J. A. B. SMITH.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 29, 1914.

1,219,598.

Patented Mar. 20, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

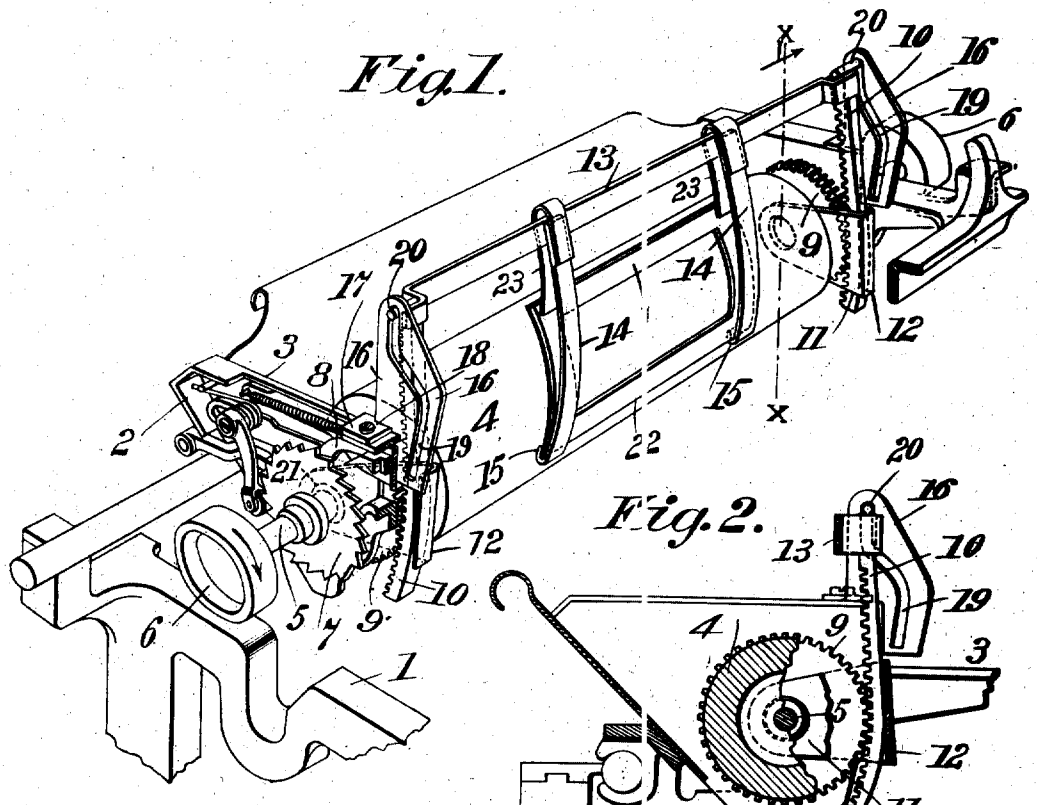
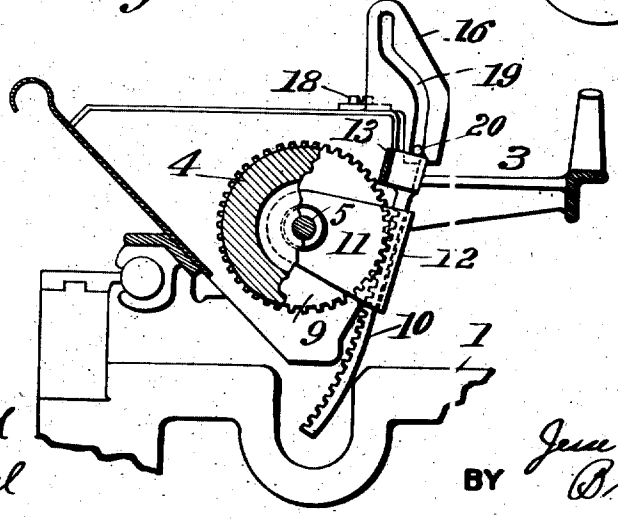


Fig. 2.

Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

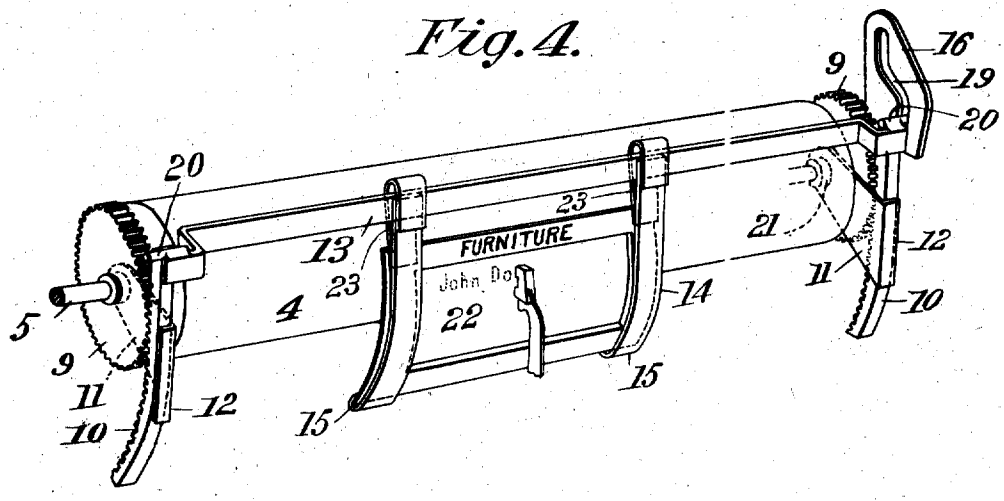


Fig. 5.

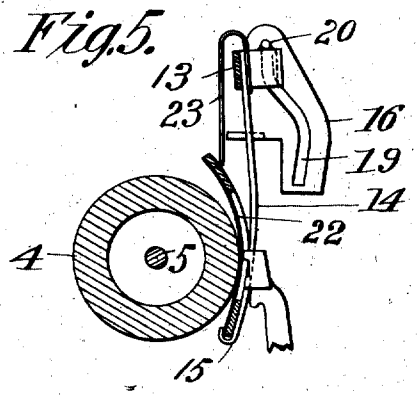


Fig. 6.

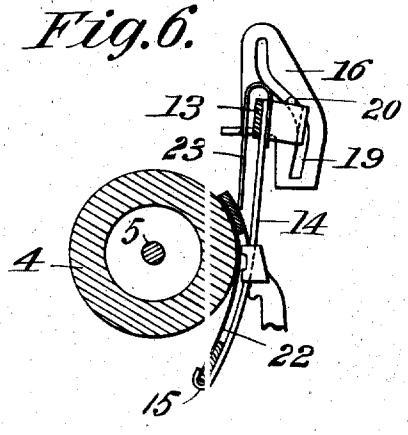
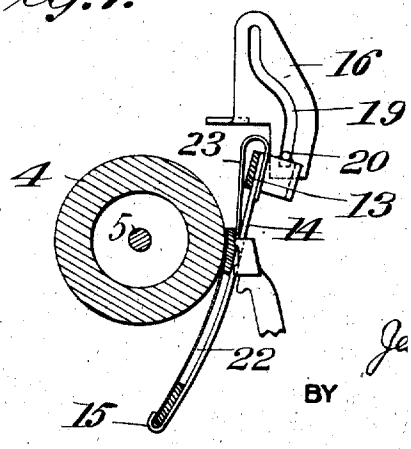


Fig. 7.



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UNITED STATES PATENT OFFICE.

JESSE A. B. SMITH, OF BROOKLYN, NEW YORK, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,219,598. Specification of Letters Patent. Patented Mar. 20, 1917.

Application filed May 29, 1914. Serial No. 841,736.

To all whom it may concern:

Be it known that I, JESSE A. B. SMITH, a citizen of the United States, residing in the borough of Brooklyn, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to holders for stencils and work-pieces of like character, for use in conjunction with typewriting machines, whereby such work-pieces may be held to the platen during its rotation. Stencil cards or sheets, such, for example, as are employed with the addressograph machine, are usually framed in pasteboard, and are more bulky and unyielding than sheets of paper, besides being too small and otherwise unsuited to be held and advanced by the usual pressure rolls, and are not adapted to bend closely around the platen.

It is usual to employ card holders which cause the card to conform closely to or hug the platen throughout the extent of the card These stencil cards are sometimes breakable or brittle or liable to injury if an attempt is made to conform them to the surface of the typewriter platen, which is usually of a small diameter. The frames of stencil cards are usually very thick, so that difficulty is incurred in causing them to hug the platen throughout their areas; and there are other cards that are thick or brittle, or both, which cannot be used with prior card holders, owing to the impracticability of bending them to the platen. I provide a line-feeding card carrier, into which the card is inserted, but which is not fixed to the platen, nor does it rotate concentrically with the platen. It carries the card up and down over the printing line on the platen, and causes whichever portion of the card is temporarily at the printing line to bear firmly against the platen, but does not bend the card around to hug the platen throughout the area of the card. This card carrier is mounted to move upwardly and downwardly as the platen is rotated forwardly and backwardly; suitable connections being provided between the platen and the card carrier for this purpose, whereby the card is positively line-spaced by reason of the motion of the card-holder, making it unnecessary to depend upon the usual unreliable pressure or feed rolls for this purpose. The card-carrier is positively controlled, so that skewing or misfeeding of the card is avoided. The card carrier in its preferred form has a pair of gripping fingers or grippers which overlie the side edge of the card, and move up and down therewith, pockets or clips being preferably provided upon said grippers for the lower edge of the card. In operation, the card is inserted in the pockets and the carrier is dropped to bring the top of the card to printing position, and then the card rises step by step or line-feeds as the platen rotates, so that line after line may be written on the card from the top to the bottom thereof.

In carrying out my invention, I employ a pair of front grippers or fingers depending from a cross-bar said fingers lying over the platen surface, and preferably having inturned lower hooked ends to support a work-piece. The cross-bar and fingers make a carrier, to which are preferably connected racks, which mesh with gears that are fast on the platen axle at each end of the platen. Guides are provided to control the card carrier.

The work-piece grippers lie between the usual front scales and the platen. Springs may press rearwardly against the upper corners of the card to aid the grippers in holding firmly against the platen the portion of the card which is temporarily at the printing line.

Other features and advantages will appear hereinafter.

In the accompanying drawings,

Figure 1 is a perspective elevation of a portion of a typewriting machine frame, showing the carriage with a platen thereon, and the improved work-piece holding device mounted on said carriage; said device being shown in operation as supporting a work-piece upon the platen.

Fig. 2 is a cross section of the line x—x of Fig. 1, showing the work-piece support advanced to the extent of its upward movement.

Fig. 3 is a similar view showing the work-piece support returned to position for writing the first line upon the work-piece.

Fig. 4 is a front perspective elevation showing the work-piece support in an advanced position.

Fig. 5 is a section through the platen, showing the holder in side elevation, and a work-piece advanced to its upward limit for writing the last line thereon.

Fig. 6 is a corresponding view, showing the writing as occurring at an intermediate position on the work-piece.

Fig. 7 is a corresponding view, showing the pasteboard frame of the stencil supported over the line of writing to receive impressions from type thereon.

The invention is herein illustrated as applied to an Underwood typewriting machine, although obviously it is applicable to other typewriting machines.

The drawings show a portion of the frame of a typewriting machine designated by the numeral 1; also the carriage 2, with platen frame 3 and platen 4 supported in said frame by its axle 5, which has the usual finger-piece 6 and line-space wheel 7, said line-space wheel being operated by pawl 8.

Fast upon the platen axle at opposite ends of the platen are gear wheels 9 with which are meshed racks 10 extending vertically at the forward side of said wheels, said racks being guided in their vertical movements by retaining plates 11 pivoted upon the platen axle and having forward flanges 12 which hold the racks 10 to their gear wheels.

The racks 10 are united at their upper ends by a strip or bar 13 which extends along the platen, said bar or strip carrying fingers 14, which depend therefrom, spaced apart, and lie against the front surface of the platen and about tangential thereto. Said fingers 14 have inturned lower ends forming hooks or pockets 15, which are intended to receive the lower edge of a work-piece. The bar 13 and fingers 14 form a work-holder arranged in upright position in front of the platen. This work-holder is moved up and down in parallelism by the coöperation of the rigidly connected gears 9 with the racks 10 (the latter rigidly united by cross bar 13), so that perfect line-feeding of the work-piece is insured, since the mere pressure of rolls to hold the card upon the platen and thereby line-feed the card, as heretofore, is no longer depended upon, but in place thereof is substituted the positive mechanically effected line-feeding movement of the work-holder itself.

Said fingers 14 and racks 10 may for convenience be curved toward their lower ends in a rearward direction, thereby allowing them to swing beneath the platen in descending, the swinging action thereof being effected by means of cam plates 16 mounted upon the platen frame 3 at the opposite ends of the platen as by lugs 17 and screws 18, said plates having cam slots 19 to receive pins or projections 20 that extend from the ends of the bar or strip 13. The pivotal retaining plates 11 for the racks 10 permit the swinging movement, and the flanges 12 thereon continue to exercise their function of maintaining the meshed engagement between the racks and gear wheels in that swinging movement. Washers or spacing collars 21 may be placed between the retaining plates 11 and the platen ends.

It will be noted that each cam slot 19 comprises a vertical portion which merges into a forwardly directed arcuate or cam portion, which continues into a rearwardly directed portion. Thus, in descending, the fingers 14 and racks 10 in the first part of their travel, move downwardly about in a straight line, and when the pins 20 enter the forwardly curved portion of the cam slots, said fingers 14 and racks 10 are then swung at their lower ends rearwardly, causing said fingers 14 and racks 10 to avoid striking portions of the machine frame which would be in their path if they continued to descend in a vertical direction, and said cam slots, being curved in a slightly rearward direction toward their lower ends, serve to guide the fingers 14, so that they may properly exercise their function of presenting the work-piece to the platen surface.

Taking the bar 13 with the racks 10 and fingers 14 as a unit, it will be noted that the flanges 12 of the pivotal retaining plates 11, by holding the racks in mesh with the gear wheels throughout their reciprocating movement, serve to maintain the relation of the fingers 14 with respect to the platen surface to hold the work-piece carried by said fingers in operative position before said platen surface.

At Fig. 5 a work-piece, as 22, is shown inserted within the pockets or hooks 15 of the fingers 14, which hold the middle portion of the work-piece closely to the platen surface at the printing line; and spring fingers or extensions 23 (from said fingers 14), are bent over and downwardly behind the bar 13, to bear at their ends against the upper forward surface of the work-piece, to press it toward the platen. At Fig. 6, the work-piece is supported with its upper portion in position to receive writing at about the first line thereon, and the spring fingers have become contracted, and exercise greater tension upon the work-piece, which is held firmly against the platen.

When desirable to write upon the upper frame portion or margin of the work-piece, as for making notes, etc., that upper frame portion is retracted to be over the printing line upon the platen, as shown in Fig. 7. In this instance, the spring fingers 23, which at their ends still bear against the upper edge of the work-piece, frame or margin, have become fully contracted, to exercise their maximum force.

The limiting slots 19 in the plates 16 restrict the backward oscillation of the platen,

that the work-piece, of predetermined depth, may, after insertion in the holder, be moved down to position for writing the first line thereon, or for writing upon the top margin, and also limit the advance of the platen.

Since only a portion of the toothed peripheries upon the gear wheels comes into actual service in the operation aforesaid, obviously segments including a sufficient number of teeth might be employed in place of the gear wheels.

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 having a rotatable platen, in combination, a work holder, means for imparting to said holder vertical tangential movement to and fro past the printing point, hooks at the lower side of said holder whereby a work piece may be held and means at the upper part of said holder for pressing a work piece toward the platen, said means extending over the platen, whereby the work piece is bent backward over the platen.

2. In a typewriting machine having a rotatable platen; in combination a work holder, means for imparting to said holder vertical movement to and fro past the printing point, card holding hooks on said holder, card-deflecting springs on said holder, plates on the carriage frame, guiding and limiting slots in said plates and means on said work holder engaging said slots.

3. In a typewriting machine having a rotatable platen, a work-piece support comprising a bar extending along the platen over the printing side thereon, means, including spaced grippers, upon said bar, to form a holder for a work-piece, and means between said bar and platen to communicate the movement of said platen to said holder to feed the work-piece across the printing line.

4. In a typewriting machine having a rotatable platen, a work-piece support comprising a bar extending along the platen over the printing side thereon, means, including spaced grippers, upon said bar, to hold a work-piece, means between said bar and platen to communicate the movement of said platen to said holder to feed the work-piece across the printing line, and means to guide said holder in proximity to the platen at the printing line throughout its range of movement.

5. In a typewriting machine, the combination with a rotatable platen, of a work-piece support comprising a pair of fingers sustained over the printing side of the platen, means for moving said fingers transversely of said printing surface, and means to guide said fingers in proximity to the platen throughout their range of operative movement.

6. In a typewriting machine having a rotatable platen, the combination of a work-piece support sustained for transverse movement over the printing surface of the platen, said holder comprising a pair of work-piece carrying fingers, and upper rear spring extensions for said fingers to urge the work-piece toward the platen surface above the printing line.

7. In a typewriting machine, the combination with a rotatable platen, of a work-piece holder comprising a pair of grippers, spaced apart, a pair of racks, a connection between said grippers and racks, gear wheels upon the platen axle to communicate platen movement to said racks and grippers, and means attached to the platen axle holding said racks in meshed engagement with said gears throughout their range of movement.

8. In a typewriting machine, the combination with a rotatable platen, of a work-piece holder comprising a pair of grippers, spaced apart, a pair of racks, a connection between said grippers and racks, gear wheels upon the platen axle to communicate platen movement to said racks and grippers, and means guiding said grippers and racks rearwardly of the machine in their downward movement.

9. In a typewriting machine, the combination with a rotatable platen, of a work-piece holder comprising a pair of grippers, spaced apart, a pair of racks, a connection between said grippers and racks, gear wheels upon the platen axle to communicate platen movement to said racks and grippers, means holding said racks in meshed engagement with said gears throughout their range of movement, and means guiding said grippers and racks rearwardly of the machine in their downward movement.

10. In a typewriting machine, the combination with a rotatable platen, of a work-piece support, adjustable means permanently operatively connected to the platen and sustaining said support over the printing side of the platen for movement transversely across the printing line, and means limiting the extent of that movement in both directions.

11. In a typewriting machine, the combination with a rotatable platen, of a work-piece support, adjustable means sustaining said support, and plates mounted upon the platen frame, said plates having cam slots, said adjustable means having projections to ride in said cam slots to guide said support in its movement.

12. In a typewriting machine having a rotatable platen, the combination of a work-piece holder adapted to move transversely over the printing side of said platen, racks

carrying said holder, gear wheels upon the platen axle in mesh with said racks to move them and the holder concurrently with the platen rotation, retaining plates pivoted upon the platen axle with flanges holding said racks to said gear wheels, and means imparting a rearward movement to said racks in their descent.

13. In a typewriting machine in combination, a rotatable platen, a card carrier, hooks on one side of said card carrier in which a card is held, card deflecting springs on the opposite side of said card carrier and means for moving said card carrier in time with the platen, tangentially past the printing point.

14. In a typewriting machine, the combination with a revoluble platen and a platen frame, of a card carrier mounted to slide upon said platen frame in time with the rotation of the platen, pinions on the platen axle and racks on the carrier and flanged retaining plates pivoted upon the platen axle, by which plates said racks are held in engagement with said pinions.

15. In a typewriting machine, the combination with a revoluble platen and a platen frame, of a card carrier mounted upon said platen frame, and means connected to said platen and to said card carrier for reciprocating the latter as the platen is rotated forwardly and backwardly; said card carrier provided with spring extensions for holding firmly against the platen different portions of a card as they successively reach the printing line on the platen without bending the card sufficiently to conform throughout to the curvature of the platen.

16. The combination with a revoluble platen and a platen frame, of a card carrier mounted upon said platen frame and comprising a pocket or catch in which to insert a card, means connected to the card carrier and to the platen for reciprocating the card carrier; said card carrier comprising grippers to overlie the side edges of the card, and means upon the platen frame connected to said card carrier for causing said grippers to press against the platen only such portion of the card as is at the printing line, as the card advances around the platen.

17. The combination with a revoluble platen and a platen frame, of a card carrier mounted upon said platen frame and comprising a pocket or catch in which to insert a card, means connected to the card carrier and to the platen for reciprocating the card carrier; said card carrier comprising grippers to overlie the side edges of the card, means upon the platen frame connected to said card carrier for causing said grippers to press against the platen only such portion of the card as is at the printing line, as the card advances around the platen, and yielding devices to engage the upper corners of the card to press the same rearwardly, to tend to hold snugly against the platen the lower portion of the card when the latter is in the vicinity of the printing line on the platen.

18. In a typewriting machine, the combination with a revoluble platen and a platen frame, of a card holder supported on the platen frame to move up and down, pins on said card holder, a connection from the card holder to the platen to enable the platen to control the movements of the card holder, and cam slots upon the platen frame with which slots the pins of the card holder engage to guide said card holder.

19. In a typewriting machine, the combination with a revoluble platen and a platen frame, of a card holder supported on the platen frame to move up and down, an operative mechanical connection from the card holder to the platen, and means upon the platen frame to guide said card holder; said guiding means constructed to cause the card holder to press the card against the platen at the printing line only, whereby the card is not bent sufficiently to cause it to conform to the curvature of the platen.

20. In a typewriting machine, the combination with a revoluble platen and a platen frame, of a card holder supported on the platen frame to move up and down, an operative mechanical connection from the card holder to the platen, and means upon the platen frame to guide said card holder; said guiding means comprising a pair of cams mounted at the ends of the platen frame, and said card holder comprising a cross bar whose ends engage said cams to be guided thereby, and also comprising grippers extending downwardly from said cross bar to press the card against the platen.

21. In a typewriting machine, the combination with a revoluble platen and a platen frame, of a card holder supported on the platen frame to move up and down, an operative mechanical connection from the card holder to the platen, means upon the platen frame to guide said card holder; said guiding means comprising a pair of cams mounted at the ends of the platen frame, and said card holder comprising a cross bar whose ends engage said cams to be guided thereby, and also comprising grippers extending downwardly from said cross bar to press the card against the platen, and a pocket or clip device being provided at the lower ends of said grippers.

22. In a typewriting machine, the combination with a revoluble platen and a platen frame, of a card holder supported on the platen frame to move up and down, an operative mechanical connection from the

card holder to the platen, means upon the platen frame to guide said card holder; said guiding means comprising a pair of cams mounted at the ends of the platen frame, and said card holder comprising a cross bar whose ends engage said cams to be guided thereby, and also comprising grippers extending downwardly from said cross bar to press the card against the platen, and springs being provided at the upper ends of the grippers to press backwardly the upper portion of the card.

23. In a typewriting machine, the combination of a platen frame, a platen mounted to rotate therein, a card carrier, means for moving said card carrier past the printing point in time with the rotation of the platen, means on the frame for deflecting the holder toward the platen and means on the holder for bending the card toward the platen.

24. The combination with a revoluble platen and a platen frame, of gears on the ends of the platen, racks meshing with said gears, means on the platen axle for holding said racks and gears in engagement, a card holder caused by said racks to move up and down, and means upon the platen frame to guide said card holder.

25. The combination with a platen moving in one direction, of a holding device to hold a card against the platen and moving in another direction, said holding device connected to the platen to line-space the card from top to bottom, said device having platen engaging members, curved toward the platen at one end.

26. In a typewriting machine in combination, a carriage, a platen mounted to turn therein, a card holder mounted for vertical movement in time with the platen, and gearing connections between the holder and the platen, one member of said connection being on the platen and the other on the holder, the latter having a backward curve.

27. The combination with a revoluble platen and a line-spacing mechanism, of gearing, said work-holder having rearwardly curved members operatively connected to the platen, and a work-holder connected with said gearing to be line-spaced thereby; said work-holder mounted for movement about tangentially of said platen.

28. The combination with a revoluble platen and a line-spacing mechanism, of gearing, said work-holder having rearwardly curved members operatively connected to the platen, a work-holder connected with said gearing to be line-spaced thereby, said work-holder mounted for movement about tangentially of said platen, and means for limiting the advance of the work-holder.

29. In a typewriting machine in combination, a carriage, a rotary platen mounted in said carriage, a pinion on said platen, a card holder adapted to carry a card past the printing point in time with the platen, and a rearwardly curved rack on said holder in engagement with the platen pinion.

30. The combination with a revoluble platen, of a work-holder comprising grippers to bear against the platen at the printing line and card bending springs and means for supporting said holder for reciprocating movement past the printing line in a general direction about tangentially to the platen, to line-feed the work-piece from top to bottom and return to bring the top of the work-piece to the printing line.

31. The combination with a revoluble platen and a platen frame, of grippers for holding a work-piece against the platen, springs for bending over the upper part of a work piece, and means for supporting, moving and guiding said grippers upon the platen frame for up and down movement past the printing line, to line-feed the work-piece from top to bottom and return to bring the top of the work-piece to the printing line.

32. The combination with a revoluble platen and a platen frame, of grippers for holding a work-piece against the platen, means for supporting and guiding said grippers upon the platen frame for up and down movement, and means connected to the platen for controlling the movement of the grippers, said supporting and guiding means constructed to cause the lower ends of the grippers to swing rearwardly when approaching their lowest positions.

33. The combination with a revoluble platen, of a work-holder mounted in front of the platen and having a catch to receive the lower edge of a work-piece, and means to move said work-holder up and down in front of the platen past the printing line in a general direction diverging from the direction of movement of the platen, to line-feed the work-piece from top to bottom and return to bring the top of the work-piece to the printing line.

34. In a typewriting machine, in combination, a carriage, a rotatable platen on said carriage, a card holder mounted to slide on said carriage across the printing point, racks on said holder, pinions on the platen engaging said racks, means on the platen axle to hold the racks and pinions in engagement, and means on the carriage for bending said card so as to bring the card close to the platen at the printing point.

35. In a typewriting machine, in combination, a carriage, a rotatable platen thereon, a work holder arranged to be moved past the printing point in time with the platen and substantially tangentially thereto, bent racks on said workholder, pinions

on the platen engaging said racks, and means on the platen frame for holding the racks and pinions in engagement.

36. The combination of an upwardly and downwardly movable upright work-holder into which the work may be dropped, said work-holder having at its bottom a support for the bottom edge of the work and at its top work bending means, mechanism connected to said work-holder to control the raising and lowering of the same in parallelism, a line-space detent mechanism connected to said raising and lowering mechanism, and a platen in front of which said work-holder is arranged.

37. The combination of an upwardly and downwardly moving upright work-holder into which the work may be dropped, said work-holder having at its bottom a support for the bottom edge of the work and at its top work bending means mechanism connected to said work-holder to control the raising and lowering of the same in parallelism, a line-space detent mechanism connected to said raising and lowering mechanism, a platen in front of which said work-holder is arranged, and means connected to said work-holder to cause the work-piece to tend toward the platen, at the printing line, in all line-spacing positions of the work-holder.

38. The combination with a platen and types to strike rearwardly on the front of the platen, of a device for line-feeding cards up past the printing line on the platen, comprising vertically movable racks, a cross bar connecting said racks at the top, card holding hinges depending from said cross-bar and spring extensions adapted to bear against a work piece, extending rearwardly from said bar.

39. The combination with a framework, a platen, and types to strike in front thereof, of an upright work-piece holder arranged in front of the platen, means to move said holder in parallelism, and means to guide said holder up and down in a tortuous path, with the work-piece bearing against the platen at the printing line.

40. In a typewriting machine, in combination, a carriage, a rotating platen and a platen frame on said carriage, cam plates on said platen frame, said plates provided with cam slots, a work holder, means for moving said work holder past the platen at the printing point, and pins on said workholder adapted to engage said cam slots to swing said work holder toward the platen on rising and under the platen in descending.

41. In a typewriting machine, in combination, a carriage, a rotating platen and platen frame on said carriage, cam plates on said frame, said plates having rearwardly inclined cam slots, pinions on said platen, vertically moving racks in gear with said pinions, a bar connecting said racks, card holding means on said bar, pins engaging said cam slots, on said bar, and pivoted retaining plates holding said racks and pinions in engagement when the racks are swung by engagement of the pins with the cam slots.

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Witnesses:
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JULIUS DUCKSTINE.