

1,131,997.

Patented Mar. 16, 1915.
2 SHEETS—SHEET 1.

FIG. 1.

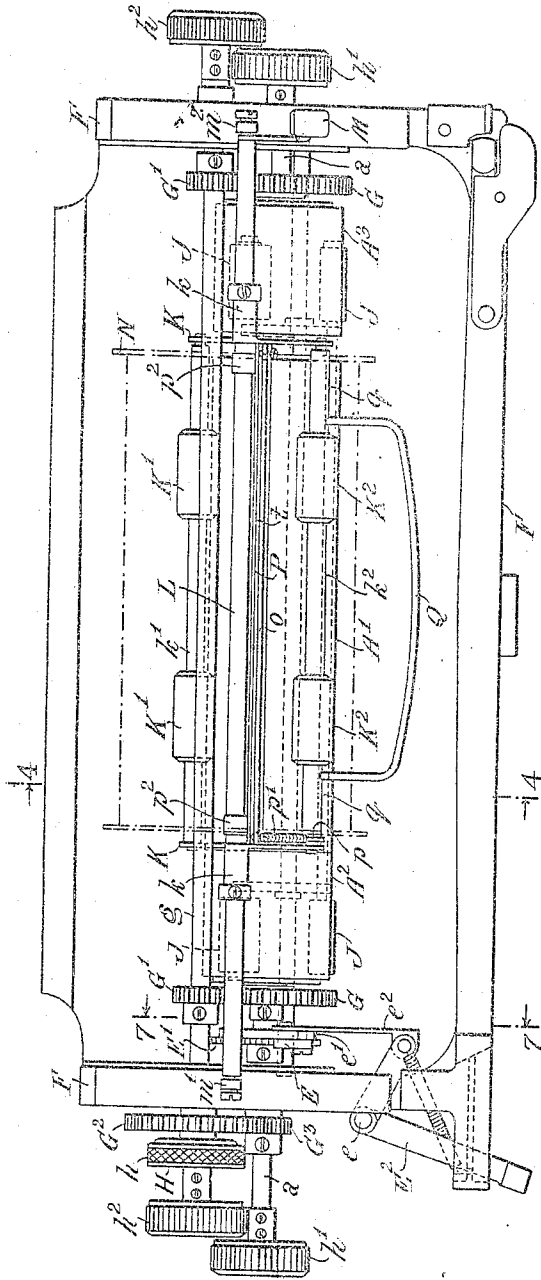
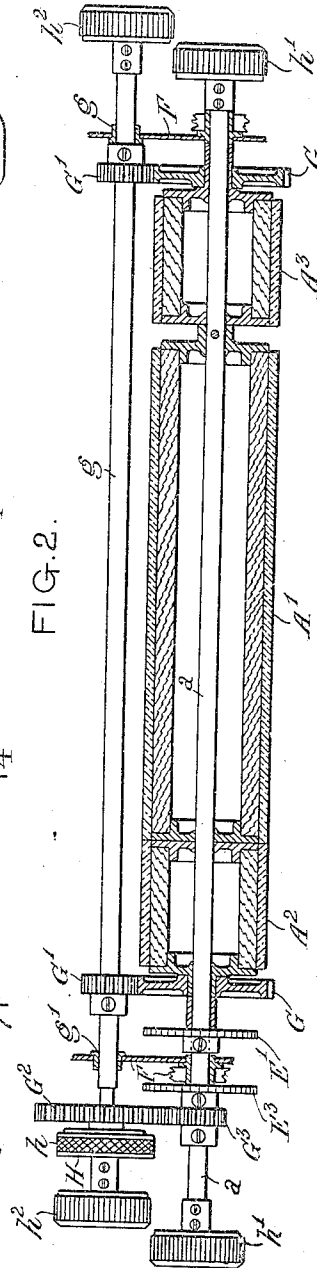


FIG. 2.



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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

1,131,997.

Specification of Letters Patent.

Patented Mar. 16, 1915.

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To all whom it may concern:

Be it known that I, JOHN JOSEPH COOPER, a subject of the King of Great Britain, and resident of 120 Queen Victoria street, London, E. C., England, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to typewriting machines adapted to enable a "carbon" or like duplicate copy of the entries comprised in a series of invoices (or similar documents) to be taken on a continuous strip of paper concurrently with the typing of the original entries upon the individual invoice-forms (or similar sheets of paper) themselves.

The present invention is designed to provide means for automatically feeding forward the sheets or strips of paper for the reception of the original and duplicate writings at different velocities, so as to obtain a different width of spacing between the lines in the original and duplicate respectively. To this end the strips or sheets of paper which respectively bear the original and duplicate are fed forward by frictional contact with independent lengths or sections of the platen, these sections being rotated concurrently with one another but at different peripheral velocities corresponding to the different speeds of advance required in the case of the respective papers. However, while the platen is composed of a plurality of independent sections or lengths, its printing area is confined to the middle section and does not extend to the end sections, so that the sole function of the latter, therefore, is to feed the sheet held thereagainst, although the end portions of the middle section also exert a feeding action. In other words, the middle section serves both as an impression support or backing against which the types strike, and as a feeding means for the sheet, while the end sections are used for feeding purposes only, and, hence, form revoluble feeding elements or devices which rotate separately from the middle section. Accordingly, the aforesaid middle section may be considered as the platen-body, and the end sections as extensions thereof, or as auxiliary platens, and in the subsequent description, as well as in certain of the appended claims, these terms will be employed. For the purpose above stated, the independent lengths into which

the cylindrical platen is divided, are in driving connection with the line-space lever in the one case directly, and in the other case through the medium of gearing proportioned so that the speed of rotation of one length of the platen is greater or less than that of the other length, so that actuation of the line-spacing mechanism will produce a simultaneous partial rotation of the various lengths into which the platen is divided, through different angular distances. Each length is furnished with its own feed rollers, and consequently the strips or sheets of paper which are held by these rollers in frictional contact with the several lengths receive motions of advance whose respective amplitudes differ in the same degree as do the angular distances through which the corresponding platen-lengths or sections themselves are rotated. In view of the fact, just stated, that feed rollers are provided for each length or section of the platen, it will be apparent that each end section or extension and its feed rollers unite in forming a set of revoluble feeding elements, which sets are distinct from the main or primary set, constituted by the middle section or platen-body and its associated feed rollers, and are driven from the said middle section or platen-body at an angular speed which is different from that at which said section or platen-body is itself driven. Also, the two auxiliary sets of revoluble elements may themselves be considered as uniting to form a single set of revoluble feeding elements. In order that the strips or sheets of paper which are to receive the original and duplicate writings respectively, may be adjusted on the platen, when necessary, relatively to or independently of one another, a friction-clutch, capable of being disconnected at will, is interposed in the gearing whereby rotary motion is transmitted between the platen-sections appertaining to the different papers, while the feed rollers for the lengths constituting the respective platen-sections are made capable of being thrown into and out of action independently of one another. It being, as a rule, required that the lines in the duplicate shall be spaced apart more widely than those of the original writing, the invention will, for the sake of convenience, be described with special reference to a construction for enabling the wider spacing to be given to the duplicate. With such

a construction; in order that the duplicate strip of paper may be readily severed between any two lines of writing, this strip, on passing the printing-point, would be made to issue through an aperture provided with a knife-edge against which the free end portion of the strip may be torn off after receiving the impression of any particular line.

In the accompanying drawings which illustrate a convenient arrangement embodying the invention, Figure 1 is a general plan view of the carriage of a typewriting machine, whereof the cylindrical platen is shown as divided into three lengths or sections. Fig. 2 is an elevation of the platen and countershaft (partly in section on the axis of the platen) as viewed in a direction perpendicular to the line 2—2 of Fig. 3. Fig. 3 is an end view of the carriage, the hand-wheels shown in Figs. 1 and 2 being removed. Fig. 4 is a vertical transverse section on line 4—4, of Fig. 1. Fig. 5 is a detail view, showing a tension-device for the stock-roll whence the duplicate strip is unwound. Fig. 6 is a partial end view of the platen, drawn to a larger scale, showing means for throwing the feed rollers into and out of action as required. Fig. 7 is a part vertical transverse section on line 7—7 of Fig. 1, showing the line-spacing mechanism. Fig. 8 is a diagrammatic plan view. Fig. 9 a perspective view of the platen, illustrating the manner in which the several lengths into which the platen is divided, operate upon the respective strips or sheets of paper bearing the original and duplicate writings. Fig. 10 is a section taken at right angles to Fig. 6, showing the eccentric shaft on which the feed rolls are mounted.

As will be seen by reference to Figs. 8 and 9, the cylindrical platen (which in Figs. 4 and 6 is marked A) is divided into a relatively long or wide central section or body A^1 and two relatively short end sections or extensions A^2 and A^3 .

C represents the continuous strip of paper which is to receive the duplicate impression, this strip being of a width to contact only with the central section A^1 of the platen.

B represents a sheet (or strip) of paper such as an invoice form (or continuous series of identical invoice forms) whereon the original writing is to be typed, this sheet (or strip) being so much wider than the section A^1 as to overlap and maintain contact with, both of the end-sections A^2 , A^3 of the platen. The sheet D of "carbon" paper (Fig. 8) which is inserted as usual between the work-sheet B and duplicate strip C should be wide enough to contact with the end sections A^2 , A^3 so as to be fed forward along with the sheet or strip B. The printing area, however, is restricted to the middle section or body A^1 and is not

continued to the end sections or extensions A^2 , A^3 .

In the example illustrated, the middle section or platen-body A^1 is fast on the platen-spindle a , while the end sections or extensions A^2 , A^3 are free to turn thereon; the required difference in angular velocity between the middle section A^1 (which has the greater speed) and the end sections A^2 , A^3 being obtained by rotating the platen-spindle a directly by means of the line-spacing mechanism, through a relatively large angle, and driving the sections A^2 , A^3 from the spindle a through the medium of gearing whereby their angular motion is reduced below that of the middle section A^1 in the required ratio. In the example, the ratio between these two angular velocities is assumed to be as 9 to 1, the middle platen-section or body A^1 which drives the duplicate strip C being caused to rotate through nine units of angular advance during the rotation of the end sections or extensions A^2 , A^3 through only one such unit. Accordingly the line-space pawl E, which drives the line-space ratchet-wheel E^1 (the latter being fast on the platen-spindle a) is made to swing about the axis of this ratchet-wheel through an interval equal to nine teeth of the wheel at each actuation of the spring-retracted line-space lever E^2 ; this lever, which is fulcrumed at e on the carriage F of the machine, being coupled by a link e^2 to the arm e^1 which is mounted to swing about the axis of the spindle a and serves to carry the pawl E. As the stroke of the pawl E is so much greater than usual, that arm of the lever E^2 to which the link e^2 is connected is made specially long. For the same reason it is found generally convenient, instead of applying the usual stop-pawl to the same ratchet-wheel E^1 , to provide the platen-spindle a with a second ratchet wheel E^3 (Fig. 2) for engagement by the ordinary stop pawl or jumper (not shown) whereby accidental overdriving of the platen is prevented.

Each of the end sections A^2 , A^3 of the platen has fixed to its outer end a toothed wheel G, the two wheels G being of equal diameter and gearing respectively with pinions G^1 fast on a countershaft g which is journaled in bearings g^1 (Fig. 2) mounted on the carriage F above and somewhat toward the rear of the platen. The countershaft g also carries a toothed wheel G^2 which gears with a pinion G^3 fast on the platen-spindle a , the proportions between the diameters (or number of teeth) in the case of the respective wheels and pinions being such that for nine revolutions of the spindle a and middle section or body A^1 of the platen, each of the end sections or extensions A^2 , A^3 will perform only a single revolution. Hence, at each actuation of the line-space lever E^2 the duplicate strip C

will be advanced nine times as fast as the sheet B, with the result that the lines of writing on the duplicate strip C will be nine times as far apart as those actually typed, originally, on the sheet B.

The platen-spindle *a* is provided with a pair of small hand-wheels *h*¹ on its ends, the countershaft *g* having a similar pair *h*² so that (assuming said spindle and countershaft to be out of gear with one another) either the middle platen-section or platen-body *A*¹ may be rotated independently of the end sections or extensions *A*², *A*³ or vice versa, according as a hand wheel *h*¹ or *h*² is turned. For the purpose of enabling the platen-spindle *a* to be thrown into and out of gear with the countershaft *g* at will, the toothed wheel *G*² is loose on the countershaft, and has fixed to it one member of a friction clutch-coupling *H* whose other member is fast on the countershaft; the coupling being constructed in any known way so as to be capable of being instantly rendered operative or inoperative, preferably by rotating the peripheral portion *h* of the clutch.

The sheet or strip of paper B which receives the original writing, is guided to the platen by the usual apron *B*¹. This sheet is held in contact with the end sections *A*², *A*³ of the platen and guided around the same by pairs of feed-rollers *J* mounted beneath the platen as usual and provided with means whereby the rollers may be thrown into and out of operation at will. The strip C which receives the duplicate writing is held in contact with the middle section *A*¹ of the platen by means of rear and front pairs of feed-rollers *K*¹, *K*² mounted, above the level of the platen-axis, in a frame comprising rear and front parallel spindles *h*¹, *h*² upon each of which one pair of the rollers is fitted to revolve, and yokes *K* which connect together the mutually adjacent ends of the respective spindles. The yokes *K* are supported by a shaft *L* which passes through bearings *h* on both yokes, the shaft *L* being placed about midway between the axes of the spindles *h*¹, *h*² and parallel to the same and to the platen-spindle *a*. The shaft *L* is provided at its ends with journals which are in axial alinement with one another but eccentric with reference to the axis of the shaft *L* itself as a whole; these journals being fitted to turn in bearings *m*¹, *m*² on the carriage *F*, so that, by rotating the shaft through about one-half revolution in one direction or the other, the feed-rollers *K*¹, *K*² will be caused to bear against or recede from the surface of the middle platen-section *A*¹ as the case may be. At one end the shaft *L* is provided with a hand-lever *M* whereby it may be rotated as described, at will.

The strip C is drawn from a roll of paper carried by a spool *N* whose arbor *n* is journaled in bearings *n*¹ supported by the carriage *F* in a convenient position above the level of the platen, the strip being led downward from the front of the spool, behind the shaft *L* and in front of the countershaft *g*, thence between the platen and the rear feed-rollers *K*¹ around the underside of the platen and upward past the printing-point in front of the platen, where a guide finger *S*, Fig. 4, is located, and thence between the platen and the front feed-rollers *K*². It will be understood from the foregoing, therefore, that the middle section or platen-body *A*¹ and the pairs of rollers *K*¹ and *K*² associated therewith form a set of revoluble feeding devices or elements which is utilized to feed the strip or web C, while the end sections *A*² and *A*³ and their associated rollers *J* likewise form a set, or sets, of revoluble feeding devices or elements, which, in a sense, is auxiliary to the first-mentioned set, certain elements in the auxiliary set, *i. e.*, the aforesaid sections or extensions *A*², *A*³, being connected by gearing with a certain element (the platen-body or middle section *A*¹), in such a way that the last-mentioned element drives the first-mentioned elements at a speed which is different from that at which it is itself driven.

The shaft *L* supports a knife *O* past whose edge the strip C is led after leaving the feed-rollers *K*², so that, almost immediately after a line of writing has been typed, that part of the strip C which bears the duplicate of this line may be severed by pulling one of the free corners of the strip forward so as to cause the paper to become torn transversely against the edge of the knife *O*. This knife is mounted upon, and extends in front of the upper edge of, a curved guide *P* having eyes or loops *p*² through which the shaft *L* passes; the guide being held by a spring *p*¹ in position to present its thin lower edge in contact with the platen at a point just in rear of the line of bite between the platen and the front feed-rollers *K*². The free end portion *C*¹ of the paper strip C, being propelled by the thrust exerted upon it by the rotation of the platen past this line of bite, travels thence rearward and upward in contact with the concave front side of the guide *P* and issues through a narrow slit *t* (Fig. 1) between the upper edge of the guide and the knife *O*; beyond which point the portion *C*¹ of the strip is prevented from accidentally passing beneath and behind the spool *N* by encountering that portion of the same strip C which is descending from the spool (see Fig. 4). The free end portion *C*¹ of the strip, being now deflected toward the front, requires to be supported so as to avoid falling forward over the keyboard of the machine, but the

support must be of such a character as not to interfere with the pulling forward of the end of the strip for the purpose of severing the free portion at the knife O.

5 The support provided consists of an open-work guide in the form of an arched or U-shaped radius-arm Q (preferably of bent wire as indicated) which is mounted to rock about the spindle k^2 and is yieldingly supported as by spring-pressure so as to tend to maintain an approximately upright position just clear of the roll of paper on the spool N when the latter is full. The free end portion of the strip C, as it falls forward after passing the knife O, comes in contact with the arm Q, and travels upward along the latter as indicated in Fig. 4, so that at any point in its progress the end of the strip may be readily grasped and drawn forward, the guide or support Q yielding to the pull. In the example illustrated, the spring p^1 already mentioned serves to maintain the guide Q in normal position, for which purpose the front end of the spring is attached to a short arm p projecting from one of a pair of sleeves q forming eyes whereby said guide is mounted to rock about the spindle k^2 . The arm p normally extends in substantial alinement with the direction in which the spring p^1 exerts its power, so that, while capable of easy displacement when the guide Q is depressed during the operation of tearing off the end portion of the strip C, this arm p is at once returned along with the guide Q to normal position when said portion of the strip has been severed.

The rotation of the spool N is braked by means of a friction device indicated in Fig. 5, this device comprising a cylinder R fast on the arbor n of the spool and containing a coiled spring which forces a disk or plunger r into frictional contact with one of the adjacent bearings n^1 for the arbor.

Claims:

1. A typewriting machine provided with a platen having separately and dependently rotatable sections, and means coöperating with said sections for automatically and simultaneously feeding forwardly at different velocities superposed sheets or strips of paper for the reception of the original writing and its "carbon" duplicate, so as to obtain a different width of spacing between the lines in the original and duplicate respectively.

2. The combination with a plurality of adjacent platen sections, of driving means operating directly upon a platen section, and means connecting said driven section with another section to transmit motion thereto, whereby said platen sections are advanced simultaneously at different angular speeds.

3. The combination with a series of adjacent revoluble platen sections concentrically mounted, of a single shaft for said sections.

means to revolve one of said platen sections, and intermediate connecting means for said sections whereby the sections are revolved simultaneously at different angular speeds.

4. The combination with a series of adjacent revoluble platen sections concentrically mounted, of means to revolve one of said platen sections, an intermediate connecting train between said sections to transmit driving power from one section through said train to the other section, whereby the sections are revolved simultaneously at different angular speeds, and paper-feeding means coöperating with each of said platen sections independently of the other platen sections.

5. The combination with a series of adjacent revoluble platen sections concentrically mounted, of means to revolve one of said platen sections, an intermediate connecting train between said sections to transmit driving power from one section through said train to the other section, whereby the sections are revolved simultaneously at different angular velocities, separate paper-feeding rolls coöperating with each of said sections independently of the other sections, and means to release the rolls from one platen section independently of the rolls on another platen section.

6. The combination with concentrically mounted revoluble platen sections, of feeding rolls to run upon said sections, intermediate means gearing said platen sections together so that the turning of one turns another, and means for releasing the feeding roll on one section independently of the feeding roll on another section.

7. The combination with a plurality of adjacent platen sections, of intermediate means connecting said sections for rotating them simultaneously at different angular speeds, and means for making inoperative said connecting means.

8. The combination with a revoluble platen section and a pressure roll to run thereon, of a pair of sections between which the first section is mounted, and means connecting the sections of said pair to turn them at the same speed.

9. The combination with a revoluble platen section and a pressure roll to run thereon, of a pair of sections between which the first section is mounted, means connecting the sections of said pair to turn them at the same speed, and means also connecting said pair of sections to the first section, to cause the pair to turn at a different speed from the first section.

10. The combination of a revoluble platen-section, end platen-sections adjacent thereto, a gear for each of said end sections, a shaft having pinions to mesh with said gears, and a train of gearing between said shaft and the first-mentioned platen-section.

11. The combination of a revoluble platen-

section, end platen-sections adjacent thereto, a gear for each of said end sections, a shaft having pinions to mesh with said gears, a train of gearing between said shaft and the first-mentioned platen-section, and means to render said train ineffective.

12. The combination of a revoluble platen section, end platen sections adjacent thereto, a gear for each of said end sections, a shaft, pinions on said shaft in mesh with said gears, a train of gearing between said shaft and the first-mentioned platen section, and feed rolls to engage each section; the feed rolls which engage the middle section being independent of those which engage the other sections.

13. The combination of a revoluble platen section, end platen sections adjacent thereto, a gear for each of said end sections, a shaft, pinions on said shaft in mesh with said gears, a train of gearing between said shaft and the first-mentioned platen section, and feed rolls to engage each section; the feed rolls which engage the middle section being independent of those which engage the other sections, and the feed rolls which engage one section being releasable independently of those which engage the other sections.

14. In a front-strike typewriting machine, the combination with a rotatable platen and a guide plate adapted to bear yieldingly against said platen above the printing line, of a paper guard holding a work-sheet from falling forward in front of the platen as it passes beyond said guide plate, and a spring for yieldingly holding said guard in its effective position.

15. In a front-strike typewriting machine, the combination with a rotatable platen and a guide plate above the printing line for guiding paper away from the platen, of a roll-holder mounted on the typewriter carriage, so that the paper guided from said roll-holder passes over the rear side of said guide plate, a pressure roll for holding said paper against the platen, and a yieldingly-mounted guard for guiding the free end of the paper upwardly at the front of the platen.

16. In a typewriting machine, the combination with a carriage and a platen shaft therein, of a platen fast on said shaft, a counter shaft, gears between said shaft and said counter shaft, an auxiliary platen loose on said platen shaft, and gears for driving said auxiliary platen from said counter shaft.

17. In a typewriting machine, the combination with a carriage, a platen shaft rotatably mounted therein and a platen fast on said shaft, of a gear on said shaft, a counter shaft, a gear on said counter shaft driven by said first gear, an auxiliary platen loose on said platen shaft, a gear on said auxiliary platen, a second gear on said counter

shaft for driving said auxiliary platen, and a clutch intermediate the counter shaft and the first-named gear on said counter shaft.

18. In a front-strike typewriting machine, the combination with a carriage and a rotatable platen therein, of a roll-holder from which a web is drawn onto said platen, a knife above the printing line of said platen, a paper guard to hold the leading edge of a work sheet above said platen, pivots on which said guard swings, and a spring normally holding said guard upward.

19. In a front-strike typewriting machine, the combination with a carriage and a rotatable platen therein, of a roll-holder from which a web may be drawn onto said platen, a knife on said platen above the printing line, a plate on which said knife is mounted for guiding paper away from the platen to the knife, a pivotally mounted paper guard to hold the leading edge of a work sheet, and a spring holding said guard upward.

20. In a front-strike typewriting machine, the combination with a carriage and a rotatable platen therein, of devices for guiding paper around the platen, a roll-holder on said carriage above said platen, a paper pressure roll behind said platen and above said paper-guiding devices for holding a web drawn from said holder against said platen, a pressure roll above the printing line of said platen for feeding the leading edge of said web, and means for simultaneously releasing said rolls.

21. In a front-strike typewriting machine, the combination with a carriage and a rotatable platen therein, of rolls for guiding a work sheet around said platen and beneath it, a roll-holder above said platen, pressure rolls above said work-sheet guiding rolls for guiding a web from said roll-holder around the platen, means for simultaneously releasing said pressure rolls, and a swivel plate riding on the platen to strip the leading edge of said web from the platen as it passes certain of said pressure rolls.

22. In a front-strike typewriting machine, the combination with a carriage and a rotatable platen therein, of pressure rolls for guiding a strip of paper along the platen, a roll-holder above the platen from which said paper is fed, a guide plate for stripping the paper from the platen as it leaves the last of said rolls with which it engages as it is fed along the platen, a knife adjacent said guide plate between which knife and guide plate the paper passes, a guard for holding the leading edge of the strip from falling forward in front of the platen, and pivots on which said guard may be swung to remove it from interfering with the operation of the knife.

23. In a front-strike typewriting machine, the combination with a carriage and a rota-

table platen, of a guide for the leading edge of the paper as it leaves the platen, a knife on said guide between which knife and guide the paper passes, a guard for guiding the paper upwardly at the front of the platen, and a spring by which the guard is yieldingly held in operative position.

24. In a front strike typewriting machine, the combination with a carriage and three rotatable platen sections, of feed rolls engaging the end sections, separately movable feed rolls for holding a narrow sheet on the middle section, a guide plate for stripping the narrow sheet as it passes the last of said feed rolls engaging said sheet, and a guard for holding the leading edge of the sheet from falling forward in front of the platen.

25. In a front-strike typewriting machine, the combination with a carriage and three rotatable platen sections therein, of feed rolls engaging the end platen sections, other separately movable feed rolls for holding a narrow sheet on the middle section of said platen, a guide plate for stripping said narrow sheet after it leaves the last of said feed rolls engaging said narrow sheet, and a knife in front of said guide plate behind which knife the leading edge of the paper passes.

26. The combination with a series of adjacent revoluble platen-sections concentrically mounted, of means connecting said platen-sections to revolve them simultaneously at different angular velocities, and means for making ineffective the connection between said platen-sections.

27. The combination with a series of adjacent revoluble platen-sections concentrically mounted, of means connecting said platen-sections to revolve them at different velocities, means for making ineffective the connection between said platen-sections, and finger-wheels for the platen-sections; one of said wheels connected to one section and another wheel connected to another section.

28. The combination with a platen composed of separately revoluble sections, of means for simultaneously rotating said sections at different angular speeds from each other, and means for holding a work-sheet against one of the sections so rotated, whereby said sheet will be advanced simultaneously with the platen, but at the surface velocity of the section against which it is held.

29. The combination with a platen composed of separately revoluble sections, of means for simultaneously rotating said sections at different angular speeds from each other, means for holding a work-sheet against one of the sections so rotated, whereby said sheet will be advanced at the surface velocity of the section against which it is held, and means for holding a second

work-sheet against the other section, whereby the second work-sheet will be advanced simultaneously with the first work-sheet, but at the surface velocity of said other section.

30. The combination of a platen section, a sheet-feeding roll to run thereon, sections at the ends of said first-mentioned platen section, and sheet-feeding rolls to engage said last-mentioned sections to engage the side borders of a wide sheet, whereby the latter may be advanced at a speed different from that of a work-sheet which is held upon said first-mentioned platen section by the first-mentioned roll.

31. The combination of a platen composed of a middle section and end sections, a sheet-feeding roll to run on the middle section to hold a work-sheet thereupon, sheet-feeding rolls to run on said end sections to engage the side borders of a wide sheet, and means operatively connecting said middle section to said end sections, to cause the latter to rotate simultaneously with the middle section but at a different speed therefrom, whereby said wide sheet will be advanced at a different speed from the first-mentioned sheet.

32. The combination of a platen in sections, feed rolls mounted to run upon the upper portion of a middle section thereof to control a narrow work-sheet thereon, feed rolls running upon the under sides of end sections to control a work-sheet of greater width than the first sheet, and means for advancing said middle and end sections.

33. The combination of a platen in sections, feed rolls mounted to run upon the upper portion of a middle section thereof to control a narrow work-sheet thereon, feed rolls running upon the under sides of end sections to control a work-sheet of greater width than the first sheet, and means for advancing said middle and end sections simultaneously at different angular speeds.

34. The combination of a revoluble platen comprising a middle section and end sections, a spool mounted above the platen to carry a web of paper, means upon the top side of said middle section to feed said web around said middle section, and rolls running upon the under sides of the end sections to control a work-sheet of greater width than the middle section.

35. The combination of a revoluble platen comprising a middle section and end sections, a spool mounted above the platen to carry a web of paper, means upon the top side of the middle section to feed said web around said middle section, rolls running upon the under sides of the end sections to control a work-sheet of greater width than said middle section, and means connecting

said middle and end sections to advance the wide work-sheet at a different speed from the web.

36. The combination of a platen-section, a platen-section at the end thereof, means running upon one side of the first-mentioned platen-section to feed a narrow sheet around the same, means running upon the opposite side of the last-mentioned section to engage the side border of another sheet wider than said first-mentioned platen-section to control the same, and means connecting said platen-sections to cause the sheets to advance at different speeds.

37. The combination with means for advancing superposed work-sheets of different widths simultaneously past a common printing center, said means including means for advancing one sheet, distinct from the means for advancing the other sheet, of means connecting said advancing means whereby movement of one is communicated to the other, to cause the work-sheets to advance at unequal speeds.

38. The combination with means for advancing superposed work-sheets of different widths simultaneously, said means including means for advancing one sheet, distinct from the means for advancing the other sheet, of means connecting said advancing means for communicating the movement of one to the other, to cause the work-sheets to advance at unequal speeds, and line-spacing mechanism for operating said sheet-advancing means.

39. The combination of a revoluble platen-body, a sheet-feeding roll to run upon said body, revoluble sheet-feeding means at each end of said body to engage the side borders of a work-sheet wider than said body, and means connecting the said body to said sheet-feeding means to advance the wide sheet at a different speed from the work-sheet which is held on the said platen-body by said roll.

40. The combination of a revoluble platen-body, a sheet-feeding roll to run upon the said body, revoluble sheet-feeding means at each end of said body to engage the side borders of a work-sheet wider than said body, means connecting the said body to said sheet-feeding means to advance the wide sheet at a different speed from the work-sheet which is held on the said body by said roll, and means to release the roll from said body independently of the said sheet-feeding means.

41. The combination of a revoluble platen-body, a sheet-feeding roll to run upon the said body, revoluble sheet-feeding means at each end of said body to engage the side borders of a work-sheet wider than said body, means connecting the said body to said sheet-feeding means to advance the wide sheet at a different speed from the

work-sheet which is held on the said body by said roll, and means for releasing either work-sheet independently of the other.

42. The combination with a platen device comprising a main platen body section and an end section rotatable relatively thereto, of means for holding a plurality of work-sheets simultaneously upon said platen device, to receive the type impressions, said holding means arranged to run on the platen sections to feed the work-sheets, and means connected to drive the platen sections at different speeds to feed forward said work-sheets at different velocities.

43. The combination with a revoluble platen composed of a middle section and end sections, of means connecting the end sections to the middle section to revolve at different speeds therefrom, means to advance a work-sheet by frictional contact with the middle section, and means to simultaneously advance a different work-sheet by frictional contact with said end sections.

44. The combination with a revoluble platen composed of middle and end sections, of means connecting said sections to revolve at different speeds, means to advance a work-sheet by frictional contact with the middle section, means to simultaneously advance a different work-sheet by frictional contact with the end sections, and means for making ineffective the connection between said middle and end sections.

45. The combination with a revoluble platen-body, and extensions at the ends of said body, of means connecting said extensions to revolve at a different speed from that of the platen body, means to advance a work-sheet by frictional contact with the platen body, means to simultaneously advance a different work-sheet by frictional contact with said extensions, means for making ineffective the connection between said platen body and said extensions, and means for releasing either work-sheet independently of the other.

46. The combination with a revoluble platen-body, of means cooperating with said platen-body for advancing a work-sheet on the same simultaneously therewith and at the same surface velocity, means connected with said platen-body for advancing a second work-sheet simultaneously with the platen-body and with the first work-sheet, but at a different surface velocity therefrom, and means for releasing either work-sheet independently of the other.

47. The combination of a platen body, a sheet-feeding roll to run thereon, extensions at the ends of said platen-body, sheet-feeding rolls to run on said extensions to engage the side borders of a wide sheet, whereby the latter may be advanced at a speed different from that of a work-sheet which held upon said platen body by the first

mentioned roll, and means for releasing either work-sheet independently of the other.

48. The combination of a platen body, a sheet-feeding roll to run thereon, extensions at the ends of said platen body, sheet-feeding rolls to run on said extensions to engage the side borders of a wide sheet, means operatively connecting said platen body to said extensions, to cause the latter to rotate simultaneously with the platen body but at a different speed therefrom, and means for making ineffective the connection between said platen body and said extensions.

49. The combination of a platen body, a sheet-feeding roll to run thereon, extensions at the ends of said platen body, sheet-feeding rolls to run on said extensions to engage the side borders of a wide sheet, means operatively connecting said platen body to said extensions, to cause the latter to rotate simultaneously with the platen body but at a different speed therefrom, means for making ineffective the connection between said platen body and said extensions, and means for releasing either work-sheet independently of the other.

50. The combination of means for advancing a work-sheet, means distinct from the first-named sheet-advancing means for simultaneously advancing a work-sheet of different width from the first-named sheet, connections between the first and second-named sheet-advancing means for causing the corresponding sheets to be advanced at different surface velocities, and means for releasing either work-sheet independently of the other.

51. In a typewriting machine, the combination of two sets of revoluble feeding elements arranged to advance superposed work-pieces, and gearing between said sets to cause an element in one set to rotate elements in the other set at a different peripheral speed, and thus simultaneously advance the work-pieces at different speeds.

52. The combination of means to advance superposed work-pieces, said means comprising a plurality of sets of work-feeding devices, each set arranged to advance one or more of the superposed work-pieces other than the work-pieces advanced by the other set, and gearing between said sets to cause a device in one set to positively drive devices in the other set and at a different speed, whereby certain of the sheets are fed at a different speed from that of the others.

53. In a typewriting machine, the combination with a revoluble platen-body, and means coöperative with said body to feed a work-sheet thereover, of sheet-feeding devices for advancing a second work-sheet over the platen-body, and connections between said feeding devices and said platen-body for causing one to drive the other at

such speed that the work-sheets will be simultaneously advanced at different speeds.

54. The combination with a rotary platen-body, of means coöperative with the platen-body for feeding a work-sheet over the latter, and means mechanically connected to the platen-body for simultaneously feeding a second work-sheet over the platen-body at a different speed from that of the first work-sheet.

55. In a typewriting machine, the combination with a rotary platen-body, of feed rolls running on the platen-body to coöperate with the latter in feeding a work-sheet thereover, revoluble devices for feeding a second work-sheet, and means, including a train of gears, for connecting said devices and the platen-body.

56. In a typewriting machine, the combination with a rotary platen-body, of a feed roll running on the platen-body to coöperate with the latter in feeding a work-sheet thereover, a pair of revoluble devices separate from the platen-body for feeding a second work-sheet, and driving connections between the platen-body and said revoluble devices for positively driving the latter, when the platen-body is rotated.

57. In a typewriting machine, the combination with a rotary platen-body, of a feed roll running on the platen-body to coöperate with the latter in feeding a work-sheet thereover, a pair of revoluble devices separate from the platen-body for feeding a second work-sheet, and driving connections between the platen-body and said revoluble devices for positively driving the latter when the platen-body is rotated, the platen-body and revoluble devices being arranged to hold the work-sheets in superposed relation at the printing point, said driving connections causing one work-sheet to be driven at a higher speed than the other.

58. The combination with a revoluble platen-body, and means coöperative with said platen-body to advance a work-sheet simultaneously with the platen-body and at the peripheral speed of the platen-body, of means operatively connected with the platen-body to simultaneously advance a second work-sheet at a different speed from that of the first.

59. The combination with a rotary platen-body, and feed rolls running on said body and coöperative with the same to advance a work-sheet thereover, of revoluble devices separate from the platen-body to advance a second work-sheet, and means, including a train of gearing, between the platen-body and said revoluble devices, for positively driving the latter from the platen-body when the platen-body is rotated but at a different peripheral speed from that of the platen-body.

60. The combination with a platen-body, 130

of means for holding a plurality of work-sheets simultaneously upon the platen-body in position to receive the type impressions, means to rotate the platen-body for feeding
5 one work-sheet forwardly, and means mechanically connected to the platen-body to simultaneously feed forwardly another work-sheet at a different speed, the relative speed of the work-sheets being constant.

10 61. The combination with a rotary platen-body, and feed rolls running on the platen-body to cooperate with said platen-body in feeding a work-sheet thereover, of a set of
15 revoluble elements positioned to advance a second sheet over the platen-body independently of said feed rolls, and connections between the platen-body and said set of revoluble elements for positively driving the latter at a different peripheral speed than that
20 of the platen-body.

62. The combination of a revoluble platen comprising a middle section and end sections, a sheet-feeding roll to run upon the middle section, sheet-feeding rolls forming
25 with said end sections sheet-feeding sets to

engage the side borders of a work-sheet wider than the said middle sections, and means connecting the middle section of the platen to said sheet-feeding sets to advance the wide sheet at a different speed from the
30 work-sheet which is held on the middle section by said first mentioned sheet-feeding roll.

63. The combination with a revoluble platen body adapted to receive type impressions, of means to hold a work-sheet upon the platen to line-feed it forwardly around the same, separate means for holding a second work-sheet upon the platen in superposed relation to the first and advancing
40 said superposed sheet around the platen, and means connecting said platen to said separate holding and advancing means, to advance the superposed sheet at a different speed from the first sheet.

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Witnesses:

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