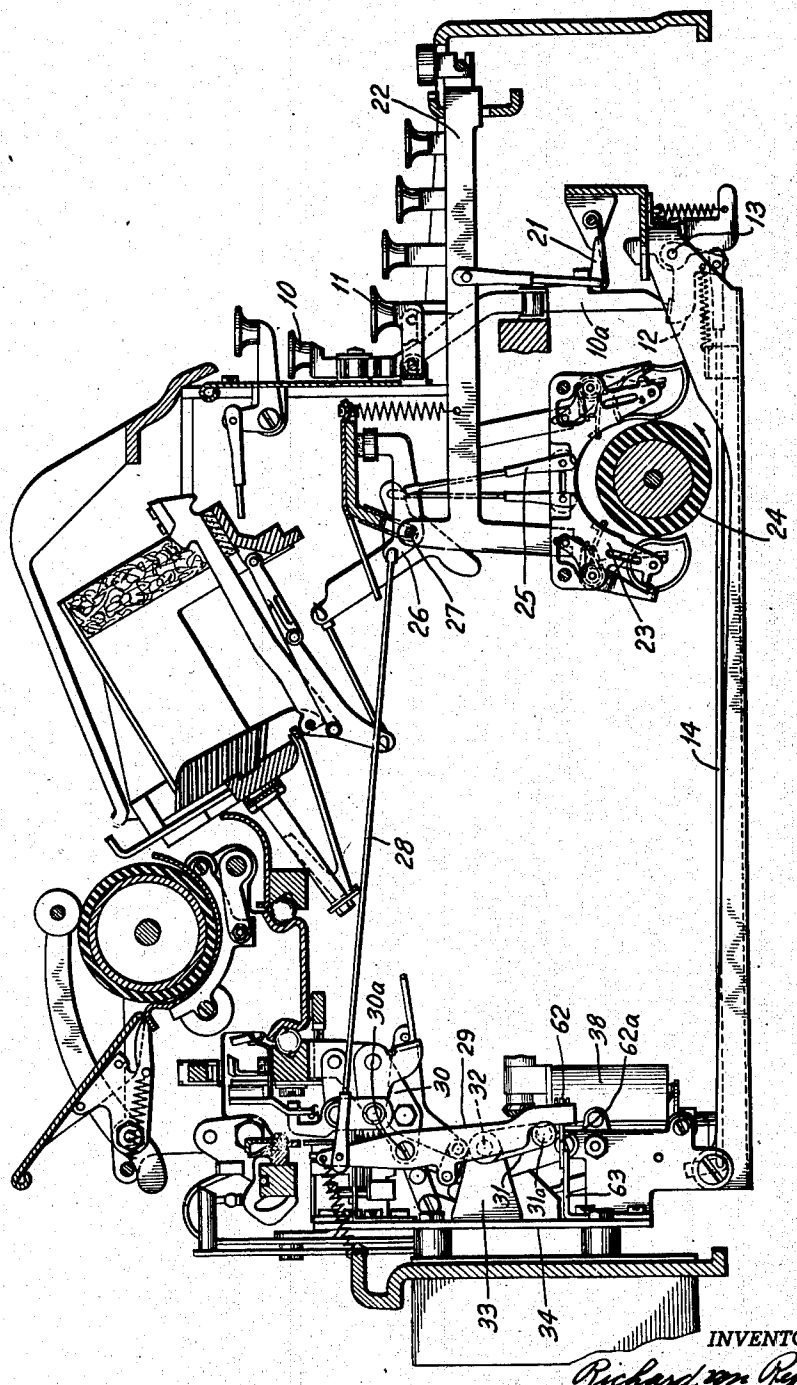
July 3, 1945. R. VON REPPERT 2,379,843

TYPEWRITING MACHINE

Filed April 20, 1943 4 Sheets-Sheet 1

FIG. 1.




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July 3, 1945. R. VON REPPERT 2,379,843

TYPEWRITING MACHINE

Filed April 20, 1943 4 Sheets-Sheet 2

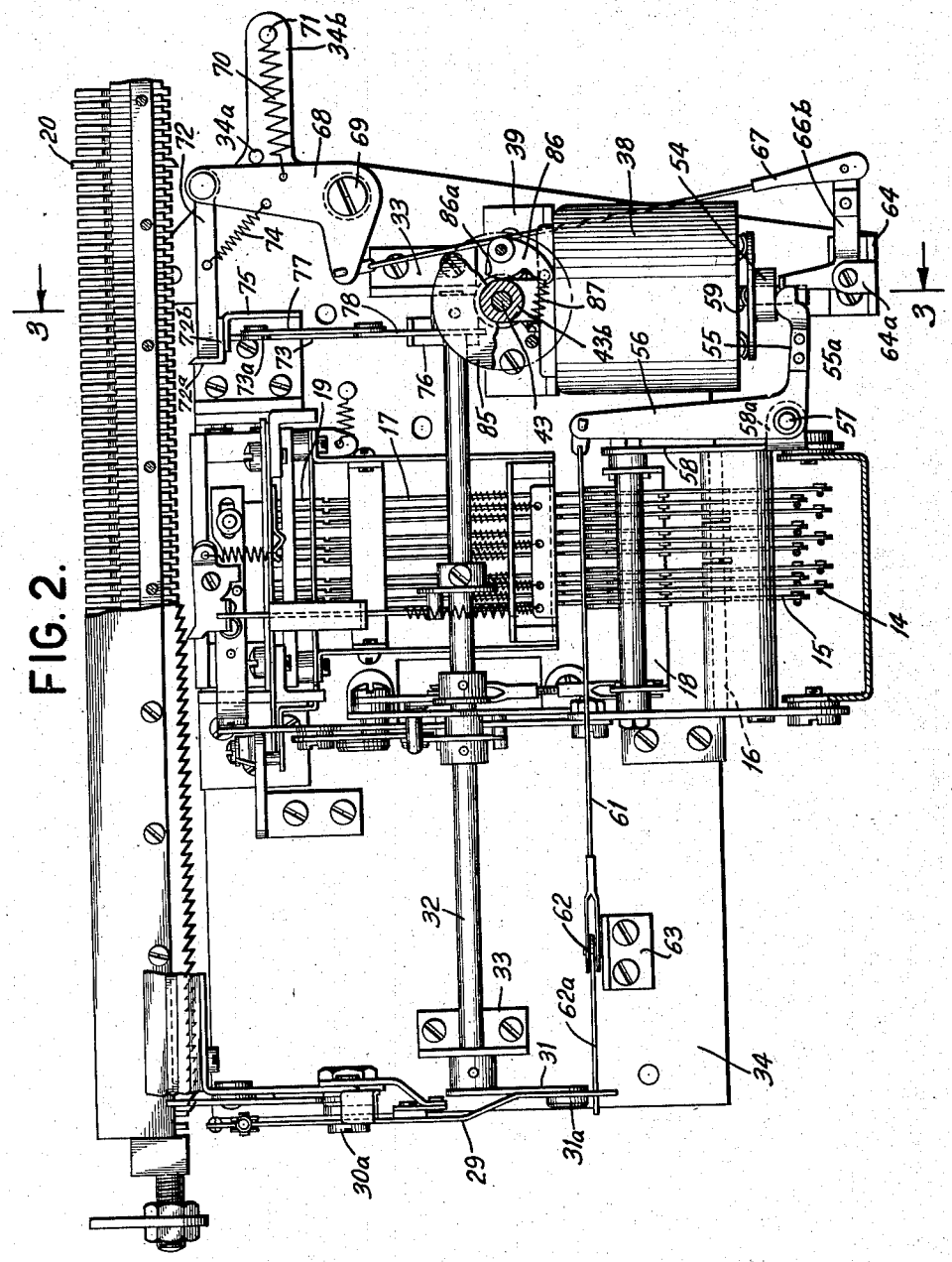



FIG. 2.

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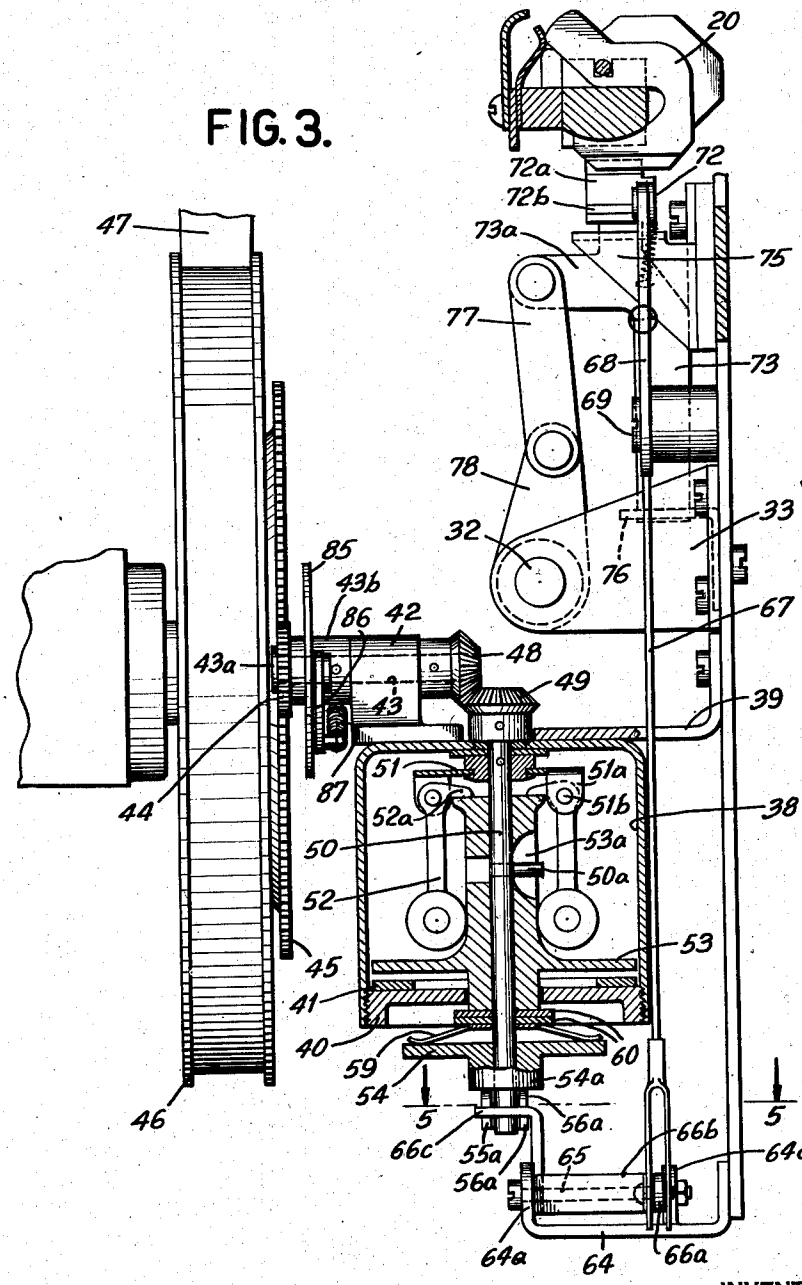
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TYPEWRITING MACHINE

Filed April 20, 1943 4 Sheets-Sheet 3

FIG. 3.




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TYPEWRITING MACHINE

Filed April 20, 1943 4 Sheets-Sheet 4

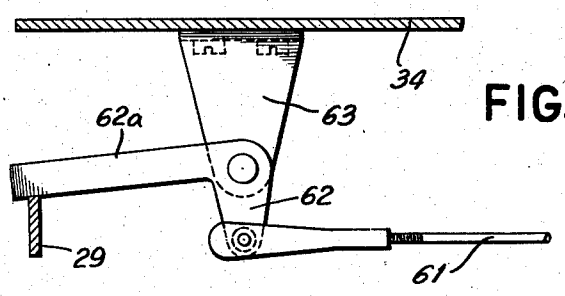



FIG. 4.

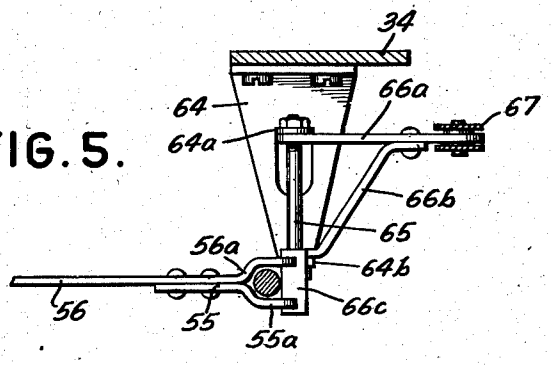



FIG. 5.

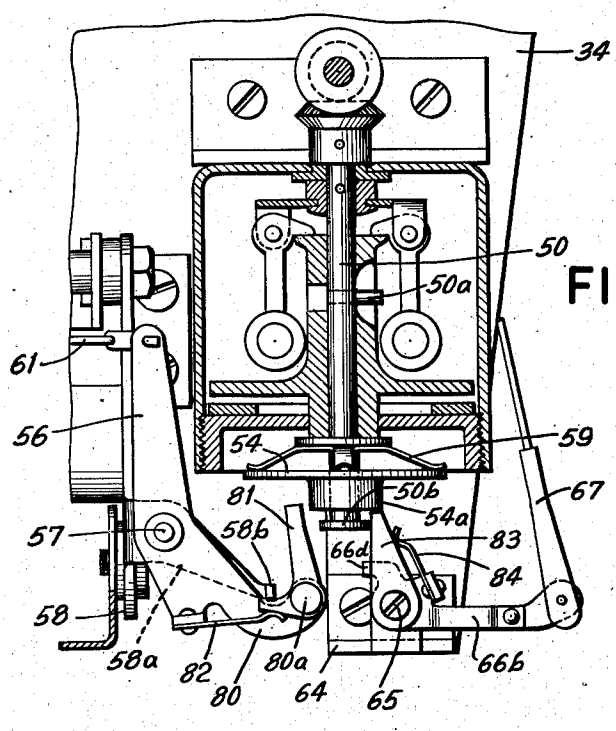



FIG. 6.

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2,379,843

# UNITED STATES PATENT OFFICE

2,379,843

## TYPEWRITING MACHINE

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Application April 20, 1943, Serial No. 483,749

14 Claims. (Cl. 197—64)

This invention relates to typewriting machines and more specifically to tabulating mechanisms and is a continuation in part of subject matter divided from application Serial No. 448,369 filed June 25, 1942, by R. V. Reppert, now Patent No. 2,353,095.

The principal object of the present invention is to provide an improved carriage speed controlling means.

An object is to provide means for reducing the shock usually accompanying the collision between the column stops and the counter stop of a tabulating mechanism.

An object is to provide a carriage speed controlling device which permits the carriage to initially move with increasing velocity but checks the velocity just prior to the collision between the column stop and the counter stop.

An object is to provide a carriage speed governing device which gives better control of the speed of the carriage during tabulating mechanisms than was formerly possible.

An object is to provide an improved friction speed governing device or brake.

An object is to provide a centrifugal force controlled friction governor or brake for typewriter carriages which is initially loaded to reduce the braking effect on the governor of the carriage and in which the increased load on the governor is removed a predetermined time before the column stop collides with the counter stop to enable the governor to exert a greater braking force on the carriage with the object of reducing its speed to a minimum at the time of collision.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of example, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a vertical section through the machine.

Fig. 2 is a front elevation of the tabulating mechanism with the speed governing device attached.

Fig. 3 is a large scale vertical section line 3—3 in Fig. 2 and showing certain parts in operated position.

Fig. 4 is a detail plan view on a large scale showing part of the lever system for setting the governor.

Fig. 5 is a horizontal section on the line 5—5 in Fig. 3.

Fig. 6 is a large scale vertical section showing a modification.

The invention is shown in the drawings as applied to the well-known "Electromatic" power operated typewriter, also known as the "international." For the purpose of illustrating the method of controlling the governor, it has been shown in the drawings as applied to the form of power operated denominational tabulating mechanism disclosed in Patent No. 2,353,095. It will be understood, however, that the invention may be applied to other forms of typewriters whether manual or power operated and to other forms of tabulating mechanism without substantial departure from the principle and structure disclosed and claimed herein.

The machine disclosed in the aforesaid patent is provided with a row of denominational tabulator keys 10 (Fig. 1) and a columnar tabulator key 11. When one of the keys 10, 11 is depressed, one of the key stems 10a moves downwardly to rock clockwise one of the bell cranks 12 pivoted on a cross rod 13. These bell cranks are connected by links 14 to stop selecting levers 15 (Fig. 2) which are pivoted on a cross rod 16 and cause the vertical links 17 to be coupled to a common operating bar 18. The links 17 are connected at their upper ends to the denominational counter-stops 19 and will be thrust upwardly by the bar 18 so as to project the stops 19 into the path of a set column stop 20 on the carriage to define a denominational position of the carriage, as explained in the aforesaid application.

The depression of the keys 10 or 11 (Fig. 1) also rocks a universal bar 21 counterclockwise thereby depressing a key lever 22 which controls a cam unit 23. This can unit 23 is operated in a well-known way by the power roller 24 which rotates continuously in the direction of the arrow (Fig. 1). The power roller 24 rocks the cam unit 23 in a clockwise direction in a well known way to draw down a link 25 connected to a bell crank 26 which is pivoted on the rod 27. The downward movement of the link 25 causes the bell crank 26 to rock in a clockwise direction, thereby drawing a link 28 to the right. The movement of link 28 rocks clockwise an operating lever 29 which is pivoted on a plate 30 suitably supported by a fixed part of the frame work of the machine.

The lower end of the lever 29 engages a stud 31a (Figs. 1 and 2) on the lower end of an arm 31 secured to an operating shaft 32 journaled in bearing brackets 33 carried by the main sup-

port plate 34 for the tabulating mechanism. As a result, the shaft 32 will be rocked clockwise (Fig. 1) or counterclockwise (Fig. 3), each time a tabulating key, such as one of the denominational tabulating keys 10, or the column tabulating key 11, is operated.

After the shaft 32 has been rocked in the manner just described, it is locked in its operated position by mechanism described in the aforesaid application. Since this locking mechanism does not directly affect the operation of the carriage speed governing device, it will not be described herein. It will suffice to say that when the collision between the said column stop 20 and any selected control stop 19 takes place, this locking mechanism is automatically released to permit the shaft 32 to become restored to its normal position. This will not occur until the tabulating operation is completed and the carriage has come to rest in the desired position as determined by the selected counter stop 19.

The shaft 32 has actuating connections to the cross bar 18 whereby the latter is elevated each time shaft 32 is rocked as aforesaid to raise a selected counter stop 19.

The foregoing briefly summarizes the operation of the tabulating mechanism to the extent necessary to an understanding of the action of the carriage speed governing device. For a more detailed understanding of the operation of the tabulating mechanism, reference may be had to the aforesaid Reppert application.

The carriage speed governor is most clearly shown in Fig. 3 which illustrates the condition of the parts after the governor has been spring loaded to reduce its braking effect during a tabulating operation. The governor includes a cylindrical housing 38 (Fig. 3) in the form of an inverted cup which may be drawn from sheet metal and secured as by welding or brazing to the underface of a bracket 39 secured to the front face of the plate 34 (see Fig. 2 also). The lower end of the can 38 is threaded to receive a plug 40 on the top surface of which is secured a friction ring 41 formed of a suitable friction material.

Also secured to the upper end of the can 38 (Figs. 2 and 3) is a bearing bracket 42 for a short pinion shaft 43 having a pinion 44 meshing with a gear 45 fixed to the side of the usual carriage spring motor 46. This spring motor may be connected in any suitable manner to the carriage as by means of a flexible band 47. A bevel pinion 48 is secured to the end of shaft 43 opposite the pinion 44 and meshes with a similar bevel pinion 49 secured to the governor shaft 50. The shaft 50 is journaled at its upper end in the can 38.

Secured to the upper end of the shaft 50 within the can 38, is a member 51 (Fig. 3) formed with four downwardly extending lugs 51*a* pivotally supporting at 51*b* the weight members 52. The weight members 52 have short arms 52*a* which engage the enlarged upper end of the hub 53*a* of a brake disk 53, the hub of the brake disk being journaled in a hole in the plug 40 and also slidable vertically in said hole. The hub 53*a* is slidably keyed to the shaft 50 by means of a pin 50*a* carried by shaft 50 and projecting into a slot in hub 53*a* whereby the assembly comprising the pinion 49, shaft 50, the member 51, the weight members 52 and the brake disk 53 are rotatable as a unit by spring motor 46. Loose on the lower end of the shaft 50 (Figs. 2 and 3) is a circular pressure plate 54, the hub 54*a* of which normally rests on the arms of a fork formed by a member 55 secured to one arm of a setting lever 56 which is pivoted at 57 to an ear 58*a* formed in one of the support brackets 58 for the cross rod 16. This fork is formed by the bent portions 55*a*, 56*a* of member 55 and the arm of lever 56 to which member 55 is fastened.

Interposed between the upper face of pressure plate 54 and the lower end of the hub 53*a* is a four-prong spring 59 (Fig. 3) and a pair of bearing washers 60. The setting lever 56 (Fig. 2) is in the form of a bell crank connected by a link 61 to a bell crank 62 pivoted on a bracket 63 secured to the front face of the plate 34. One arm 62*a* of the bell crank, as more clearly shown in Fig. 4 extends to the left behind the lower end of the lever 29.

When the lever 29 is operated as described above in consequence of the depression of a denominational tabulating key 10 or the column tabulating key 11, the bell crank 62 will be rocked clockwise (Fig. 4) drawing the link 62 to the left (Fig. 2) to rock the setting lever 56 in a counterclockwise direction. This causes the pressure plate 54 to be elevated from the position of Fig. 2 to the position of Fig. 3 placing the prongs of the spring 59 under greater tension since the hub 53*a* of the friction disk 53 is incapable of moving upwardly (Fig. 3) and can only move downwardly under the stimulus of centrifugal force acting through the weight members 52. This has the effect of spring loading the weight members 52 so as to require a greater centrifugal force to push the hub 53*a* downwardly than is required when the pressure plate 54 is in the position of Fig. 2.

In the position of Fig. 2, the spring 59 may have little or no effect so that the weight members 52 are comparatively free to move in an arc with rotation of the shaft 50 by the spring motor 46. With the pressure plate in the position of Fig. 3, the friction disk 53 will have to be driven at a fairly high speed before the weight members 52 move far enough to bring the friction disk 53 in contact with the friction ring 41. Thus, when the parts are in the position of Fig. 3, the carriage may acquire considerable velocity during the first portion of the tabulating movement of the carriage with relatively slight checking effect by the friction disk 53.

Means are provided to lock the presure plate 54 in the position of Fig. 3 and to release the pressure plate shortly before the column stop 20 strikes the selected counter stop 19. Secured to the front face of the plate 34 (Figs. 2, 3, and 5) is a bracket 64 formed with ears 64*a* supporting a long stud 65 on which is loosely pivoted a detent lever formed by securing together a straight arm 66*a* and an irregularly bent lever 66*b*. The lever 66*b* is formed with an offset latch lug 66*c* which normally bears against the ends of the fork formed by the bent portion 55*a* of member 55 and the portion 56*a* of lever 56. The portions 55*a*, 56*a* also are formed with a latching shoulder underneath which the lug 66*c* snaps as in Figs. 3 and 5, when the pressure plate 54 is lifted by bell crank 56 to the position of Fig. 3, thereby maintaining the governing device in spring loaded condition until released by the means about to be described.

The arm 66*a* is connected by a link 67 (Figs. 2, 3 and 5) to a bell crank 68 pivoted at 69 on the front face of the plate 34. The bell crank 68 is urged in a clockwise direction against a stop stud 34*a* (Fig. 2) by means of a spring 70 anchored to the vertical arm of the bell crank and to a pin 71 carried by an extension 34*b* of the

plate 34. Pivoted on the upper end of the vertical arm of the bell crank 68 is a link 72 having an L-shaped offset portion to provide a vertical lug 72a and a horizontal lug 72b. The horizontal lug 72b normally rests on the upper end of a vertically movable slide 73 (see Fig. 3 also) and is held there by gravity and by means of a spring 74 which is anchored to link 72 meshed to the vertical arm of the bell crank 68.

The slide 73 is guided at its upper end in a bracket 75 (Figs. 2 and 3) secured to the front face of the plate 34 and at its lower end by another bracket 76 also secured to plate 34, both brackets being provided with closed slots of the same length and width as the thickness and width of the link in cross section at the bearing points in the brackets. Slide 73 has a horizontal extension 73a connected by a link 77 to an arm 78 secured to the shaft 32.

When the shaft 32 is rotated by the arm 29 in consequence of the actuation of one of the tabulating keys 10 or the column tabular key 11, the arm 78 will be rocked counterclockwise to the position of Fig. 3, thereby elevating the slide 73 to place the lug 72a in the path of the set column stop 20 which is to determine the final stopping position of the carriage. At the same time, of course, pressure plate 54 will be pushed upwardly and latched by the lug 66c. The movement of the lever 66b to latching position also causes a slight clockwise movement of the lever 68 (Fig. 2) to draw the link 72 slightly to the right.

The spring loading of the governor allows the carriage to move very freely throughout the bulk of the tabulating mechanism and allows the carriage to acquire a high velocity. Ultimately, the set column stop 20, in its travel to the left (Fig. 2) will strike the lug 72a and draw the link 72 to the left in Fig. 2 until the lug 72b passes out of contact with the upper end of the slide 73 permitting the spring 74 to rock the link 72 slightly counterclockwise until the lug 72b rests upon the top surface of the bracket 75 with a lug 72b bearing against the left side of the slide 73.

This movement of the link 72 to the left by the column stop 20 rocks the bell crank 68 counterclockwise (Fig. 2) thrusting the link 67 downwardly and rocking the lever 66b clockwise to release the latch lug 66a from the portions bent 55a, 56a of the member 55 and lever 56. This permits the pressure plate 54 to drop and, since at this point the shaft 50 will be rotating at high speed, the friction disk 53 will be free to move into engagement with the friction ring 41 and producing braking force which checks the speed of the carriage through the spring drum 46 and the tape 47. This frictional force, in actuality, is applied by reducing the force exerted on the carriage by the spring motor through the tape 47, so that the final movement of the carriage is produced largely by the momentum stored in the carriage itself.

As soon the the column stop strikes the counter stop, the locking device described in the Reppert application will be released to permit the shaft 32 to be restored thereby lowering the slide 73 and permitting the spring 70 to draw the link 72 and lever 68 back to the position of Fig. 2 in readiness for another tabulating operation.

There is shown in Fig. 6, a modified form of setting lever and detent means for the pressure plate 54 which may be more suitable for use with the specific form of mechanism described in the Reppert application. In the latter application, the lever 29 has a pin and slot connection through the arm 31, consequently the lever 29 and the cam unit which operates it are held in operated position until the column stop 20 strikes the selected counter stop 19 owing to the provision of the locking means described in the Reppert application which locks the shaft 22 and parts connected thereto in operated position. Since the pressure plate 54 must be released before the column stop 20 strikes the counter stop 19, it is necessary to modify the construction of the setting lever 56.

In Fig. 6, the setting lever 56 is formed with a goose neck shaped arm 80 on which a pawl 81 is pivoted at 80a. The pawl is urged in a clockwise direction by a leaf spring 82 secured to an offset lug formed in the arm 80. The ear 58a in this case, is elongated and provided with an offset stop lug 58b engageable with the tail of the pawl 81 on the opposite side thereof to the spring 82. In Fig. 6, the parts are shown in the set position with pressure plate 54, maintaining the tension of the spring 59 at the maximum and is held in this position by a pawl 83 pivotally mounted on the long stud 65 which also pivots the lever 66b. The pawl 83 is urged counterclockwise against a stop lug 66d formed in the lever 66b by a leaf spring 84 secured to an offset lug formed in the lever 66b. The lower end of shaft 50 is formed with an enlarged portion 50b to provide limited downward movement of the pressure plate 54. In the position of Fig. 6, with the governor fully spring loaded, the hub of the pressure plate passes down on the end of the pawl 83.

Upon the engagement of the column stop 20 with the lug 72a, the lever 66b is rocked clockwise, as described above in reference to the form shown in Fig. 2, and disengages the pawl 83 from the face of the hub 54, allowing the pressure plate 54 to drop. With the release of the link 72, the spring 70 will rock the lever 68 clockwise back to the position of Fig. 2, thus causing the lever 66b to rock counterclockwise back to the position of Fig. 6. Since the end of pawl 83 is now released from the latching surface in the hub 54 and occupies a position horizontally opposite the cylindrical part of the hub 54, the pawl 83 will not be free to assume the position of Fig. 6 with the result that the spring 84 will be tensioned.

When the disengagement of the locking means which holds shaft 32 in operated position takes place, bearing in mind that the form of the mechanism disclosed in the Reppert application is now under consideration in which the lever 56 will be held in actuated position, such lever will now be released and allowed to rock in a clockwise direction (Fig. 6).

The release of the pressure plate 54 has resulted in placing the hub of said pressure plate below the nose of the pawl 81 with the result that when the lever 56 is restored, said nose will engage said hub and be held in approximately a vertical position by said hub until the lever 56 has moved far enough to enable the nose of the pawl to snap under the hub and engage the enlarged portion 50b.

When another tabulating operation occurs, the lever 56 will be rocked in a counterclockwise direction and the pawl 81 will lift the pressure plate 54 far enough for the pawl 83 to again snap under the latching surface on the hub. As the lever 56 rocks counterclockwise, the tail of the pawl 81 will be brought into engagement with the stop lug 56b and gradually the pawl 81 will be rocked in a counterclockwise direction relative

to arm 80 until completely disengaged from the hub, as in Fig. 6.

With this arrangement, while the lever 56 is held in the position of Fig. 6 the pressure plate is able to drop downwardly when the pawl 83 is released. Furthermore, when the pressure plate 54 is pushed upwardly to load the governor, movement need not be transmitted through the linkage including lever 66b, link 67 and lever 68 to the links 72, because the spring 84 may be weaker than the spring 70 to allow the pawl 83 to move into latching position without disturbing the linkage.

When the carriage is returned, the spring motor 46 is driven by the tape 47 in the reverse direction to wind the power spring. If the pinion 44 were fixed to the shaft 43, the braking device would be driven in the reverse direction and exert a load upon the carriage, thereby tending to slow down the return of the carriage. In some cases this might be undesirable and means may be provided to prevent it from happening.

The pinion 44 is loosely rotatably mounted on the shaft 43 between the enlarged end 43a (Fig. 3) of the shaft and a collar 43b attached to the shaft as by means of a pin 43c. Secured to the hub of the pinion 44 is a clutch disk 85 on which is pivoted a friction clutch dog 86 urged in a clockwise direction (Fig. 2) by a spring 87. The dog 86 is formed with a slightly spiral cam 86a which engages the collar 43b.

When the disk 85 is rotated in a clockwise direction (Fig. 2), the cam 86a firmly grips the collar 43b and drives the shaft 43 in the same direction. The disk 85 is rotated in a clockwise direction by the gear 45 when the carriage is letter spacing or tabulating, whereby the governor or braking device will be operative. The disk 85 is rotated in a counterclockwise direction during a carriage return operation, causing the cam 86a to slip on the surface of the collar 43b, whereby the shaft 43 will not be turned, thus relieving the carriage of the load imposed by the governor. The spring 87 may have light tension and the cam 86a a relatively slight rise whereby only a small spring pressure is needed to insure a positive drive of the shaft 43 by the disk 85.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a single embodiment, 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 combination with the carriage of a typewriter, tabulating mechanism including a column stop moved by the carriage and a counter stop projectile to a position to be engaged by said column stop to arrest the carriage in a columnar position, a friction speed governing device for controlling the speed of travel of the carriage and having loading means to reduce the effect of the governing device, means to project the counter stop into the path of the column stop and render the loading means effective, and means actuated by said column stop in its travel for rendering the loading means ineffective.

2. In combination with a tabulating mechanism having a column stop and a counter stop, one of which stops is moved in a path from one columnar position to another, one of which stops is also projectable into said path to intercept the other stop; a normally active governing device, means to actuate the projectable stop and render the governing device temporarily at least less effective, and means actuated by the stop which is movable along said path for restoring the effectiveness of said device prior to the interception of the one stop by the other.

3. In combination with a tabulating mechanism having a carriage moved stop travelling in a path from one columnar position to another and having a cooperating stop intercepting and engageable by the travelling stop to determine said second columnar position and also having means to initiate a tabulating operation, a normally fully effective carriage governor, means controlled by the initiating means for temporarily rendering the governor ineffective or at least less effective, and means controlled by the initiating means and movable by the carriage moved stop near the end of its path for restoring the full effect of said governor.

4. In a machine of the class described, in combination with a main carriage, a row of column stops for defining different columnar positions of the main carriage; a row of counter-stops for determining different denominational positions of the carriage for each column defined by a single column stop, said counter-stops being arranged in a row parallel with the row of column stops; a carriage cushioning device including an operating member movable into the path of a column stop and movable thereby to actuate said device through a predetermined movement of the carriage, said member being disposed in alignment with the row of counter-stops so as to be engaged and operated by one of said column stops and then released prior to engagement of a column stop with a counter-stop; a series of denominational keys each associated with a column stop; means controlled by said keys for moving the counter-stops into the path of the column stops, and means controlled by said keys for simultaneously moving said operating member into the path of a column stop for movement by said column stop.

5. In a tabulating mechanism, in combination with the main carriage, a column stop on the main carriage, a counter-stop movable into the path of the column stop, a carriage retarding device including an element movable with the counter-stop into the path of the column stop and arranged to be moved by the column stop in its progress toward the counter-stop and also released automatically from the column stop prior to the engagement of the column stop with the counter-stop.

6. In a tabulating mechanism, the combination with the main carriage, a column stop on the main carriage, a counter-stop movable into engagement with the column stop to arrest the carriage by cooperation with the column stop; and a retarding device including a member movable into the path of the counter-stop when the counter-stop is moved, said member having a limited travel under the influence of the column stop and automatically releasable from the column stop before the latter strikes the counter-stop, said member being releasable at a point to permit the carriage to have an additional movement prior to the column stop striking the counter-stop.

7. In a tabulating mechanism, a main carriage, a column stop on the carriage, a counter-stop movable into the path of the column stop, and

a carriage retarding device including a movable element arranged to be engageable by the column stop in its movement toward the column stop and to be moved by the counter-stop, and means operable with the counter-stop for raising said member into the path of the counter-stop and arranged to be disengageable from the member after said member has been moved a predetermined distance, said point of release of said member being located to permit the column stop to move an additional distance prior to the engagement of the column stop with the counter-stop.

8. In a tabulating mechanism, the combination with the main carriage, a column stop moved by the main carriage, a counter-stop movable into the path of the column stop, a frictional braking device for controlling the speed of the carriage, means operative when the counter-stop is moved into the path of the column stop to render the braking device ineffective, a member movable into the path of the column stop so as to be engaged and moved thereby to render the braking device effective a predetermined distance from the counter-stop, and means operative to move said member into the path of the column stop when the counter-stop is moved.

9. In combination with a carriage tabulating mechanism having a carriage moved stop and a cooperating counter-stop, one of which stops is movable into a position to engage the other to arrest the carriage in a columnar position, a carriage retarding device, means for controlling said device including a normally ineffective member for intercepting the carriage moved stop in its movement to said columnar position and automatically disengaged from the carriage moved stop before engagement of said stops to permit the carriage to continue its movement to stop-engaging position, and means for moving said one stop and rendering effective said member.

10. In a carriage tabulating mechanism, a pair of coacting stops, one of which is movable toward the other to a columnar position; a carriage retarding device, and means for controlling the retarding device including a member movable into the path of the movable stop and so constructed and arranged as to control the retarding device through only a portion of the path of the movable stop, said member being automatically released and withdrawn from the path of the movable stop before the movable stop strikes the coacting stop.

11. In a carriage tabulating mechanism, a pair of column defining stops one of which has a path of movement intercepted by the other stop to define a columnar position of the carriage, a carriage retarding device, and means for controlling said device including an element movable to intercept said one stop and movable thereby a predetermined extent to limit the effect of the retarding device on the carriage to only a portion of the path of said one stop, said element being released automatically before said one stop is intercepted by the other stop.

12. In a carriage tabulating mechanism having a relatively fixed stop and a carriage moved stop one of which stops is movable to intercept the other to define a columnar position of the carriage; a friction carriage retarding device including a pressure member and cooperating friction member engageable to produce a friction load on the carriage, and means for controlling the engagement of said members including a member movable to intercept the carriage moved stop in its movement and movable by the carriage moved stop through a limited portion of the path of said carriage moved stop to limit the engagement of the friction members to only said portion of said movement of said carriage moved stop, said movable member being moved by the carriage a predetermined distance and automatically released to permit a further movement of the carriage free of said movable member prior to interception of the carriage moved stop by the fixed stop.

13. In a carriage tabulating mechanism having two cooperating stops, one moved by the carriage and intercepted by the other to define a columnar position of the carriage; a carriage retarding device comprising coacting friction members, centrifugal force actuated means for engaging said friction members, and loading means to counterbalance the centrifugal engaging force; and means controlled by movement of the carriage moved stop for controlling the loading means.

14. In a carriage tabulating mechanism in which there is provided a pair of coacting carriage arresting stops, one actuated into a path containing the other along which path one of the stops travels until engaged by the other, a carriage retarding device, and means for controlling the operation of the retarding device during a portion of the travel of the travelling stop and including a member initially movable into said path along with the actuated stop and thereafter moved a predetermined extent during the travel of the carriage, said member being automatically released and restored to permit the carriage to continue in its travel a predetermined extent before the engagement of said stops occurs.

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