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2,277,693

PIN TYPE FEEDING DEVICE

Original Filed April 12, 1935

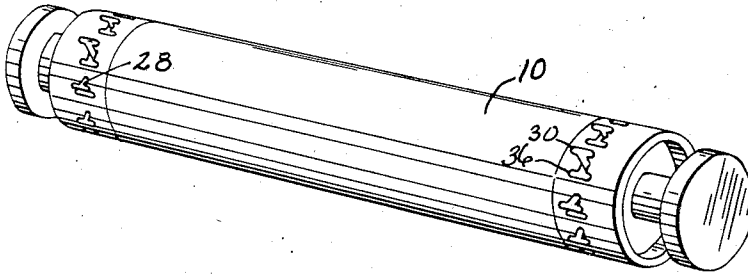


Fig. 1

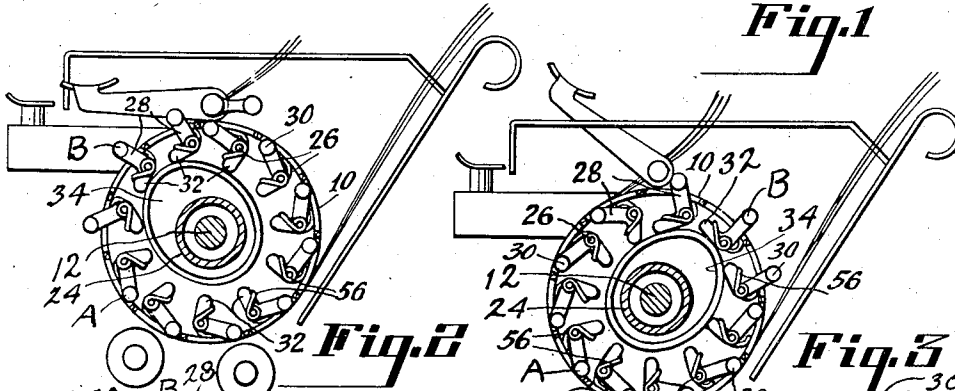


Fig. 2

Fig. 3

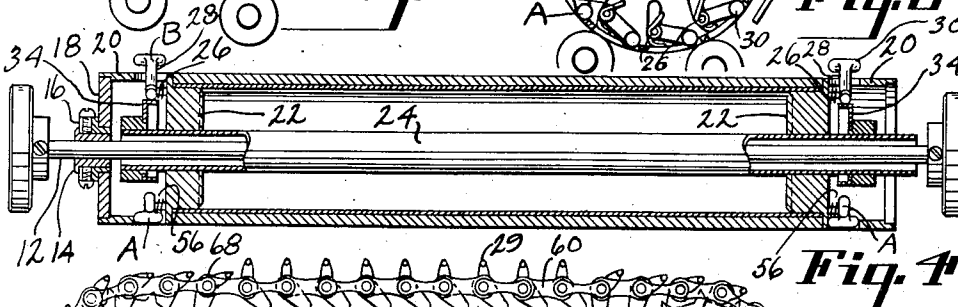


Fig. 4

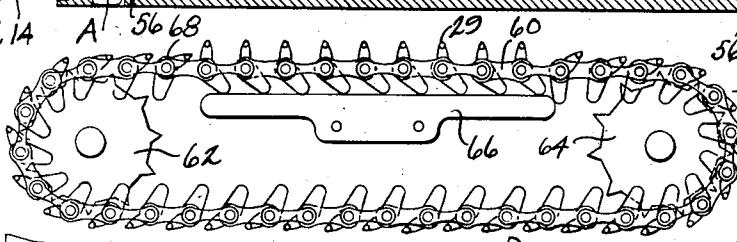


Fig. 5

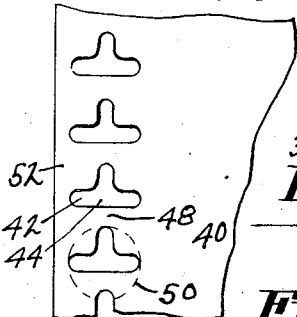


Fig. 6

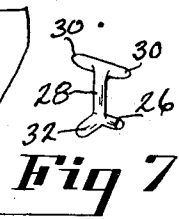


Fig. 7

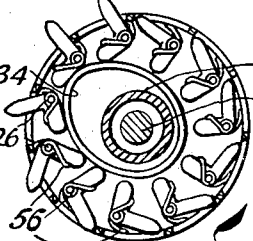


Fig. 8

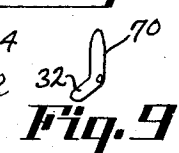


Fig. 9

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2,277,693

PIN TYPE FEEDING DEVICE

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Original application April 12, 1935, Serial No. 16,008. Divided and this application August 16, 1937, Serial No. 159,311

18 Claims. (Cl. 271-2.1)

This invention pertains to pin type feeding means for writing and imprinting machines, progressively engageable in longitudinally spaced holes in continuous strips of record material for advancing it past a writing position, and more particularly to a traveling series of feeding pins which are automatically extended and retracted into and out of the longitudinally spaced holes in the strip while the latter is being advanced through a relatively straight path of travel, as originally disclosed and claimed in copending application Serial No. 16,008, filed April 12, 1935, which resulted in Patent No. 2,112,833 and of which the present application is a division, and to which cross reference is made.

The object of the invention is to improve the construction as well as the means and mode of operation of pin type feeding devices for writing and imprinting machines, whereby they will not only be more efficient in use but will be automatic in operation, uniform in action, having relatively few operating parts and unlikely to get out of repair.

A further object of the invention is to provide a pin type device having relatively loose engagement in longitudinally spaced holes in the record material, wherein the pins are advanced through a relatively straight path of travel while in engagement with the record material.

A further object of the invention is to provide a traveling carrier having extendible and retractable feeding pins to be progressively automatically projected into engagement with the material and withdrawn therefrom at predetermined points in their path of travel.

A further object of the invention is to provide a pin type feeding means having the advantageous structural features and meritorious characteristics herein disclosed.

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.

In the drawing Fig. 1 is a perspective view of a writing or imprinting machine platen embodying pin type feeding means.

Fig. 2 is a transverse sectional view thereof in the plane of the feeding pins.

Fig. 3 is a similar view, wherein the feeding pins are shown in retracted inoperative relation.

Fig. 4 is a longitudinal sectional view of the construction shown in Figs. 1, 2 and 3.

Fig. 5 illustrates a circuitous carrier for the feeding pins having a portion of its path of travel disposed in a straight line substantially parallel to the path of travel of the record ma-

terial into and out of the longitudinally spaced holes of which the pins are extendible and retractable, to which form of embodiment of the invention this divisional application is particularly directed.

Fig. 6 is a fragmentary view of a portion of record material having therein a special T-shaped form of feed hole.

Fig. 7 is a detail perspective view of one of the feeding pin elements illustrated in Figs. 1, 2 and 3 for use with the T-shaped feed holes shown in Fig. 6.

Fig. 8 is a sectional view similar to Figs. 2 and 3 illustrating the use of feeding pins devoid of the paper retaining heads or cross arms shown in preceding figures.

Fig. 9 is a detail view of the straight type of feeding pins as shown in Fig. 8, to be employed in lieu of the headed type pins shown in other figures, and which is equally applicable to the endless chain type feeding device shown in Fig. 5.

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

The purpose of the herein disclosed pin type feeding device is duo-functional. It not only serves to uniformly advance superposed strips of record material toward the writing or imprinting position of a typewriter, tabulating, computing or billing machine, or other imprinting apparatus, but by progressive engagement of the feeding pins simultaneously in registering longitudinally spaced holes or apertures in the superposed strips of record material it assures and maintains registration of prescribed writing or impression receiving areas thereof as they pass the writing or imprinting position.

There are herein illustrated two forms of apparatus, in one of which the extendible and retractable feeding pins are mounted directly on a platen roll of a writing or imprinting apparatus and actuated into and out of feeding engagement with the record material by the rotation of such platen roll, which construction forms the subject matter of the parent application. In the other form of apparatus to which the present divisional application pertains, the feeding pins are adjustably mounted on an endless traveling chain or belt, and are carried over an elongated cam or track by which they are automatically projected through the holes in the record material, and at the limit of which they are automatically retracted therefrom.

The construction disclosed and claimed in the parent application briefly described, comprises a platen roll 10 for use in a writing or imprinting machine having at each end thereof pin wheel units 20 which form continuations of the platen roll. Extending axially through the platen roll 10 and pin wheel units 20 is a shaft 12 on which the platen roll is mounted for unison rotation

by a bushing 14 secured in the hub 16 of the terminal head 18 of one of the pin wheel units 20. Surrounding the shaft 12 is a tubular sleeve 24 journaled in heads 22 within the platen roll, which form side walls of the pin wheel units 20.

Pivoted to each head 22 in circumferentially spaced relation for oscillatory motion upon trunnions 26 are annular series of oscillatory elbow levers, comprising outer arms 28 which form feeding pins for engagement in longitudinally spaced holes in the record material to be fed, and inner arms 32 which control the extension and retraction of the pins 28. The strip engaging feeding pins 28 may be straight, and are preferably tapered to a blunt or rounded point as shown in Figs. 8 and 9, or may be provided with enlarged heads or cross arms 30, as illustrated in detail in Fig. 7 and as shown in Figs. 1 to 4.

For the present purpose either form may be employed, but the form shown in Figs. 8 and 9 is preferred, since this form does not necessitate specially shaped feed holes as shown in Fig. 6 for reception of the headed style of pins, but is usable with stationery having relatively spaced round holes such as is now extensively used for manifolding purposes.

The inner unaligned arms 32 of the feeding pins 28 engage with a cam 34 stationarily supported within the platen on the tubular sleeve 24 as the platen rotates thereabout. During the greater portion of their circular path of travel about the cams, the feeding pins are held retracted, as shown at A in the several views, by individual retractile springs 56. When, however, the inner arms 32 of the feeding pins engage the high point of the cam 34, they are progressively oscillated about their pivotal connections 26 against the tension of the springs 56 into extended position as shown at B. The periphery of the pin wheel unit is provided with slots or openings corresponding approximately to the shape of the feeding pins 28 through which the pins 28 are projected into engagement in the longitudinally spaced holes in the strip of material being fed, and into which they are retracted by their springs 56 as the arms 32 thereof pass beyond the cam 34. For use with T-shaped feeding pins, such as shown in Fig. 7, the openings in the peripheries of the pin wheel units comprise T-shaped slots, as shown in Fig. 1, thus permitting the cross heads to be swung from the in position A to the out position B, as clearly shown in Figs. 2 and 4. The straight pins 28 illustrated in Fig. 9 necessitate only short straight slots extending peripherally of the pin wheel units, through which the pins may be extended and retracted.

By rotating the sleeve 24 and with it the cams 34 secured thereto, the area within which the feeding pins 28 are projected may be changed to different portions of the periphery of the pin wheels. In Figs. 1 and 2 the pins are shown operatively projected contiguous to the writing line. However, if the writing machine is to be employed with unpunched stationery, with which the projection of the pins would interfere, in which event conventional frictional feeding means is employed, the rock sleeve 24 is so adjusted that the pins are projected at an inoperative position slightly rearwardly of the top of the platen roll, as shown in Fig. 3.

Such projection of the feeding pins in operative or inoperative position at the will of the operator is shown and described in Letters Pat-

ents of the United States No. 2,000,649 and No. 2,000,651, wherein the progressive projection and retraction of the feeding pins into and out of engagement with punched stationery and alternate frictional and positive advancement of the record material is more fully described and claimed. The construction heretofore described is that especially set forth and claimed in the parent application, of which the present application is a division.

For some conditions of use, it is desirable to feed the stationery in a substantially straight path of travel, either in its approach toward or its departure from the writing or imprinting position. To this end, pins of either the form shown in Fig. 7 or Fig. 9 may be mounted upon endless traveling chains or belts relative to which the feeding pins are movable into engagement in holes in the record material and retracted therefrom incident to their travel movement at predetermined points in their paths of travel.

Referring to this form of pin type feeding means disclosed in Fig. 5, the same type pins shown in Figs. 1, 2, 3, 4 and 7 have been shown mounted on a continuous chain 60 trained over relatively spaced sprockets 62 and 64. The feeding pins 29 are projected to the out position by their travel movement over a cam 66 underlying a portion of the chain 60 during which the pins are projected into engagement with the record material to feed the same in a straight path. The feeding pins 29 are pivotally mounted in the chain for oscillatory motion into and out of record material engaging relation. The engagement of their arms 32 with the cam 66 serves to oscillate the pins 29 to erect position and to so hold them while the pins traverse the length of the cam 66.

When the feeding pins pass beyond the cam 60, springs 68 similar to the springs 56 illustrated in Fig. 4 retract the pins out of engagement with the record material. Feeding pins of either the type shown in Fig. 7 or Fig. 9 may be employed, in the circuitous chain belt type of feeding device shown in Fig. 5. In Fig. 9, a record material feeding arm 70 of straight construction tapering to a blunt or rounded end without the extensions 30 is shown. The arm 32 thereof by its engagement with either the cam 34 or the cam 66, according to the type of device, controls the extension and retraction of the feeding pins into and out of engagement in the longitudinally spaced holes in the record material. Such type of feeding pin may be used with record material having either round or oblong apertures.

The endless belt or chain pin type feeding device may be located parallel to the path of travel of the record material to engage therewith either in advance or beyond the imprinting position. The feeding pins are progressively extended and retracted into and out of longitudinally spaced holes in the record strip while advancing it in a relatively straight path of travel.

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 my invention, I claim:

1. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by a flexible traveling carrier, a plurality of feeding pins mounted thereon for unison travel movement and for movement additional to their travel movement independently of each other relative to the carrier through the holes and thence into overhanging relation with contiguous areas of the opposite face of the strip beyond the limits of the holes when engaged therein, and control means for automatically effecting movement of the pins into such overhanging relation with the strip upon travel movement of the carrier.

2. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by a flexible traveling carrier, a plurality of feeding pins mounted thereon for unison travel movement and for movement additional to their travel movement independently of each other relative to the carrier, said pins including offset terminals extending beyond the limits of the holes into overhanging relation with contiguous portions of the strip when the pins are engaged in the holes, and control means for effecting such independent movement of the pins relative to the carrier by the travel movement of the latter.

3. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by an endless traveling belt, a portion of which extends in parallel relation with the path of travel of the stationery being fed, a plurality of extensible and retractable feeding pins carried by the belt and engageable in the holes in the stationery for advancing the stationery in unison with the travel of the belt, and a cam member in proximate rela-

tion with the path of travel of the belt governing the extension and retraction of the pins.

4. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by an endless traveling belt, a plurality of extensible and retractable spaced pins carried by the belt and progressively engageable in the holes in the stationery for advancing the latter in unison with the travel of the belt, a track extending in proximate relation with at least a portion of the path of travel of the endless belt and extension members associated with the pins and having operative engagement with the track for governing the engagement and disengagement of the pins and strip.

5. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by a pair of spaced sprocket wheels, an endless chain belt traveling about said sprocket wheels, a plurality of relatively spaced feeding pins carried by the chain and movable relative thereto into and out of engagement in the spaced holes of the stationery, a track member so positioned and arranged as to elevate the pins into engagement with the stationery at a given point in the travel of the chain and maintain such position during a predetermined range of travel motion thereof.

6. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by a traveling carrier, a plurality of feeding pins pivotally mounted upon the carrier for oscillatory motion relative thereto into and out of feeding engagement in the holes of the strip in a plane substantially coincident with their path of travel and control means for oscillating the pins by the travel movement of the carrier.

7. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding

legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by a traveling carrier, a plurality of feeding pins adjustably mounted upon the carrier for movement relative thereto into and out of engagement in the holes in the strip and control means operative upon advancement of the carrier for effecting movement of the pins through said holes in the strip and thence beyond the confines of the holes into lapping relation with portions of the strip contiguous to the holes to retain engagement of the strip with the pins.

8. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by a traveling carrier, a plurality of pins, the terminals of which extend laterally out of axial alignment of the pins, adjustably mounted upon the carrier for movement relative thereto into and out of engagement in the holes in the strip and control means for the pins operative upon advancement of the carrier for effecting movement of the pins through the holes in said strip to a position wherein the laterally extending terminals of the pins project beyond the holes into overlapping relation with portions of the strip contiguous to the holes to maintain engagement of the pins and strip.

9. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by an endless carrier belt, relatively spaced guides about which the belt advances, a plurality of feeding pins advanced in unison with the carrier belt and mounted for oscillatory motion into and out of feeding engagement in the holes of the strip, and control means for the pins operative upon advancement of the carrier for effecting oscillation of the pins into and out of engaging relation with the strip at prescribed points in the path of travel of the carrier belt.

10. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by an endless carrier belt, relatively spaced guides about which the belt advances, a plurality of feeding pins adjustably mounted upon the carrier belt

for movement relative thereto into and out of feeding engagement in the holes of the strip and control means operative upon advancement of the belt to effect movement of the pins progressively into engagement in said holes and subsequent disengagement therefrom at the limit of a prescribed range of feeding movement of the strip.

11. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by an endless chain conveyor, a pair of relatively spaced sprocket wheels about which the endless chain conveyor is guided, a plurality of feeding pins advanced in unison with the chain and mounted for adjustment relatively thereto into and out of feeding engagement in the holes in the strip, a succession of independent pin supporting members movable relative to the chain conveyor with which succeeding pins are connected, and a track member traversed by the movable pin supporting members by which the pins are automatically adjusted into engagement in the holes in the strip and maintained therein through a prescribed range of travel at the end of which the pins are automatically disengaged from the holes.

12. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by an endless traveling belt, guide means about which the belt is advanced, a plurality of feeding pins advanced in unison with the belt and independently adjustable relative thereto into and out of feeding engagement in the holes in the strip, a track member extending in proximate relation with a portion of the path of travel of the belt, and a succession of adjustably mounted contact members carried by the belt and to which the pins are connected, having progressive traveling engagement with the track during advance movement of the belt by which the contact members are adjusted relative to the carrier belt to effect engagement of the pins in the holes in the strip and maintain such engagement throughout a prescribed range of travel at the end of which the pins are automatically disengaged from the strip.

13. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting

means of the apparatus, characterized by a traveling carrier, a plurality of feeding pins advanced in unison with the carrier and mounted for adjustment relative thereto into and out of feeding engagement in the holes in the strip, a succession of independent pin supporting members movable relative to the carrier and to each other with which succeeding pins are connected, and a track member traversed by the movable pin supporting members during advancement of the carrier by which the pins are automatically adjusted into engagement in the holes of the strip and maintained therein through a prescribed range of travel at the end of which the pins are automatically disengaged therefrom.

14. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by a traveling carrier, a plurality of feeding pins advanced in unison with the carrier and mounted for adjustment relative thereto into and out of feeding engagement in the holes in the strip, a track member extending in proximate relation with a portion of the path of travel of the pins and a succession of adjustably mounted contact members supported by the carrier with which the pins are connected having progressive travel engagement with the track during advancement of the carrier, by which the contact members are adjusted relative to the carrier to effect movement of the pins into the holes in the strip and maintain their engagement therein throughout a prescribed range of travel at the end of which the pins are automatically disengaged from the strip.

15. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by means for intermittently advancing the record strip relative to the imprinting position including an endless traveling chain belt, relatively spaced sprockets about which the chain belt passes, and between which the belt traverses a relatively straight path of travel, feed pins adjustably carried by the chain belt for movement relative thereto and progressively engageable in the longitudinally spaced holes of the record strip, and means for automatically extending and retracting the feeding pins into and out of engagement with the record strip coincident with the travel movement of the chain belt.

16. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of

prescribed longitudinally spaced legend receiving areas and a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by feeding means for intermittently advancing the strip including a traveling endless belt, traversing a circuitous path of travel, a portion of which extends in substantially parallel relation with the path of travel of the strip, feeding pins adjustably carried by the belt for to and fro motion relative to the belt into and out of feeding engagement in the longitudinally spaced holes in the strip, and a relatively straight track traversed by the pins during advance motion of the belt controlling the engagement and disengagement of the feeding pins and the strip.

17. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by feeding means therefor including a traveling series of feeding pins following a prescribed circuitous path of travel, a portion of which is in a substantially straight line in approximately parallel relation with the path of travel of the strip, and a track member traversed by the pins in their travel motion by which the pins are progressively projected into and withdrawn from the holes in the strip in a plane substantially perpendicular to their path of travel whereby they maintain their engagement therewith during traversal of at least a portion of the straight line portion of their path of travel.

18. A strip feeding means for a writing and imprinting apparatus, wherein a continuous strip of record material having therein a succession of prescribed longitudinally spaced legend receiving areas and a succession of longitudinally spaced feed holes for engagement of a pin type feeding device is advanced past imprinting position, said holes being disposed in correlated relation with the legend receiving areas whereby succeeding legend receiving areas are progressively presented in registering relation with legend imprinting means of the apparatus, characterized by feeding means therefor including a traveling series of feeding pins following a prescribed circuitous path of travel, a portion of which is in a substantially horizontal line parallel with the path of the strip and means for automatically extending and retracting the pins in a vertical direction into and out of the holes in the strip in synchronism with their travel movement whereby they are maintained in engagement with the holes in the record material strip while traversing at least a portion of the horizontal path of travel of the pins.

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