Dec. 21, 1937. J. Q. SHERMAN ET AL 2,102,651

PINWHEEL FEED

Filed March 21, 1935 2 Sheets-Sheet 1

Fig. 1

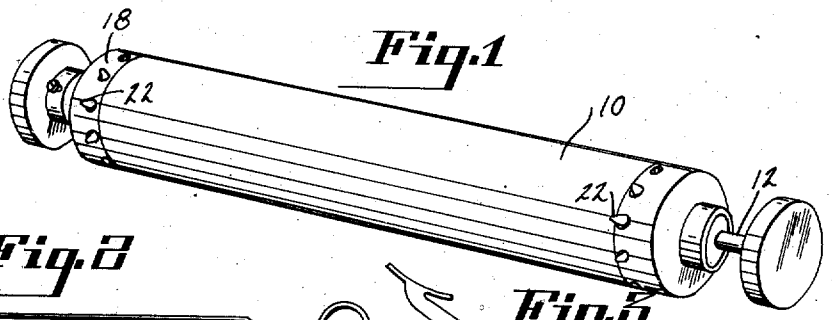



Fig. 3

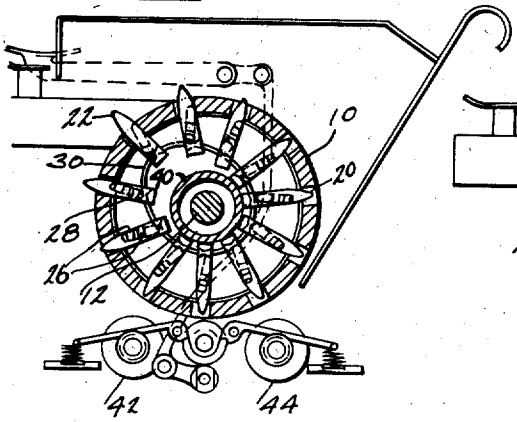



Fig. 5

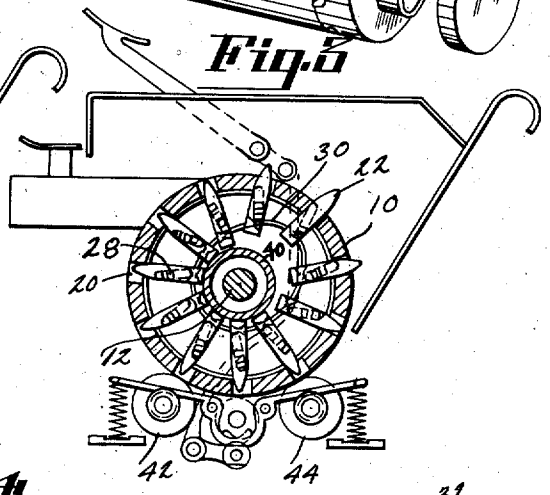



Fig. 4

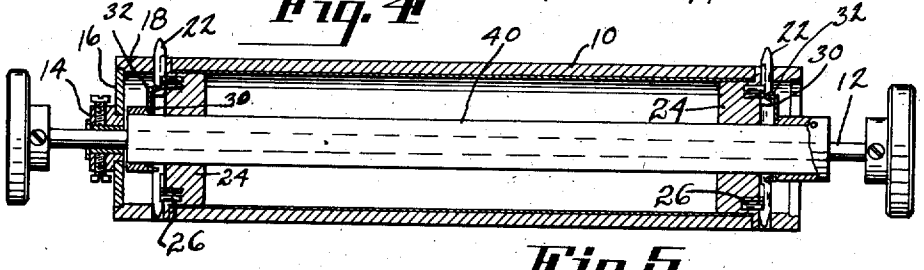



Fig. 6

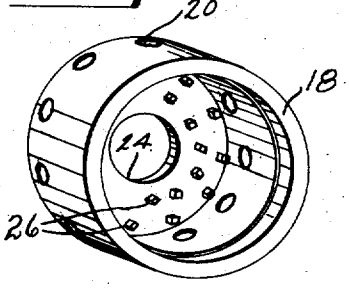
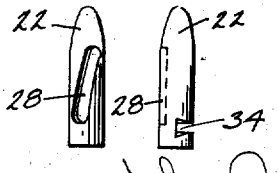



Fig. 5




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PINWHEEL FEED

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Fig. 7

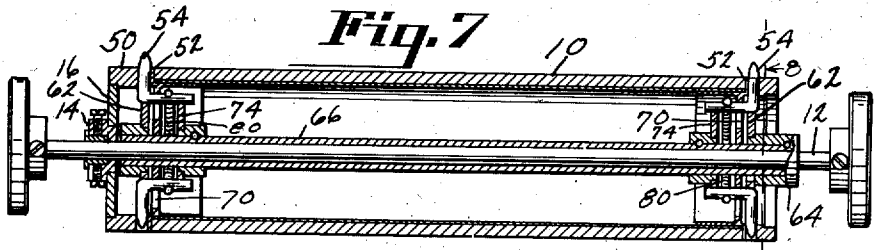



Fig. 8

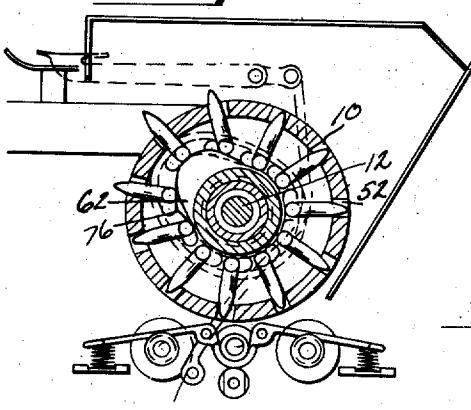



Fig. 9

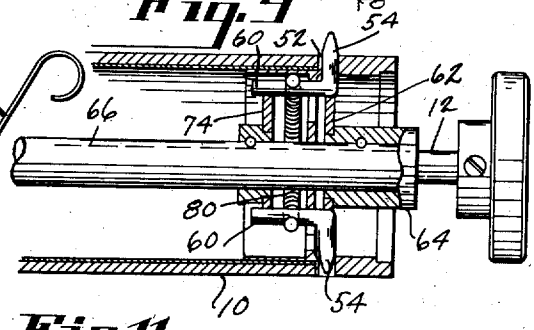



Fig. 11

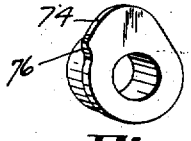



Fig. 10

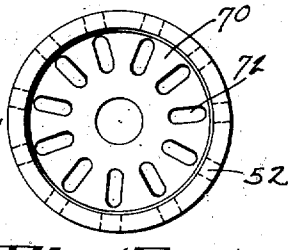



Fig. 18

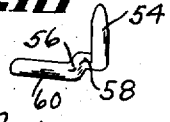



Fig. 16

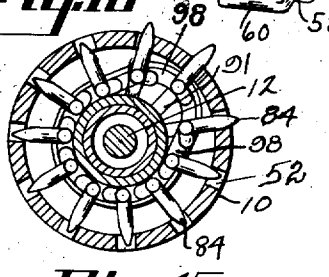



Fig. 12

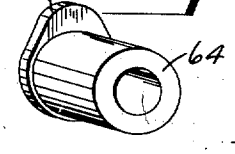



Fig. 17

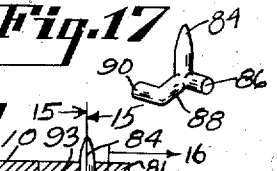



Fig. 15

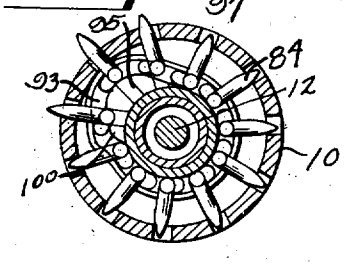
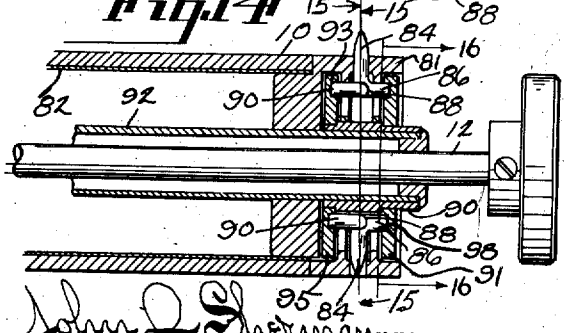



Fig. 14




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Patented Dec. 21, 1937 2,102,651

# UNITED STATES PATENT OFFICE

2,102,651

## PINWHEEL FEED

John Q. Sherman and Henry G. Dybvig, Dayton, Ohio; said Dybvig assignor to said Sherman

Application March 21, 1935, Serial No. 12,206

52 Claims. (Cl. 197—133)

This invention relates to a feeding device for superposed strips of continuous length record material and more particularly to a pin feeding device for feeding the several strips of record material in registry.

The object of this invention is to provide a feeding device that will accurately feed record material arranged in superposed relation in accurate alignment without continuous attention of the operator.

Another object of this invention is to give the feeding pins while entering into engagement with the apertures of the record material a predetermined directional impulse for the purpose of accurately aligning the several strips to thereby feed the strips in registry.

Another object of this invention is to provide a mechanism for advancing the feeding pins into the path of the record material substantially coincident with the radius of curvature thereof.

Another object of this invention is to retract the feeding pins from engagement with the record material without tearing the same.

Another object of this invention is to provide a pin wheel feeding device for punched record material wherein the pins advance into and retract from the record material without tearing the same.

Another object of this invention is to provide a pin feeding device for a writing machine that is dependable, accurate, efficient and at the same time cheap in construction.

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, Fig. 1 shows a perspective view of a platen or roll, provided with feeding pins embodying my preferred modification.

Fig. 2 shows a cross sectional view of the platen shown in Fig. 1 as mounted in a carriage of a writing machine with the pin wheel feeding device in operative position.

Fig. 3 is another sectional view of the platen shown in Fig. 1 as mounted in a writing machine carriage, the pin wheel feeding device being shown in inoperative position and the friction feeding device in operative position.

Fig. 4 discloses a longitudinal sectional view of the platen shown in Fig. 1.

Fig. 5 discloses two views of the feeding pins.

Fig. 6 discloses an enlarged view of a portion of the platen shown in Fig. 1.

Fig. 7 discloses a longitudinal sectional view of another modification of a platen.

Fig. 8 discloses a sectional view taken substantially on the line 8—8 of Fig. 7.

Fig. 9 shows an enlarged fragmentary longitudinal sectional view of the platen shown in Fig. 7.

Figs. 10, 11 and 12 disclose parts of the assembly actuating the pins shown in Figs. 7, 8 and 9.

Fig. 13 shows a feeding pin used in the modification shown in Figs. 7, 8 and 9.

Fig. 14 discloses a fragmentary longitudinal sectional view of another modification of a platen.

Figs. 15 and 16 show transfer sectional views taken in the direction of the arrows 15—15 and 16—16 respectively shown in Fig. 14.

Fig. 17 shows a feeding pin used in the modification shown in Fig. 14.

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

In Sherman's Patents, Numbers 2,000,649 and 2,000,651, issued May 7, 1935, a pin wheel feeding device has been shown wherein the pins enter the record material along the radius of curvature of the material being fed so as to prevent the tearing and mutilation thereof. In the embodiment shown herein the feeding pins in addition to having longitudinal movement along the radius of curvature of the record material while advancing into and being withdrawn therefrom, also have movement laterally to accurately align the record material. The feeding pin, after having engaged and advanced the record material and immediately prior to being withdrawn, may have a slight lateral movement rearwardly so as to permit the pin to be retracted from its aperture in the record material without touching the edges bounding the aperture.

Referring to Fig. 1 of the drawings the reference character 10 indicates a platen provided with a shaft 12 suitably journaled in a writing machine carriage. As best seen in Fig. 4, a collar 14, suitably attached to the shaft 12, carries the end frame or disc 16 supporting a cylindrical member 18 which is provided with a plurality of apertures 20 for receiving feeding pins 22. Member 18 is provided with a wall 24, carrying a plurality of studs 26, two for each pin 22. A groove 28 extending spirally or in askew relation in one side of the pin 22 receives the studs 26. The two studs 26 for each pin 22 causes the pin to travel laterally a predetermined amount.

For the purpose of advancing and retracting

the pins 22, an oval shaped cam 30 is provided with a flange 32 seated in a notch 34 found in each pin 22, the notch being oppositely disposed on each pin 22 with respect to the groove 28. Thus, it will be seen that as the platen is rotated the pins 22 will travel in an oval path so that the pins project beyond the platen during a portion of the revolution and are wholly contained within the platen during the remainder of the revolution. As the pins are advanced outwardly by the cam flange 32, the pins are given a slight advance impulse in a forward direction due to the studs 26 being disposed in the spirally arranged slot 28. This slight advance impulse in a forward direction causes the pins to engage the forward edge of the apertures in the superposed sheets of record material as the pins move toward their full projected position, thus accurately aligning the sheets of record material. As the pins are withdrawn out of engagement with the record material, or retracted, the studs 26 cause the pins to move laterally rearwardly as they move downwardly longitudinally, thereby moving away from the forward edges of the apertures in the superposed sheets of record material as the pins are retracted.

Referring to Fig. 4, the cam 30 is mounted upon the tubular sleeve 40 which may be oscillated from the position shown in Fig. 2 to the position shown in Fig. 3, so as to throw the pins from operative to inoperative position, in which event the record material may be fed past writing position by the friction feeding rolls 42 and 44 found on the conventional typewriters. The sleeve is freely rotatable upon the shaft 12 and independently of the platen 10 and may be locked in position by a suitable mechanism, one such fully shown and described in Sherman's Patent No. 2,000,649.

In the modification disclosed in Figs. 7 to 13 inclusive, the shaft 12 has fixedly attached thereto the collar 14, rigidly supporting the disc 16, driving the cylindrical member 50, which forms a platen and is provided with a plurality of apertures 52. The apertures are preferably oblong so as to permit a slight circumferential movement of the feeding pins 54 mounted in the apertures, which will be more fully described later.

By referring to Fig. 13, the feeding pin 54 carries a crank shaped extension 56, having a portion 58 parallel to shank 60, extending longitudinally to the platen and parallel to the shaft 12. The portion 58 rides upon a cam 62 having a tubular sleeve 64 fixedly attached to the tubular sleeve 66 mounted upon the shaft 12. Cam 62 governs the relative position of the pin 54 with respect to the periphery of the platen. Adjacent to the cam 62 is a disc 70, provided with oblong slots 72 which receive the portion 58 of the extension 56.

Another cam 74 supports the shank 60. The shape of the cam surface of cam 74 is not the same as that of cam 62. The cam 74 is provided with an off-set 76 which causes a slight rotation of the pin about the portion 58 of the pin when the shank 60 advances over the off-set 76, so as to give the pin an advance impulse forwardly, advancing the pin into engagement with the leading edge of the aperture of the record material. It is necessary for the pin 54 to rotate about the portion 58, in that this portion is seated in the slot 72, which permits radial movement of the pin with respect to the platen; but does not permit circumferential movement of portion 58 with respect to the platen.

The pins are held in contact with cams 62 and 74 by a spring 80, best shown in Figs. 7 and 9, which is mounted outwardly of the pin shanks 60 adjacent to the slot of disc 70. Thus, it may be seen that the pins may be advanced outwardly substantially radially, but out of contact with the leading edge of the aperture. Then, after the pin has reached its projected position, the shank 60, riding over the off-set 76, slightly rotates the pin with respect to the platen, so as to give the pin an impulse forwardly, advancing the pin into the leading edge of the apertures of the superposed sheets of material to accurately align the several sheets. At the end of the feeding operation, the pin is rotated out of engagement with the leading edge of the record material, at which time it is ready to be retracted without contacting the record material, the pin being retracted along a path substantially coincident with the radius of curvature of the record material.

The tubular sleeve 66 together with the cams 62 and 74 and the disc 70 may be rotated from operative to inoperative position and vice versa much the same as disclosed in the modification shown in Figs. 1 to 6 inclusive and the same as shown in Sherman's Patent No. 2,000,649.

Referring to the modification disclosed in Figs. 14 to 17 inclusive, the end 81 of the platen 82 may be attached to the shaft 12 in a manner similar to that disclosed in the previous modifications. Feeding pin 84 is provided with a pair of extensions 86 and 88 at right angles to each other, the latter being provided with a shank 90. The extension 86 follows a cam groove 98 in member 91 fixedly attached to a sleeve 92 which is rotatably mounted upon the shaft 12 to shift the pins from operative to inoperative position and vice versa, much the same as shown in the previous modification. The shank 90 follows a cam groove 93 in cam 95 also fixedly carried upon the tubular sleeve 92.

The slot 97 in member 81 guides the extension 86 radially with respect to the platen. The shape of the cam grooves 93 and 98 are such as to cause the pin 84 to advance into and be retracted from the record material substantially along the radius of curvature. An off-set 100 found in the cam groove 93 causes the pin to have an advancing impulse, so as to advance the pin into the leading edge of the aperture of the several strips of the record material to correctly align these and feed the record material in registry.

Just prior to the retraction of the pin from the record material, the cam grooves cause the pin to be retarded with respect to the advancement of the record material, to permit the pin to be retracted without engaging the leading edge of the aperture, thereby preventing mutilation of the record material which is provided with apertures somewhat larger than the feeding pins to permit the impulse movement of the feeding pins.

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. In its broadest sense, the invention consists in the provision of means for producing a lateral movement of the pins as such pins are being projected or retracted.

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.

1. In a device for feeding a plurality of superposed strips of continuous length record material having feed holes, including a pin feeding device having a plurality of feeding pins arranged to advance into and be retracted from the record material in a path substantially coincident with the radius of curvature and for movement to advance the record material and means for imparting a further advance impulse to the feeding pins in the direction of the movement of the record material so as to cause the feeding pins to advance into engagement with the leading edge of the aperture to accurately feed the strips in registry.

2. The combination of a platen roll for a writing machine wherein record material provided with apertures is fed circumferentially about the roll, of a series of pins mounted for radial movement in said roll and for movement with said roll means for positively automatically projecting the pins beyond the periphery of the roll and retracting the pins successively as the roll rotates whereby the pins enter the apertures in the direction substantially coincident with the radius of curvature of the record material and means for imparting an advance impulse movement of the feeding pin relatively to its movement with the platen roll to cause the feeding pin to engage the edge of the aperture to accurately align the same.

3. A platen roll for a writing machine, means for feeding record material circumferentially about the roll including a plurality of retractable feeding pins for engagement with feed holes in the record material, means for reciprocating the pins in a path coincident with the radius of curvature of the record material, the pins being arranged for movement to advance the record material, and means for giving the feeding pins an impulse relative to their movement with the platen roll while the pins are in engagement with the record material for accurately feeding the same.

4. A platen roll for typewriting machines and rectilinearly feeding and aligning means carried by the roll having positive engagement with the record material to feed it circumferentially around said platen roll and to align the record material, actuating means therefor by which the feeding means is rendered operable to engage the record material at a point of the platen adjacent to the writing line only for feeding purposes, said feeding means retracting along a path coincident with the radius of curvature of the record material and means for imparting an impulse movement to the feeding pin relative to its movement with the platen roll during the engagement of the feeding pin with the record material to accurately align the same.

5. A platen roll for typewriting machines, radially extensible and retractable tapering feeding pins carried by said roll, said pins projecting beyond the periphery thereof adjacent to the writing line only for engagement with the record material to feed the same circumferentially about the platen roll and means imparting an impulse movement to the feeding pin relative to its movement with the platen roll while the pin is in engagement with the record material to accurately align the same.

6. The combination with a platen roll for a typewriting machine of reciprocatory pins carried by the platen roll for feeding superposed webs of manifolding material circumferentially of the roll, means for imparting an impulse movement to the pin relative to its movement with the platen roll to cause the pin to align the material in registry at the writing line, said pins being adapted to engage the webs of manifolding material for a portion only of that portion thereof which conforms to the contour of the platen roll.

7. A feeding device for an apertured web including a carrier, a plurality of reciprocatory feeding pins therein engageable in the apertures to feed the web, control means for giving the pins an impulse movement relative to their movement with the web during the feeding operation and means for retracting the pins from the web still in contact with the carrier after the material has passed the writing point.

8. A feeding device for an apertured web, including a rotary carrier about which the web is fed in circumferential relation, a plurality of retractable feeding pins upon the carrier progressively engageable in the apertures of the web for feeding the same, means for giving the pins an impulse movement relative to their movement with the carrier while the pins engage the record material to accurately align the same and yielding means for progressively retracting the pins to strip the web from the feeding pins by rotation of the carrier before the web separates therefrom, said pins being retractable along a path substantially coincident with the radius of curvature of the record material.

9. In a writing machine a platen rotating about an axis, a pin wheel feeding mechanism associated with said platen, said pin wheel feeding mechanism including a plurality of movable pins for advancing the record material through a writing machine, a cam having a closed loop-like cam surface surrounding said axis for controlling the movement of the pins, said cam giving an impulse to the pins relative to their movement with the record material while the pins are in engagement with the record material to accurately align the same.

10. In a writing machine, a platen roll, means for feeding the paper circumferentially about said platen so that the record material is curved about the platen, said means including tapering pins advancing into and retracting from the apertures provided therefor in the record material to feed the same, the axis of the pins substantially coinciding with the radius of curvature of the writing material when in contact therewith and means for giving the pins an impulse movement relative to their movement with the record material to accurately align the record material while engaged by the pins.

11. In a writing machine a feed roll about which the record material is advanced circumferentially characterized by tapering pins engaging the record material in contact with the roll, said pins being advanced and retracted in a path coincident with the radius of curvature of the material engaged so as to prevent mutilation, and means for giving the pins an impulse movement relative to their movement with the record ma-

terial to move the pins into engagement with and to accurately align the record material.

12. A platen roll for a writing machine, a series of tapering feeding and aligning pins carried thereby and moving radially relative to the roll, said pins loosely engaging the apertures provided therefor in the record material, means for giving the pins an impulse movement relative to their movement with the record material to accurately align and feed the same circumferentially about the roll and means for retracting the feeding pins to withdraw the same from the record material.

13. A platen roll for a writing machine, a plurality of reciprocatory tapering aligning and feeding pins mounted therein for loosely engaging the apertures provided therefor in the record material advancing circumferentially about the roll, means for advancing and retracting the pins responsive to the rotation of the platen roll and means responding to the movement of the platen roll for giving the pins an impulse movement relative to their movement with the platen to accurately align the record material.

14. A platen roll for a writing machine, a plurality of reciprocatory aligning and feeding pins mounted therein for loosely engaging the apertures provided therefor in the record material, actuating means for positively advancing the pins in operative engagement with the record material disposed circumferentially about the platen roll, means for retracting the pins out of engagement with the record material to strip the material therefrom responsive to the rotation of the platen roll and means for giving the pins an impulse movement relative to their movement with the platen when the pins are in operative position for accurately aligning and feeding the record material.

15. A feeding device for an apertured web including a means for guiding the web through a curved path while advancing through the device, a carrier, a plurality of reciprocatory tapering aligning and feeding pins therein loosely engageable in the apertures in the record material to align and feed the web, and control means for giving the pins an impulse movement relative to their movement with the web and for retracting the pins to strip a portion of same still in contact with the carrier from the pins after it has passed the writing point, said pins entering and retracting in a path substantially coincident with the radius of curvature of the web.

16. In a writing machine, a pin wheel feeding mechanism including a plurality of groups of movable feeding pins for continuously and progressively advancing the writing material through the writing machine and a pair of cams for each group, each having a closed loop-like cam surface for simultaneously and positively controlling only the movement of their group of pins, one cam controlling the movement of the pins transversely with respect to the record material, the other influencing the movement of the pins with respect to the direction of travel of the record material.

17. A platen roll for a writing machine, and a plurality of reciprocatory feeding and aligning pins mounted therein and actuating means for positively advancing and retracting the pins responsive to the rotation of the platen roll, said actuating means causing the pins to have an impulse movement relative to their movement with the record material when the pins are in contact therewith to accurately feed and align the same.

18. In a pin wheel feeding device for use with apertured record material, the combination of feeding pins each having a pair of angularly disposed notches with means cooperating with one of the notches for moving the pins along the longitudinal axis thereof through the apertures of the record material and means cooperating with the other notch for shifting the longitudinal axis of the pin to move the pin into engagement with the margins of the apertures.

19. In a pin wheel feeding device for use with apertured record material, the combination with feeding pins for advancing and aligning the record material with means for causing the feeding pins to advance longitudinally into the record material and means for giving the feeding pins an impulse movement relative to their movement with the record material to cause the pins to move into engagement with the margins of the apertures to accurately align the record material.

20. A pin wheel feeding device for feeding and aligning record material including a plurality of feeding pins having an operative and an inoperative position, the angular distance between the feeding pins in inoperative position being equal, means for advancing the feeding pins transversely with respect to the movement of the record material to project the pins through the aperture and means for changing the angular distance between the pins engaging the record material to accurately align the same.

21. A feeding pin for a pin feeding device for feeding and aligning record material, said feeding pin having a transverse slot and an askew slot angularly disposed with respect to said transverse slot.

22. In a pin wheel feeding device for feeding apertured record material, a slotted feeding pin, a carrier support having a hole larger than the feeding pin in which the feeding pin is mounted, a cam for thrusting the feeding pin beyond the surface of the carrier, and means for giving the feeding pin an impulse movement relative to their movement with the carrier to accurately align the record material.

23. In apparatus for feeding and aligning record material, a carrier for the material, and a pin feeding device including a pin having both longitudinal and lateral movement relative to the carrier.

24. In apparatus for feeding and aligning record material, a carrier for the material, and a pin feeding device including a pin having simultaneous longitudinal and lateral movement relative to the carrier.

25. In apparatus for feeding and aligning record material, a carrier for the material, and a pin feeding device having longitudinal movement and dual movement in lateral directions, one of the lateral movements being relative to the carrier.

26. Apparatus for feeding and aligning superposed sheets of record or like material comprising a moving material carrier, and a pin feeding device associated with the carrier including pins having lateral movement at different speeds relative to movement of the record material carrier.

27. Apparatus for feeding and aligning superposed sheets of record or like material comprising a material carrier, and a pin feeding device including pins having dual lateral movements, one of the lateral movements being relative to the carrier.

28. In a pin type feeding device for feeding superposed sheets of record or like material, a

travelling carrier, feeding pins carried thereby, means for moving said pins longitudinallly into and out of feeding engagement with the material, and means for moving the feeding pins laterally relatively to the carrier for sheet aligning purposes.

29. In a pin type feeding device for feeding superposed sheets of record or like material, a travelling carrier, feeding pins carried thereby, means for moving said pins longitudinally into and out of feeding engagement with the material, and means for moving the feeding pins laterally relatively to the carrier for sheet aligning purposes.

30. In a pin type feeding device for feeding superposed sheets of record or like material, a travelling carrier, feeding pins carried thereby, means for moving said pins longitudinally into and out of feeding engagement with the material, and means for simultaneously moving the feeding pins laterally relatively to the carrier for sheet aligning purposes.

31. In a pin type feeding device for feeding superposed sheets of record or like material, a travelling carrier, feeding pins carried thereby, means for moving said pins longitudinallly into and out of feeding engagement with the material to be fed, and means for imparting to the pins dual motion in direction transversely of the pins, one of the movements being relatively to the carrier.

32. In a pin type feeding device, a travelling carrier, a series of feeding pins carried thereby for progressive engagement with the material to be advanced, and means for giving to the pins lateral movement relative to the carrier while engaged with the material to impart a movement additional to that afforded by the travel movement of the carrier.

33. In a pin type feeding device, a travelling carrier, a series of feeding pins carried thereby for progressive engagement with the material to be advanced, means for moving the pins longitudinally into and out of feeding engagement with the material, and means for giving to the pins lateral movement relative to the carrier while engaged with the material to impart a movement additional to that afforded by the travel movement of the carrier.

34. In a pin type feeding device, a travelling carrier, a series of feeding pins carried thereby for progressive engagement with the material to be advanced, means for moving the pins longitudinally into and out of feeding engagement with the material, and means for simultaneously giving to the pins lateral movement relative to the carrier while engaged with the material to impart a movement additional to that afforded by the travel movement of the carrier.

35. In a pin type feeding device for feeding superposed sheets of record material having pin receiving openings therein, a travelling carrier, feeding pins carried thereby, means for moving said pins longitudinally into the pin receiving openings in said material, and means for moving said pins laterally relatively to the carrier and into engagement with the forward edges of said openings simultaneously with movement of such pins into such openings.

36. In a pin type feeding device for feeding superposed sheets of record or like material having receiving openings therein, a travelling carrier, feeding pins carried thereby, means for causing feeding engagement of said pins with said openings, means for moving said pins longitudinally out of feeding engagement with said openings, and means for moving said pins laterally relatively to the carrier and out of engagement with the forward edges of said openings, simultaneously with the longitudinal movement of said pins out of said openings.

37. In a pin type feeding device for feeding superposed sheets of record or like material having receiving openings therein, a travelling carrier, feeding pins carried thereby, means for causing feeding engagement of said pins with said openings, means for moving said pins longitudinally out of feeding engagement with said openings, and means for moving said pins laterally out of engagement with the forward edges of said openings and reversely to the movement of said carrier, simultaneously with the longitudinal movement of said pins out of said openings.

38. In a pin type feeding device for feeding superposed sheets of record or like material having pin receiving openings therein, a travelling carrier, feeding pins carried thereby, means for moving said pins longitudinally into the pin receiving openings in said material, means for moving said pins laterally relatively to the carrier and into engagement with the forward edges of said openings simultaneously with movement of the pins into the openings, means for moving said pins longitudinally out of feeding engagement with such openings, and means for moving said pins laterally out of engagement with the forward edges of said openings, simultaneously with the longitudinal movement of said pins out of said openings.

39. In a pin type feeding device for feeding superposed sheets of record or like material having pin receiving openings therein, a travelling carrier, feeding pins carried thereby, means for moving said pins longitudinally into the pin receiving openings in said material, means for moving said pins laterally into engagement with the forward edges of said openings simultaneously with movement of the pins into the openings, means for moving said pins longitudinally out of feeding engagement with such openings, and means for moving said pins laterally out of engagement with the forward edges of said openings, and reversely to movement of said carrier, simultaneously with the longitudinal movement of said pins out of said openings.

40. In a pin feeding device for feeding record or like material, a feeding roll, feeding pins carried thereby, means for moving the pins into and out of feeding engagement with the material in a direction substantially coincident with the curvature of the record material about the roll, and means for imparting movement to said pins relatively to the feed roll in a transverse direction.

41. In a pin feeding device for feeding record or like material, a feeding roll, feeding pins carried thereby, a means for moving the pins into and out of feeding engagement with the material in a direction substantially coincident with the curvature of the record material about the roll, and means for imparting dual movement to said pins in a direction transversely of the pins, one of the movements being relatively to the feeding roll.

42. In a pin feeding device for feeding record or like material, a feeding roll, feeding pins carried thereby, means for moving the pins into and out of feeding engagement with the material in a direction substantially coincident with the curvature of the record material about the roll, and

means for simultaneously imparting movement to said pins relative to the feeding roll in a transverse direction.

43. In a pin feeding device for feeding record or like material, a feeding roll, feeding pins carried thereby, means for moving the pins into and out of feeding engagement with the material in a direction substantially coincident with the curvature of the record material about the roll, and means for simultaneously imparting movement to said pins relatively to the roll and in a direction transversely to the roll and the material.

44. A pin type feeding device for series punched material to be fed including a plurality of relatively spaced travelling feeding pins progressively engageable in spaced feed holes in the material, supporting means for the pins, means for progressively advancing the pins while in engagement with the material, and means for imparting to each of the pins successively an advance movement relative to the supporting means and other pins of the plurality.

45. A pin type feeding device for series punched material to be fed including a plurality of relatively spaced travelling feeding pins progressively engageable in spaced feed holes in the material, supporting means for the pins, and means for advancing the pins differentially in the direction of feeding movement one relatively to another simultaneously with their travel motion.

46. A pin type feeding device for series punched material to be fed including a plurality of relatively spaced travelling feeding pins progressively engageable in spaced feed holes in the material, supporting means for the pins, and means for effecting travel movement of certain of the pins at a substantially uniform rate of travel, and means for intermittently effecting a differential advance of individual pins of the plurality during such uniform advancement of other pins.

47. A pin type feeding device for series punched material to be fed including a plurality of relatively spaced travelling feeding pins progressively engageable in spaced feed holes in the material, supporting means for the pins, and means for advancing the pins through a prescribed path of travel at successively different rates of speed.

48. A pin type feeding device for series punched material to be fed including a plurality of relatively spaced travelling feeding pins progressively engageable in spaced feed holes in the material, supporting means for the pins, means for advancing the pins through a prescribed path of travel, and means for varying the rate of advancement of individual pins therein.

49. A pin type feeding device for series punched material to be fed including a plurality of relatively spaced travelling feeding pins progressively engageable in spaced feed holes in the material, supporting means for the pins, means for advancing the pins through a prescribed path of travel and means for temporarily accelerating the speed of advancement thereof at a predetermined point in their path of travel.

50. In a strip feeding means for advancing superposed strips having therein longitudinally spaced feed holes, a pin type feeding device including a traveling carrier and a series of pins movably mounted thereon for progressive engagement in the spaced holes of the strip and means for imparting to the pins successive impulses relative to the carrier during their advancement therewith by which the strips are intermittently jogged to relatively adjust the strips into registering relation during their advancement.

51. The herein described method of progressively feeding superposed strips of record material each having therein a series of longitudinally spaced holes past a given position by means of a pin type feeding device engageable in the holes of the strips consisting in imparting to the strip engaging pins of the feeding device successive advance feeding impulses at alternating speeds whereby the strips are alternately jogged by a quick movement to relatively adjust the strips into registering relation and further advanced an additional distance in unison at a lesser speed.

52. The herein described method of progressively feeding past a given position superposed strips of record material each having therein a series of longitudinally spaced holes by means of a pin type feeding device engageable in the holes of the strips consisting in imparting to the strip engaging pins of the feeding device a pulsating advance movement wherein the strips are intermittently jogged to relatively adjust the strips into registering relation during their advancement.

JOHN Q. SHERMAN.
HENRY G. DYBVIG.

CERTIFICATE OF CORRECTION.

Patent No. 2,102,651. December 21, 1937.

JOHN Q. SHERMAN, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, second column, line 31, claim 38, after "laterally" insert the words relatively to the carrier and; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of March, A. D. 1938.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)

means for simultaneously imparting movement to said pins relative to the feeding roll in a transverse direction.

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52. The herein described method of progressively feeding past a given position superposed strips of record material each having therein a series of longitudinally spaced holes by means of a pin type feeding device engageable in the holes of the strips consisting in imparting to the strip engaging pins of the feeding device a pulsating advance movement wherein the strips are intermittently jogged to relatively adjust the strips into registering relation during their advancement.

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