March 30, 1965 K. A. SUMIDA 3,175,744

STAMP DISPENSING MACHINE

Filed April 18, 1963 2 Sheets-Sheet 1

Fig. 1

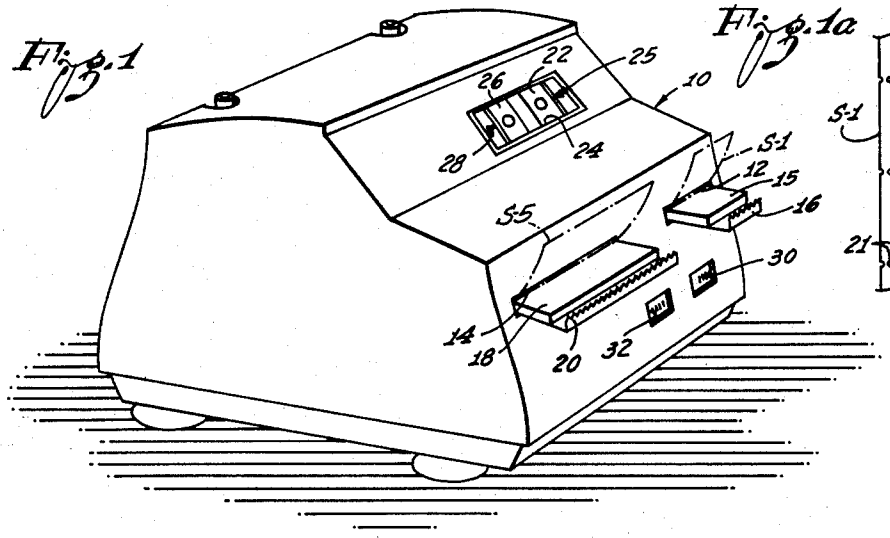


Fig. 1a

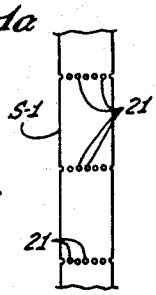


Fig. 2

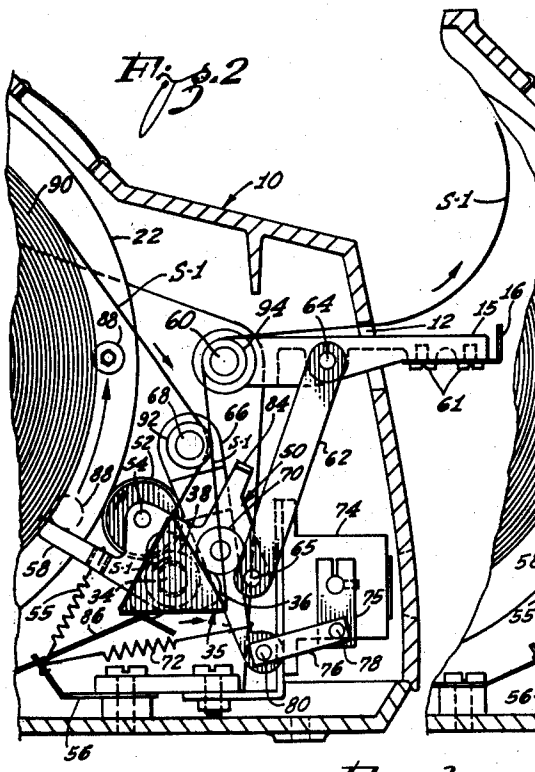


Fig. 3

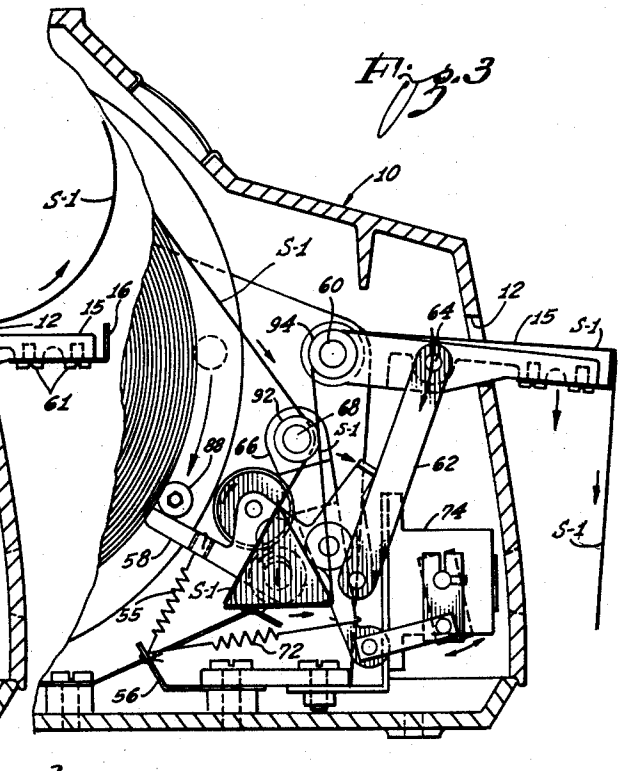


Fig. 3b

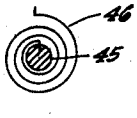
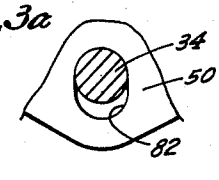


Fig. 3a



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March 30, 1965 K. A. SUMIDA 3,175,744

STAMP DISPENSING MACHINE

Filed April 18, 1963 2 Sheets-Sheet 2

Fig. 4

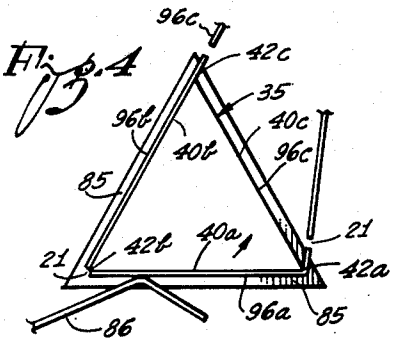


Fig. 8

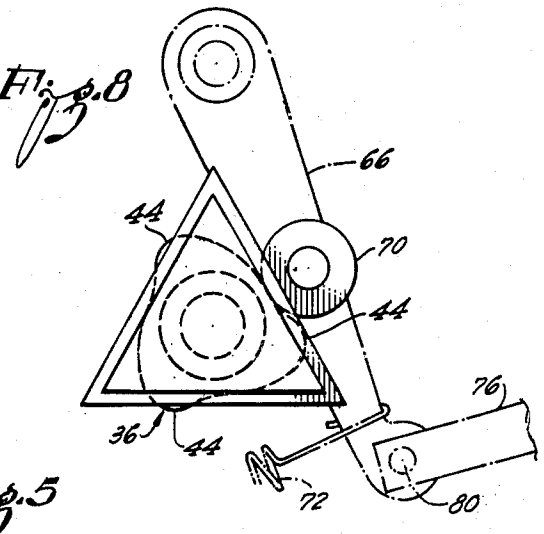


Fig. 5

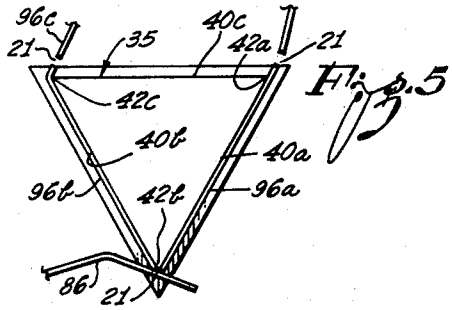


Fig. 9

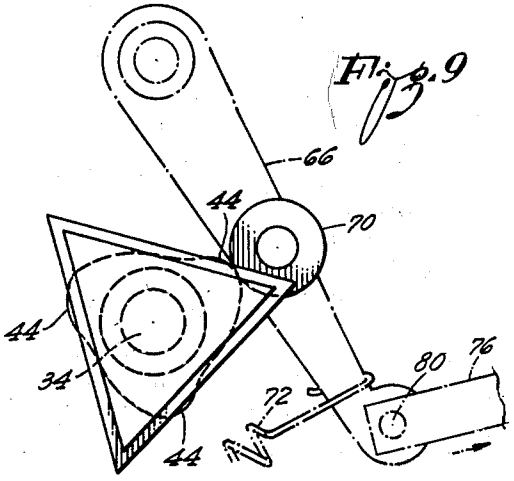


Fig. 6

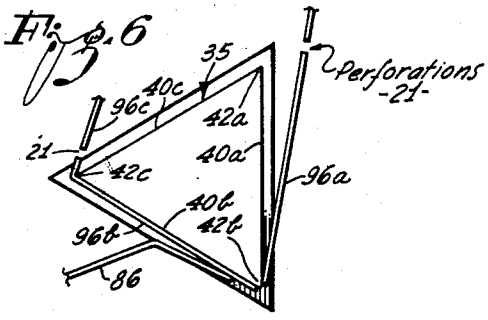
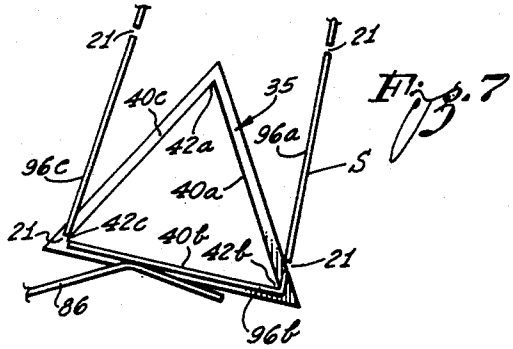


Fig. 7



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United States Patent Office 3,175,744
Patented Mar. 30, 1965

3,175,744

STAMP DISPENSING MACHINE

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Filed Apr. 18, 1963, Ser. No. 273,961
11 Claims. (Cl. 225—39)

This invention relates to a device for dispensing premium stamps or so-called trading stamps of the type commonly given to purchasers of various commodities for accumulation by the purchasers and subsequent redemption.

The number of stamps dispensed with each sale is based on the total sales figure, each stamp representing 10¢. The prevalent practice is to provide sales clerks with sheets of stamps each sheet comprising, for example, ten rows of ten stamps each with the stamps interconnected both end to end and side to side by weakened frangible connections in the form of rows of perforations. A clerk must mentally calculate the number of stamps corresponding to each sale and must use both hands to sever the required number of stamps from the sheet. Usually, the previous removal of stamps from a sheet leaves a fraction of a sheet of irregular configuration to complicate matters and to favor errors in counting out stamps.

The pressing need is to provide some means to reduce both the time and effort required to dispense the trading stamps and not only to facilitate accurate counting of the stamps for each transaction but also to accumulate a running total of the stamps for accounting purposes. To meet this need, various devices have been suggested heretofore in which the stamps are drawn to a dispensing zone from a supply roll and some type of metering means is engaged by the traveling stamps.

The basic problem that has not been satisfactorily solved is to insure that the metering means is constantly synchronized with the movement of the stamps. It has been found that if solely frictional engagement between the metering means and the stamps is relied upon, the metering means inevitably gets out of synchronization with the stamps. It would seem that sprocket wheels to engage the perforations would solve the problem but this approach fails because the perforations are not always accurately punched.

Another difficulty arises from the fact that the stamps have a gummed coating. It has been found that if the stamps are pulled over a fixed surface in the course of the dispensing operation the stamps often adhere to the fixed surface to cause difficulties and loss of time. The present invention is based on the concept of synchronizing a metering means with a series of interconnected stamps by employing a metering means in the form of a rotary member of the configuration of an equilateral polygon of not more than four sides, the successive sides of the polygon meeting at angles of not more than 90° to form relatively sharp equally spaced transverse edges. With suitable means guiding a strip of interconnected stamps around such a polygonal metering member, the strip of stamps bends sharply at the perforated interconnections in such a manner that each angular bend seeks a transverse edge of the metering member. Preferably the faces of the polygonal metering member are slightly shorter than the stamps so that the traveling strip of stamps intermittently slips relatively to the polygonal member as the sharp ends of the strip of stamps at the successive rows of perforations are drawn into positive engagement with the successive transverse edges of the polygonal member. Thus, automatic synchronization occurs as each row of perforations of the strip of stamps reaches some particular position in the rotation of the polygonal member. An important advantage of this arrangement is that since the faces of the polygonal member are appreciably shorter than the length of the stamps, the spacing between the rows of

perforations of the stamps is not critical. Variations in the spacing between the rows of perforations merely vary the extent of sliding movement of each stamp across a face of the polygonal body as an angular fold in the strip of stamps seeks a transverse edge of the polygonal member.

The series of stamps is guided to the polygonal member or rotary metering member from a supply roll and is guided from the rotary metering member to the dispensing zone, the guide means being preferably in the form of rollers. Thus, the stamps make only rolling engagement with both the guide means and the rotary metering member with no tendency for the stamps to adhere to any of the surfaces.

The problem of correctly counting the number of stamps to be dispensed is solved by employing counting means for individual sales calibrated in terms of sales figures. In the preferred practice of the invention a rotary counting wheel which may be termed a sales counter is operated by the metering member and carries circumferentially spaced sales figures which appear at a counter window. The clerk simply pulls the strip of stamps to the dispensing zone until the sales figure of the particular transaction appears at the counter window and then severs the counted stamps from the strip whereupon the counting wheel automatically resets at zero. In the meantime a second counter which is a cumulative counter also operated by the metering body carries a running total of the dispensed stamps.

A feature of the preferred practice of the invention is the use of two separate dispensing mechanisms, one for a strip comprising a single row of interconnected stamps and one for a strip in the form of a plurality of rows of stamps, preferably a strip of five rows of stamps. The rotary sales counter for the single row of stamps registers in steps of 10¢ up to a maximum of $1.90. The rotary sales counter for the five-row strip of stamps registers in steps of 50¢ up to several dollars.

For a sale of less than $2.00 the stamps are dispensed from the single row strip. For larger sales that are multiples of 50¢ the stamps are dispensed directly from the wider strip. For larger sales that are not multiples of 50¢, stamps from both strips are dispensed. Only multiples of five stamps are dispensed from the five-row strip.

As will be explained, one feature of the invention relates to the manner in which the sales counter and the cumulative counter are both operatively connected to the polygonal metering member. Another feature is the provision of means to sever stamps at the dispensing station of the device with the sales counter operatively connected with the severing means to reset automatically in response to the severing operation.

The various features and advantages of the invention may be understood from the following detailed description and the accompanying drawings.

In the drawings, which are to be regarded as merely illustrative:

FIG. 1 is a perspective view of the presently preferred embodiment of the invention;

FIG. 1*a* is a plan view of a portion of a single-row strip of stamps;

FIG. 2 is a sectional view of one of the counting mechanisms showing the positions of the parts at an intermediate point in a dispensing operation;

FIG. 3 is a similar view showing the positions of the parts near the end of the dispensing operation when the sales counter resets to zero in response to the stamp serving operation;

FIG. 3*a* is a fragmentary view showing how a rocker plate is mounted on a shaft by means of a slot;

FIG. 3*b* is a fragmentary view showing how a torque spring biases a counter wheel;

FIGS. 4, 5, 6 and 7 are diagrammatic views showing successive stages in the rotation of the polygonal dispensing member;

FIG. 8 is a largely diagrammatic view showing a cam and a follower associated with the polygonal metering member for operating the cumulative counter; and

FIG. 9 is a similar view at a different rotary position of the polygonal metering member.

As shown in FIG. 1, the working parts of the invention may be enclosed in a suitable housing, generally designated **10**, which provides for dispensing a single-row strip of stamps designated S–1 through a short outlet transverse slot **12** and further provides for dispensing a five-row strip of stamps designated S–5 through a longer transverse outlet slot **14**. The short outlet slot **12** is part of a dispensing zone which includes a dispenser shelf **15** and an angular cutting blade **16** that projects forward from the dispenser shelf. In like manner, the wider slot **14** is part of a second dispensing zone which includes a wider dispenser shelf **18** and a wider angular cutting blade **20** that extends forward from the dispenser shelf.

The successive stamps in each strip are connected by frangible connections which are provided by rows of perforations. Thus, as shown in FIG. 1*a*, the successive stamps S of the single-row stamp strip S–1 are separated by a row of perforations **21**.

A sales counter in the form of a counter wheel **22** that is operatively associated with a single-row strip S–1 has numerals reporting individual sales, the numerals running from 10¢ to $1.90 in steps of 10¢. The numerals on this counter wheel are visible at a counter window **24** which is provided with a suitable index mark **25**. In FIG. 1, zero is at the window adjacent the index mark. In like manner, a second counter wheel **26** associated with the five-row stamp strip S–5 and carrying sales figures in multiples of 50¢ is visible at the same window with reference to a second index mark **28**. Here again, zero is at the index mark in FIG. 1.

A conventional numerical counter inside the housing functions as a cumulative counter and displays numerals at a small window **30** to give a running total of the stamps dispensed from the single-row strip S–1. A second window **32** displays the numerals of a second similar cumulative counter which carries a running total of the stamps dispensed from the five-row strip S–5.

Since each of the two mechanisms for dispensing stamps from the single-row stamp strip S–1 and from the five-row stamp strip S–5, respectively, are both identical except for the difference in width, a description of the mechanism for the single-row stamp strip S–1 will suffice for both mechanisms.

As shown in FIGS. 2 and 3, the dispensing mechanism for the single-row stamp strip S–1 includes a unitary rotary assembly mounting on a fixed cantilever shaft **34**. The rotary assembly comprises a rotary metering means in the form of an equilateral polygonal metering member **35**, a counting cam **36** and a driving roller **38**, all three of these components being concentric and fixedly interconnected for rotation in unison. While the polygonal metering member **35** may be square in cross section with four equal faces meeting at 90° angles, preferably the polygonal metering member is of triangular cross section, as shown, with three faces **40***a*, **40***b* and **40***c* (FIGS. 4–9) meeting at 60° angles to form three relatively sharp transverse edges **42***a*, **42***b* and **42***c*.

The counting cam **36** has the same number of lobes as the number of faces of the polygonal metering member, the cam having three equally spaced lobes **44** as best shown in FIGS. 8 and 9.

In addition to the described unitary rotary assembly, the principal parts of the dispensing mechanism for the S–1 stamp strip include: the previously mentioned counter wheel **22** mounted on an axle **45** (FIG. 3*b*) and biased by a suitable torque spring **46**; a pivotally movable support means in the form of a rocker plate **50** loosely

journaled on the previously mentioned cantilever shaft **34**; a transmission roller **52** journaled on a spindle **54** on the rocker plate **50** for continuous contact with the drive roller **38** and for intermittent peripheral contact with the counter wheel **22**; a suitable tension spring **55** anchored to a fixed bracket **56** and connected to a stop finger **58** of the rocker plate **50** to bias the rocker plate counterclockwise; the previously mentioned dispenser shelf **15** which is pivotally mounted on a cantilever shaft **60**; the previously mentioned angular cutting blade **16** which is attached to the underside of the dispenser shelf **15** by screws **61**; a link **62** connected at one end by a pivot **64** to the dispenser shelf **15** and connected at its opposite end by a pivot **65** to the rocker plate **50**; a rocker arm **66** best shown in FIGS. 8 and 9 and pivotally mounted on a cantilever shaft **68**, the rocker arm carrying a follower in the form of a roller **70** for cooperating contact with the counting cam **36**; a tension spring **72** connected to the rocker arm **66** to press the roller **70** against the counting cam **36**; a conventional cumulative counter **74** having an operating arm **75** for carrying a running total of the stamps dispensed from the single-row strip S–1; and a link **76** connected by a pivot **78** to the operating arm **75** and connected by a pivot **80** to the rocker arm **66**.

The rocker plate **50** serves to move the transmission roller **52** into and out of actuating contact with the periphery of the sales counter wheel **22** while maintaining the transmission wheel in constant effective contact with the periphery of the drive roller **38**. A feature of the mechanism in this regard is that the rocker plate **50** is journaled on the cantilever shaft **34** for this purpose by means of a slightly elongated slot **82** (FIG. 3*a*) which provides automatic compensation for wear and which permits a liberal range of tolerance with respect to the dimensioning of both the drive roller **38** and the cooperating transmission roller **52**. The rocker plate **50** has an angular stop finger **84** which is positioned to abut the link **62** for the purpose of limiting the clockwise rotation of the rocker plate and for the further purpose of limiting the downward movement of the dispensing shelf **15**.

The polygonal metering member **35** is preferably formed with radial flanges **85** at its opposite ends (FIG. 4) to serve as retaining guides for the stamp strip S–1 and to keep the stamp strip centered on the three faces of the metering member. A feature of the invention in this regard is the provision of a suitable leaf spring **86** which exerts extremely light pressure against the underside of the metering member, the pressure being sufficient to hold the stamp strip against the metering member.

The normal positions of the parts when the dispensing mechanism is not in operation are shown in FIG. 2 where it can be seen that a stop lug **88** on the face of the sales counter wheel **22** is in abutment with the stop finger **58** of the rocker plate **50**. Thus, the light force of the torque spring **46** of the counter wheel **22** is added to the force of the tension spring **55** to urge the rocker plate **50** counterclockwise for the purpose of holding the transmission roller **52** in actuating contact with the periphery of the sales counter wheel **22**. At this time the follower roller **70** is in the bottom of a valley formed by two lobes **44** of the counting cam **36** to hold the polygonal metering member **35** at its normal idle position as shown. Thus, the follower roller **70** on the spring pressed arm **66** not only serves as means to actuate the counter **74** but also serves as detent means for holding the rotary metering member **35** stationary at a predetermined orientation of the metering member.

The single-row stamp strip S–1 is led from a supply roll **90** around a guide roller **92** on the cantilever shaft **68** and then around the polygonal metering member **35**. From the polygonal metering member **35** the single-row strip S–1 passes over a second guide roller **94** on the cantilever shaft **60** and from this guide roller the stamp

strip S–1 extends across the top of the dispenser shelf 15 through the housing slot 12.

FIG. 4 shows a stamp 96*a* flat against a face 40*a* of the polygonal metering member 35 and a second stamp 96*b* flat against a second face 40*b*. The two stamps 96*a* and 96*b* are interconnected by a line of perforations 21 and the stamp strip is bent to an acute angle at the perforations with the acute bend in the stamp strip pulled tight against a transverse edge 42*b* of the polygonal metering member. The leaf spring 86 holds the stamp 96*a* lightly against the face 40*a* of the metering member.

When the operator pulls on the stamp strip S–1 to draw stamps into the dispensing zone, the resulting movement of the single-row stamp strip initially rotates the polygonal metering member 35 from the position shown in FIG. 4 to the position shown in FIG. 5 to cause corresponding rotation of the drive roller 38, the transmission roller 52 and the counter wheel 22, with corresponding movement of the stop lug 88 away from the stop finger 58.

Further movement of the stamp strip towards the dispensing zone rotates the metering member 35 to the position shown in FIG. 6 where the stamp 96*a* swings away from the polygonal dispensing member 35. It is to be noted that in FIG. 6 the perforations 21 between the two stamps 96*a* and 96*b* are still at the sharp transverse edge 42*b* of the metering member. The perforations 21 between the stamp 96*b* and the following stamp 96*c* lags behind the transverse edge 42*c* of the polygonal metering member.

As the polygonal metering member rotates from the position shown in FIG. 6 to the position shown in FIG. 7, the tension on the stamp strip causes the stamp 96*b* to slide forward on the metering member 35 until the perforations 21 between the stamp 96*b* and the stamp 96*c* register with the transverse edge 42*c* of the polygonal metering member. Thus, as each of the three faces of the metering member 35 successively reach the underside of the rotating metering member, the stamp strip slips forward along the face to bring a new line of perforations into register with the trailing edge of the face. In this way, synchronization occurs for each successive stamp in the traveling strip.

In the described metering operation, the strip of stamps periodically slips forward slightly relative to the polygonal metering member because the faces of the polygonal member are shorter than the individual stamps. If the metering faces were longer than the individual stamps, the periodic slippage would be rearward relative to the polygonal member.

If the sales transaction amounts to $1.30, for example, the operator pulls on the same strip S–1 until the figure $1.30 on the counter wheel 22 appears at the window 24 opposite the index 25. At this time thirteen stamps of the single-strip will be pulled beyond the serrated cutting blade 16, and the counter 74 will have been operated thirteen times to raise the total figure at the window 30. The operator then pulls the thirteen stamps downward across the blade 16 in the manner indicated in FIG. 3, the perforations of the stamp strip registering with the blade for ready severance of the stamps that are to be dispensed.

The downward force exerted on the outer end of the dispenser shelf 15 by the pressure of the stamp strip against the blade 16 causes the dispenser shelf to swing downward at its outer end as shown in FIG. 3 to cause the link 62 to rock the rocker plate 50 clockwise to a limit position determined by abutment of the stop finger 84 against the link 62. This clockwise rotation of the rocker plate 50 against the resistance of the spring 55 shifts the transmission roller 52 out of contact with the periphery of the sales counter wheel 22 whereupon the sales counter wheel is released by the transmission roller 52 to rotate clockwise back to its starting position at which the stop lug 88 again rests against the stop finger 58. It is to be noted that the impact of the returning stop lug 88 against the stop finger 58 completes the return counterclockwise rotation of the rocker plate 50 to bring the transmission roller back to its normal position against the periphery of the sales counter wheel 22.

When the stamps are severed by the cutting blade 16, the dispenser shelf 15 is free to return to its normal upper position under the actuating force of the spring 55, but the return movement is sufficiently retarded by the inertia of the involved mass to permit the sales counter wheel 22 to return to its starting or zero position before the transmission roller 52 is carried back to its normal position. It is to be noted that the pressure exerted by the follower roller 70 against the counting cam 36 is adequate to withstand the force of the torque spring 46 so that the follower roller 70 in cooperation with the counting cam 36 not only serves as means for orienting the metering member 35 at its normal idle position but also serves as detent means for preventing reverse rotation of the sales counter wheel 22 as long as the transmission roller 52 is in effective contact with the wheel.

When stamps are severed by the blades 16 and 20, new stamps are presented on the dispensing shelves 15 and 18. Thus, each time stamps are dispensed from each stamp strip, the device is automatically readied for a new dispensing operation.

At the end of the day the total number of stamps that have been dispensed may be obtained by adding the total visible in the window 30 to five times the total visible in the window 32. It is apparent that the device is highly effective for saving time and for promoting accuracy in the counting of stamps for individual sales. It is to be noted that only one hand is necessary to dispense stamps from either the single-row strip S–1 or the five-row strip S–5.

My description in specific detail of the selected embodiment of the invention will constitute various changes, substitutions and other departures from my disclosure within the spirit and scope of the appended claims.

I claim:

1. In a device for dispensing trading stamps from a strip of stamps connected end to end by frangible connections, the combination of:

a rotatable equilateral polygonal metering member having no more than four equal sides; and

means to direct the strip of stamps longitudinally around said polygonal member and from the polygonal member to a dispensing zone with corresponding rotation of the polygonal metering member.

2. A combination as set forth in claim 1 which includes resilient means adjacent the periphery of said polygonal member to press the strip of stamps against the member.

3. A combination as set forth in claim 1 in which said polygonal body has the cross section of configuration of an equilateral triangle with three equally spaced transverse peripheral edges defined by contiguous sides at 60° angles to cause said frangible connections to seek said edges in response to tensioning of the strip of stamps as said edges rotate successively to a given position for repeated synchronization of the strip of stamps with the polygonal member.

4. A combination as set forth in claim 3 in which the length of the sides of the polygonal member is slightly less than the length of the individual stamps to cause slippage of the strip of stamps relative to the polygonal member to bring the weakened connections successively to said successive edges.

5. In a device for dispensing trading stamps from a strip of stamps connected end to end by frangible connections, the combination of: a rotary body; means to guide said strip of stamps longitudinally around said

rotary body and therefrom to a dispensing zone to cause rotation of the rotary body in response to longitudinal travel of the strip; a counting means biased to a starting position and movable from the starting position to indicate quantities of the stamps moved to the dispensing zone; releasable connecting means normally operatively connecting said rotary body to said counting means to move the counting means progressively from a starting position in response to progressive movement of the strip of stamps to the dispensing zone; detent means to prevent reverse rotation of said rotary body by the bias of said counting means; means operable to sever the dispensed stamps from the strip; means to release said connecting means in response to operation of said severing means to permit the counting means to return to its starting position; a multiple lobe cam operatively connected to said rotary body for rotation simultaneously therewith; a follower in contact with said cam; spring means to urge said follower against the cam to cause the rotary body to tend to stop at predetermined points in its rotation and to prevent reverse rotation of the rotary body by the bias of said counting means; and a cumulative counter to total the number of dispensed stamps, said cumulative counter being responsive to said follower.

6. In a device for dispensing stamps, the combination of: first supply means to hold a first single-row strip of stamps with the stamps connected end to end by weakened frangible connections;

second supply means to hold a second multiple-row strip of stamps connected end to end by weakened frangible connections;

two rotary equilateral polygonal members each having no more than four equal sides;

means to guide said two strips of stamps, respectively, around the two polygonal members to cause rotation thereof in response to longitudinal travel of the strips of stamps;

two counter means responsive to rotation of said two polygonal members, respectively, to indicate the number of stamps dispensed for each sale;

means to sever the dispensed stamps; and

means to reset said two counter means in response, respectively, to the operation of said two severing means.

7. A combination as set forth in claim 6 which includes two cumulative counters to total the number of stamps dispensed from said two strips respectively, said cumulative counters being responsive to rotation of said two polygonal members respectively.

8. In a device for dispensing stamps, the combination of:

first supply means to hold a first single-row strip of stamps with stamps connected end to end by weakened frangible connections;

second supply means to hold a second multiple-row strip of stamps connected end to end by weakened frangible connections;

two rotary equilateral polygonal members each having no more than four equal sides;

means to guide said two strips of stamps, respectively, around the two polygonal members to cause rotation thereof in response to longitudinal travel of the strips of stamps;

two counter means each biased to a starting position and movable from the starting position to indicate the quantity of stamps from said two strips, respectively, that are moved to the dispensing zone;

two releasable connecting means normally operatively connecting said polygonal members, respectively, to said two counter means to move the two counter means progressively from their starting positions in response to progressive movement of the two strips of stamps, respectively, to the dispensing zone;

means operable to sever the dispensed stamps from the two strips, respectively, at the dispensing zone; and

means to release said two connecting means, respectively, in response to operation of said two severing means to permit the two counter means to return to their starting positions.

9. In a device for dispensing trading stamps from a strip of stamps connected end to end by frangible connections, the combination of:

a rotary assembly comprising an equilateral polygonal member, a multiple-lobe cam and a drive roller, said drive roller and cam being united with said polygonal member concentric thereto;

means to guide said strip of stamps longitudinally around said polygonal member and from the polygonal member to a dispensing zone to cause rotation of the assembly in response to travel of the strip of stamps to the dispensing zone;

a rotary counter biased to a starting position and movable from the starting position to indicate the quantity of stamps moved to the dispensing zone; a transmission roller; support means carrying said roller and movable between a release position and a normal effective position at which the transmission roller contacts said rotary counter to transmit thereto the rotation of said assembly;

means at said dispensing zone to sever stamps from said strip; and

means operatively connecting said severing means with said support means to move said support means to its release position in response to operation of the severing means thereby to permit the rotary counter to be returned to its starting position.

10. A combination as set forth in claim 9 in which said support means has an oblong aperture embracing a concentric portion of said assembly to fulcrum the support means for movement between its two positions.

11. A combination as set forth in claim 9 in which

said assembly includes a multiple-lobe cam;

which further includes a follower biased against the cam; and

which further includes a cumulative counter to total the number of dispensed stamps, said cumulative counter being operatively connected to said follower.

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WILLIAM W. DYER, JR., *Primary Examiner.*