A. S. DENNIS.

TYPE WRITING MACHINE.

APPLICATION FILED JUNE 9, 1909.

964,091.

Patented July 12, 1910.

Fig 1.

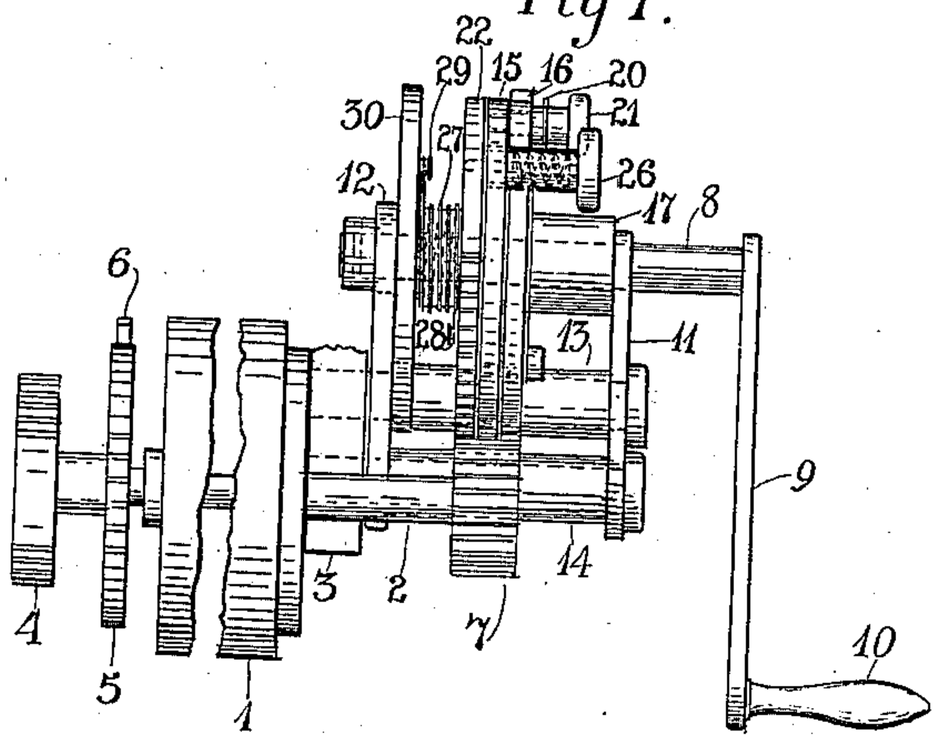


Fig 2.

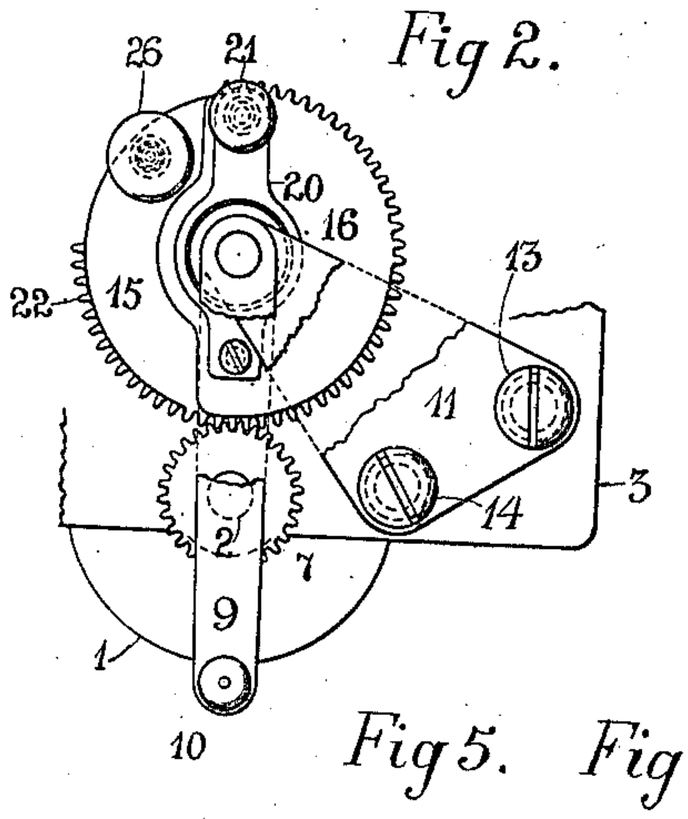


Fig 4

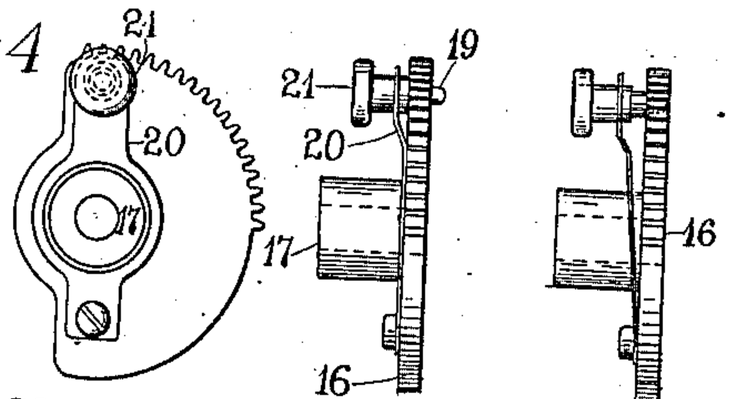


Fig 3.

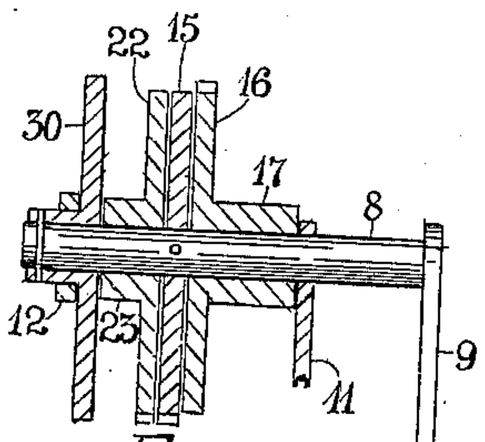


Fig 7.

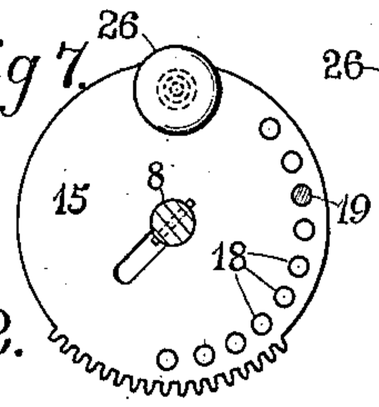


Fig 9.

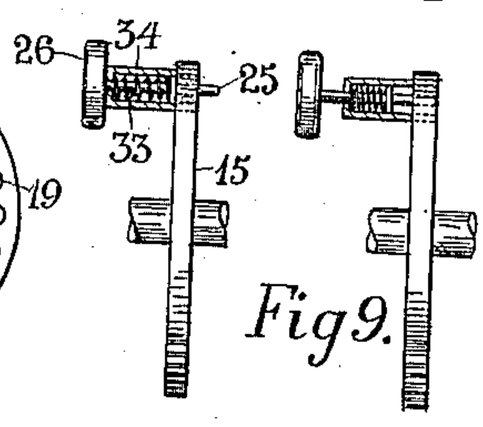


Fig 10.

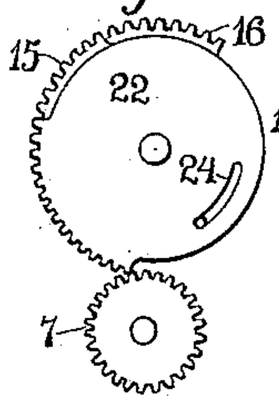


Fig 11.

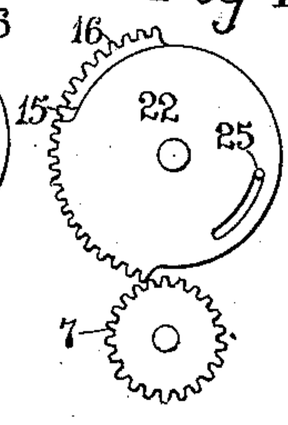


Fig 12.

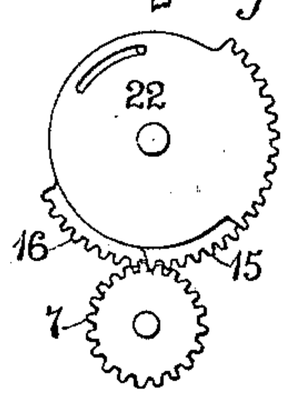
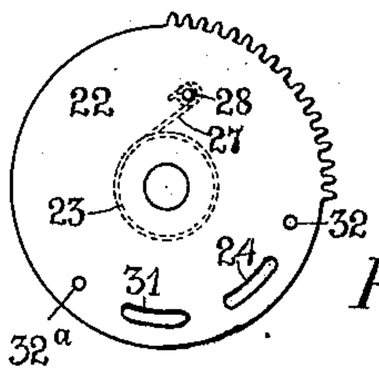


Fig 8.

Fig 13.



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UNITED STATES PATENT OFFICE.

ADOLPHUS S. DENNIS, OF LAKEWOOD, OHIO, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

964,091. Specification of Letters Patent. **Patented July 12, 1910.**

Application filed June 9, 1909. Serial No. 501,111.

To all whom it may concern:

Be it known that I, ADOLPHUS S. DENNIS, a citizen of the United States, residing in Lakewood, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to the platen-controlling devices of typewriting machines, and particularly to devices intended to rotate the platen first backwardly to receive a bill, and then forwardly to bring the first line on the bill to printing position as in the operation known as condensed billing. The invention however is not limited to this use.

The main object of the invention is to provide a simple and inexpensive mechanism for this purpose, readily applicable to existing typewriting machines, and not liable to get out of order, and affording a rotation of the platen through either less or more than an entire revolution at each operation.

Upon the platen axle I fix a pinion; and upon the platen frame I mount a driving axle having a crank or finger piece and carrying a mutilated gear, which is normally out of mesh with said pinion, but may be swung into mesh therewith to rotate the same and may then continue to move out of mesh with the pinion, whereby the length of the rotation of the platen depends upon the length of the mutilated gear. The platen is provided with the usual detent, whereby the pinion is held in proper position for the mutilated gear to swing back into mesh therewith, and return the platen to its original position. Said gear consists of a series of segments placed side by side and matching one another, to form a continuous gear; the pinion being of sufficient length to mesh with all of the segments. The segments moreover are relatively adjustable rotatively for the purpose of extending or shortening the continuous gear. The latter, when most extended, still falls short of forming a complete gear, and always remains mutilated or in the form of a grand segment. The three segments may be adjusted or folded together, so that only a very short stroke may be imparted thereby to the platen, or they may be extended or fanned out, so that more than an entire revolution may be imparted thereby to the platen; the diameter of the gear being preferably substantially in excess of that of the platen pinion.

Provision is made for causing the initial or backward stroke of the platen to be shorter than the final or forward stroke thereof. To this end one of the segments is permitted to have a limited vibration, relatively to another, and a spring effects such vibration in one direction. When therefore the driving gear is rotated, the yielding segment first engages the pinion, and the spring permits it to yield temporarily while the crank continues turning. Hence a short stroke is given to the platen. During such stroke the yielding segment escapes from the platen pinion, and the spring returns it to its normal position, relatively to the other segment; and hence upon the return stroke the platen is driven by the fully expanded continuous gear, and hence turns through a greater arc than at its first stroke.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a plan of part of a platen frame and platen provided with the present improvements. Fig. 2 is an end view of the devices seen at Fig. 1. Fig. 3 is a sectional diagram of the three-part gear and its appurtenances. Fig. 4 is a face view, and Fig. 5 is an edge view of the outside adjustable segment. Fig. 6 is a view similar to Fig. 5, but showing the locking pin withdrawn to permit adjustment of the segment. Fig. 7 is a face view, and Fig. 8 an edge view of the middle segment, which is fixed to the driving axle, and is provided with a rack to receive the locking pin, which is shown at Figs. 4, 5 and 6. Fig. 9 is a view similar to Fig. 8, but showing the locking pin withdrawn. Figs. 10, 11 and 12 show stages in the initial stroke of the driving gear, Fig. 10 showing the initial engagement of the yielding segment with the platen pinion, Fig. 11 showing the driving axles having advanced from the Fig. 10 position while the yielding segment remains stationary, and Fig. 12 showing the driving shaft as having advanced still farther, and the yielding segment as having escaped from the platen pinion, and as having been restored by its spring to its original position with reference to the other segment. Fig. 13 is a face view of the yielding segment.

The usual cylindrical platen 1 is pro-

vided with a shaft or axle 2, mounted in a platen frame 3 of any usual construction, and having at one or both ends knobs 4 for rotating the platen. A notched line-space wheel 5 may be secured to one end of the platen, and a spring detent 6 may coöperate therewith in the usual manner. Upon the platen axle outside of the platen frame is fixed a broad pinion 7, the teeth of which may have the same pitch as those of the line-space wheel 5.

A driving axle 8 having a crank 9 (provided with a handle 10) is journaled in an auxiliary frame comprising plates 11, 12, connected by studs 13, 14, said studs secured to the platen frame 3 in any suitable manner. Fixed upon the driving axle 8 is a gear segment 15, the length of the segment being preferably about 90°. At the outer side of said segment is a second similar segment 16, mounted loosely upon the axle 8 by means of a hub 17 and of the same size as the segment 15 and matching the same, so that the two segments taken together may form a continuous gear segment of about 180 or 200 degrees.

In the segment 15 is formed a rack consisting preferably of a circular series of holes 18, in any of which may fit a pin 19, carried by the segment 16 and held in engagement with the hole by a spring 20. The pin 19 is provided with a button 21, whereby it may be withdrawn, and whereby the segment 16 may then be rotated to lengthen or shorten the continuous gear; the pin 19 being then inserted in any of the holes 18 to lock the segments together, and the spring 20 holding the pin in such position. The holes 18, which are shown diagrammatically, may of course be disposed at the same angular intervals to correspond to the teeth or notches of the line-space wheel 5. Upon the opposite or inner side of the rigid segment 15 is a third segment 22, matching the other two segments and having a hub 23, whereby it is loosely journaled upon the driving axle 8. In this inner segment 22 is formed a segmental slot 24 to receive a pin 25, carried upon the rigid segment 15 and having a button 26, whereby it may be withdrawn from the slot 24. The loose segment 22 is capable of vibration relatively to the fixed segment 15 to an extent determined by the play of the pin 25 in the slot or opening 24. A spring 27 moves the segment 22 in one direction. Said spring is coiled about the hub 23 and is connected at one end to a pin 28 provided on the segment 22, and at the other end to a pin 29 provided on a disk 30, which is fixed to the driving shaft 8. The spring tends to keep the gear expanded to its fullest extent.

When it is desired to rotate the platen backwardly to receive a new bill, the handle 10 is grasped and turned toward the right, or in the same direction as the hands of a clock, and the point of the loose segment 22 is brought into engagement with the pinion 7, as at Fig. 10. The crank 9 continues in rotation, but said pinion 22 remains stationary, owing to the yielding of the spring 27, until the pin 25 engages the other end of the slot 24. At this time the parts are in the position seen at Fig. 11. Upon continued rotation of the crank in the same direction, all of the three segments move together as if made in one piece, and the platen is consequently rotated. At a subsequent portion of the stroke of the crank 9 the loose pinion 22 escapes from the pinion 7, and the spring 27 restores said loose segment to its original relative position, as at Fig. 12. At Fig. 11 the grand segment, taken as a whole, is in its shortened condition, while at Fig. 12 it is in its expanded condition. The stroke of the crank 9 continues preferably until the continuous gear escapes entirely from the pinion 7; the extent of rotation of the platen therefore depending upon the length of the continuous gear. The bill is then inserted in the machine in the usual manner and the platen 9 is then rotated reversely to bring the segments 15, 16 and 22 successively into mesh with the pinion 7. During this stroke, there is no yielding or relative movement of the loose pinion 22, so that the continuous gear is effective for its full or expanded length, and hence the pinion 7 and the platen are given a forward rotation in excess of the backward rotation, just described. By this means a record sheet, which remains in the machine, is brought to position to receive the first line of writing on the second bill, a space or gap intervening between said first line and the last line of the preceding bill.

Preferably, there is provided a series of slots 24, a second slot of this kind being seen at 31, and the pin 25 may be inserted in either one of the slots, thus lengthening or shortening the continuous gear, while affording the desired yielding movement of the segment 22. The series of slots may be increased, if desired.

If it is not desired to have a yielding movement of the segment 22, the pin 25 may be inserted in a small hole 32 in the segment 22, to lock the latter to the rigid segment 15. Another of the holes 32 may be provided as at 32^a, to permit lengthening or shortening of the continuous gear. The pin 25 is held in working position by a spring 33 coiled about the same and confined in a box 34 fixed on the segment 15.

It will be seen that manipulation of the device is very simple, and that it is only necessary to grasp the crank and to swing it until it rotates the platen, and becomes disconnected therefrom, whereupon a fresh bill may be inserted, and the crank may then be rotated in the reverse direction, to turn the

platen to original position and until the crank swings out of connection with the platen.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a platen having a pinion, of a mutilated gear normally disengaged but mounted to swing into mesh with said pinion to turn the platen in one direction and then out of mesh with said pinion at the conclusion of the same stroke of the gear, by which the latter is brought into mesh with the pinion; whereby the gear may be employed to rotate the platen in one direction to a mechanically predetermined extent, and may then be rotated reversely to turn the platen back again.

2. In a typewriting machine, the combination with a platen having a pinion, of a mutilated gear normally disengaged but mounted to swing into mesh with said pinion to turn the platen in one direction and then out of mesh with said pinion at the conclusion of the same stroke of the gear, by which the latter is brought into mesh with the pinion; whereby the gear may be employed to rotate the platen in one direction to a mechanically predetermined extent, and may then be rotated reversely to turn the platen back again, the platen being provided with a line-space wheel and a check therefor.

3. In a typewriting machine, the combination with a platen having a pinion and also provided with checking means or a detent, of a mutilated gear provided with a crank and normally disengaged but mounted to swing at a single movement first into mesh with said pinion to rotate the same, and then out of mesh with the pinion, at the conclusion of the same stroke of the gear by which the latter is brought into mesh with the pinion, whereby the platen is rotated to a mechanically limited extent and is then left free of the control of the gear, so that the platen may be rotated line by line independently of said gear.

4. In a typewriting machine, the combination with a platen having a pinion, of a driving gear segment, a second driving gear segment by the side of the first and revolubly adjustable relatively thereto, both segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen.

5. In a typewriting machine, the combination with a platen having a pinion, of a driving gear segment, a second driving gear segment by the side of the first and revolubly adjustable relatively thereto, both segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen, and means for detaining or locking said segments together in different relative positions.

6. In a typewriting machine, the combination with a platen having a pinion, of a driving gear segment, a second driving gear segment by the side of the first and revolubly adjustable relatively thereto, both segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen, a rack upon one of said segments, and a releasable detent upon the other of said segments to engage said rack to hold the segments together in different relative positions.

7. In a typewriting machine, the combination with a platen having a pinion, of a driving gear segment, a second driving gear segment by the side of the first and revolubly adjustable relatively thereto, both segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen, a rack upon one of said segments, and a releasable detent upon the other of said segments to engage said rack to hold the segments together in different relative positions; said detent in the form of a spring-pin passing through its segment into said rack and having a button whereby it may be released.

8. In a typewriting machine, the combination with a platen having a pinion, of a driving gear segment, a second driving gear segment by the side of the first and revolubly adjustable relatively thereto, both segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen, and means for detaining or locking said segments together in different relative positions; one of said segments fixed upon a shaft which is provided with a crank, and the other of said segments loose upon said shaft.

9. In a typewriting machine, the combination with a platen having a pinion, of a driving gear segment, a second driving gear segment by the side of the first and revolubly adjustable relatively thereto, both segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen; said continuous gear mounted to swing out of mesh with

said pinion at the conclusion of each of its forward and backward platen-driving strokes.

10. In a typewriting machine, the combination with a platen having a pinion, of a driving-gear segment, second and third driving-gear segments by the side of the first and each revolubly adjustable relatively thereto and to each other, the three segments movable into mesh with said pinion and cooperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen.

11. In a typewriting machine, the combination with a platen having a pinion, of a driving-gear segment, second and third driving-gear segments by the side of the first and each revolubly adjustable relatively thereto and to each other, the three segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen, and means for connecting all of said segments together in different relative positions.

12. In a typewriting machine, the combination with a platen having a pinion, of a driving-gear segment, second and third driving-gear segments by the side of the first and each revolubly adjustable relatively thereto and to each other, the three segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen; said set of segments provided with two detents and also provided with two corresponding series of perforations to engage said detents to connect the segments together in different relative positions.

13. In a typewriting machine, the combination with a platen having a pinion, of a driving-gear segment, second and third driving-gear segments by the side of the first and each revolubly adjustable relatively thereto and to each other, the three segments movable into mesh with said pinion and cooperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen, and means for connecting all of said segments together in different relative positions, one of said segments fixed upon a shaft which is provided with a finger piece and the other two of said segments loose upon said shaft.

14. In a typewriting machine, the combination with a platen having a pinion, of a driving-gear segment, second and third driving-gear segments by the side of the first and each revolubly adjustable relatively thereto and to each other, the three segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen, and means for connecting all of said segments together in different relative positions, said continuous gear mounted to swing out of mesh with said pinion at the conclusion of each of its forward and backward platen-driving strokes.

15. In a typewriting machine, the combination with a platen having a pinion, of a driving-gear segment, second and third driving-gear segments by the side of the first and each revolubly adjustable relatively thereto and to each other, the three segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen, and means for connecting all of said segments together in different relative positions, one of said gears fixed upon a shaft which is provided with a finger-piece, and the other segments being placed one upon each side of the fixed segment and both loose upon said shaft.

16. In a typewriting machine, the combination with a platen having a pinion, of a mutilated gear mounted to swing into mesh with said pinion to turn the platen in one direction and then out of mesh with said pinion at the conclusion of the same stroke of the gear, whereby the gear may be employed to rotate the platen in one direction to a mechanically predetermined extent, and may then be rotated reversely to turn the platen back again; means being provided to cause the stroke of the platen effected by said gear to be longer in one direction than in the other direction.

17. In a typewriting machine, the combination with a platen having a pinion, of a mutilated gear mounted to swing into mesh with said pinion to turn the platen in one direction and then out of mesh with said pinion at the conclusion of the same stroke of the gear, whereby the gear may be employed to rotate the platen in one direction to a mechanically predetermined extent, and may then be rotated reversely to turn the platen back again; means being provided to cause the stroke of the platen effected by said gear to be longer in one direction than in the other direction; means being provided to cause the advance stroke of the platen to be longer than the backward stroke of the platen effected by said gear.

18. In a typewriting machine, the combination with a platen, of a driver therefor, a gear having means for transmitting movement from the driver to the platen, said gear being extensible to determine the length

of the stroke imparted to the platen by said driver, and means being provided to cause the stroke of the platen effected through said gear by said driver to be longer in one direction than in the opposite direction.

19. In a typewriting machine, the combination with a platen having a pinion, of a mutilated driving gear normally out of mesh with said pinion and mounted for movement into mesh with the pinion, said gear extensible to regulate the stroke imparted thereby to said platen, and means being provided to cause the stroke of the platen effected through said gear by said driver to be longer in one direction than in the opposite direction.

20. In a typewriting machine, the combination with a platen, of a driver therefor, and a connection between said driver and said platen, said connection extensible to determine the length of the stroke imparted to the platen by said driver; means being provided to cause the advance stroke of the platen to be longer than the backward stroke of the platen effected by said connection.

21. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear.

22. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; said continuous gear mounted to swing at each stroke into and out of mesh with said pinion.

23. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; said continuous gear mounted to swing at each stroke into and out of mesh with said pinion; and said spring mounted upon one of said segments and extending to the other thereof.

24. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; one of said segments fixed upon an axle and the other of said segments adjustable relatively to the first to determine the length of the stroke imparted through said pinion to the platen.

25. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; means being provided for locking said segments against relative rotation at will.

26. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected

by the gear to be shorter than the reverse movement of the pinion effected by said gear; one of said segments having a releasable pin and the other segment having a slot or opening to receive said pin to permit limited relative movement of the segments.

27. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; one of said segments having a releasable pin and the other segment having a slot or opening to receive said pin to permit limited relative movement of the segments, and also having a perforation in which said pin may fit to lock the segments together and prevent relative rotation.

28. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; one of said segments having a pin and the other of said segments having a series of slots or openings into either of which said pin may enter to lengthen or shorten the continuous gear and also afford limited relative movement of the segments.

29. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; one of said segments having a releasable pin, and the other of said segments having a series of perforations into any of which said pin may fit to lock the segments together in different relative positions at will to lengthen or shorten the continuous gear.

30. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; one of said segments having a releasable pin, and the other of said segments having a series of perforations into any of which said pin may fit to lock the segments together in different relative positions at will to lengthen or shorten the continuous gear; said perforated segment having also a slot or opening into which said pin may enter to afford relative limited movement of the gears.

31. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; one of said segments having a releasable pin, and the other of said segments having a series of perforations into any of which said pin may fit to lock the segments together in different relative positions at will to lengthen or shorten the continuous gear; said perforated segment having also a series of slots or openings into either of which said pin may be introduced at will to permit limited movement of the gears, and also to afford of lengthening or shortening of the continuous gear.

32. In a typewriting machine, the combination with a platen, of a driver, and an intermediate device operated by the driver and normally disconnected from the platen to permit rotation of the latter independently of the driver; said intermediate device being movable by said driver into con-

nection with the platen to rotate the latter, and being extensible to determine the extent to which the platen may be rotated by said driver, and constructed to rotate the platen in opposite directions and having a yielding construction to cause the stroke of the platen in one direction to be shorter than its stroke in the opposite direction.

33. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear, a third segment by the side of the second segment and adjustable relatively thereto, and means to secure the second and third segments together in different positions.

34. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear, a third segment by the side of the second segment and adjustable relatively thereto, and means to secure the second and third segments together in different positions; said continuous gear mounted to swing at each stroke into and out of mesh with said pinion.

35. In a typewriting machine, the combination with a platen having a pinion, of a driving shaft, a segment fixed on said shaft, a second segment loose on said shaft, means to limit the independent rotation of the second segment on the shaft, a spring to effect such independent rotation in one direction, a third segment on the other side of the first segment and loose on the shaft, one of said first and third segments having a rack and the other having means to engage the rack; all three segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting the second segment to yield to a limited extent when said second segment is swung into engagement with said pinion to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear.

36. In a typewriting machine, the combination with a platen having a pinion and also provided with checking means or a detent, of a mutilated gear provided with a crank and normally disengaged from said pinion but mounted to swing at a single movement first into mesh with said pinion to rotate the same, and then at the same stroke out of mesh with the pinion, whereby the platen is rotated to a mechanically limited extent and is then left free of the control of the gear, so that the platen may be rotated line by line independently of said gear; the diameter of said gear being substantially greater than the diameter of said pinion, and the gear being capable of turning the platen through more than an entire revolution at each stroke.

37. In a typewriting machine, the combination with a platen having a pinion, of a driving shaft, a segment fixed on said shaft, a second segment loose on said shaft, means to limit the independent rotation of the second segment on the shaft, a spring to effect such independent rotation in one direction, a third segment on the other side of the first segment and loose on the shaft, one of said first and third segments having a rack and the other having means to engage the rack; all three segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting the second segment to yield to a limited extent when said second segment is swung into engagement with said pinion to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; the diameter of said gear being substantially greater than the diameter of said pinion, and the gear being capable of turning the platen through more than an entire revolution at each stroke.

38. In a typewriting machine, the combination with a platen having a pinion, of a driving gear segment, a second driving gear segment by the side of the first and revolubly adjustable relatively thereto, both segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen; the diameter of said gear being substantially greater than the diameter of said pinion, and the gear being capable of turning the platen through more than an entire revolution at each stroke.

39. In a typewriting machine, the combi-

nation with a platen having a pinion, of a driving-gear segment, second and third driving-gear segments by the side of the first and each revolubly adjustable relatively thereto and to each other, the three segments movable into mesh with said pinion and coöperative to form a continuous gear, and by reason of their relative adjustability determining the stroke imparted through said pinion to the platen; the diameter of said gear being substantially greater than the diameter of said pinion, and the gear being capable of turning the platen through more than an entire revolution at each stroke.

40. In a typewriting machine, the combination with a platen having a pinion, of a segment, a second segment by the side of the first and movable relatively thereto, means limiting such relative movement, and a spring to effect such relative movement in one direction; both segments movable into mesh with said pinion and coöperative to form a continuous driving gear, the spring permitting one segment to yield to a limited extent when said segment is swung into engagement with said pinion, to cause the movement of the pinion thereupon effected by the gear to be shorter than the reverse movement of the pinion effected by said gear; the diameter of said gear being substantially greater than the diameter of said pinion, and the gear being capable of turning the platen through more than an entire revolution at each stroke.

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Witnesses:

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