Nov. 17, 1936. F. W. STORCK 2,061,524

FEEDING, SEVERING, AND MOISTENING DEVICE

Filed Sept. 25, 1934 4 Sheets-Sheet 1

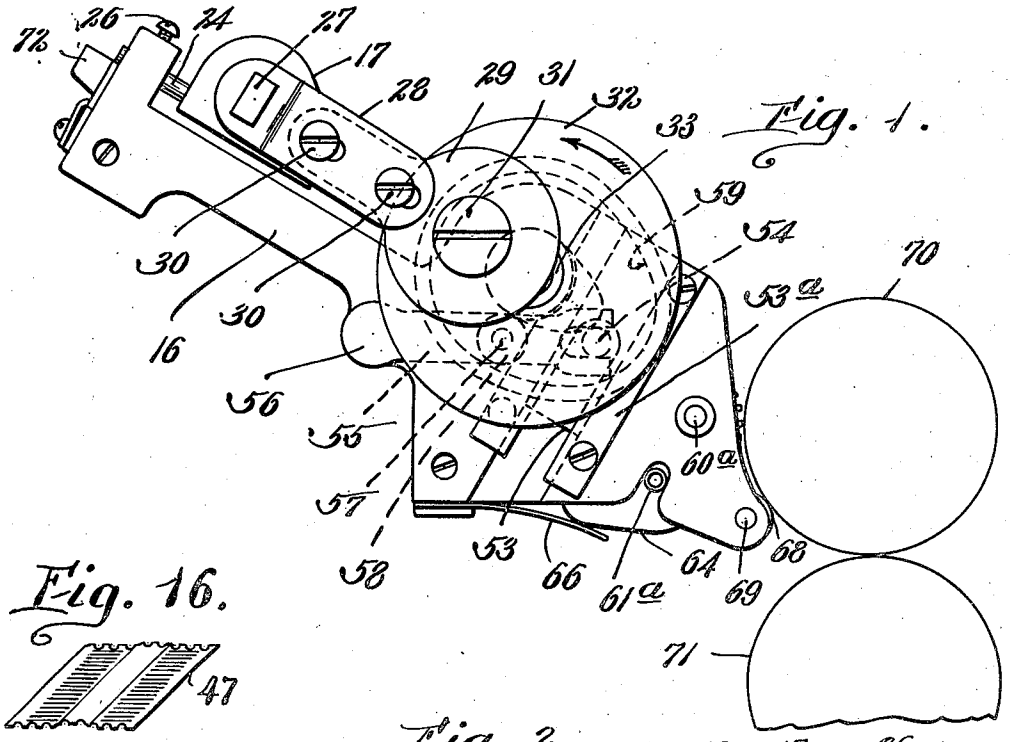
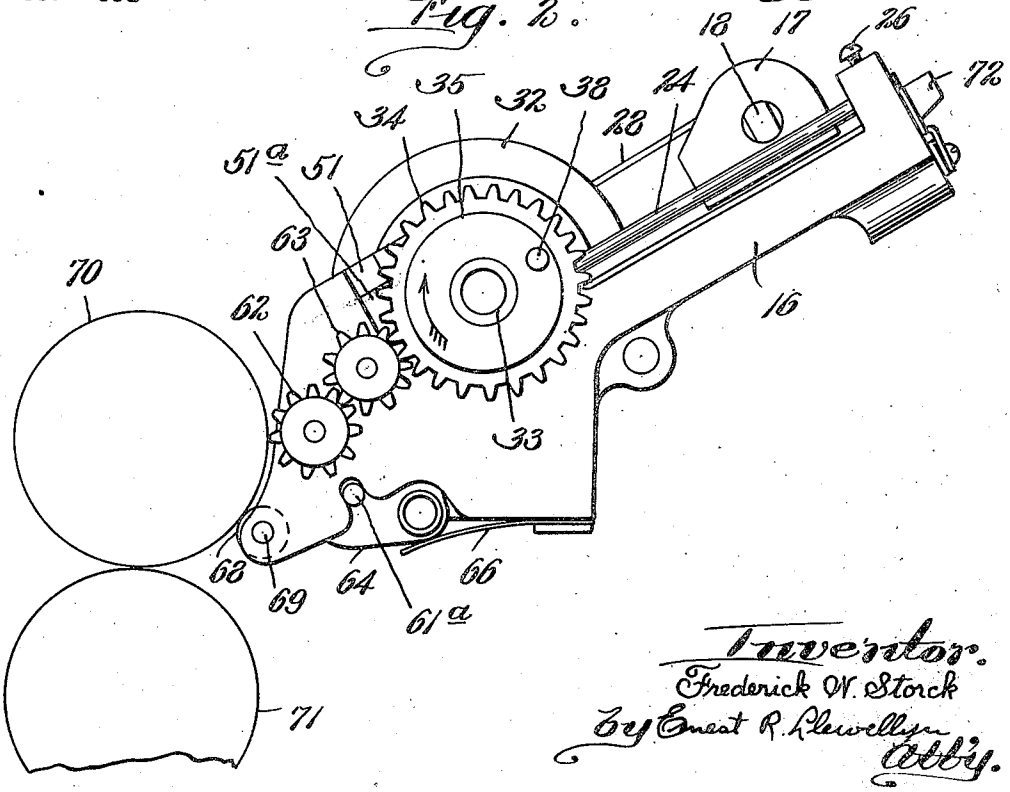


Fig. 1.

Fig. 16.

Fig. 2.



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Fig. 6.

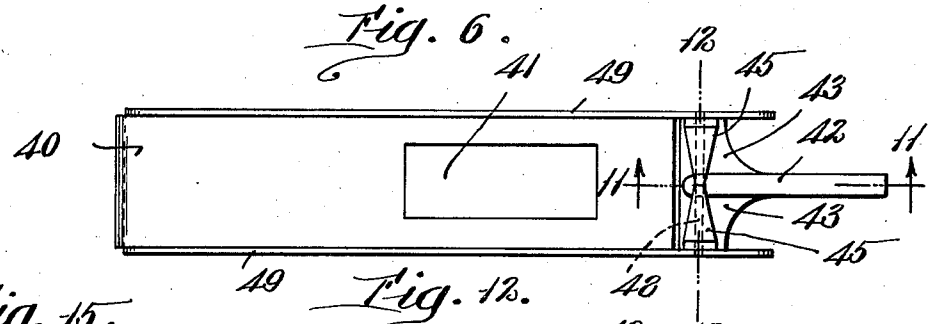


Fig. 15.

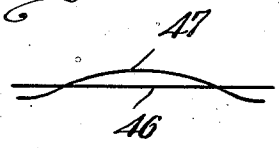


Fig. 12.

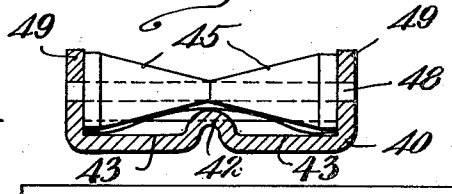


Fig. 11.

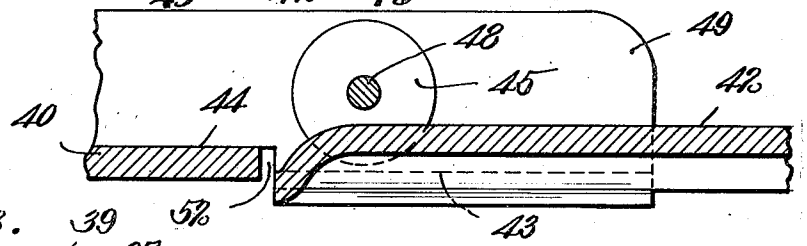


Fig. 13.

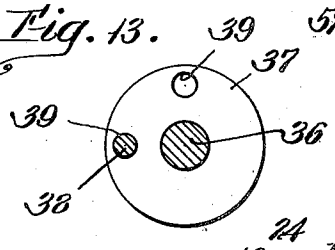


Fig. 3.

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FEEDING, SEVERING, AND MOISTENING DEVICE

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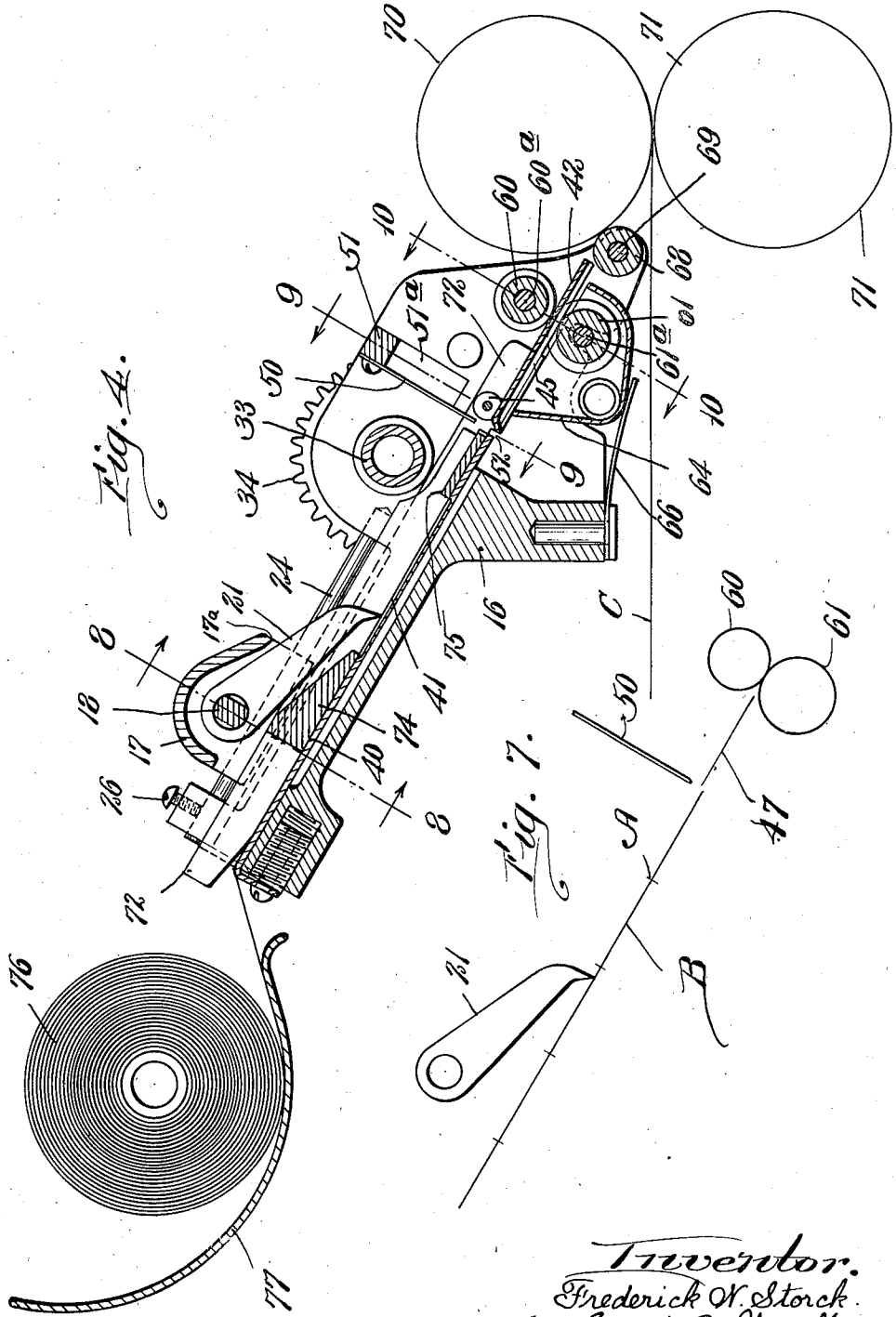


Fig. 4.

Fig. 7.

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FEEDING, SEVERING, AND MOISTENING DEVICE

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Fig. 5.

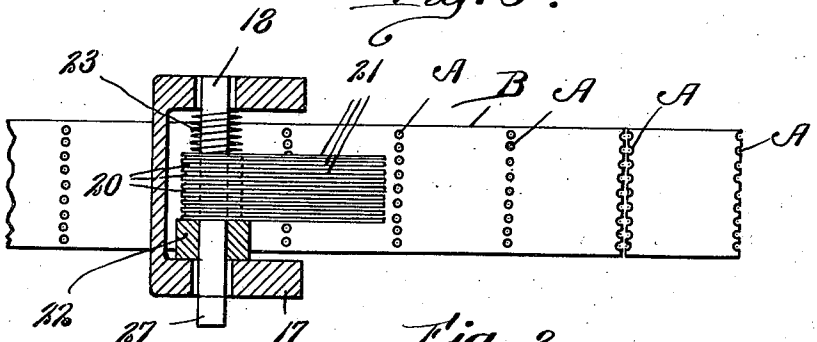
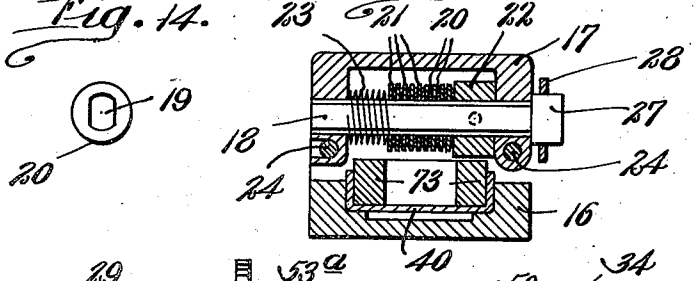


Fig. 8.

Fig. 14.



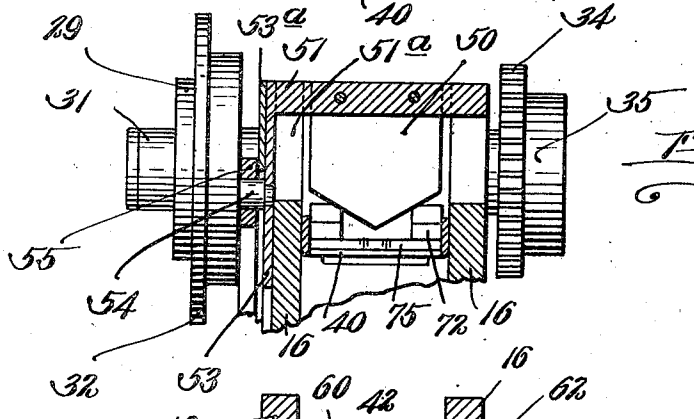


Fig. 9.

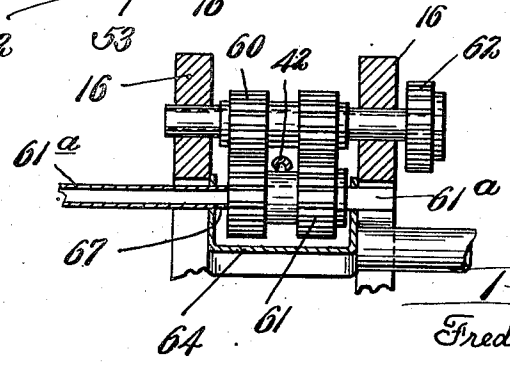


Fig. 10.

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Patented Nov. 17, 1936 2,061,524

UNITED STATES PATENT OFFICE

2,061,524

FEEDING, SEVERING, AND MOISTENING DEVICE

Frederick W. Storck, Arlington, Mass., assignor to Standard Mailing Machines Company, Everett, Mass., a corporation of Massachusetts

Application September 25, 1934, Serial No. 745,403

22 Claims. (Cl. 91—14)

My invention relates to devices for feeding strips of sheet material and more particularly to devices utilized in connection with the well known mailing or mail handling machines which are arranged to perform a sealing and/or stamp affixing operation and using strips of sheet material having an adhesive applied to one face thereof and laterally perforated at intervals, of which the well known roll of postage stamps is illustrative.

As is well known, a stamp is usually placed at the upper right hand corner of the face of an envelope or object in accordance with the rules of the United States Post Office Department, and in the above referred to mailing or mail handling machine the stamp is severed from the strip roll, moistened and positioned preparatory to and for attachment to the envelope or object. In instances, when the weight of the envelope or object is over weight, it is required, to compensate for the over weight, that additional stamps be attached to the envelope or object and preferably beside the one previously affixed.

Also, in utilizing a roll of material of the above character, due to the variation in diameters of the rolled material and other inherent characteristics, the distortion of a moistened severed portion, the distortion of which is intensified as the roll is diminished in size, presents an objectionable and unsatisfactory feature and a problem in properly applying the severed portion to another object to be affixed in the usual manner by a minimum interval of pressure.

Therefore, in view of the foregoing, the object of my present invention is to provide a simple and efficient self-contained, adjustable stamp feeding, severing, moistening, setting and positioning unit that may be easily and readily attached to the usual and well known mailing or mail handling machines.

Another object of my invention is to provide a feeding mechanism for perforated strip material wherein a plurality of feed fingers are provided for engaging the perforations, to feed the strip forward to position the advancing perforation for severing, and wherein each of the fingers acts independently of the other to compensate for inherent irregularities in the lateral location of the perforations or irregularities in the plane of the strip. Still another object, in feeding the perforated strip, is to distort one of the severed ends whereby the opposed severed ends may be utilized for a further feeding operation.

A further object is that of providing a simple stamp positioning means whereby subsequent stamps may be relatively positioned on an envelope or other object.

A still further object in my present invention is the provision of means, contained in my unit, to properly moisten a severed portion and effect a set in the contour of the severed portion whereby said severed portion may be more readily affixed to an object within a minimum interval of pressure.

To accomplish the above objectives, I have provided a novel combination and arrangement of parts hereinafter described and more specifically pointed out in the appended claims.

In the accompanying drawings I have illustrated my invention sufficiently to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:

Fig. 1 is a right hand side elevation of my improved feeding device.

Fig. 2 is a left side elevation of the feeding device.

Fig. 3 is a top plan view of the same.

Fig. 4 is a sectional side elevation taken on line 4—4, Fig. 3.

Fig. 5 is a plan view of a section of perforated strip, the feeding fingers, shaft on which they are mounted, and a section of the casing in which the shaft is mounted.

Fig. 6 is the support for a strip as it is fed by the device when in operation.

Fig. 7 is a diagrammatic view of the edge of a strip, the position of the feeding fingers as they move forward to feed the strip, the severing knife, a severed portion of the strip in position to be fed forward, and the feeding rolls adapted to receive and feed the severed portion.

Fig. 8 is a sectional elevation taken through line 8—8, Fig. 4.

Fig. 9 is a sectional elevation taken through line 9—9, Fig. 4.

Fig. 10 is a sectional elevation taken through line 10—10, Fig. 4.

Fig. 11 is an enlarged sectional side elevation of the end of the support shown in Fig. 6 taken on line 11—11, Fig. 6.

Fig. 12 is a cross section of the support shown in Fig. 6 taken through line 12—12, Fig. 6.

Fig. 13 is an elevation of the operating clutch taken on line 13—13, Fig. 3.

Fig. 14 is a side elevation of one of the friction washers used between the feeding fingers.

Fig. 15 is an end view of the advancing end of a strip of material and of the severed portion of the strip. This view is designed to show the cross

sectional shapes of the two portions which they assume after the severing operation.

Fig. 16 is a perspective view of a severed portion as it appears when prepared for applying and affixing the same to an envelope or other object.

In the drawings illustrating my feeding device, there is a main frame 16 in which is mounted the reciprocating carrier 17 having a rock shaft 18 suitably mounted therein. The opposite sides of said shaft 18 are flattened to correspond to the shape of a hole 19 in the washer 20 as shown at Fig. 14. The shaft 18 has pivotally mounted thereon a plurality of fingers 21, the outer terminating ends of said fingers being pointed, as shown, to adapt them to fit in the perforations A of a perforated strip B. The fingers 21 are spaced apart by means of washers 20, the fingers 21 and washers 20 being alternately mounted on the shaft 18 between the collar 22, which is secured to said shaft 18 and a compression spring 23 bearing against the inner wall of the carrier 17. The spring 23, being in contact with the outside washer, compresses the plurality of fingers and washers against the collar 22, thus inducing frictional contact between the fingers 21 and the washers 20. As the washers 20 are fixed against rotation on the shaft 18 they will oscillate with it, and since the fingers 21 are free to rotate on the shaft 18 any oscillating movement imparted to them will be through frictional contact of the washers due to the force of the spring 23.

The carrier 17 is slidably mounted on the guides 24—24 which are secured in the frame 16 and held in position by the binding screws 26—26.

The shaft 18 is provided with a rectangular terminating end portion 27 adapted to engage in the rectangular hole in the portion 28 of the connecting rod 29, thereby causing said shaft to be oscillated by the angular movement of said connecting rod. The portion 28 is provided with slotted holes adapted to receive binding screws 30—30 which are threaded into the connecting rod 29. The purpose of this construction is to provide adjustment of the length of the connecting rod and proper positioning of the feed fingers relative to the perforations in the strip of material and the positioning of the perforations for a subsequent severing operation.

The connecting rod 29 is pivotally mounted on a crank pin 31 which is secured in a crank disc 32. The crank disc 32 is secured on one end of the shaft 33, said shaft being mounted in suitable bearing supports in the frame 16. The shaft 33 has also secured thereon a gear 34 which is provided with a hub 35, said hub having secured therein an engaging pin 38. The shaft 33 is provided with a hole which extends axially therethrough and which is adapted to receive a drive shaft 36. Said shaft 36 has secured thereon a collar 37 which is provided with a plurality of gauge holes 39 which are adapted to register with and engage said pin 38. The drive shaft 36 is connected with a source of power, not shown. It is through the shaft 36 that power is supplied to operate my self-contained unit.

The purpose of providing a plurality of gauge holes 39 in the collar 37 is to provide an adjustment that will change the timing of my feeding device so that one or more additional postage stamps may be attached and relatively positioned to each other, when it is found that the envelope and its contents are over weight and require additional stamps. While I have only illustrated two holes as 39, it will be understood that any number of holes may be used in order to affix the required number of stamps.

The carrier 17 is designed to travel back and forth a distance equal to the length of the desired postage stamp. The points of the fingers 21 are adapted to slide on the surface of a strip of stamps and enter the perforations A when it reaches them and feed the strip forward a distance equal to the distance between the rows of perforations. When the feeding device is properly adjusted, the strip of stamps will be fed to a position to bring the row of perforations exactly under the severing device. As the carrier is reciprocated back and forth, by its crank connections, the oscillations of the shaft 18 will lower the points of the fingers 21 into contact with the perforations in the strip on the forward movement and raise them clear of the strip on the backward movement. These movements of the feeding up and down at their points is due to the frictional contact of the washers 20, which are non-rotatably mounted on the shaft 18, with the fingers 21, which are freely mounted on the shaft 18.

As is obvious from the foregoing description of the construction and operation of the fingers 21 and their coacting friction washers 20, the shaft will receive a greater angular rotative movement in converse directions than is required for the normal up and down movement of the finger points. This greater rotative movement of the shaft causes the frictional contacts, which are rotated with the shaft, to rotate against the fingers and thereby causing the fingers to exert pressure in their opposed limiting positions.

It is further obvious that, on the forward movement of the carrier 17, some of the points of the fingers 21 will not register with and enter the perforations in the strip and, therefore, some of the finger points will rest on top of the strip and out of transverse alignment with the registering fingers.

On the return movement of the carrier 17, the shaft 18 is oscillated, as heretofore mentioned, and raises the registering and non-registering fingers simultaneously. As the fingers 21 are frictionally raised by the shaft 18 and friction washers 20, their movement is arrested by the inner face 17*a* of the forward edge of the carrier frame 17, see Fig. 4. As the shaft 18 receives an additional movement in a contra-clockwise direction during the return of backward movement of the carrier 17, all of the fingers 21 will be forced into alignment against the face 17*a*, and there will be frictional slippage between the friction washers 20 and the fingers 21 in the direction contra to that effected when the points of the fingers 21 are engaged with the stamp strip, thus re-setting the angular displacement of the friction means with respect to the fingers, occasioned by the contact of the fingers with the strip, so that on the next successive occurrence of engagement, there may be a recurrence of the frictional downward pressure of the friction washers 20 against the coacting fingers 21 after said fingers have again encountered the same strip.

The supporting plate 40 has a depression 41 which permits the ends of the fingers 21 to pass through the perforations A.

The enlarged view Fig. 12 shows the forward end of the support 40 which has the upwardly curving narrow portion 42, and the depressed portions 43—43 formed on either side of it. In the enlarged view Fig. 11, it will be seen that the

portion 42, or the crest of its curve, lies slightly above the main inner horizontal surface of the support 40 and that the flat portions 43—43 are slightly below the adjacent main surface 44. A pair of tapering rolls 45—45 are revolvably mounted on the shaft 48, the shaft 48 is secured in the walls 49—49 of the support 40. The rolls 45—45 are small in diameter at the center and extend over and across the narrow portion 42 with a space between them to permit the passage of the strip. It will be noted that as the strip passes over the narrow portion 42 and under the rolls 45—45 that it will be curved as indicated by the numeral 47 in Fig. 15.

The vertically reciprocating member 50 is used to sever a stamp from the strip at the point where the perforations occur. The member is timed to sever a stamp during the return movement of the feeding fingers and while the strip is at rest. The member 50 severs the stamp at the perforations with a tearing action, which does away with the necessity of maintaining a sharp cutting or shearing edge on the severing device.

The severing device 50 is attached to the frame 51 in position to enter the slot 52 during its operation of severing a stamp from the strip at the point where the perforations occur.

The frame 51 is provided with the vertical, substantially T-shaped, portion 53 which is guided in the slot 51*a* in the frame 16. A plate 53*a* holds the frame 51 in position. A stud 54 is secured in the portion 53 and arranged to enter the forked end of the lever 55. The lever 55 is pivoted on the pivot 56 which is secured in the frame 16. A stud 57 is secured in the mid portion of the lever 55 and has rotatively mounted thereon the roll 58.

There is formed on the inner face of the cam disc 32 a cam groove 59 adapted to receive the roll 58. The arrangement of the parts is such that rotation of the cam disc 32 will reciprocate the lever 55 and through its engagement with the stud 54 will reciprocate the frame 51 and the severing device 50. The movement of the parts are so timed, that the severing device 50 will sever a stamp from the strip after the feeding movement of the strip has been completed and the feeding fingers are on their return movement to commence another feeding cycle.

After a stamp 47 has been severed from the strip, it assumes the lateral curvature indicated by the numeral 47, the advancing end of the strip will remain straight as indicated by the numeral 46. The appearance of the end of the strip and the severed stamp is best shown in Fig. 15. The lateral curvature of the severed stamp is due to its bending over the raised portion 42 and under the rolls 45—45. By bending the severed stamp as indicated, the advancing end of the strip will positively interlock with the severed stamp to feed it into engagement with the feeding and moistening rolls. The serrated condition of the end of the strip and the severed stamp, due to the perforations, help maintain the end of the strip and the stamp in engagement and interlocked.

Referring to Fig. 7, it will be noted that the distance between the severing device and the serrated feed rolls 60 and 61 is greater than the length of a stamp, by this arrangement of the parts I am able to combine an intermittent and a constant feeding movement so they will cooperate automatically. This does away with the use of clutches and similar devices to provide for an intermittent feeding movement of the feeding rolls.

The feeding roll 60 is mounted on the shaft 60*a* which rotates in bearings in the frame 16. The gear 62 is secured to the end of the shaft 60*a* and enmeshes with the gear 63 which in turn meshes with and is driven by the gear 34.

The roll 61 is rotatively mounted on the shaft 61*a* which is secured in the walls of the tank 64.

The surface of the rolls 60 and 61 are serrated so that contact of their surfaces will rotate the roll 61.

The moistening device consists of the removal tank 64 held in position in the frame 16 by the spring 66. The shaft 61*a* has a hole extending axially to the hole 67, through which moisture can pass to the tank 64, and thence conveyed to the gummed surface of a stamp by the surface of the roll 61. The surface of the roll 61 is immersed in the fluid in the tank 64. The shaft 61*a* being stationary, a tube or hose may be attached to it through which fluid can be conveyed to the tank 64. A grooved roll 68 is rotatively mounted on a shaft 69 which is secured in the end portions of the walls 65—65 of the frame 16, said roll being adapted to engage with a feed roll of the machine proper.

It will be noted that, as the severed portion 47 of the strip is passed over the narrow central portion 42 and between the serrated faces of the rolls 60, 61, said severed portion has received a serrature impression, as illustrated at Fig. 16, which eliminates any inherent curvature or irregularity in the plane of said portion and therefore the under or adhesive face of the severed portion presents a substantially flat plane, and whereby the affixing of said portion to an object may be more readily accomplished with a minimum interval of pressure.

The circles 70 and 71 show the position of the feed rolls of a mailing machine to which my improved feeding device can be attached and used to attach a postage stamp to an envelope.

A weight 72 is provided adapted to fit between the walls 49—49 of the support 40. The weight 72 consists of the sides 73—73 joined by the cross members 74 and 75. The weight 72 serves to hold the strip temporarily flat and to provide sufficient friction to prevent its accidental displacement. 76 represents a roll of sheet material in the form of a strip resting in the curved support 77. The support 77 is positioned so the strip will pass over the support 40 and under the weight 72.

In the operation of my improved feeding device, the perforated strip is positioned between the support 40 and the weight 72 with a line of perforations in advance of the carrier fingers 21.

As the feeding mechanism is actuated, the finger points will engage the advanced perforations and feed the strip forward until a line of perforations is positioned for engagement under the severing device.

During the return movement of the carrier fingers 21 to their initial position the severing device is actuated and severs the stamp, which is in advance of the severing device, from the perforated strip.

On the next subsequent forward feeding movement of the carrier fingers, the previously severed stamp will be engaged by the advancing strip end and pushed into engagement with the moistening and feeding rolls 60, 61. These feeding rolls 60, 61 advance the severed and moistening stamp into engagement between the grooved roll 68 and coacting feed roll 70. The stamp is advanced by these rolls 68, 70 in a positioned relation to con-

tact and be deposited upon an envelope which is thereafter passed between opposed pressure feed rolls 70, 71 and the stamp deposited thereon is firmly affixed to the envelope by the pressure of the rolls.

Having described my invention what I claim is:

1. A strip feeding device, comprising a frame and guides secured in said frame, a reciprocating carrier slidably mounted on the guides, feeding means rotatively mounted in said carrier and having free ends adapted to be oscillated, spring controlled friction means in contact with each of said feeding means and adapted to coact with said carrier to oscillate the free ends of said feeding means into and out of contact with a strip of material during their feeding and non-feeding operations.

2. A strip feeding device, comprising a reciprocating carrier, guides for said carrier, feeding fingers each individually friction controlled mounted in said carrier said friction control forming a part of means associated with said carrier whereby said fingers are engaged with said strip on the forward feeding movement of said carrier and elevated above the plane of said strip on the converse movement of said carrier and means for reciprocating the carrier.

3. A device for feeding and severing portions of a perforated strip of material, comprising a reciprocating carrier, guides on which the carrier is slidably mounted, feeding fingers rotatively mounted in the carrier so their free ends can oscillate and engage the perforations in the strip, means coacting with said carrier to frictionally oscillate said fingers, said friction means engaging each feeding finger and permitting their independent action with uniform pressures in all positions, means for reciprocating the carrier, means operating during the interval between the feeding movements to sever a portion from the strip by a tearing action.

4. In a device for feeding perforated strips, a reciprocating carrier, a shaft pivoted in the sides of the carrier having flattened portions on its opposite sides, a plurality of feeding fingers rotatively mounted on said shaft, friction washers non-rotatively mounted on said shaft and located between the feeding fingers, means for maintaining and adjusting the pressure between the washers and the feeding fingers and means for reciprocating the carrier and oscillating the feeding fingers.

5. A device for feeding strips of perforated materials, comprising a frame and guides mounted thereon, a reciprocating carrier slidably mounted on the guides, a plurality of feeding fingers mounted in the carrier, a plurality of friction washers mounted between the feeding fingers, means adapted to reciprocate the carrier longitudinally and oscillate the free ends of the feeding fingers laterally to engage the perforations in the strip and feed it and to lift the fingers off the strip during the non-feeding movement of the carrier.

6. A method of feeding, severing, and moistening strips of gummed sheet material having lateral perforations, consisting of intermittently feeding the strip by the perforations, severing the strip at a line of perforations, bending the severed portion laterally to insure a positive contact of the advancing end of the strip with the severed portion to feed it forward, moistening the severed portion and thereafter positioning said severed portion for further engagement.

7. A method of positioning and feeding the severed portion of a strip of material, which consists of holding the severed portion in a laterally curved position and the advancing end of the strip in a straight line laterally so it will positively contact with the curved end of the severed portion and feed it in a contiguous relation to the advancing strip end.

8. The method of positioning and feeding a portion of strip material severed from a strip of the same and feeding the severed portion by the advancing end of the strip, which consists in curving the severed portion laterally, and holding it in such condition with its mid curved portion above the plane of the advancing end of the strip, its sides lying below the plane of the advancing end of the strip thereby to insure positive contact of the advancing end of the strip with said severed portion during their feeding movements.

9. In a device for feeding strip materials, the combination of intermittent and continuously operating feeding devices, which comprise reciprocating means for intermittently feeding a strip of material to position its end in a holding device, means for severing the portion held in the holding device so the next feeding movement of the strip will push the severed portion of the strip into engagement with the continuously operating feeding rolls and said feeding rolls.

10. A perforated strip feeding device comprising a reciprocating carrier, guides for the same, a plurality of friction controlled oscillating fingers mounted in said carrier for engaging the perforations in a strip to feed it with means embodying said friction control for oscillating said fingers and means for reciprocating the carrier.

11. In a feeding and severing device, means for feeding a strip of perforated material, means for severing a portion from said strip and means for guiding the severed portion so the advancing end of the strip will feed and position said severed portion into engagement with feeding rolls.

12. In a device of the character described, means for feeding a strip of perforated material, means for severing a portion from said strip, means comprising opposed rotative members having irregular face contours, the face contours of said opposed members being spaced apart less than the total thickness of the material and whereby said severed portion is formed in a set, substantially flat plane during advancement of said portion by said rolls.

13. In a feeding and severing device, means for feeding a strip of perforated material, means for severing a portion from said strip, opposed rotative feed rolls having irregular face contours adapted to engage in the surface of said severed portion, and effect a substantially flat set in the plane of said severed portion and feed said set severed portion into engagement with other feed rolls.

14. The method of positioning and feeding a portion of strip material severed from a strip of the same, which consists of distorting the severed portion laterally and relative to the normal plane of said strip, advancing the end of said strip into positive abutment with the distorted severed portion and advancing said severed portion by contiguous engagement with said advancing strip end.

15. In a device for feeding, severing and moistening strips of perforated material comprising means for engaging said perforations and intermittently feeding said strip, means for severing a portion of said strip, opposed serrated faced feed rolls in advance of said severing means, said

rolls being so spaced that the faces thereof engage one another in a driving relation and adapted to engage and advance said severed portion whereby said portion receives a serrature impression that effects a substantial set in the plane of said portion.

16. In a device for feeding, severing and moistening strips of perforated material comprising means for engaging said perforations and intermittently feeding said strip, means for severing a portion of said strip, means for advancing said severed portion into engagement with opposed feed rolls, each of said rolls having opposed serrated peripheral faces, said faces engaging one another in a driving relation and whereby said severed portion receives a serrature impression that substantially effects a lateral set in the plane of said portion as it is passed between said opposed feed rolls.

17. In a device for feeding perforated strips, a slidably mounted carrier, a shaft pivoted in said carrier, means for oscillating said shaft and for causing a reciprocating motion to said carrier, a feeding finger one end of which loosely embraces said shaft and the other end of which is adapted to engage the strip, a friction means mounted on said shaft and adapted to be oscillated thereby and to cause said finger to be oscillated into and out of engagement with the strip in a manner whereby a continued downward pressure is put upon the strip by the finger after contact has been made therewith and contact means for positively limiting the elevation of said finger when it is moved upwardly under the influence of said friction means and thereby cause slippage between said friction means and said finger to reset the angular displacement of the friction means with respect to the finger occasioned by the contact of the finger with the strip.

18. A device as set forth in claim 17 with means for adjusting and maintaining the pressure between the washers and the feeding fingers.

19. In a device for feeding perforated strips, a reciprocating carrier, a shaft pivoted in said carrier, a plurality of feeding fingers rotatively mounted on said shaft, friction washers non-rotatively mounted on said shaft and located between the feeding fingers and permitting their independent action with uniform pressure in all positions, with means for transversely aligning said fingers for each cycle of operation and means for reciprocating the carrier and oscillating the feeding fingers.

20. In a device for feeding perforated strips, a reciprocating carrier, a shaft pivoted in said carrier, means for reciprocating said carrier and oscillating said shaft, a plurality of feeding fingers rotatively mounted on said shaft, friction means coacting with said fingers and shaft to frictionally oscillate said fingers to opposed stop positions, said shaft having a greater angle of oscillation than said fingers.

21. In a device for feeding perforated strips, a reciprocating carrier, means for reciprocating said carrier and oscillating said shaft, a plurality of feeding fingers freely mounted on said shaft and having a limited rotation thereon which is less than the complete rotative movement of said shaft, friction means coacting with said fingers and shaft to frictionally oscillate said fingers.

22. In a device for feeding perforated strips, a reciprocating carrier, a shaft pivoted in said carrier with means for oscillating said shaft, a plurality of feeding fingers rotatively mounted on said shaft, friction washers non-rotatively mounted on said shaft and located between the feeding fingers, means for maintaining and adjusting the pressure between the washers and feeding fingers, said fingers having a limited rotation with said shaft and which is less than the complete oscillation of said shaft and means for reciprocating said carrier.

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