STAMP VENDING MACHINE

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ABSTRACT OF THE DISCLOSURE

A stamp vending machine is disclosed that employs a group of three fingers to engage the lateral rows of perforations in the stamp web and move the web along a supporting track. The three fingers are mounted above the stamp web supporting track in adjacent side by side relationship so that at least one of the fingers will engage a perforation in the stamp web as the fingers are moved along the track.

This invention relates to stamp vending machines generally, and, more particularly, to stamp vending machines that dispense one or more stamps from a stamp web having laterally extending rows of perforations between the stamps.

Such a machine moves the stamp web from a storage roll to the outlet of the machine along a web supporting track. Usually, the web is moved relative to the track a predetermined distance to vend a preselected number of stamps. The web is moved on the track by a member that moves over the track carrying fingers that engage one or more perforations in one of the lateral rows of perforations located between the stamps. These perforation engaging fingers are pivotally mounted to allow them to move into and out of engagement with the perforations. Their pivot point is located so each finger will remain in engagement with any perforation it encounters, when traveling in one direction, and will ratchet past any perforation it encounters, when traveling in the other direction. In the past, it has been the practice either to space these fingers according to the expected spacing of the perforations in the stamp web, or to space the fingers a distance less than the expected spacing of the perforations, in adjacent, side-by-side, relationship across a substantial portion of the web.

With the first arrangement, the fingers would by-pass any row of perforations that was laterally out of alignment with the fingers. This misalignment could result from lateral movement of the web on the track, the fingers on their support, the finger support itself, or any combination thereof. In addition, the row of perforations may be shifted laterally when formed in the stamp web.

With the second arrangement, the problem of skipping over the desired row of perforations was greatly reduced, however, it was not eliminated for the fingers continued to skip rows of perforations occasionally. This would result in the machine vending less than the number of stamps purchased, which was irritating to the customer.

Further, when the second arrangement was used with a track that supported the stamp web on two or more longitudinally extending rails an additional problem existed, i.e., the distance the stamp web was moved with each operation of the machine varied. This resulted because some of the time all of the perforations engaged by the fingers would be located between the rails and the remainder of the time they would not be so located. When the first situation existed the fingers would pivot downward and enter the perforations a predetermined amount and the stamp web would be moved a given distance. When the fingers engaged perforations positioned over one or more of the rails of the track, however, the rails prevented the fingers from moving into the perforations to the extent that they would when the rails were not there. This resulted in the stamp web being moved a different distance along the track, which changed the cutoff point of the stamp web. This was undesirable.

To insure that the stamp web is moved the same distance along the track each time the machine is operated to vend a preselected number of stamps, each of the fingers of the machine that enter a perforation must do so approximately the same distance each time, and it is an object of this invention to provide such a stamp vending machine.

It is another object of this invention to provide a stamp vending machine of the type described above having fingers arranged so at least one of the fingers will engage a perforation in the first lateral row of perforations the fingers encounter even though the perforations shift laterally relative to the fingers and which will move the stamp web the same preselected distance along the track with each operation of the machine.

It is another object of this invention to provide a stamp vending machine having fingers that are so mounted that they will always engage a perforation that is located between the rails that support the stamp web supporting track and movement to the outlet of the machine which results in the stamp web being moved a uniform distance each time the machine is operated.

These and other objects, advantages, and features of the invention will be apparent to those skilled in the art from a consideration of this specification, appended claims, and attached drawings.

The preferred embodiment of the invention will now be described in detail in connection with the attached drawings in which,

FIGURE 1 is a side view of a stamp vending machine of the type to which this invention relates with a portion of the housing broken away to show the arrangement of the stamp web supporting track and the fingers that move the stamp web along the track.

FIGURE 2 is a cross sectional view on an enlarged scale taken along line 2—2 of FIGURE 1.

FIGURE 3 is a cross sectional view taken along line 3—3 of FIGURE 2 showing in solid lines the position taken by one of the fingers as it enters a perforation that is located in a portion of the web that is unsupported by the track and in dotted lines the position it would take should the perforation be located in a portion of the track that is directly supported by the track.

FIGURE 4 is a top view taken along line 4—4 of FIGURE 2 of one of the groups of perforation engaging fingers of the machine; and

FIGURES 5A—5D illustrate how a group of three fingers mounted in accordance with this invention will always engage a perforation in a stamp web even though the perforations shift laterally relative to the fingers.

FIGURE 1 shows the path taken by stamp web 10 as it travels from roll 11 to outlet 12. From roll 11 the web moves along track 13, which has a concave surface for supporting a portion of the web between the roll and the outlet of the machine. A plurality of perforation engaging fingers 14 are mounted on an oscillating arm 15 in a manner to be described below. The arm is caused to oscillate over the concave surface of the track to cause one or more of the fingers 14 to engage perforations in the stamp web. When the fingers are moved clockwise to the left toward the outlet, the fingers move the stamp web along the track. When they are moved counterclockwise toward the right one or more fingers may engage the perforations, but they move into and out of the perforations and do not move the stamp web with them. For a complete description of a stamp vending machine of this type, see patent application Ser. No. 403,514, filed
As best seen in FIGURE 2, the type of track used in the machine in the drawings, comprises a plurality of plates mounted in side-by-side relationship to provide rails to support stamp web 10. Plates 13a, 13b and 13c and plates 15a, 15b and 15c are mounted in contiguous side-by-side relationship to provide rails to support the outside edges of stamp web 10. In between these two groups of plates are located plates 13d-13f. These inner plates are spaced apart and are generally thinner than the plates which form the outside rails of the track. These inner plates then form rails that support the portion of stamp web 10 that extends between the two outer groups of plates or outer rails. Plates 16a and 16b are attached to opposite sides of the track. Their upper portions are bent over the two outside sets of plates to hold down the outer edges of the stamp web and also to limit its lateral movement on the track.

As explained in the above referenced patent application, this type track has certain advantages. The track may comprise a flat plate which provides a flat even surface to uniformly support the entire width of the web.

In accordance with the preferred embodiment of the invention, a group of three fingers is arranged to engage perforations in the stamp web and move it along the track. In the embodiment shown, two such groups designated A and B are shown. Each of fingers 14a-14f are made from flat plate. As best seen in FIGURE 3, each finger is generally rectangular in shape with a downwardly extending pointed portion 17 on its lower front side for engaging and entering into the perforations in the stamp web. The plate from which the fingers are made has a thickness slightly less than half the lateral width of the perforation the finger is to engage. By slightly less, it is meant that the thickness of the fingers is such that the perforation engaging portions of two fingers can easily enter the same perforation simultaneously, but that the combined thickness of two such portions is substantially greater than half the width of the perforation.

The problem created when the fingers enter the perforations differs distances is graphically illustrated in FIGURE 3. Finger 14f is shown in solid lines in the position it would assume when the stamp web is located in an unsupported portion of web. Shown in dotted lines is the position finder 14f would assume if it were located so that the end of portion 17 engaged the top of a rail (not shown) when it entered the perforation. The rail, of course, limits the distance portion 17 travels in the direction of the stamp web. Thus, the stamp web would be moved by finger 14f, as it rode along the top of the rail, further by the distance “X” than it would be if the finger had entered the perforation between the rails, as shown in the solid line portion of the drawing.

Therefore, in accordance with this invention, means are provided to mount a group of at least three perforation engaging fingers in adjacent, side-by-side, relationship with the inside side surfaces of the outside fingers of the group spaced apart a distance approximately equal to the distance between the perforations and with the fingers free to move laterally sufficiently for at least one of the fingers to enter a perforation in the first row of perforations the fingers encounter. In addition, the mounting means mount the fingers to pivot around an axis that extends transverse the direction of travel of the stamp web to limit the fingers to move into and out of the perforations.

In the embodiment shown, the mounting means includes a U-shaped bracket 20. It is mounted on arm 15 by threaded portion 21 and nut 22. Fingers 14f are pivotally mounted on shaft 23, which extends between arms 20a and 20b of bracket 20 transverse the direction of travel of the stamp web on the track.

Each finger is resiliently urged to pivot independently around shaft 23 toward the stamp web. In the embodiment shown, resilient rods 25 are connected to the top of each spring finger and extend upwardly against a laterally extending pin (not shown) carried by arm 15. This pin is placed so as to bend these resilient rods which in turn urge the fingers to pivot around shaft 23 toward the stamp web.

The two finger groups A and B in the embodiment shown are located on shaft 23 between groups of washers 24. These washers have a thickness such that the fingers are held between the rails but not so tightly as to keep each finger from pivoting freely relative to the other fingers. Also, the fingers should be able to move laterally either independently or as a group a limited amount. When so mounted, it has been discovered that and 14c as they move along the web is about equal to the distance between perforations 18a and 18b. Further, resilient rods 25 will be urging the fingers downwardly against the web. Also, the edges of the fingers that engage the web are beveled slightly. Therefore, either finger 14d or finger 14e will enter perforation 18a as shown in FIGURE 5A or finger 14e or 14f will enter perforation 18b, as shown in FIGURE 5B. Usually, this causes all the fingers to move laterally toward the perforation that is engaged.

This ability of the fingers to move laterally independently allows two fingers to be engaged at the same time. As shown in FIGURE 5C, FIGURE 5D shows the situation when the perforation is in alignment with the center finger 14b.

Actually, only one group of fingers, such as A or B is sufficient, since it is only necessary for one finger to engage a perforation to move the web. The use of two simply provides a more uniform push on the web.

Means are provided also to limit the distance the perforation engaging portions of each finger can enter a perforation to thereby cause the fingers to move the stamp web a uniform distance each time the machine is operated to vend a given number of stamps. As shown in FIGURE 3 the distance each finger can move into a perforation is determined by how far the finger can pivot before its lower back corner engages bight 20c of the U-shaped bracket. This can be adjusted by loosening nut 22 and rotating the bracket. The stamp web can be used to stop the downward travel of the fingers, however. Preferably, the fingers engage the bracket before their downward travel into a perforation stopped by the stamp web.

Of course, the fingers can rotate into engagement with bracket 20 and enter the perforation a uniform amount only if the fingers engage a perforation located in a portion of the web that is unsupported by the track. Therefore, with a track of the type shown the fingers are mounted so they will engage the stamp web between
rails of the track. If the web is supported by a flat, even surface, the distance the fingers can enter the perforations will be limited to the thickness of the stamp web. The same is true if the rails are made broad enough for all the fingers to always engage a rail, such as the two outside rails of the track shown in FIGURE 2. In either case, the distance the fingers enter the perforations is uniform and the stamp web will be moved a uniform distance each time the machine is operated.

From the foregoing, it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth, together with other advantages which are obvious and which are inherent to the apparatus and structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

The invention having been described, what is claimed is:

1. A stamp vending machine for vending stamps from an elongated stamp web having longitudinally spaced rows of perforations extending laterally thereacross comprising, a track having a plurality of spaced, parallel rails for supporting a portion of such stamp web for movement longitudinally, a group of three fingers located above the track, each of said fingers having a portion designed to enter any perforation it may encounter and a thickness slightly less than half the lateral width of a perforation so two of such portions may enter substantially into a perforation to move the stamp web along the track when the fingers are moved in one direction, means mounting the group of fingers in adjacent side-by-side relationship with the inside side surface of the perforation engaging portions of the outside fingers of the group spaced apart a distance approximately equal to the distance between the perforations and with the fingers free to move laterally sufficiently for one of the fingers to enter a perforation in the first row of perforations the fingers encounter, said mounting means further mounting the fingers to pivot independently around an axis that extends transverse the direction of travel of the stamp web on the track and to engage the web between where the web is supported by two adjacent rails of the track to thereby permit one or more of the perforation engaging portions of the fingers in the group to enter any perforation the group may encounter without engaging either of said rails, means for resiliently urging each finger to pivot independently toward the stamp web, and means for moving the finger mounting means parallel to the rails to cause at least one of the perforation engaging portions of the fingers to enter a perforation located between the rails in the first laterally extending row of perforations the group encounters and move the web along the track with the fingers.

2. The stamp vending machine of claim 1 in which the means limiting the distance each finger can enter a perforation comprises an adjustable stop on the mounting means for engaging the fingers and limiting the distance they can pivot toward the stamp web.

3. A stamp vending machine for vending stamps from an elongated stamp web having longitudinally spaced rows of perforations extending laterally thereacross comprising a track having a plurality of spaced, parallel rails for supporting a portion of such stamp web for movement longitudinally along the rails, a group of three fingers located above the track, each of said fingers having a portion designed to enter any perforation it may encounter and a thickness slightly less than half the lateral width of a perforation so two of such portions may enter substantially into a perforation to move the stamp web along the track when the fingers are moved in one direction, means mounting the group of fingers in adjacent side-by-side relationship with the inside side surface of the perforation engaging portions of the outside fingers of the group spaced apart a distance approximately equal to the distance between the perforations and with the finger free to move laterally sufficiently for one of the perforation engaging portions of the fingers to enter a perforation in the first row of perforations the fingers encounter, said mounting means further mounting the fingers to pivot independently around an axis that extends transverse the direction of travel of the stamp web on the track and to engage the web between where the web is supported by two adjacent rails of the track to thereby permit one or more of the perforation engaging portions of the fingers in the group to enter any perforation the group may encounter without engaging either of said rails, means for resiliently urging each finger to pivot independently toward the stamp web, and means for moving the finger mounting means parallel to the rails to cause at least one of the perforation engaging portions of the fingers to enter a perforation located between the rails in the first laterally extending row of perforations the group encounters and move the web along the track with the fingers.

4. The stamp vending machine of claim 3 in which the mounting means includes a shaft for pivotally supporting the fingers of the group and a plurality of washers on either side of the group of fingers to hold the fingers in position on the shaft to engage the stamp web between supporting rails while allowing lateral movement of the fingers, said washers having a diameter sufficiently less than the length of the fingers to permit the ends of the fingers upon which the perforation engaging portions are located to spread apart and to move laterally.

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