

Feb. 23, 1943.

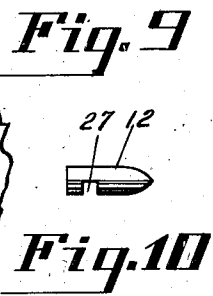
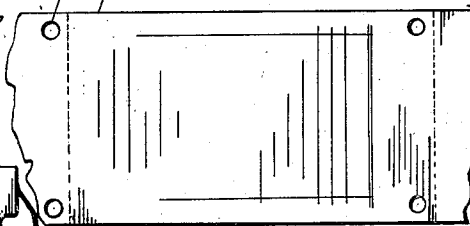
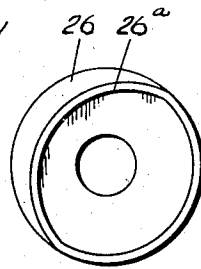
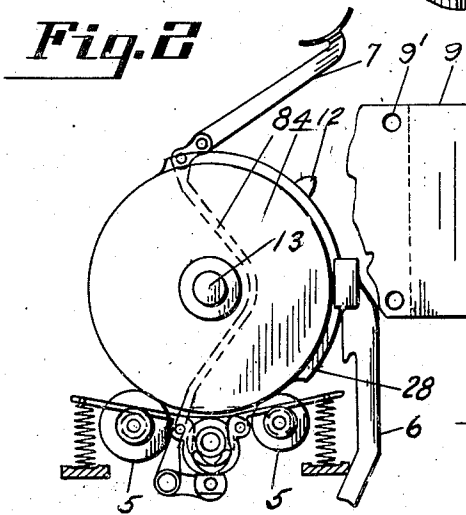
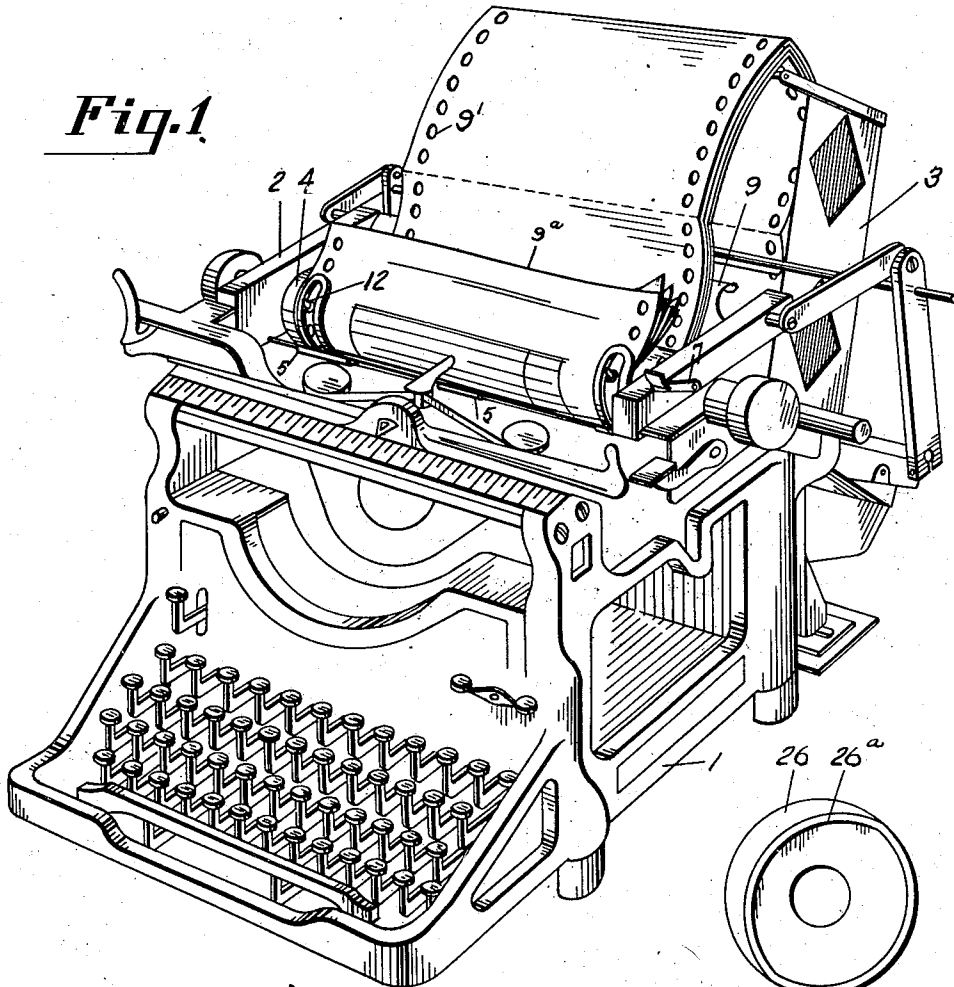
J. Q. SHERMAN

2,311,702

COMBINED FRICTION AND PIN ALIGNING DEVICE FOR WRITING MACHINES

Original Filed May 28, 1932

3 Sheets-Sheet 1



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Feb. 23, 1943.

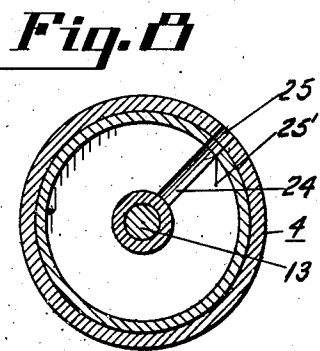
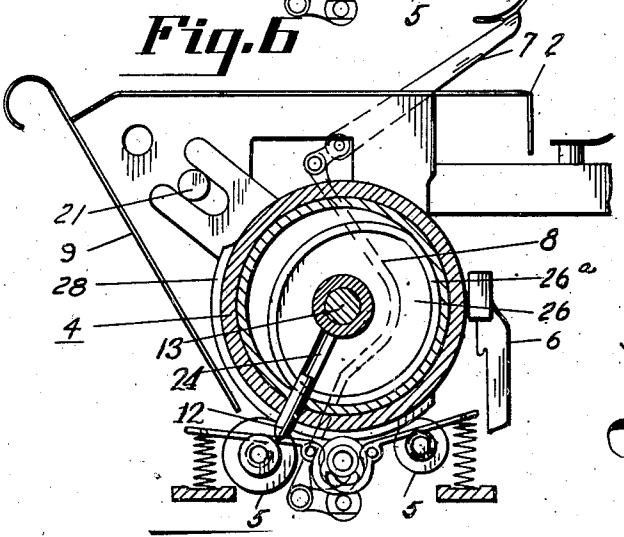
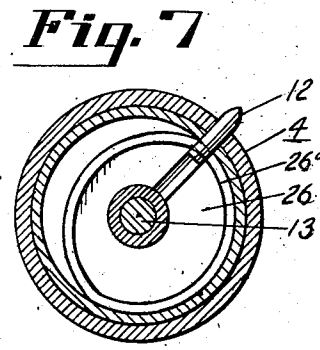
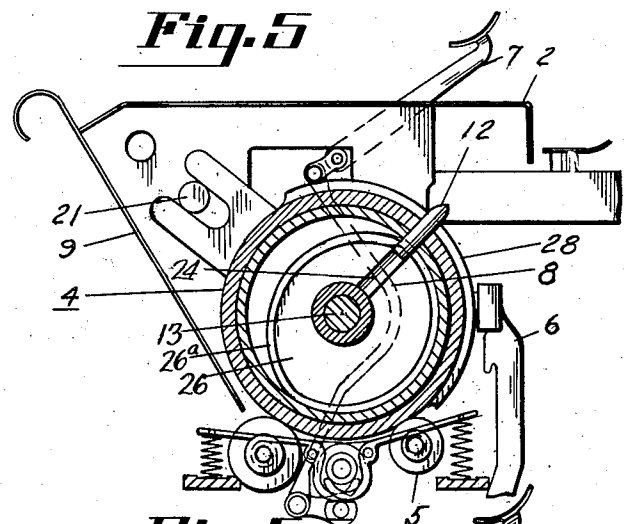
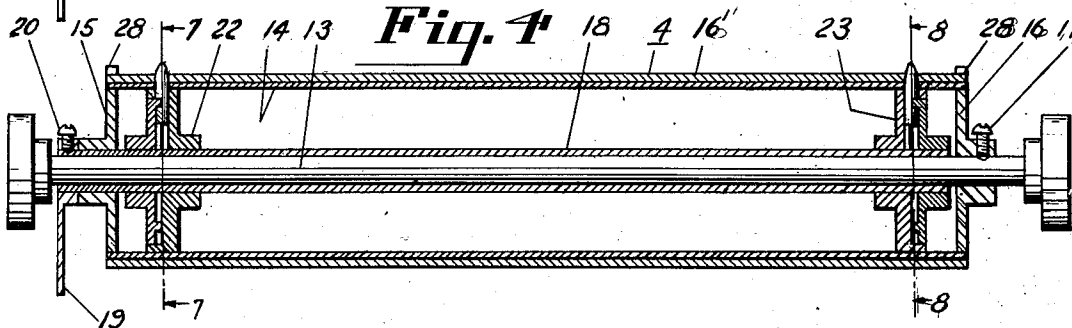
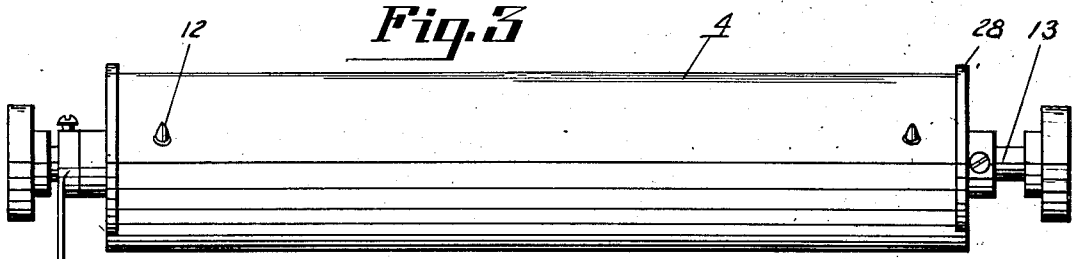
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2,311,702

COMBINED FRICTION AND PIN ALIGNING DEVICE FOR WRITING MACHINES

Original Filed May 28, 1932

3 Sheets-Sheet 2



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2,311,702

COMBINED FRICTION AND PIN ALIGNING DEVICE FOR WRITING MACHINES

Original Filed May 28, 1932

3 Sheets-Sheet 3

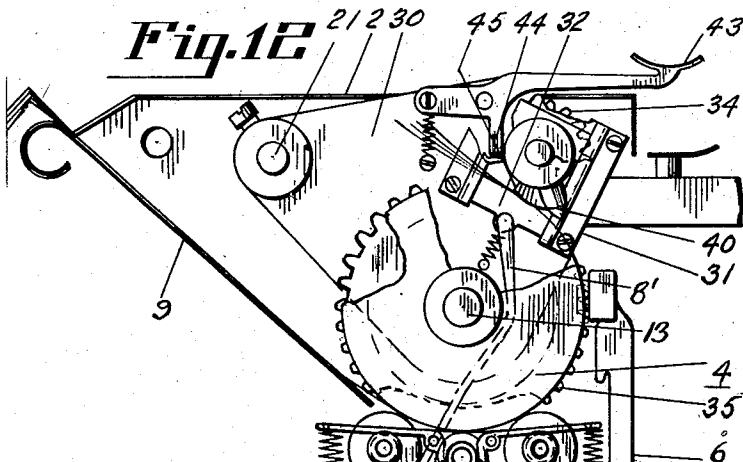


Fig. 15

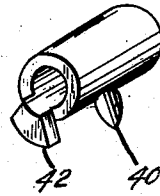


Fig. 13

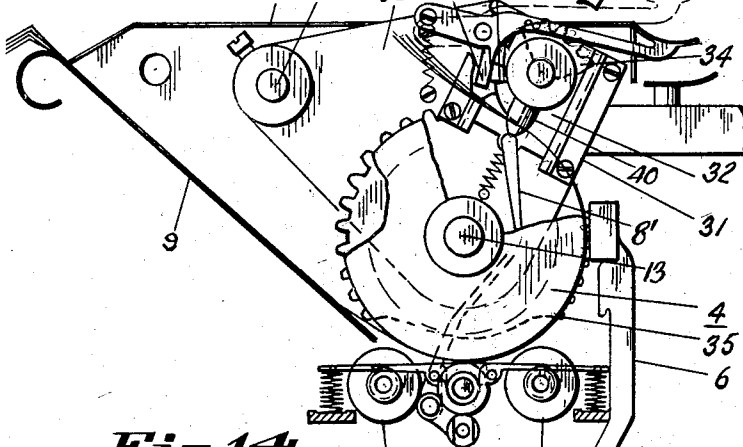
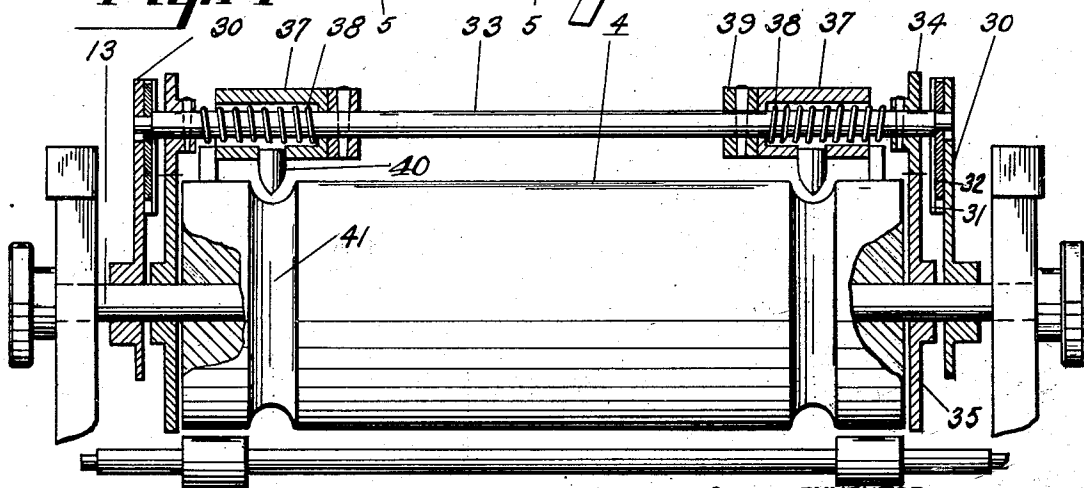


Fig. 14



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UNITED STATES PATENT OFFICE

2,311,702

COMBINED FRICTION AND PIN ALIGNING DEVICE FOR WRITING MACHINES

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Original application May 28, 1932, Serial No.
614,238. Divided and this application Novem-
ber 8, 1940, Serial No. 364,932

35 Claims. (Cl. 197—133)

This invention relates to paper feeding means for writing machines, and particularly to the association with ordinary friction feed apparatus of means for intermittently relatively adjusting superposed record sheets or strips to accurately maintain alinement and registry of manifolding forms.

The present application is a division of now pending application Serial Number 614,238, filed May 23, 1932, the benefit of which filing date is claimed for the present application. Cross reference is also made to copending application Serial No. 708,902, filed January 29, 1934, which contains claims for different embodiments of alternating pin type and friction feed, and retractable pin wheel structures.

While friction paper feed devices, such as the conventional form of typewriter platen roller and its associated pressure rollers, and the "wringer roller" type of pressure feeding means employed in autographic registers, recording machines, and the like have been quite extensively used in the writing and recording machine art, it is generally recognized that such friction means will not effect uniform feeding of superposed strips or sheets used for manifolding purposes and hence it is quite difficult to maintain registry of printed forms carried upon different strips or sheets. This is due in part to the fact that each succeeding sheet being a greater distance from the axis of the actuating roller must travel through a peripheral path of greater lineal extent than the inner strips or sheets. It is partly due to inequalities and irregularities in the printing of the forms arising from variations in the paper itself. Different strips may have different degrees of stretch or elasticity, and due to atmospheric and other conditions, the strips may have greater or less degree of sag at the time of printing which causes the spacing of the printed forms to vary slightly. There is also present a small degree of slippage of the strips one on another when friction alone is relied upon for advancing superposed strips. While such error or displacement may be infinitesimal within the limit of one form, such discrepancy is cumulative, soon becoming quite noticeable, and if allowed to continue will result in actual falsification of records, as for example when lists of printed items appear on the printed forms such as wheat, corn, oats, etc., and due to relative displacement of the forms, an entry pertaining to wheat made upon the uppermost form is transposed opposite corn or oats on the underlying form.

The present invention pertains to means oper-

ating in sequence with the friction feeding means for automatically engaging and positively readjusting the superposed forms into accurate registry at regular intervals. The record material is advanced alternately by friction feeding means and by positive feeding means. The friction feeding means is automatically disengaged during the operation of the positive feeding and aligning means and vice versa.

The object of the invention is to improve the construction and operation of writing machines, whereby they will be not only cheap in construction, but will be more efficient in use, accurate and automatic in operation, uniform in action, and unlikely to get out of repair.

A further object of the invention is to enable the adaptation of any ordinary writing or recording machine for billing machine purposes.

A further object of the invention is to provide means for insuring uniform registry and alignment of frictionally fed superposed printed forms.

A further object of the invention is to automatically effect periodic readjustment of superposed printed forms into registering relation.

A further object of the invention is to provide means for automatically alternating the friction and positive feeding means for the record material.

A further object of the invention is to provide alternately operative friction and positive feeding means for record material.

A further object of the invention is to provide an improved form of writing machine platen which may be interchanged with the platen roll of conventional and popular types of typewriters and recording machines.

A further object of the invention is to provide means for the purpose stated comprising but few operating parts and which will not radically differ in appearance or operative control from the paper feeding devices of standard writing machine constructions.

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 drawings wherein are shown the preferred, but obviously not necessarily the only form of embodiment of the invention,

Fig. 1 is a perspective view of a conventional form of typewriter to which the present invention has been applied.

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Fig. 2 is an end elevation of the platen roller and co-operating pressure rollers for frictionally feeding record material.

Fig. 3 is a front elevation of the platen roller removed from the writing machine.

Fig. 4 is a longitudinal sectional view thereof.

Figs. 5 and 6 are transverse sectional views through the writing machine platen roll and associated paper feeding devices, showing the platen roller in alternate positions of rotary movement in one of which the parts are adapted for frictionally feeding the record material, while in the other figure the frictional feeding means is operatively released and the positive feeding means is in operative position.

Figs. 7 and 8 are transverse sectional views on lines 7-7 of Fig. 4, viewed in opposite directions.

Fig. 9 is a detail side elevation of the actuating cam for the positive feeding pins.

Fig. 10 is a detail view of the feeding pin removed from the platen roller.

Fig. 11 is a detail view of one of the printed forms.

Figs. 12 and 13 are detailed views of friction feed mechanism.

Fig. 14 is an enlarged cross sectional view of the pin feeding device.

Fig. 15 is an enlarged view of a feeding pin and a cam associated therewith.

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

Referring to the drawings, 1 is a typewriter of conventional form of which 2 is the reciprocating typewriter carriage and 3 is a traveling supply carrier for record material operatively connected with and reciprocating to and fro with the movement of the writing machine carriage 2.

Revolubly mounted in the traveling carriage 2 is the platen roller 4 with which are associated the usual underslung pressure rollers 5-5 for frictionally feeding the record material about the platen roller and past the writing position indicated by the contact point of the type bar 6 upon the platen roller 4, as indicated in Figs. 2, 5 and 6. Underslung rollers as used herein designate feed rollers mounted below the platen.

In the usual typewriter construction, the pressure rollers are adjustable into and out of contact relation with the periphery of the platen roller 4 by means of the finger trip lever 7 mounted upon the traveling carriage 2, and connected with the pressure roller mounting devices by an intermediate link 8. The normal position of the pressure rollers 5 is that in contact with the platen roller 4, as is shown in Figs. 2 and 5. However, by depressing the finger trip lever 7, the pressure rollers are moved away from the platen roller, as is shown in Fig. 6, thereby relieving the pressure upon the interposed record material being fed about the platen roller. The particular pressure roller operating means illustrated is that found in a popular and widely used typewriter at the present time, and per se forms no part of the present invention. Such control means is here disclosed for illustrative purposes only and with no intent to unduly limit nor restrict the invention.

The record material which preferably, though not necessarily, comprises superposed strip of manifolded material, is drawn from a supply packet within the traveling carrier 3 and passes thence over the guide 9, upon the writing machine carriage 2, and beneath the platen roller 4 where it passes intermediate the platen roller and the pressure rollers 5-5 in its travel toward

the writing position which is coated with the contact point of the type bar 6 with the periphery of the platen roller. The pressure rollers 5 hold the record material against the rotary platen roller 4 with sufficient pressure to insure its advance movement as the platen roller is rotated. Such is the ordinary friction feed mechanism and its operation.

As before mentioned, due to the different radius of the paths of travel of different superposed strips, differences in the paper itself and inequalities in the spacing of successive printed forms thereon, while such frictional feed is reasonably satisfactory and practical for short lengths of material, it will not feed extended lengths or continuous strips successfully without more or less frequent release of pressure and readjustment of the strips into registry and alignment. Ordinarily this must be done by manual manipulation. In the present instance it is effected automatically. The pressure of the frictional feeding roller 5 is relieved at each rotation of the platen roller 4 and the superposed strips 9a are positively advanced during a portion of such rotary movement of the platen roll and during their advance movement they are relatively adjusted into proper alignment and registry. To this end the platen roller 4 is provided with a single reciprocating feeding pin 12 at each end of the roller.

The platen roller comprises a shaft 13 about which is concentrically disposed a cylinder 14 having terminal heads 15 and 16. The head 16 is fixedly secured to the shaft 13 by means of a set screw 17 for unison rotation therewith. Surrounding the shaft 13 within the cylinder 14 is a sleeve or tube 18 upon which the cylinder head 15 is loosely journaled. This tube or sleeve 18 is stationarily held against rotation by an arm 19 secured thereto by the set screw 20 and engaging with a suitably positioned frame rod or stud 21 upon the traveling carriage 2 of the writing machine. Pressed within the cylinder 14 and loosely journaled upon the stationary sleeve or tube 18 are two spaced heads 22 and 23, each having therein a radial groove 24 forming a guide for one of the reciprocating pins 12. The groove 24 registers with a hole 25 in the cylinder 14 and a corresponding hole 25' in the flange of the head. Located closely adjacent to the head 22 are eccentric cams 26 having laterally extending flanges 26a which engage in notches 27 in the respective pins 12. The cam flanges 26a are concentric throughout substantially half of their extent and are eccentric throughout the remainder thereof. These cams being secured upon the tube or sleeve 18, are held stationary while the cylinder 14 and its heads 22 carrying the pin 12, rotate relative thereto. The pins 12, being carried by the rotation of the cylinder, ride upon the flanges 26a, and as they approach the concentric portion of such cam flange, they are projected outwardly beyond the periphery of the platen roller 4, and as they pass thence on to the eccentric portion of such cam flange, the pins are retracted within the cylinder. Thus at each rotation of the platen roller, the pins are alternately projected and retracted.

At each end of the platen roller 4, there is provided a segmental bearing surface 28 which, during the rotation of the platen roller, engages with the pressure rollers 5 forcing such pressure rollers away from the platen roller 4 and out of frictional feeding contact with the record strips passing thereabout. While in Fig. 5 these

pressure rollers 5 are shown in contact with the platen roller 4 for frictional feeding advancement of the record strips, in Fig. 6 they are shown engaged by the segmental bearing portion 28 and hence forced away from the platen roller 4, allowing the paper strips to extend freely and loosely about the platen roller intermediate the pressure rollers 5 and such platen roller 4.

The pin controlling cams 26 are so positioned that at approximately the time the pressure rollers 5 are disengaged from the platen roller 4, the pins 12 are projected beyond the periphery of the platen roller into operative engagement with the strips of record material which are marginally punched at 9' to receive such positive feeding pins 12. The feeding pins 12, which are rounded or tapered at their extremities, enter easily within the overlying punched holes 9' of the superposed record strips even though such holes are not accurately in registry with each other. However, the entry of the tapered pins 12 within such overlying or overlapping holes 9', effects a slight displacement of the superposed strips necessary to cause the holes 9' to accurately register. This movement is effected by the engagement of the pins 12 with the margins of the holes during the advance movement of the pins in unison with the travel of the platen roller 4. The holes 9' being punched in accurate predetermined relation with the printed forms upon the respective strips, the registry of the holes by the engagement of the feeding pin 12 therein necessarily accurately registers the printed forms upon the several superposed strips. The feeding pins 12, traveling upon the concentric portion of the cam flanges 26a, maintain their engagement with the record strips until the engaged portion has been advanced a short predetermined distance thereby insuring proper registry and alignment of the several strips at such time. Having performed their feeding and aligning functions, the pins 12 pass from the concentric to the eccentric portion of the cam flanges 26a, and are thereby retracted out of engagement with the record strips and within the platen roller 4. At the same time the segmental bearing portion 28 passes beyond the pressure rollers 5, allowing such rollers to return into engagement with the periphery of the platen roller 4 under influence of their retracting springs preparatory to further advance movement of the record strips under frictional feeding influence.

In Figs. 12 to 15, there is illustrated a modification of the construction heretofore described, wherein, in lieu of the aligning pins or studs being mounted directly within and carried by the rotary platen roller, they are mounted independently thereof and engage with the record strips only when the holes 9' therein come within the operative range of the aligning studs or pins. Whereas in the construction first described, the aligning holes 9' in the forms or strips 9a, must be punched at regularly spaced intervals substantially equivalent to the circumferential distance about the platen roller 4, in the present modified construction such aligning and registering holes need not be punched at either regular intervals nor in any predetermined relation with the travel or extent of the platen roller.

In the modified construction, auxiliary frame members 30 are mounted within the traveling carriage 2 upon the platen roller shaft 13 and upon the transverse frame rod 21, before referred to. Carried upon these supplemental frame members 30, of which there is one at each side

of the traveling carriage 2, in suitable guides or ways 31, are sliding bearing plates 32 in which is journaled a rotary counter shaft 33. The shaft 33 is rotated by means of gear pinions 34 secured thereon which intermesh with gear wheels 35 secured upon the main shaft 13 of the platen roller 4. The sliding bearing plates 32 are connected by links 8' with the mounting devices of the friction pressure rollers 5 which normally engage with the periphery of the platen roller 4, as is shown in Fig. 12. By the upward sliding movement of the bearing plates 32 within their guides 31, the pulling effort upon the links 8' operates to retract the friction or pressure rollers 5 out of engagement with the platen roller 4, as is illustrated in Fig. 13, thereby relieving the frictional feeding pressure upon the interposed strips of record material. Such record strips are thus left free and loose between the rollers 5 and the platen roller 4. To effect the pressure roller releasing movement of the sliding bearing plates 32 within their guides 31, there are mounted upon the counter shaft 33 adjacent to each end thereof, sleeves 37 which are spring pressed axially, by helical springs 38 surrounding the shaft 33, into frictional driving engagement with collars 39 secured to the shaft 33. Each of the rotary sleeves 37 carries a radially projecting stud or pin 40, in the plane of which the rotary platen roller 4 is peripherally grooved at 41, to provide clearance for the stud or pin 40 which is of such length as to project beyond the periphery of the platen roller 4 into the groove 41 as the sleeves 37 rotate with the shaft 33. The sleeve 37 also carries at its extremity an eccentric segmental cam flange 42, which during the rotary movement of the sleeve 37, in unison with the shaft 33, contacts the peripheral surface of the platen roller 4, adjacent to its end, and thereby serves to elevate the shaft 33 and with it the sliding plates 32 within their guides 31, thereby exerting pulling influence upon the links 8' to disengage the pressure rollers 5, as is shown in Fig. 13.

While the sleeve 37 is normally held under tension of the spring 38 in frictional driving contact with the friction collars 39, it is normally held against such rotary motion by the contact of the stud or pin 40 upon an unperforated or unpunched portion of the record material passing about the platen roller 4 intermediate such roller and the aligning stud or pin 40, under frictional feeding influence of the pressure rollers 5 coacting with the platen roller 4. When, however, an aligning hole 9' in the record material passes beneath the pin 40, the pin entering such holes is permitted to turn with the shaft 33 under frictional driving influence of the collars 39. At the same time the segmental cam 42 engaging with the peripheral surface of the platen roller 4 beyond the edge of the record material, operates to elevate the shaft 33 and sliding plates 32 to effect disengagement of the pressure rollers 5, thus relieving pressure or tension upon the record strips which are, at such time, engaged by the stud or pin 40. The continued rotation of the sleeve 37 serves to positively advance the record strips a short distance and at the same time by entering within the overlapping holes 9', and stud or pin 40 serves to register such holes with each other and hence register the printed forms upon the superposed strips. The rotation of the sleeve 37 and aligning pin 40 is arrested by engagement of the shoulder 45 of the cam 42 with the finger 44 of the lever 43, until manually released by operation of the lever 43 pivoted to the frame 30. As

the sleeve 37 continues its rotary movement under frictional driving influence of the collar 39, the pin or stud 40 is withdrawn from the aligning holes 9' which have been registered with each other, thus carrying the segmental cam 42 beyond the platen roller 4, allowing the shaft 33 and the sliding bearing plates 32 to return to their normal position thereby permitting return of the pressure rollers 5 into operative frictional feeding relation with the under side of the platen roller 4. The sleeve 37 continues its rotation under the driving influence of the friction collar 39 until it has made one full rotation when the pin 40 contacting with an unpunched area of the record material, arrests the rotation of the sleeve 37 while the shaft 33 and frictional drive collar 39 continue their rotation independently of such pin and cam carrying sleeve 37.

From the above description it will be apparent that there is thus provided a device of the characterized 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 the invention, what is claimed is:

1. In an imprinting apparatus wherein a continuous strip of record material is progressively advanced past an imprinting position, dual feeding means for advancing the strip including coacting frictional rollers having intermittent engagement with the record receiving material, and a pin type feeding device having operative engagement in longitudinally spaced holes in the record material for advancing the material independently of the frictional rollers during periods of inaction thereof, and means for automatically engaging and disengaging the frictional feeding rolls in timed relation with the operation of the pin type feeding device.

2. In an imprinting apparatus wherein a continuous strip of record material is progressively advanced past an imprinting position, dual feeding devices for the strip including frictional feeding rollers operatively engageable with the strip and a pin type feeding device also operatively engageable with the strip, and means for automatically disengaging one of the feeding devices while the advancement of the strip is continued by the other feeding device.

3. In an imprinting apparatus wherein a continuous strip of record material is progressively advanced past an imprinting position dual feeding devices therefor including coacting frictional feeding rollers and a pin type feeding device, and automatic means synchronized with the advancement of the strip for automatically disengaging the frictional feeding rollers each time the strip is advanced a predetermined distance said pin type feeding device being operative to advance the strip independently of the frictional feeding

rollers during the succeeding intermittent periods of nonoperation of said frictional feeding rollers.

4. In an imprinting machine wherein a continuous strip of material is progressively advanced past an imprinting position, coacting frictional rollers operatively engageable therewith for advancing the strip, a pin type feeding device for said strip located beyond the frictional feeding rollers in the direction of travel of the strip and operative to advance the strip past the imprinting position independently of the frictional feeding rolls, and automatic means synchronized with the advancement of the strip for periodically relaxing the feeding engagement of the frictional feeding rollers with the strip to permit advancement of the strip by the pin type feeding device independently of the rollers.

5. In an imprinting machine wherein a continuous strip of record material is progressively advanced past an imprinting position, coacting frictional pressure feeding rollers, and a pin type feeding device disposed in relatively offset relation with each other in the direction of advancement of the strip, each operative to advance the strip relative to the imprinting position, and a control device energized by the operation of one of said feeding devices for rendering the other feeding device temporarily inoperative while the advancement of the strip is continued by the said remaining operative feeding device.

6. In an aligning feed mechanism for a writing machine, a pair of cooperating rollers having intermittent operative engagement with a strip of material for frictionally advancing the material past an imprinting position, a pin type aligning device positively engaging the material strip disposed in offset spaced relation with the point of engagement of the feed rollers with the strip in the direction of advancement of the strip, and a throwout device operative incident to the advancement of the strip prescribed distances for temporarily disengaging the material strip from feeding relation with the rollers while the pin type aligning device effects adjustment of the strip of material relative to the imprinting position.

7. In an aligning feed mechanism for writing machines, a pair of cooperating frictional rollers for frictionally advancing a strip of material past an imprinting position, a pin type feeding device located in offset relation with the line of feeding pressure engagement of the feed rollers with the strip in the direction of feeding movement of the strip material and engageable in longitudinally spaced holes in the strip material for advancing the material independently of the feed rollers, and throwout means actuated incident to rotation of one of the said feeding devices for temporarily disengaging the friction feed roll from engagement with the strip material while the material is being adjusted relative to the imprinting position by the pin type feeding device.

8. In an aligning and feeding apparatus, a pair of cooperating rollers for frictional engagement with interposed strip material for intermittently advancing the material through succeeding predetermined distances, a pin type feeding device disposed in offset relation, with the cooperating frictional feed rollers in the direction of movement of the strip and having feeding engagement in longitudinally spaced holes in the record material to adjust the strip material independently of the cooperative rollers, and throw-

out means actuated by movement of the pin type feeding device for automatically releasing the record material from the influence of the cooperating rolls during adjustment of the strip material by the pin type feeding device intermediate succeeding advancements of the record material by the rollers.

9. An imprinting apparatus including frictional pressure rollers for intermittently advancing an interposed strip of material past a record making position, a pin type feeding device disposed in offset relation with the point of feeding engagement of the rollers with the strip in the direction of advancement of the latter and operative to advance and align the strip intermediate succeeding operative feeding periods of the rollers, and cam means for cyclicly releasing the frictional rollers from feeding engagement with the strip during alignment of the material by the pin type feeding device.

10. An imprinting apparatus including a pair of frictional rollers intermittently operative to advance interposed strip material past a record making position, a pin type feeding device disposed in offset relation with the rollers in the direction of advancement of the strip and having feeding engagement in longitudinally spaced holes in the strip for readjusting the strip relative to the record making position alternately with the feeding engagement of the rollers with the strip material, and throwout means actuated in unison with the pin type feeding device for automatically releasing the frictional feeding engagement of the rollers from the strip material during readjustment thereof by the pin type feeding device.

11. In an imprinting machine, rotary feeding rolls relative to which a continuous strip of material is intermittently advanced past an imprinting position, a rotary driven shaft located in parallel offset relation with the platen roll, a gear train interconnecting the driven shaft and a feeding roll for unison synchronized operation, and a pin type feeding and aligning device located in offset relation beyond the feeding rolls in the direction of travel movement of record material, and coupling means associated therewith for connecting the driven shaft with the pin type feeding and aligning device for simultaneous operation and for alternately permitting rotation of the driven shaft in unison with the platen roll independently of the pin type feeding and aligning device.

12. In a writing machine, the combination with a platen relative to which record material is intermittently advanced past a writing position, of frictional feeding means for temporarily advancing the record material past the writing position, and pin type feeding means located beyond the platen in the direction of travel of the material and engageable in relatively spaced holes therein for advancing the record material past the writing position during periods of inaction of the frictional feeding means, and means for automatically determining the feeding period during which each of said means is operable.

13. In a writing machine, the combination with a rotary platen relative to which record material is intermittently advanced past a writing position, of frictional feeding means for temporarily advancing the record material past the writing position, and relatively movable pin type feeding means located beyond the platen in the direction of travel of the material and movable relative to the platen engageable in relatively

spaced holes in the record material for advancing the record material past the writing position during periods of inaction of the frictional feeding means, and means for automatically disengaging one of the feeding means and effecting operative engagement of the other with the record material at the end of a predetermined feeding operation.

14. A writing machine, including a rotary platen roll past which series connected form record material is advanced past a writing position, a rotary driven shaft in offset parallel relation with the rotary platen roll, a gear train transmitting rotary motion from the platen roll to said rotary shaft, and a pair of pin type feeding devices relatively spaced axially of the shaft and actuated by the rotation thereof, engageable in longitudinally spaced holes in the record material to intermittently positively advance the record material relative to the platen roll, and friction roll cooperating with said platen for frictionally advancing the record material in automatically timed sequence with the operation of the pin type feeding devices.

15. The combination with a writing machine having a platen and a writing position past which record material is progressively advanced, of a pin type feeding device progressively engageable in relatively spaced holes in the record material for advancing the same past the writing position, said pin type feeding device being mounted for bodily movement toward and from the path of travel of the record material, and means controlled by the advancement of the record material predetermined distances for automatically moving the pin type feeding device bodily relative to the record material.

16. A writing machine having a platen roll and frictional means associated therewith for feeding record material past a writing position, a positive feeding means laterally offset relative to the platen roll and operatively engageable with the record material alternately with the frictional means for feeding the record material past the writing position, and means for automatically reversing the engagement of the respective feeding means with the record material by rotation of the platen roll.

17. A writing machine including a rotary platen roll about which record material is circumferentially advanced, frictional feeding means cooperating with the platen roll for advancing record material about the roll and past a writing position, positive feeding means actuated by rotation of the platen roll for advancing the record material about the platen roll past the writing position, and means for automatically alternating the actuation of the respective feeding means by the continued rotation of the platen roll.

18. A writing machine including a rotary feeding roll past which record material is circumferentially advanced, frictional means actuated by the rotation of the feeding roll to advance the record material through a preliminary movement past a writing position, and positive feeding means for advancing the record material an additional distance past writing position automatically actuated independently of the frictional feeding means by continued movement of the feeding roll.

19. In a writing machine the combination with a revoluble platen roll of relatively adjustable pin type feeding device intermittently engageable with record material for advancing the material

about the platen roll and past a writing position, and means for automatically effecting engagement and disengagement of the pin type feeding device with the record material by the continued rotation of the platen roll.

20. In a front strike type writing machine the combination with a revoluble platen roll about which record material is circumferentially advanced, of a frictional feeding device intermittently engageable with the record material for advancing record material about the platen roll and past a writing position, and means for automatically effecting the engagement and disengagement of the frictional feeding device with the record material by the continued rotation of the platen roll.

21. In a writing machine the combination with a revoluble platen roll or frictional feeding means and pin type feeding means, located one in advance of the other in the direction of feeding movement thereof, alternately engageable with record material for advancing the record material through successive advance movements about the platen roll and past a writing position, and means for disengaging one and engaging the other of the respective feeding devices with the record material controlled at least in part by the continued rotation of the platen roll.

22. In a writing machine the combination with a platen roll of frictional feeding means engageable with record material for advancing the record material around the platen roll past a writing position, a pin type feeding device engageable with the record material beyond the point of engagement therewith of the frictional feeding means to advance the material independently thereof, and means for automatically disengaging one of said feeding means and engaging the other feeding means with the record material when the material has been advanced a predetermined distance by the engaging feeding means.

23. In a writing machine the combination with a platen roll relative to which record material is advanced past a writing position, of a pin type feeding means disposed in offset relation with the platen roll in the direction of advancement of the strip for advancing the record material, and means operative incident to the advancement of the record material predetermined distances for automatically engaging and disengaging the record material and pin type feeding means one with the other.

24. Feeding and aligning mechanism for continuous form stationery, including a frame, a supply compartment, a platen, feed rolls cooperating therewith to advance continuous form stationery strips from said supply compartment over the platen, retractable register pins moving in timed relation with respect to said feed rolls and adapted to enter and register in turn each form length of said strips, and means mounted on said frame adjacent to said feed rolls and driven in timed relation to the feed rolls for retracting the pins from the stationery during the advancement of each alternate form length.

25. Feeding and aligning mechanism for continuous form stationery, including a frame, a supply compartment, a platen, feed rolls cooperating therewith to draw one form length of continuous form stationary strips provided with register perforations over said platen during each revolution, retractable register pins mounted for movement relative to said feed rolls to engage and register in turn each form length of said

strips, oscillatable means mounted on said frame for disengaging the stationery from the pins, and differential cam means driven in timed relation to the movement of the feed rolls for actuating said oscillatable means during each alternate revolution of the feed rolls.

26. An imprinting apparatus including cooperating friction rollers for progressively advancing a continuous strip of material past an imprinting position, a pin type strip feeding device located in offset relation relative to the friction rollers in the direction of advancement of the strip and having feeding engagement in marginally punched holes in the strip for advancing the strip independently of the friction rollers during inoperative feeding periods thereof, intermeshing gears operatively connecting the pin type feeding device and one of the friction rollers for unison actuation, and actuating means common to the friction rollers and the pin wheel, and automatic throw-out means for rendering the frictional feed rollers temporarily ineffective to advance the strip during independent advancement thereof by the pin wheel feeding device.

27. In a typewriting machine, the combination comprising a platen roller and a frictional roller cooperating with said platen roller to advance continuous length record material circumferentially about said platen roller, a cam carried by the platen roller for releasing the feeding engagement of said frictional roller, and a pin feeding mechanism independent of said platen for readjusting the position of the record material when the frictional feeding roller is released.

28. In a typewriting machine, the combination including a rotary platen, pin feeding mechanism carried by said platen, said pin feeding mechanism being inoperative during a portion of the rotation of said platen, cam mechanism for retracting and advancing said pin feeding mechanism beyond the periphery of said platen, underslung friction feeding mechanism advancing the writing material during the portion of the revolution of said rotary platen when said pin feeding mechanism is inoperative, and means for depressing said frictional feeding mechanism to move same into inoperative position when the pin feeding mechanism advances into operative position.

29. In a typewriting machine, the combination including a frictional feeding mechanism, a rotary platen having a single radially disposed aperture in each end, a pin carried in each aperture, a cam mechanism for retracting and advancing said pin relative to the periphery of said platen out of and into feeding engagement with writing material advanced relative a writing position, underslung frictional feeding mechanism for advancing the writing material during a portion of the revolution of said rotary platen when said pin feeding mechanism is inoperative, and means for causing the frictional feeding mechanism to move into inoperative position when the pins engage the writing material to adjust it.

30. The combination with a platen roller of a writing machine and a pressure roller coacting therewith to feed superposed strips of record material thereabout, and a radially disposed reciprocatory feeding pin carried by the platen, means for automatically relieving the pressure of the feeding roller upon the platen incident to movement of the feeding pins into engagement with the record material, and means for projecting the feeding pin into engagement with the

record material during the period of release of the pressure of said roller.

31. The combination with a platen roller for a writing machine and underslung pressure rollers coacting therewith to advance superposed strips of record material, of a cam mounted upon the periphery of the platen for depressing said pressure rollers, to relieve the feeding engagement thereof, a feeding pin carried by the platen roller, and means operative upon rotation of the platen roller for projecting said feeding pin into engagement with the record material during the disengagement of the pressure rollers.

32. In a typewriting machine for use with apertured record material, the combination including a platen roller having an annular groove, frictional feeding mechanism having an operative and an inoperative position for intermittently advancing record material circumferentially of said platen, and automatic means engaging the apertures of the record material when the frictional feeding mechanism is in inoperative position for positively feeding and aligning the record material, said positive feeding means cooperating with the groove in the platen.

33. In a writing machine for use with apertured record material, the combination including a feed roller having an annular groove, frictional feeding mechanism including said roller having an operative and an inoperative position for intermittently supplying record material to the writing machine, and automatic means frictionally contacting the record material and aligned with the apertures and arranged to release the frictional feeding device and aligning the record material when entering the apertures.

34. The combination with a typewriting machine having a reciprocatory platen carriage including frictional feeding means wherein underslung pressure rollers coact with a platen roller for frictionally feeding record material past a writing position, of a pin wheel device for intermittently feeding and aligning the record material including pin wheels and mounting means therefor attachably supported upon said carriage and cam means associated with the pin wheel device for cyclicly depressing the frictional pressure rollers to release the same from the platen during the alignment of the record material by the pin wheel device.

35. The combination with a typewriting machine having a reciprocatory platen carriage including frictional feeding means wherein underslung pressure rollers coact with a platen roller for frictionally feeding record material past a writing position, of a rotary platen having a single radially disposed aperture at each end, an aligning pin carried in said apertures, a cam mechanism for controlling the movement of said pin with respect to the periphery of the platen to cyclicly project the pin into engagement with the record material and means associated with said platen for depressing the rollers to release the same from the platen during the alignment of the record material.

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Deceased.*