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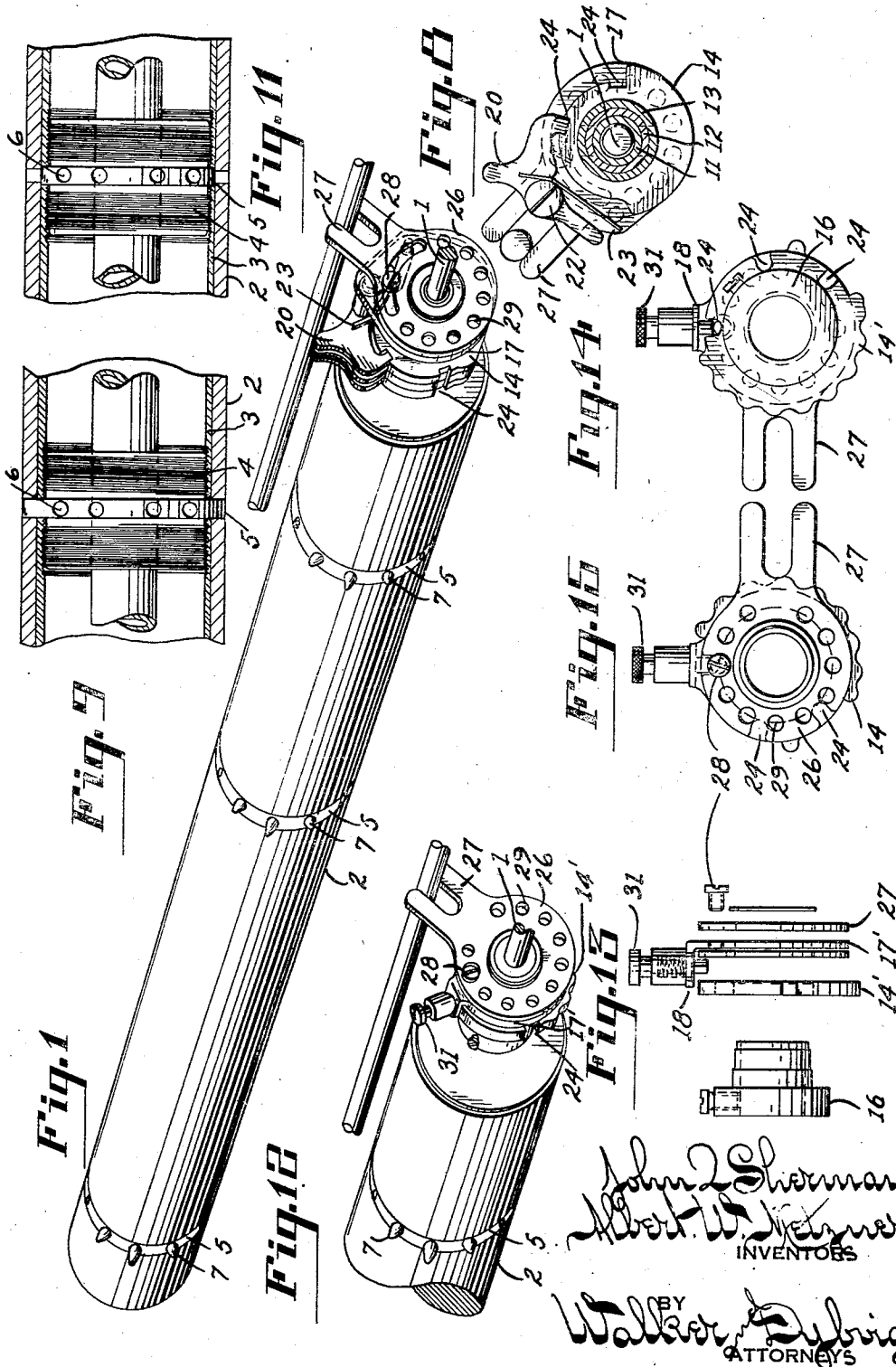
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MULTIPIN WHEEL PLATEN

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## MULTIPIN WHEEL PLATEN

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27 Claims. (Cl. 197—129)

This invention relates to rolls for writing and computing machines, and more particularly to a pin type platen roll for positively feeding superposed sheets of suitably punched writing material and which is adaptable for feeding writing material of different widths.

The use of printed forms for making manifold copies at a single writing is quite general. It is highly essential that the superposed forms be kept accurately in registry while passing through the writing machine. The ordinary friction type of feeding means will not maintain proper alignment and registry of superposed sheets, both due to slippage or creep of one sheet upon another and also to inaccuracy of manufacture and the stretch and shrinkage of different sheets.

It is generally recognized that however carefully and accurately manifold forms may be printed, when superposed one upon another they will not register throughout, but necessitate a slight degree of relative shifting or adjustment simultaneously with their feeding movement in order to maintain their registry at the writing position.

In the present invention the platen roll is provided with retractible feeding pins arranged in multiple series and radially disposed relative to the axis of the roll, which, as the roll rotates, are automatically extended and retracted in sequence whereby marginally punched manifold material, with which the platen is to be used, will be engaged only at the writing line or closely adjacent thereto and will be automatically stripped from the pins by the withdrawal of the latter without strain or disturbance after passing the writing position. The superposed sheets of writing material are thus left free for relative adjustment as they approach the writing position and the punched material may be successfully fed without undue strain.

The retraction of the feeding pins as they pass beyond the writing position, enables the pins to clear contiguous portions of the writing machine mechanism and thereby enables pin type platens of the present construction to be substituted for the usual friction type platen rolls of the present commercial typewriters and computing machines.

It is highly desirable that typewriters and computing machines be capable of utilizing writing material of different widths which is comparatively easy with friction type feeding means, but the respective series of feeding pins being arbitrarily fixed in their spaced relation necessitate marginally punched record material of a corre-

sponding width. To overcome this difficulty, there is provided, in the present construction, multiple series of retractible feeding pins located at differently spaced intervals along the platen roll with individual control means whereby the pins of any one or more series may be adjusted to inoperative position independently of those of other relatively spaced series of pins, thereby enabling the differently spaced series of reciprocating feeding pins to be utilized in any combination. While in the present drawings for the purpose of illustration, only three series or sets of retractible pins have been illustrated, in practice such platen rolls have been extended and larger numbers of sets or series of retractible feeding pins, as many as five, six or seven sets, are incorporated in the single platen roll, with each set or group of pins subject to separate control.

The object of the invention is to simplify the construction as well as the means and mode of operation of pin type feeding devices as applied to typewriters and computing machines, wherein the record and manifold material circumferentially conforms to the platen roll, whereby they will not only be cheapened and economical in construction, but will be more efficient in use, automatic in action, uniform in operation, of sturdy construction, and unlikely to get out of repair.

A further object of the invention is to provide a platen roll having multiple sets or groups of such pin wheel feeding devices preferably, though not necessarily, at differently spaced intervals, any two of which may be utilized simultaneously as a single pair.

A further object of the invention is to provide a platen roll having multiple spaced sets or groups of pin wheel feeding devices and control means separately governing the respective groups or sets of pins.

A further object of the invention is to provide means for adjusting any one or more sets or groups of pin feeding devices into and out of operative position independently of each other and of other like groups or sets of pin type feeding devices.

A further object of the invention is to provide improved means for independently locking respective sets or groups of pin type feeding devices in their operative or inoperative position.

A further object of the invention is to provide an improved platen roll for writing machines embodying retractible pin type feeding devices.

With the above primary and other incidental objects in view, as will more fully appear in the

specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described and set forth in the claims.

Referring to the accompanying drawings, wherein is shown the preferred but obviously not necessarily the only form of embodiment of the invention, Fig. 1 is a perspective view of a writing machine platen roll, embodying three relatively spaced sets or groups of retractible feeding pins and control means therefor, illustrating the present invention. Fig. 2 is a longitudinal sectional view of an assembled platen roll embodying the present invention. Fig. 3 is an end elevation of the platen roll and adjusting means for the pins. Figs. 4 and 5 are detail sectional views, looking in opposite directions respectively from the plane 5—5 of Fig. 2. Fig. 6 is a detail view of a control cam for adjusting the feeding pins. Fig. 7 is a detail disassembled view of the control mechanism. Fig. 8 is a side elevation of the control mechanism viewed from the side opposite that shown in Fig. 3. Fig. 9 is a side elevation of one of the pin wheel units, and portions of the platen. Fig. 10 is a perspective view of a portion of a platen roll embodying a modification of the construction shown in the preceding figures. Fig. 11 is a detail view of one of the pin wheel units pertaining to the modification shown in Fig. 10. Fig. 12 is a perspective view illustrating a modification of the control and detent means. Fig. 13 is a disassembled view of the several parts of the control and detent means illustrated in Fig. 12. Fig. 14 is a side elevation thereof, and Fig. 15 is a similar view from the opposite side.

Like parts are indicated by similar characters of reference throughout the several views.

In the drawings, there has been illustrated a conventional form of writing machine platen roll and contiguous cooperating parts. It is to be understood that the present pin type platen roll in proper size is interchangeable with a platen roll of various standard makes of typewriters and computing machines. To this end, it normally employs the same mounting devices and occupies the same relation to the various operating parts of the writing machine and is adapted to be actuated by the usual pawl and ratchet mechanism, not shown in the present drawings.

Referring to the drawings, and particularly to Fig. 2 thereof, 1 is the shaft upon which the platen is carried and which is journaled in the usual bearing in the writing machine. Concentrically surrounding the shaft 1 is the platen which comprises an outer tubular sleeve 2, preferably of rubber or composition, forming a tympan to receive the impact of the type, while interiorly thereof is a second tubular sleeve 3 of metal. The sleeves 2 and 3 are interrupted at spaced intervals by pin wheel heads, each comprising a cylindrical exteriorly screw threaded body 4 having a medial rim portion 5 projecting peripherally beyond the screw threaded main body intermediate succeeding sections of the platen cylinders 2 and 3. The extremities of the inner or metal cylinder 3 have screw threaded engagement with the pin wheel body 4 while the succeeding sections of the outer cylindrical sleeve 2 of the platen are interposed between and abut upon the projecting peripheral rims 5 of the pin wheel heads. The medial projecting rims or flanges 5 are provided at circumferentially spaced intervals with radial holes or bores 6 which form

guides for a plurality of radially disposed reciprocatory feeding pins 7 slidably mounted therein and which, by their reciprocatory motion, are projected beyond the peripheral surface of the platen sleeve 2 into feeding engagement with the writing material or retracted within the periphery thereof into an inoperative position. Such pin wheel heads, each with its quota of reciprocatory feeding pins, are distributed in variously spaced relation throughout the length of the platen roll. While only three such sets or groups of feeding pins are shown in the drawings, any number of pin wheel heads and groups of reciprocatory radially disposed feeding pins may be employed.

The feeding pins 7 are each provided adjacent to its inner end with a lateral notch 8, in which engages the marginal flange of a substantially elliptical control cam 9. This control cam is of substantially circular formation throughout part of its extent, the remainder being eccentric, as is more clearly illustrated in Fig. 6. During the normal operation of the device, the cam 9 being positioned with its eccentric portion substantially coincident with the writing position, the rotation of the cylinder about the stationary held cam 9 causes feeding pins 7 to ride upon the peripheral flange of the cam and are thereby given to and fro motion coincident with their radial positions relative to the center of the platen cylinder. In the to and fro motion of the pins, incident to their travel about the eccentric cam flange, they are projected beyond the periphery of the cylinder into engagement with the marginal feeding holes of the writing material as each particular pin approaches the writing position and after having engaged and advanced the writing material a limited distance, each pin is thereupon automatically and positively withdrawn from engagement with the writing material and retracted within the periphery of the cylinder, as is shown at the left in Fig. 4, thereby clearing all contiguous portions of the writing machine.

By transmitting to the control cam 9, partial rotation about the axis of the shaft 1, the reciprocatory feeding pins 7 may be projected from the periphery of the platen roll at different points. That is to say, the projected position of the pins may be changed from that coincident with the writing position to one removed therefrom wherein the pins will be inoperative to engage and advance the writing material.

For the purpose of stationarily holding the control cams 9 in their adjusted positions and for variously rotating the control cams pertaining to different pin wheel units, there are provided about the shaft 1 a plurality of concentric independently revoluble sleeves 11, 12 and 13, one for the cam 9 of each pin wheel unit, and to the extremity of which such pin wheel control cam 9 is fixedly secured. These adjusting sleeves 11, 12 and 13 project beyond the extremity of the platen roll, and fixedly engaged with the extremity of each sleeve is a notched disc 14, by means of which the respective sleeves may be separately rotated. The discs 14 may be secured to the respective sleeves by any suitable means, preferably by interlocking lugs 15 by which the discs are staked or riveted, except the disc pertaining to the inner sleeve 11 which is secured to a collar 16, in turn mounted upon the sleeve 11. This collar 16 is rabbeted or shouldered at its opposite side, on one of which shoulders the disc 14 is engageable while a second disc 17, having an ex-

tended peripheral portion 18 (see Figs. 13 and 14), is secured to the opposite side of the collar 16 upon the corresponding shoulder. The latter disc 17 carries upon the extended peripheral portion thereof a pivotal stud 19 riveted or otherwise secured thereto, upon which are pivoted for oscillatory motion spring actuated pawls 20. There is a pawl 20 for each of the discs 14 within the planes of which the pawls are disposed and separated upon the pivotal stud 19 by interposed washers 21, the assembly being secured by a large headed screw 22 engaging in the end of the pivotal stud 19. These parts are best illustrated in the disassembled view, Fig. 7. The pawls 20 are actuated by springs 23, shown by dotted lines in Fig. 3, and engage in one or another of peripheral notches 24, in the discs 14, to hold such discs and thereby the interconnected sleeves and pin controlling cams 9 in their adjusted positions. By disengaging the corresponding pawl 20 and rotating the disc 14 pertaining thereto, each control cam 9 may be rotatively adjusted to effect the projection of the feeding pins 7 at either the writing position or an inoperative position removed therefrom peripherally of the platen roll. By utilizing different pairs of the pin wheel units, manifolding paper of different widths may be fed thereby. For example, by retracting the pins of the intermediate units or by rotation of the cams, shifting them to their inoperative position and utilizing the outermost or terminal pin wheel units, extremely wide manifolding paper may be fed thereby. If the middle pin wheel unit and that shown at the left are utilized and the pins of the units at the right are shifted to their inoperative position, then paper of less width can be fed about the platen. By shifting the cam 9 of the pin wheel unit at the extreme left to present the pins in inoperative position and adjusting the cams of the middle unit and that at the right into operative position, a very narrow form of manifolding material may be fed. Thus with the three pin wheel units, as illustrated in the drawings, paper of three different widths may be used upon the same platen. As has been before mentioned, for certain conditions of use, particularly in large types of commercial computing machines and recording apparatus, it has been found desirable to provide platens having as many as seven pin wheel units disposed at spaced intervals throughout the length of the platen roll. It will be obvious that all of the pin wheel units may be adjusted to project their pins simultaneously in their operative position or any one or more of them may be so adjusted and the remaining units adjusted to present their pins in an inoperative position, or, if desired, all of the pin wheel units may be so adjusted that no pins are presented in such position as to engage with the record material being fed about the platen, in which case the platen may be used in the usual manner as a frictional feed platen. In order to hold the sleeves and cams stationarily relative to the writing machine, a disc 26 is provided having a bifurcated arm 27 which straddles a frame rod 28, found upon the carriage of the writing machine. This disc 26 is engageable in various rotative relations with the disc 17, carrying the detent pawl 20 by means of a screw 28 extending through any one of the series of holes 29 in the disc 26 and engaging with the disc 17 positioned adjacent thereto.

In Figs. 13 to 15 there is illustrated a modification of the detent means wherein a disc 17', cor-

responding to the aforementioned disc 17, carries a reciprocatory plunger 31, spring pressed into engagement with one or the other of the notches in the disc 14'. The disc 14' is mounted upon an adjusting sleeve connected with a pin wheel unit cam as before described. For convenience, in rotating the disc to adjust the cam, the periphery of the disc is of undulating or crenate formation. Otherwise the construction and operation are as before described.

In Figs. 10 and 11, there is illustrated a further modification wherein the external cylindrical sleeve 2 is continuous throughout instead of being divided into succeeding sections interposed between the marginal rims or flanges 5 of the pin wheel units. In this construction, as shown in Fig. 11, the flange of the pin wheel units is of reduced diameter so that the external sleeve 2 may extend continuously thereacross and is provided with holes in the sleeve registering with the guide ways 6 of the unit within which the pins 7 reciprocate.

Whereas in Figs. 1 and 2 the peripheral rim of the pin wheel units is visible upon the surface of the cylinder, in Fig. 10 the rim is concealed interiorly of the exterior cylindrical sleeve 2 through which the pins 7 are projected in the manner before described.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute, the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described our invention, we claim:

1. Paper feeding means for a writing machine, including a plurality of relatively spaced, concentrically disposed pin wheel units, each including a revoluble body, a series of radially disposed reciprocatory paper engaging pins carried thereby, a cam about which the pins travel during rotation of the body, said cam being rotatively adjustable independently of said body, and detent means for locking the several cams in their adjusted positions.

2. Paper feeding means for a writing machine, including a plurality of rotatively mounted pin wheel units concentrically disposed in relatively spaced relation, each unit including a series of radially disposed reciprocatory paper engaging pins, control cams transmitting to the pins reciprocatory motion incident to the rotation of the units, a series of concentric relatively rotatable sleeves, one for each unit, upon which the respective cams are carried, and means for locking the sleeves in different positions of rotative adjustment.

3. Paper feeding means for a writing machine, including a plurality of relatively spaced concentrically arranged pin wheel units and independently operable control means for the respec-

tive units by which certain of the units may be rendered inoperative independently of other units whereby a pair comprising any two of the units may be simultaneously operative.

5 4. A writing machine platen including a plurality of relatively spaced pin wheel units, the pins of which are radially retractible within the periphery of the platen, and separately operable control means for the pins of the different pin  
10 wheel units of the plurality.

5. Paper feeding means for a writing machine, including a plurality of relatively spaced, concentrically disposed pin wheel units stationarily fixed relative to each other, and control means  
15 therefor enabling the operative combination of different pin wheel units of the plurality into pairs, the members of which are differently spaced for operative engagement with record materials of different widths.

20 6. Paper feeding means for a writing machine, including a plurality of rotatively mounted pin wheel units concentrically disposed in relatively spaced relation, each unit including a series of radially disposed reciprocatory paper engaging  
25 pins, means for actuating the pins incident to the rotation of the units, and means for differently timing the operation of pins of different units of the plurality during the simultaneous rotation of all said units.

30 7. Paper feeding means for a writing machine including a plurality of pin wheel units concentrically disposed in relatively spaced relation and interconnected for unison rotation, each including retractible pins, means for retracting the  
35 pins of the several units, and operative means for effecting the extension and retraction of the pins of certain pin wheel units at points in the rotation thereof different from the points of extension and retraction of the pins of other pin  
40 wheel units.

8. Paper feeding means for a writing machine, including a plurality of pin wheel units concentrically disposed in differently relatively spaced relation whereby writing material of different widths may be operatively engaged with  
45 different pairs of such units, and means for rendering inoperative the pin wheel units intermediate the operatively engaging units.

9. The combination of a platen roll for a writing machine, including a plurality of pin wheel sections concentrically disposed at differently spaced intervals and intermediate sections of smooth cylindrical surface with selective means  
50 extending at least to one end of said platen for controlling the operation of certain of the pin wheel sections.

10. The combination of a platen roll for a writing machine, including a plurality of pin wheels and a plurality of smooth cylindrical sections alternately arranged in concentric relation and fixedly interconnected with each other for unison rotation with selective means accessible adjacent  
60 the end of the platen for controlling the operation of certain of said pin wheels.

65 11. A platen roll for a writing machine, including a plurality of pin wheel units arranged in spaced relation, the pins of which are adjustably mounted, intermediate cylindrical sections forming writing surfaces connected with the pin  
70 wheel units to form an integral structure, and means for separately adjusting the pins pertaining to different pin wheel units accessible beyond the end of the unitary platen.

75 12. A continuous unitary platen roll, including a rotary cylindrical body, a plurality of groups

of radially adjustable feeding pins carried thereby at spaced intervals, and means extending beyond the end of the roll for independently controlling the pins of different groups to effect their extension and retraction at different points in  
5 their rotary paths of travel.

13. A paper feeding device for a writing machine, including a plurality of pin wheel units disposed in differently relatively spaced relation whereby writing material of different widths  
10 may be operatively engaged with different groups of said units and means for rendering inoperative pin wheel units intermediate the operatively engaging units.

14. A paper feeding device for a writing machine, including a plurality of pin wheel units disposed in different relatively spaced relation whereby writing material of different widths may be operatively engaged by different groups of  
15 said units and means for selecting the groups of units to be utilized, said means being accessible remotely from said pin wheel units.

15. In a writing machine, a platen, a plurality of pin wheel units associated with said platen, the pins of said pin wheel units having operative  
20 and inoperative positions and means for selectively moving some of the pins into operative position and the others into inoperative position whereby writing material of different widths may be operatively engaged with different pairs of  
25 said units.

16. In a writing machine, a platen, a plurality of pin wheel units associated with said platen, the pins of said pin wheel units having inoperative and operative position and means for maintaining in operative position the pins of a pre-determined pair only of said pin wheel units for feeding paper to the platen so that paper of varying widths may be used.

17. Paper feeding means for a writing machine including a plurality of groups of record material feeding pins engageable with suitably punched material of different widths, the positions of projection of pins of the several groups being variable relative to their material engaging  
35 positions, and means for independently varying the positions of projection of the pins of each group for rendering the respective groups of pins operative and inoperative.

18. Paper feeding means for a writing machine including a plurality of groups of record material feeding pins engageable with suitably punched material of different widths, and adjusting means for the pins of the several groups by which the pins of different groups may be selectively  
40 adjusted to operative and inoperative positions according to the width of the material to be engaged.

19. Paper feeding means for a writing machine including a plurality of groups of record material feeding pins engageable with suitably punched material of different widths, and adjusting means for the pins contained in the several groups including a series of concentrically disposed revoluble sleeves, one for each group of pins, and pin operating means carried by each sleeve for adjusting the pins in accordance with the movement of the sleeves.

20. Paper feeding means for a writing machine including a plurality of groups of record material feeding pins engageable with suitably punched material of different widths, and adjusting means for the pins contained in the several groups including a plurality of concentrically disposed relatively movable sleeves, one for  
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each group of pins, and pin operating means carried by each sleeve and pertaining to a particular group of pins for adjusting the pins thereof into and out of material engaging positions.

5 21. Paper feeding means for a writing machine including a plurality of groups of record material feeding pins engageable with suitably punched material of different widths, adjusting means for each group of pins, a group of ad-  
10 justable discs, one for each group of pins, operative connections between the respective discs and the pin adjusting means of the corresponding groups, and detent means for locking the discs in operated positions.

15 22. Paper feeding means for a writing machine including a plurality of groups of record material feeding pins engageable with suitably punched material of different widths, adjusting means for each group of pins, a plurality of dis-  
20 tantly located actuators, one for each group of pins, and operative connections between the distantly located actuators and the adjusting means, by which the several groups of pins may be ad-  
25 justed in accordance with the width of the material to be engaged.

23. The combination with a typewriting machine platen adapted for use with various widths of punched record material of a plurality of relatively spaced pin wheel units of which any se-  
30 lected pair are engageable with the punched record material and independently capable of operative and inoperative adjustment relative thereto, and means for independently adjusting said units into and out of material engaging re-  
35 lation, said means extending to the end of the platen.

24. The combination with a writing machine

platen and means for frictionally feeding record material thereabout, of a series of a plurality of relatively spaced pin wheel units for positively feeding the record material about said platen alternatively with the frictional feeding means, and means for selectively rendering one or more  
5 of said pin wheel units inoperative.

25. Paper feeding means for a typewriting machine for feeding various widths of punched record material including a plurality of relatively  
10 spaced pin wheel units for operatively engaging the punched record material, and means for selectively rendering certain of the pin wheel units inoperative independently of the other selected  
15 units which feed the record material, said means being accessible at a position remote from the pin wheel units.

26. Paper feeding means for a writing machine including a plurality of pin wheel units relatively spaced for operative engagement of selective  
20 pairs thereof with suitably punched record material of different widths, and means for rendering inoperative the pin wheel units other than those engageable with record material of a given width.

27. Paper feeding means for a writing machine including a plurality of groups of material feed-  
25 ing pins having operative and inoperative material engaging positions for feeding suitably punched record material of different widths, and adjusting means pertaining thereto by which se-  
30 lected groups of material feeding pins may be adjusted into and out of material engaging position according to the width of the material to be fed.

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