation in the sheet at a certain position, and means under control of said photo-cell for changing the direction of operation of said motor to correct the position of said sheet with relation to said certain position.

9. In an accounting machine of the class described, means adapted to line space a continuous sheet divided into perforated forms, other means operable intermittently for feeding the sheet from form to form after a variable number of line spacing operations, means for sensing the position of a perforation on each form, and means under control of said sensing means for shifting a form back or forth according to the position of the perforation.

10. In a machine of the class described, a platen for feeding a marked record sheet, a constantly rotating shaft, a pair of Geneva drive gears, means for connecting one of said gears with the shaft, a clutch between the other of said gears and a platen drive gear, a magnet for operating said clutch, interchangeable idler gears between said platen drive gear and another platen gear, differential gearing connected to said platen, a pawl coupling between said other platen gear and a train of connections to said differential gearing for feeding the sheet a fixed amount on each operation, another line of connections to said differential gearing for shifting said sheet back or forth towards a correct printing position, a motor for operating said line of connections, a photo-cell for sensing whether the mark on the sheet is in a certain position after feeding, and means under control of said photo-cell for controlling the direction of operation of said motor.

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