April 4, 1939. F. L. FULLER ET AL 2,153,180

CARD FEEDING MECHANISM

Original Filed Nov. 5, 1936 6 Sheets-Sheet 1

FIG. 1.

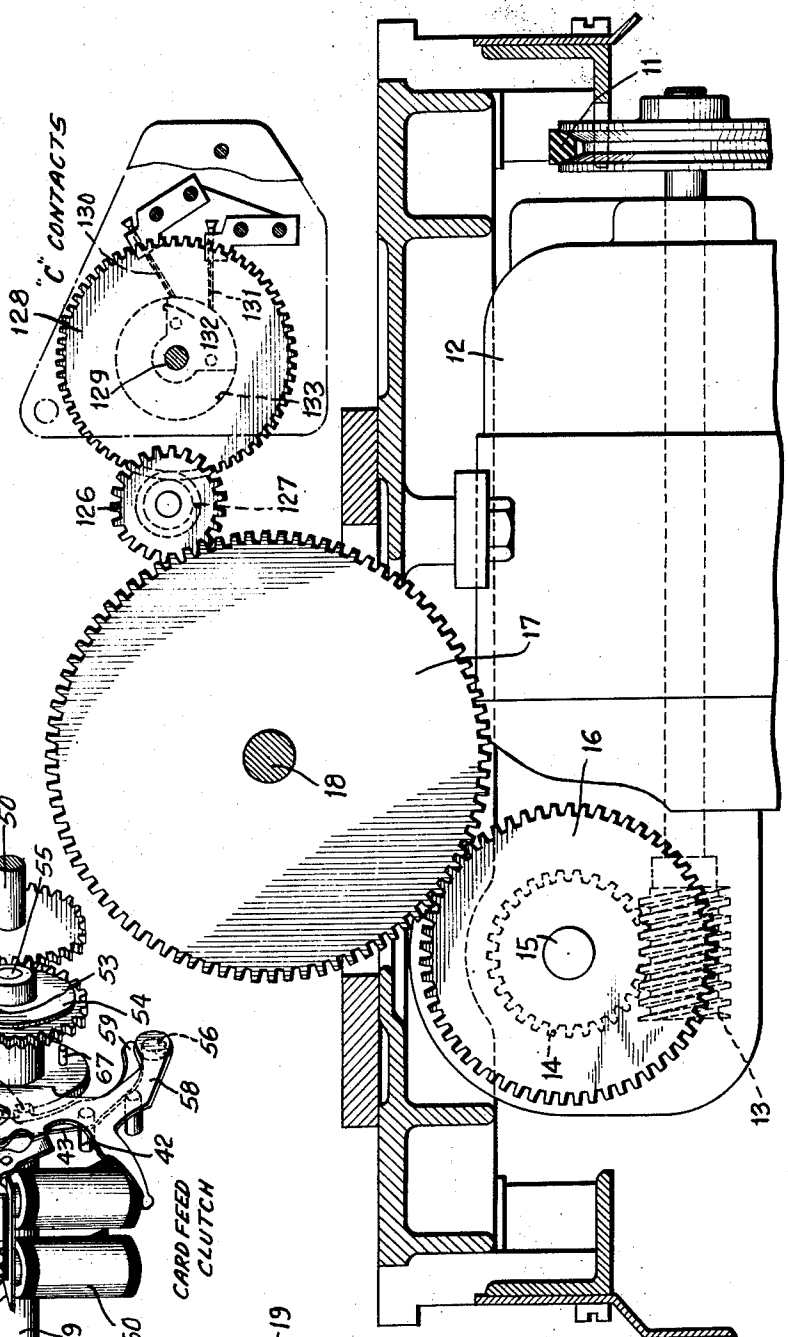
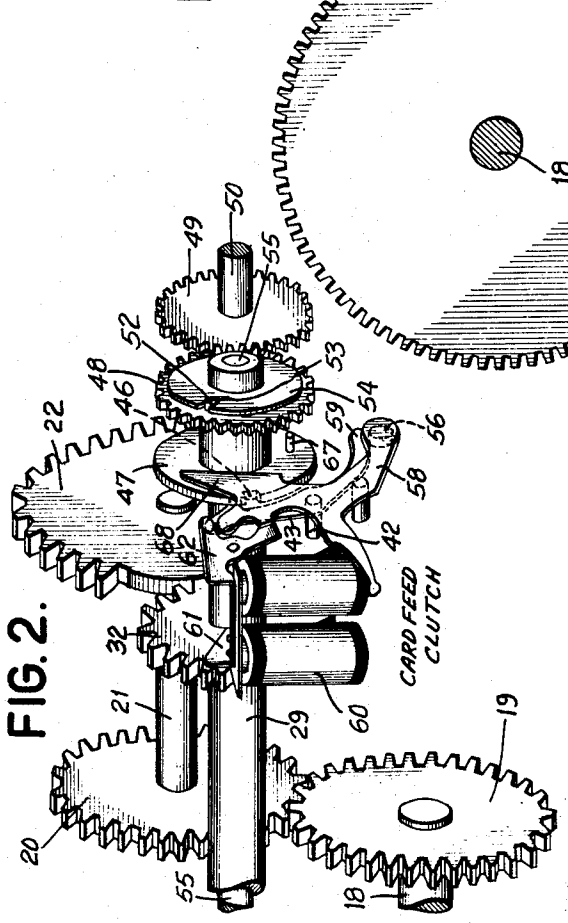


FIG. 2.



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CARD FEEDING MECHANISM

Original Filed Nov. 5, 1936 6 Sheets-Sheet 2

FIG. 3.

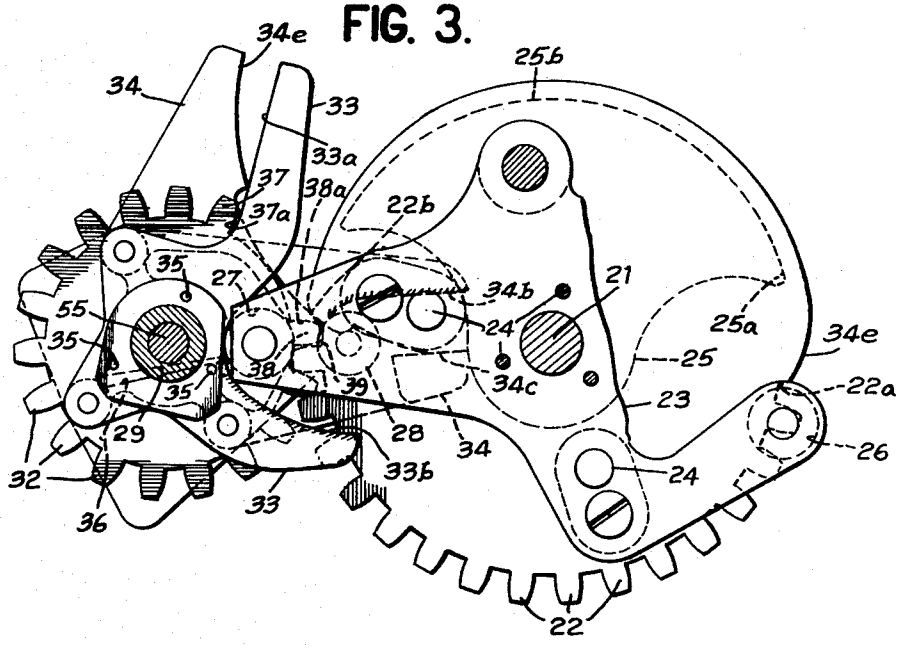
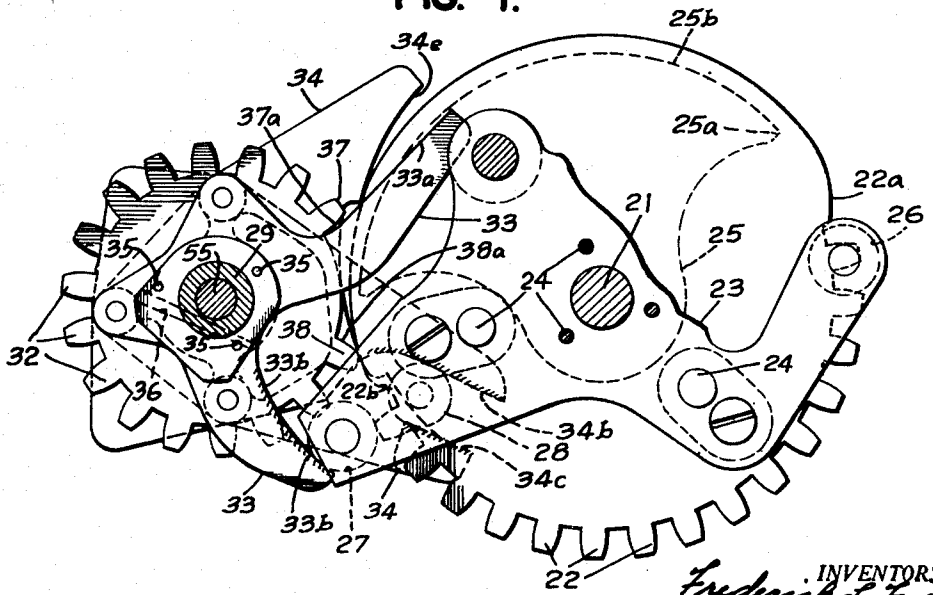


FIG. 4.



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CARD FEEDING MECHANISM

Original Filed Nov. 5, 1936 6 Sheets-Sheet 3

FIG. 5.

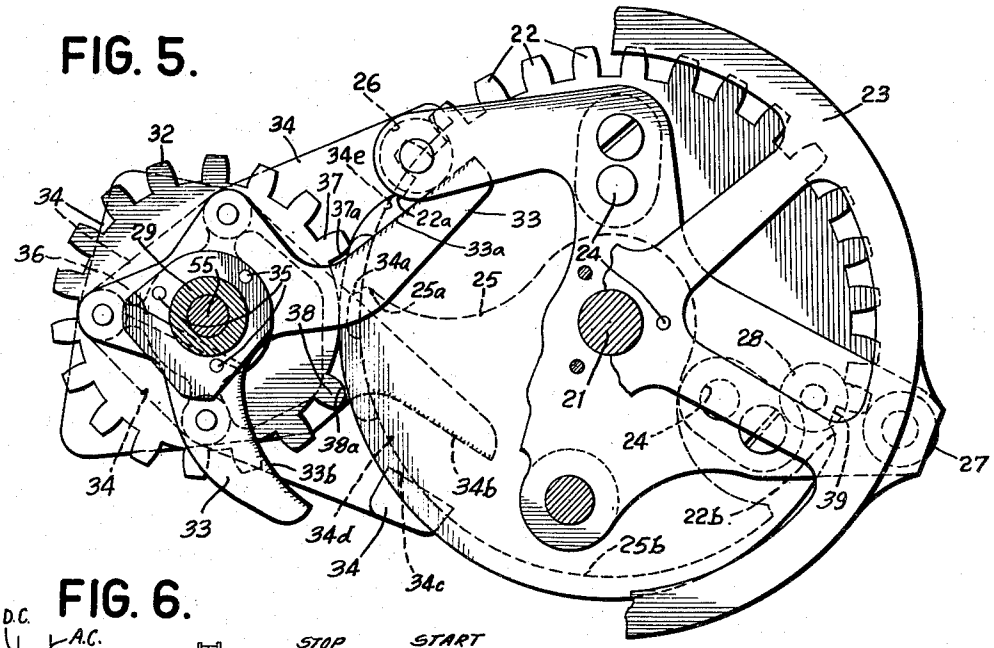


FIG. 6.

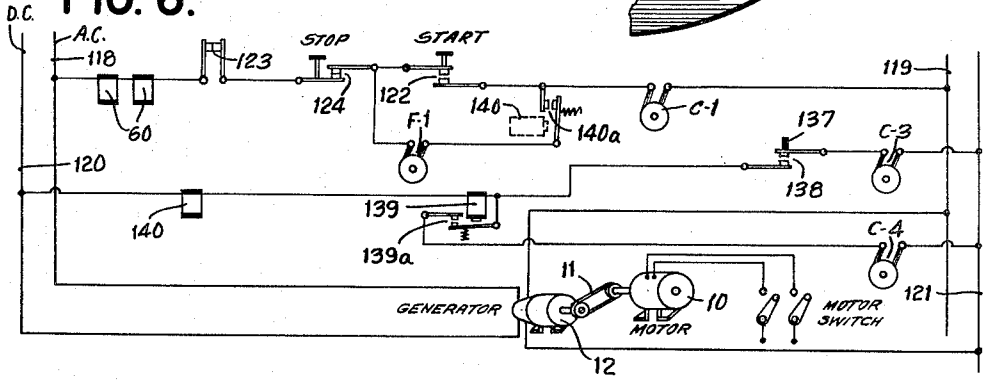
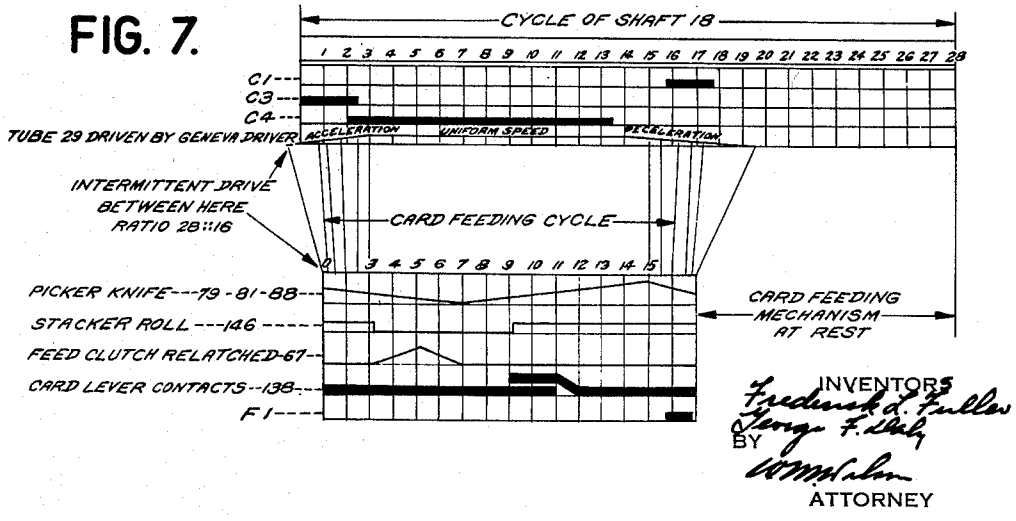


FIG. 7.



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CARD FEEDING MECHANISM

Original Filed Nov. 5, 1936 6 Sheets-Sheet 4

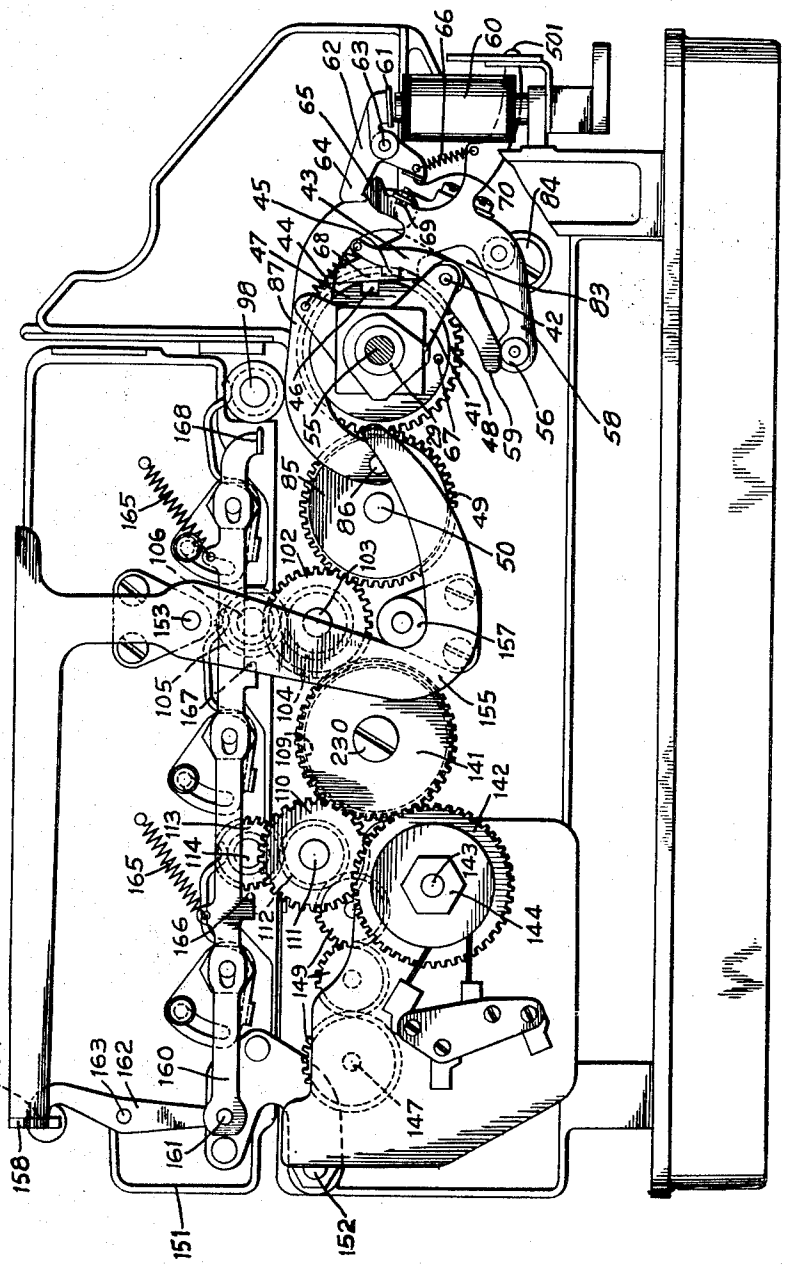


FIG. 8.

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CARD FEEDING MECHANISM

Original Filed Nov. 5, 1936 6 Sheets-Sheet 5

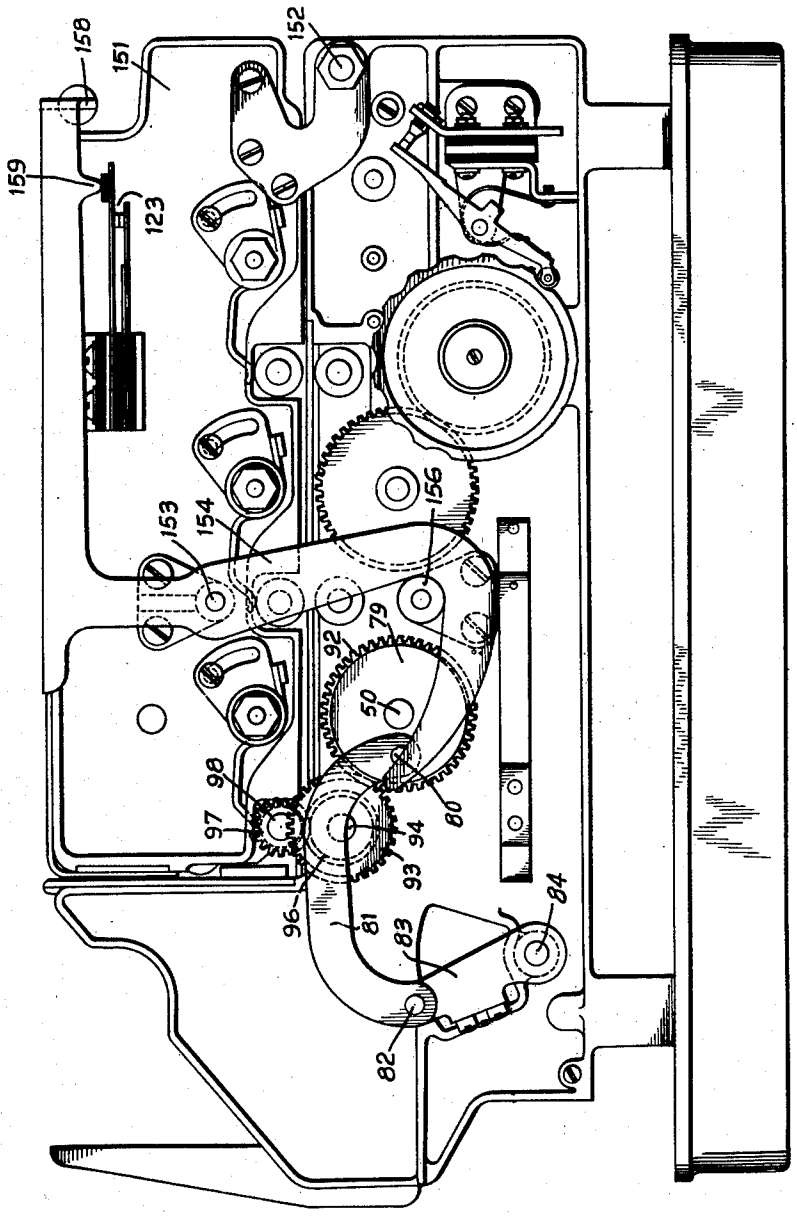


FIG. 9.

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CARD FEEDING MECHANISM

Original Filed Nov. 5, 1936 6 Sheets-Sheet 6

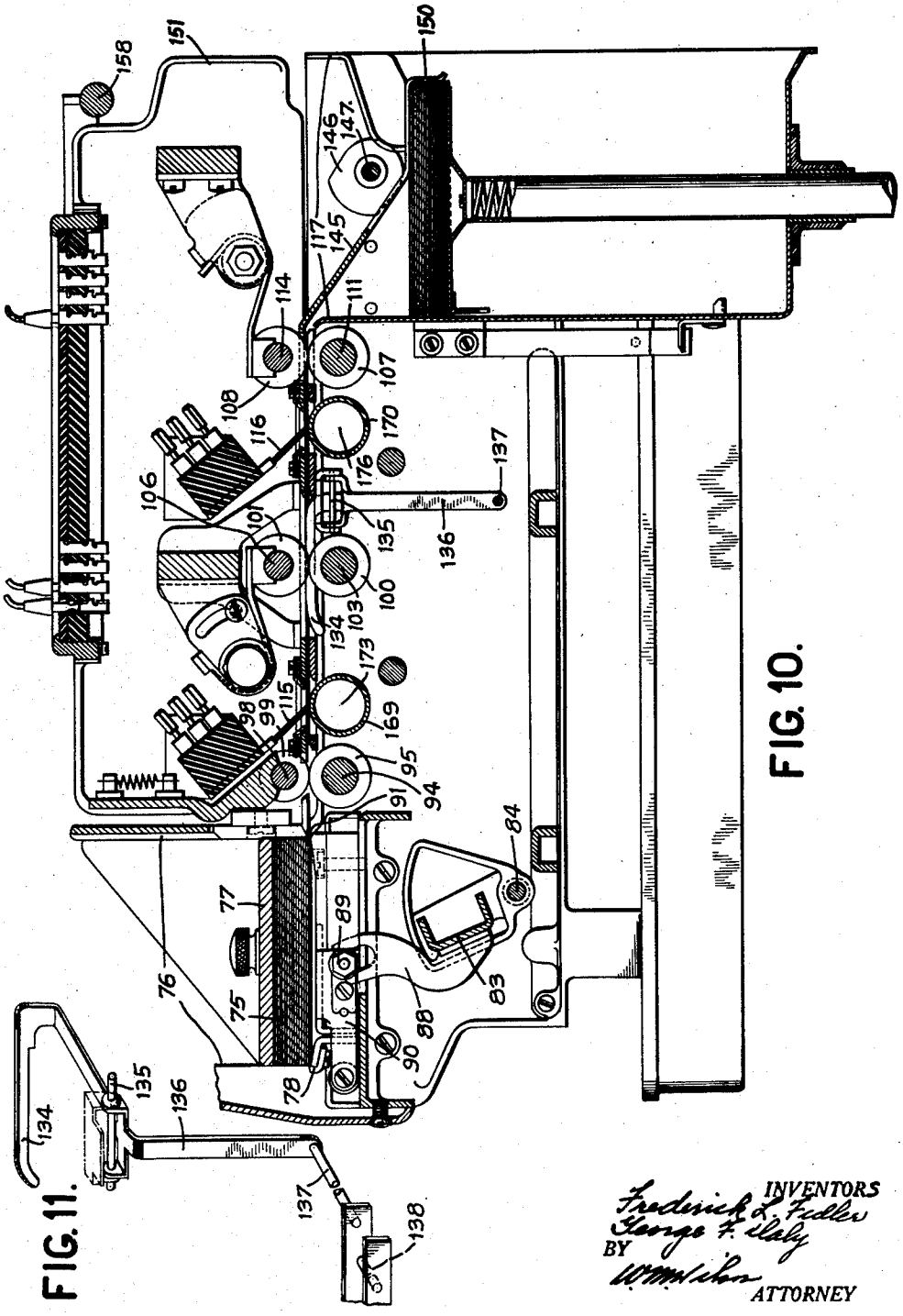


FIG. 10.

FIG. 11.

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UNITED STATES PATENT OFFICE

2,153,180

CARD FEEDING MECHANISM

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Original application November 5, 1936, Serial No. 109,227. Divided and this application November 11, 1937, Serial No. 174,028

10 Claims. (Cl. 271—10)

This application is a division of application Serial No. 109,227 filed November 5, 1936 and relates to card feeding mechanisms for machines and particularly to machines of the type known as card controlled tabulating machines.

The main object of the present invention is the incorporation of improvements in card feeding mechanisms that will cause machines of this type to operate smoother to thereby make it possible to increase the speed of operation.

With respect to the card feeding mechanisms it has, heretofore, been the practice to clutch the card feeding mechanism to a drive shaft while the latter is rotating, hence suddenly starting the operation of the card feeding mechanism from rest at the same speed of the shaft creating shocks and jerks which were deleterious to the mechanisms and the machine.

The present improvement is the provision of a novel Geneva driving mechanism for the card feeding mechanism which permits the clutch engagement when certain parts acquire their zero or minimum speed, and to cause the operation of the card feeding mechanism to be gradually accelerated from rest.

The novel driving mechanism is thereafter operative to drive the card feeding mechanism synchronously with the rotation of the main drive shaft so as to analyze the card perforations, the main driving shaft causing the rotation of the totalizer or printing elements synchronously with the analyzing of the card perforations effected by the operation of the card feeding mechanism.

In order to provide easy access to the card feeding mechanism for the insertion and removal of the cards, servicing, etc., the card feeding mechanism is located at the top of the machine and in order not to unduly widen the machine the card feeding mechanism has preferably a short travel for the cards. Obviously where the card feeding mechanism has a cycle of operation corresponding to the long cycle of operation of the drive shaft the desirable short travel of the cards is not possible so that another object of the invention is to cause the driving mechanism for the card feeding mechanism to decelerate its speed of operation and then hold it at rest while the main drive shaft thereafter rotates to cause certain operations in connection with printing and calculation.

Another and relatively important object relates to the construction of the card feeding mechanism which permits the upper portion to be hinged and separated from the lower portion for access. The upper portion controls locking mechanism which insures the proper enmeshment of cooperating gears and prevents the operation of the machine unless the two portions are operatively co-related.

Other objects which are far too numerous to be mentioned herein will be obvious as the specification is understood and all of which are attained in an efficient manner in construction and design and produce a card feeding mechanism having very desirable characteristics in operation, simplicity in construction and manufacture, servicing and appeal in commercial requirements.

While some of the improvements are incorporated in a card feeding mechanism for a tabulating machine their disclosure should be considered as merely illustrative and not restrictive, since many of the improvements herein may, with equal benefits, be employed in machines of other types.

In said drawings:

Fig. 1 is a view in side elevation taken at the left end of the machine and shows the main driving connections for the card feeding mechanism.

Fig. 2 is a perspective view of the main drive, the driving connections therefrom and the clutch to the card feeding mechanism.

Figs. 3 and 4 are detail views of the Geneva driving mechanism in operated positions which are selected so as to facilitate the understanding of its operation.

Fig. 5 is a view in side elevation illustrating the Geneva driving mechanism in its normal position.

Fig. 6 is an electrical wiring diagram.

Fig. 7 is a timing diagram of the machine.

Fig. 8 is a view in side elevation showing the left hand side of the card feeding mechanism.

Fig. 9 is a view in side elevation showing the right hand side of the card feeding mechanism.

Fig. 10 is a central sectional view of the card feeding mechanism.

Fig. 11 is a perspective view of a card lever and its associated contact operating devices.

Power drive

The motive power for the improved tabulating machine is derived from a motor 10 (see Fig. 6) which through a belt connection 11 (Fig. 1) drives a shaft of a generator 12. Attached to one end of the generator shaft is a worm screw 13 (Fig. 1) meshing with a worm wheel 14 attached to a shaft 15, the worm screw 13 and the worm wheel 14 providing a speed reducing mechanism so as

to drive the shaft 15 at a speed reduced with respect to the shaft of the generator 12. Attached to the shaft 15 is a pinion 16 meshing with a gear 17 secured to a continually rotating main drive shaft 18.

Geneva drive mechanism

Shaft 18 (Fig. 2) at its right end carries a gear 19 meshing with a gear 20, said gears 18 and 19 having a gear ratio 1–1. The gear 20 is fast to a stud shaft 21 and to which shaft there is secured a mutilated gear 22. An index wheel 23 (Fig. 5) which has the function of a roll carrier is pinned at 24 to the mutilated gear 22 and to a locking plate 25. Hence, the mutilated gear 22, index wheel 23 and locking plate 25 are attached together and also to the shaft 21 and rotate with said shaft as a unit and are continually driven at a constant and uniform speed by the main drive shaft 18.

The index wheel 23 carries a pair of rollers 26 and 27 and the mutilated gear 22 carries a roller 28. The above described parts form parts of a Geneva drive and the remaining parts of the Geneva drive will now be described.

A tube shaft 29 (Figs. 2, 3, 4 and 5) is journaled in side frames of the machine (not shown). A mutilated gear 32, a cam plate 33, and a cam plate 34 are pinned together by pins 35 and the entire assembly by a pin 36 is secured to said tube shaft 29.

Assuming that the drive starts with the position of the parts shown in Fig. 5, which is the position at the start of the accelerated movement given to tube shaft 29, at the initial counterclockwise movement of the roller 26 a portion 25*a* of the concentric portion of the locking plate 25 moves away from a shoulder 34*a* of cam plate 34 which unlocks tube shaft 29 and permits the rotation of the tube shaft 29. The roller 26 in its counterclockwise rotation will now coact with the cam surface 33*a* (the portion shaded) of cam plate 33 and as roller 26 rotates in a counterclockwise direction it will act on the cam plate 33 and rotate the latter in a clockwise direction and roller 26 will move in a concentric path towards the center of the tube shaft 29 and rotate the tube shaft 29 at a uniformly accelerated rotation until the center of the tube shaft 29, roller 26 and shaft 21 are in horizontal alignment.

Attention is directed to the fact that the tooth 37 and the tooth 38 of the gear 32 are provided with cam edges 37*a* and 38*a*, respectively, and said cam edges 37*a* and 38*a* coact at different times with cam edges 22*a* and 22*b* respectively of the mutilated gear 22. The cam edges 37*a* and 22*a* coact during the above described accelerated movement for the purpose of holding roller 26 against the cam 33*a* and which was found, in practice, to be essential.

After the accelerated motion the teeth of the mutilated gear 22 will mesh with the teeth of the gear 32 and thereafter the latter and tube 29 is driven with a uniform speed of rotation and as will be evident later on this occurs during the time the index points are being analyzed and occurs at a uniform speed of rotation.

At the termination of the uniform speed of rotation of the gear 32 all the index points have been analyzed and by mechanism now to be explained the tube shaft 29 is given a rotation at a decelerated speed.

The tooth space 39 of gear 22 is now engaged by the tooth 38 of gear 32 and at this time the rollers 27, 28 will be in a horizontal alignment with the centers of the tube shaft 29 and shaft 21, as shown in Fig. 3.

There are two possible conditions at this time which arise from different speeds of rotation effected by the main drive shaft. It will first be assumed that shaft 18 has been driven at such a speed as to cause the inertia stored in the members attached to shaft 29 to overthrow the unit carried by tube shaft 29 in a clockwise direction.

In this case the cam surface 34*b* (shaded) of cam plate 34 presses against roller 28, (Fig. 3) since the roller 28 at this time is below the cam surface 34*b* of cam plate 34. At the beginning of the deceleration cam surface 22*b* cooperates with the surface 38*a* of the tooth 38 to impart additional driving motion to the gear 32 as the teeth of the gears 22 and 32 de-mesh.

Assuming that the drive shaft 18 turns at a much slower speed the roller 27 is now positioned as shown in Fig. 4 so as to cooperate with the surface 33*b* (shaded) of cam plate 33 to drive the cam plate 33 and therefore the gear 32, also at a decelerated speed. It was found in practice that since roller 27 was located outside of the pitch line of gear 22 that it was not practical to have the cam plate 33*b* of sufficient length to complete the movement of deceleration. Accordingly the auxiliary plate 34*c* of cam plate 34, which is offset so as to be in the plane of roller 28, cooperates with said roller 28 (see Fig. 4) to complete the movement of deceleration because roller 28 utimately bears against the plate 34*c* in its counterclockwise rotation. The cooperation of roller 28 with both cam surface 34*b* and plate 34*c* takes place irrespective of the high or low speed of rotation of the drive shaft 18. At the completion of the deceleration, when tube shaft 29 has been given a full rotation, roller 28 rides out between cam surface 34*b* and plate 34*c* and gear 22 now completes its rotation to a full revolution to bring it to the position shown in Fig. 5 but during this rotation the tube shaft 29 will be held stationary. During the completion of the rotation of gear 22 the concentric surface 25*b* of the locking plate 25 coacts with the concentric surface between 34*d* and 34*c* of the cam plate 34 to provide the desired locking action to hold tube shaft 29 stationary while shaft 21 is further rotated.

The above described Geneva drive mechanism is utilized to drive a card feeding mechanism through a clutch device shown in Figs. 2 and 8. The gear 32, it will be recalled, is attached to the tube shaft 29 and the latter carries an arm 41 to which is pivoted at 42 a clutch dog 43 urged by a spring 44 to cause a clutch tooth 45 to fit in a notch 46 of a disk 47 rotatable with a gear 48 which meshes with a gear 49 secured to a shaft 50. The disk 47 and gear 48 are secured to a sleeve 51 loosely mounted on the sleeve 29.

Fixed to gear 48 is a pin 52 engaging a slot 53 in a disk 54 attached to a shaft 55 which is journaled inside the sleeve 29, this construction causing tube shaft 29 by the clutch device to rotate disk 47, gear 48, disk 51, and shaft 55 during card feeding operations.

A roller 56 carried by an arm 58 coacts with the lower end 59 of the clutch dog 43 so as to prevent in each rotation of arm 41 the clutch tooth 45 from engaging the clutch notch 46 except when a magnet 60 attracts its armature 61 and which latter is supported by a bell crank 62 pivoted at 63. The nose 64 of the bell crank 62 normally catches over an extension 65 of the arm 58. When nose 64 is disengaged from the

extension 65 a spring 66 causes arm 58 to rock and move the roller 56 out of cooperation with the lower end 59 of the clutch dog 43 so that since at this time the clutch tooth 45 is positioned over the periphery of disk 47 it will enter said notch 46 while the disk 47 is at rest so that subsequently the arm 41 through the clutch dog 43 will drive the disk 47 for one revolution. This engagement takes place at substantially the termination of a machine cycle when the speed of rotation of tube shaft 29 is at a minimum providing card feed is to be effected during the following cycle. Hence, the mechanism driven by the clutch device is started in operation very gradually and without shock or jerks, and which is accomplished by the Geneva drive just described.

To positively knock-off the armature and cause its retraction against the attraction due to residual magnetism and to restore arm 58 to its normal position a pin 67 carried by the disk 47 engages a projection 68 of the arm 58, and rocks the arm so that it is relatched by the nose 64 and held relatched by spring 66. An adjustable screw 69 carried by the arm 58 engages a projection 70 of the bell crank 62 and positively restores the armature to a normal position effected by the tension in the spring 66.

Card feeding mechanism

The card feeding mechanism is best shown in Figs. 8 to 11 inclusive and by referring to Fig. 10 it will be noted that the supply of tabulating cards 75 is placed in a hopper 76 and upon the top of the stack of tabulating cards there is placed the customary weighted presser plate 77 so as to press the stack of tabulating cards downwardly to cause the left edge of the lowermost card to be engaged by a picker 78. The tabulating cards are of a form shown in patent to C. D. Lake, No. 1,772,492 dated August 12, 1930 and each card is provided with 80 columns of data which is adapted to be analyzed and tabulated.

From Fig. 9 it will be seen that to the shaft 50 there is attached a disk 79 to which is pivoted at 80 a link 81 and said link is pivoted at 82 to a picker operating frame 83 which is pivoted at 84. This connection is shown in Fig. 9 for one side of the frame 83 and referring to Fig. 8 it will be observed that a similar connection is provided for the other side of the frame 83 and comprises a disk 85 rotatable with gear 49 and to which disk 85 there is pivoted at 86 a link 87 which also has a pivot connection to the picker operating frame 83.

Referring now to Fig. 10, it will be seen that the frame 83 has attached thereto an arm 88 having a forked connection to a pin 89 carried by a slidably mounted plate 90 and which carries the aforesaid picker 78. During the initial accelerated movement imparted to the shaft 50 by the means previously described, the picker 78 by its engagement with its lowermost tabulating card 75 will force said card out of the stack and through a card throat 91 to various sets of feeding rollers which are also driven by the shaft 50 by trains of gearing now to be described in detail.

Referring to Fig. 9, it will be seen that to the shaft 50 there is secured a gear 92 which is in mesh with a pinion 93 attached to a shaft 94 which carries the lowermost feeding roller 95 of the first set (see Fig. 10). To the shaft 94 there is attached a gear 96 (Fig. 9) meshing with a pinion 97 attached to a shaft 98 which carries the uppermost feeding roller 99 of the first set (see Fig. 10).

The second or the intermediate set of feeding rollers comprises a lowermost roller 100 and the uppermost roller 101 which are driven by a gearing now to be described by reference to Fig. 8. The gear 49 (Fig. 8) meshes with a gear 102 which is attached to a shaft 103 which carries the lowermost feeding roller 100. The shaft 103 has attached thereto a pinion 104 meshing with a pinion 105 which is attached to the shaft 106 which carries the uppermost feeding roller 101.

The third set of feeding rollers comprises a lowermost roller 107 and an uppermost roller 108 (Fig. 11) and the gear drive for these rollers will now be described with particular reference to Fig. 8. The gear 102 is in mesh with a gear 109 which meshes with a pinion 110 attached to a shaft 111 which carries the lowermost feeding roller 107. To the gear 110 there is attached a pinion 112 meshing with a pinion 113 attached to a shaft 114 which carries the uppermost feeding roller 108.

By the above described gearing, the three sets of feeding rollers will feed the card as it emerges from the card supply magazine past the first or control brushes 115 (Fig. 10) and past the second or adding control brushes 116 and thence to a storage magazine 117.

Reference has previously been made to the card feeding clutch control magnet 60 which is energized to control card feeding operations and the electrical means by which card feed is initiated and continued for successive tabulating cards will now be described with particular reference to the wiring diagram shown in Fig. 6.

As previously stated, the machine is provided with a generator 12 and said generator is adapted to supply alternating current to line wires 118 and 119 and direct current to line wires 120 and 121 and said direct current and alternating current supply is adapted to furnish current for the energization of various magnets substantially in a manner which is in accordance with the patent to J. W. Bryce, No. 1,926,890 dated September 12, 1933 and to which reference may be had for the description of the generator which is generally described herein.

When the start key 122 is depressed a circuit will be made from the A. C. line side 118 through the card feeding clutch control magnet 60, contacts 123 now closed, the manually controlled stop key contacts 124, the manually closed start key contacts 122 now closed, and through the contacts C—1 to the other A. C. line side 119. The machine herein is provided with a series of machine controlled contacts designated herein as the "C" contacts and "F" contacts and these contacts are adapted to close at predetermined times in the machine operation and their timing fully is disclosed in the timing diagram shown in Fig. 7 and to which reference is to be had for the theoretical timing of such contacts.

The group of "C" contacts are timed to close by driving means which will now be described in detail with particular reference to Fig. 1. The gear 17 meshes with a pinion 126 and rotatable with said pinion is a pinion 127 meshing with a gear 128 attached to a shaft 129. Each of said "C" contacts is in the form of a commutator comprising as shown for one "C" contact a pair of brushes 130 and 131 adapted to make electrical contact with a segment 132 which is carried by a

disk 133 of insulation and rotated by the shaft 129.

Obviously the timing of the closure and the opening of the various circuits is controlled by the length of the commutator segments 132 each of which is designed in accordance with the particular times of closing and opening of the circuits.

Referring now to the timing diagram with the start key held depressed, when contacts C—1 are closed the energization of the card feed clutch magnet 60 causes the engagement of the clutch and the feeding of the lowermost card from the supply hopper 76 to a position where the leading edge of the card is almost in contact with the first set of brushes 115 (see Fig. 10). After the first cycle of machine operation, the start key is again depressed to cause further feeding of the card to the right as viewed in Fig. 10 and during this second cycle of operation, the card which is fed will pass over a card lever 134 and rock the same about its pivot 135 (Figs. 10 and 11) to cause an extension 136 thereof to act on a pusher rod 137 to close card lever controlled contacts 138.

Referring now to the wiring diagram, with the card lever contacts 138 closed, the circuit extends from the direct current line side 121 through contacts C—3, card lever contacts 138, relay magnet 139, relay magnet 140 to the other direct current line side 120 causing, when contacts C—3 close, the energization of the relay magnet 139 and the closure of its relay contacts 139a. From the timing diagram, it will be seen that contacts C—3 close at the same time the card lever contacts 138 are closed and the relay magnets 139 and 140 will be held energized by the closure of the contacts C—3 at the beginning of the next cycle of machine operation. By means of the closed relay contacts 140a, contacts C—1, and contacts F—1 which close at the last part of the card feeding cycle when contacts C—1 close an impulse will be transmitted to the card feed clutch magnet 60 so as to cause automatically a third cycle of machine operation during which operation the card passes the adding control brushes 116.

The manner in which the various "F" contacts are controlled in operation will now be described with particular reference to Fig. 8. To the gear 109 there is attached a gear 141 which meshes with a gear 142 secured to a shaft 143 which carries the commutator segments for controlling the F—1 contacts. From Fig. 8, it will be seen that the end of the shaft 143 is threaded so as to receive a nut 144 which not only clamps the various commutators on the shaft 143 but permits by the unloosening of the nut 144 the individual adjustment of each of said commutators. This construction is also provided for the "C" contacts.

Referring now to Fig. 10, it will be seen that when the card emerges from the last set of feeding rollers 107 and 108 it is inclined downwardly beneath a plate 145 so as to pass under a mutilated rubber roller 146 attached to a shaft 147.

Referring now to Fig. 8, it will be seen that the feed roller carrying shaft 111 has attached thereto a gear 148 (same size as gear 112) which drives the shaft 147 through a train of gears 149. As the roller 146 rotates, it will engage the top surface of the card and further feed it so that its leading edge abuts the angled portion 150 of the plate 145 at which time the card is in the storage hopper 117. The roller 146 may turn further so as to be free of the top card fed in the supply hopper.

Referring to the wiring diagram in Fig. 6 and to the timing diagram, it will be evident as long as cards are fed so as to retain the card lever contacts 138 closed, at the termination of each card feed cycle contacts F—1 will close so as to transmit an impulse to the feed clutch control magnet 60 causing the successive feeding of the cards.

The card feeding unit is provided with an improved construction whereby the upper set of feeding rollers and other parts may be elevated for access to the feeding mechanism for the purpose of adjustment, inspection, cleaning, etc.

From Figs. 8 and 9, it will be seen that the upper portion 151 of the card feeding unit is hinged at 152 to the lower section of the card feeding mechanism and in order to rigidly hold both portions in cooperation there is pivoted in the upper section 150 at 153 a pair of hook shaped members 154 and 155 adapted to catch or hook over rollers 156 and 157, respectively, so as to hold both sections firmly together. The members 154 and 155 are tied together by a bail member 158 provided with a contact operating portion 159 adapted when both sections are operatively correlated to close the aforesaid contacts 123. By manually withdrawing the hooks of the members 154 and 155 out of cooperation with the studs 156 and 157, the upper section may be rocked around the pivot 152 and at this time the contacts 123 will be open by their resiliency due to the removal of the contact operating portion 159.

Referring to the wiring diagram, the opening of contacts 123 will prevent the energization of the card feed clutch control magnet 60 thereby preventing feeding of the cards unless both sections of the card feeding mechanism are in proper operative relationship.

In order to insure the proper meshing of the correlated gears 112 and 113 and 104 and 105 (Fig. 8) and gears 96 and 97 (Fig. 9) there is provided a slidably mounted plate 160 (Fig. 8) which is pivoted at 161 to a double arm 162 pivoted at 163 and having a top portion 164 coacting with the aforesaid yoke 158. When the upper section is unlatched springs 165 will be free to urge the plate 160 to the right as shown in Fig. 8 thereby causing projections 166 and 167 thereof to engage with the teeth of gears 113 and 105, respectively, and a projection 168 to engage with a gear attached to shaft 98 holding said gears in such position that the teeth of gears 113, 105, 97 (Fig. 9) will engage the interdental spaces of the correlated gears 112, 104, and 96 respectively when the upper section is lowered to its normal position.

The above described mechanism will effectively prevent the breaking of teeth of the coacting gears.

While there has been shown and described and pointed out the fundamental novel features of the invention as applied to a single modification 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. 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 card controlled machine, a card feed-

ing mechanism, a cyclically operable shaft, and a drive intermediate said card feeding mechanism and said shaft, said drive comprising a Geneva drive and including driving means to drive said card feeding mechanism to feed the card at a uniform speed synchronously with the rotation of said shaft.

2. In a machine of the class described, card feeding mechanism, a constantly rotating shaft, a Geneva drive comprising means whereby said shaft drives a driving clutch member at an accelerated speed, means for thereafter causing the shaft to drive the driving clutch member at a uniform speed synchronously with said shaft, and means thereafter decelerating the movement of said driving clutch member by said shaft, a driven clutch element for driving the card feeding mechanism by said driving clutch member, and means for causing the engagement of said clutch element and said driven clutch member prior to driving said companion clutch member at an accelerated speed.

3. In a card controlled machine, card feeding mechanism, a constantly rotating shaft, a Geneva drive comprising; means for causing said shaft to drive a driving clutch member at an accelerated speed; means for thereafter causing the shaft to drive the driving clutch member at a uniform speed synchronously with said shaft; means for thereafter decelerating the speed of movement of said driving clutch member by said shaft and means for thereafter retaining said driving clutch member at rest while said shaft continues to rotate, and means for effecting a clutch connection between said driving clutch member and said card feeding mechanism when the latter is at rest and prior to the driving of the driving clutch member at an accelerated speed.

4. In a card controlled machine, in combination, a cyclically rotatable drive shaft, a card feeding mechanism, and a Geneva drive mechanism intermediate said drive shaft and the card feeding mechanism including means to initially drive the card feeding means at an accelerated speed, means to thereafter drive the card feeding mechanism at a uniform speed and synchronously with the rotation of the main drive shaft, and means for thereafter locking the card feeding mechanism at rest while said shaft rotates to complete its cycle of rotation.

5. In a cyclically operable tabulating machine, a card feeding mechanism, a cyclically operable main drive shaft, a Geneva drive connected intermediate said drive shaft and said card feeding mechanism comprising means for effecting a cycle of operation of the said feeding mechanism to feed a card synchronously with the rotation of the main drive shaft, and means for thereafter decelerating the speed of operation of said feeding mechanism to a rest position of the latter.

6. In a card controlled machine, in combination, means for feeding cards, a constantly rotating shaft, a Geneva drive intermediate said card feeding means and said shaft comprising; means for causing the shaft to drive the card feeding means at an increasing accelerated speed; means for thereafter causing the shaft to drive the card feeding means uniformly and synchronously with said shaft, and means for decelerating the speed of operation of said card feeding mechanism to a rest position of the latter.

7. In a card controlled machine, card feeding mechanism, a constantly rotating main drive shaft, a clutch member, a companion clutch member having a driving connection to said card feeding mechanism, said companion clutch member being at rest at the rest position of said card feeding mechanism, a Geneva drive intermediate said constantly main drive shaft comprising means for driving said first-named clutch member from a rest position of the clutch member with an accelerated speed, and comprising means to decelerate the speed of said first-named clutch member to a rest position, and means for causing the engagement of the aforesaid clutch members after the first-named clutch member is decelerated to a rest position to thereby drive the card feeding mechanism at a speed dependent upon the speed of the first-named clutch member.

8. In a card controlled machine, card feeding mechanism, a constantly rotating main drive shaft, a clutch member, a companion clutch member having a driving connection to said card feeding mechanism, said companion clutch member being at rest at the rest position of said card feeding mechanism, a Geneva drive intermediate said constantly main drive shaft comprising means for driving said first-named clutch member from a rest position of the clutch member with an accelerated speed, and comprising means for thereafter driving said first-named clutch member at a uniform speed synchronously with the rotation of said shaft, and comprising means to decelerate the speed of said first-named clutch member to a rest position, and means for causing the engagement of the aforesaid clutch members after the first-named clutch member is decelerated to a rest position to thereby drive the card feeding mechanism at a speed dependent upon the speed of the first-named clutch member.

9. In a machine of the class described, in combination, a stationary frame, a plurality of rotatable feeding rollers carried by said frame, a movable frame carrying companion rotatable feeding rollers and separated therefrom by movement of the movable frame, means for latching the aforesaid frames together for enabling the rollers to cooperate for feeding operations, machine controlling contacts, and means for causing said latching means to control the different positions of said contacts in accordance whether said frames are latched or unlatched.

10. In a machine of the class described, in combination, a stationary frame, a plurality of rotatable feeding rollers carried by said frame, a movable frame carrying companion rotatable feeding rollers and separated therefrom by movement of said movable frame, a gear attached to each feeding roller carried by the movable frame meshing with gears attached to the feeding rollers carried by the stationary frame, means for latching the aforesaid frames together, means for locking the gears carried by said movable frame, and means controlled by said latching means for releasing said locking means by the movement of said latching means to unlatch said frames.

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