

[54] **FRICION FEED TICKET DISPENSER**

2,687,174 8/1954 Richens 83/176 X
 3,558,254 1/1971 Cahill..... 83/649 X
 3,748,937 7/1973 Long..... 83/422 X

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[21] Appl. No.: **416,855**

[57] **ABSTRACT**

[52] U.S. Cl. **225/103; 30/241; 83/212; 269/315**

[51] Int. Cl. **B65h 35/10**

[58] Field of Search 225/103, 93, 96.5; 83/212, 83/210, 176, 436, 17, 422, 649, 372, 373, 268, 269, 391, 392, 393, 394, 395; 269/315, 316, 317, 318, 319, 320

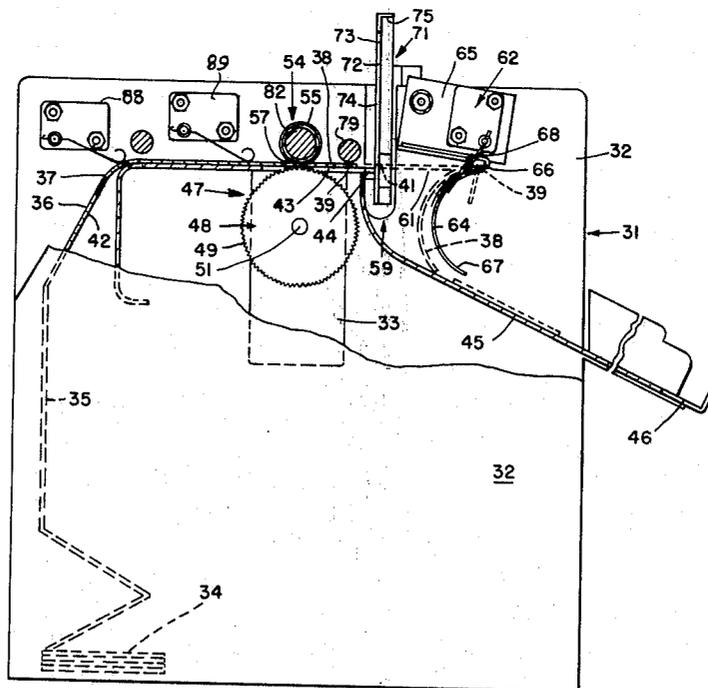
A dispenser especially for lottery tickets feeds a web of tickets, by means of a knurled roll, rubber roll pressure nip with the leading ticket advancing across a platform, through a breaker zone, across a gap to a stop. The leading ticket is bowed as it bridges the gap to assure straightness and to resist collapse under breaker bar impact. The breaker bar impacts near a perforated line, with a karate type blow, to separate each successive ticket. If slightly out of registration, there is no accumulation of error as may occur with a cutter bar.

[56] **References Cited**

UNITED STATES PATENTS

2,269,714 1/1942 Fenton..... 83/212

8 Claims, 4 Drawing Figures



SHEET 1

Fig. 1.

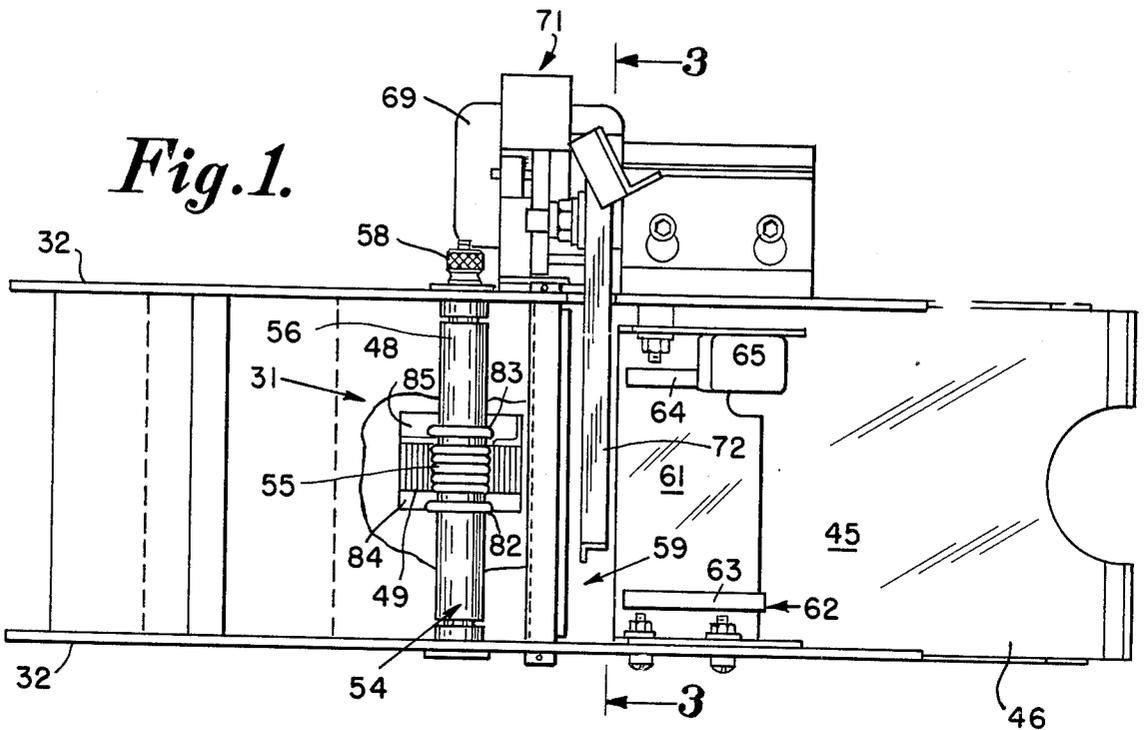


Fig. 2.

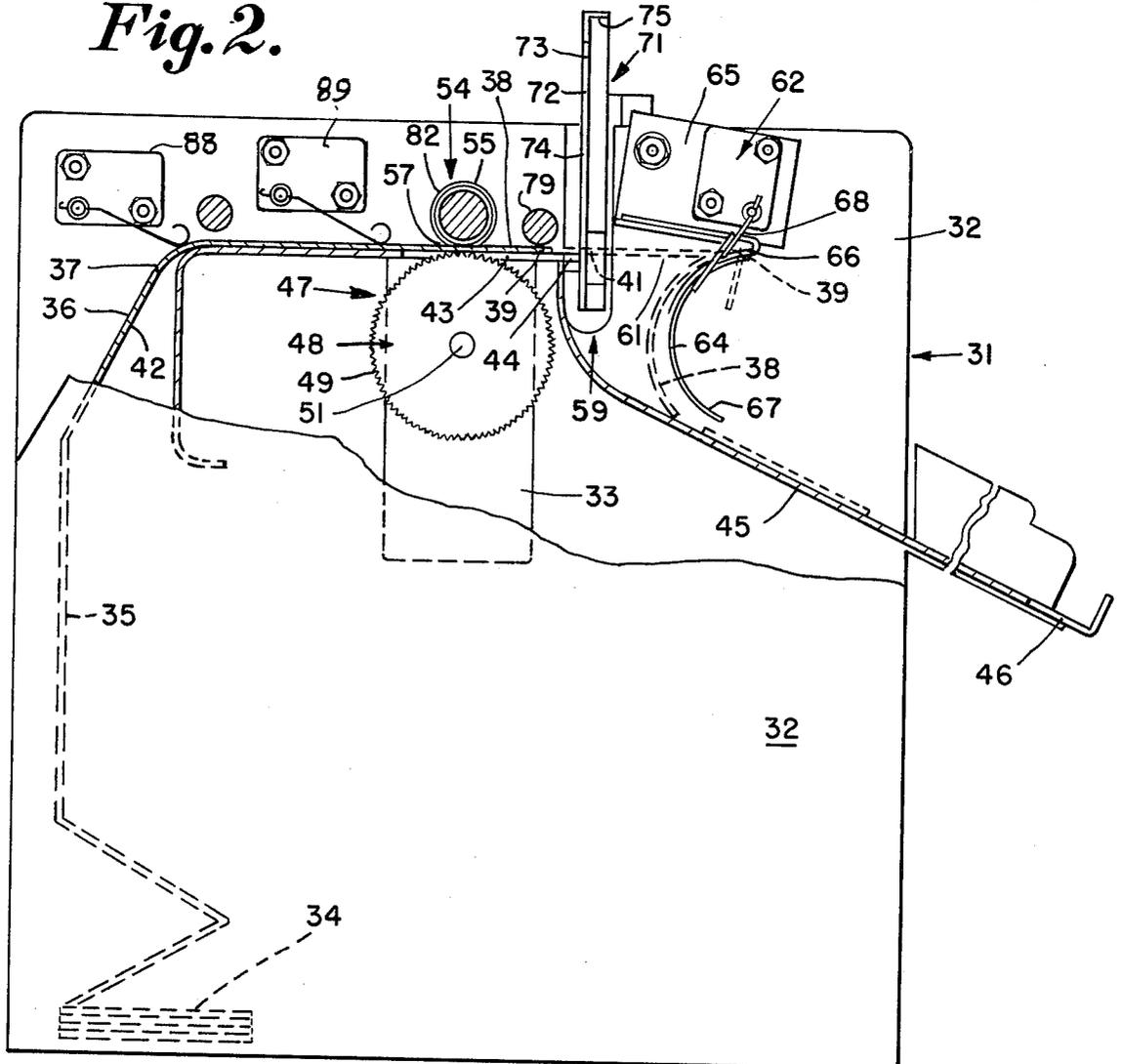


Fig. 3.

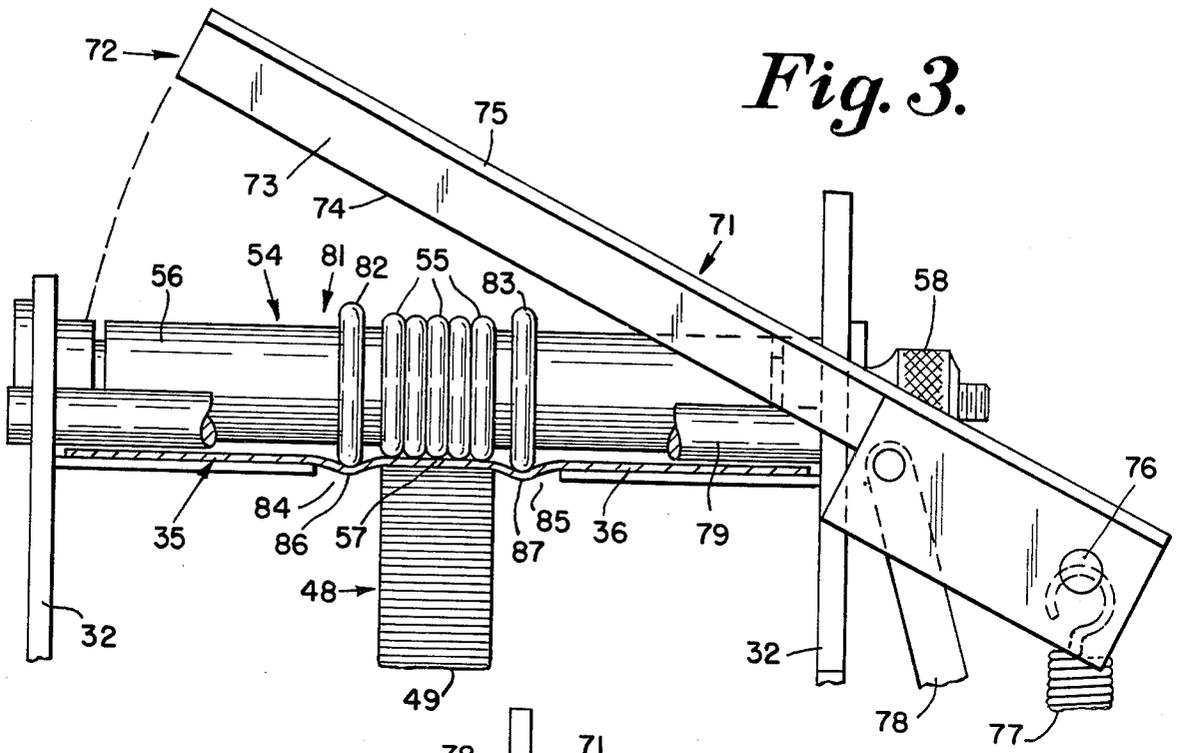
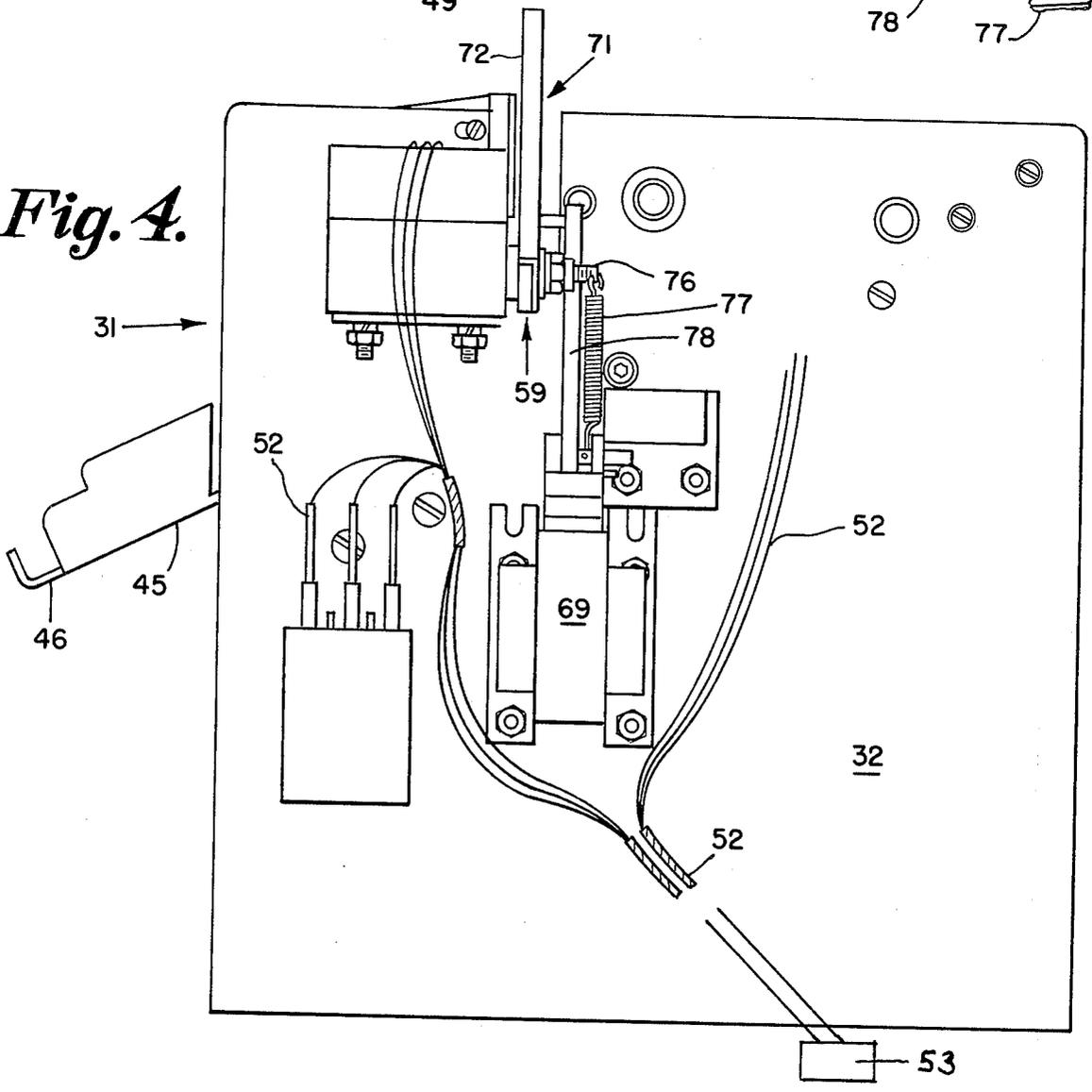


Fig. 4.



FRICION FEED TICKET DISPENSER

BACKGROUND OF THE INVENTION

The dispensing of tickets for lotteries has long presented problems not found, for example, with theatre tickets, insurance policies and the like because of the intrinsic value of the lottery tickets. Usually the automatic lottery ticket dispensers are placed in locations, such as state liquor stores, wherein there are no skilled operators ready to correct malfunctions such as the inadvertent dispensing of all of the tickets at once or the jam-up of a machine in rush purchase hours.

It has heretofore been proposed in U.S. Pat. No. 3,612,372 to Richer of Oct. 12, 1971, to use registration pin chain feed and a registration apertured web of tickets to be sure of a single ticket feed, the actuation coming from the closing of a door after the customer has written his name on the ticket. The tickets are torn off the web by the purchaser.

In U.S. Pat. No. 3,734,261 to Richer of May 22, 1973, the tickets are also advanced by registration holes and registration pin chains, but are cut off by an upwardly moving pivoted knife. A tension bar assures a clean cut and clamps are provided to hold down the tickets against the lift-off effect of the up moving knife.

The tearing off of tickets and the cutting off of tickets, while normally satisfactory, can create considerable dispensing difficulty when the tickets used in a particular state are of relatively flimsy, limp material or when a batch of tickets is printed inaccurately. Some states do not approve of registration apertures in the web of tickets so that they must be fed by friction. Prior art devices do not adapt themselves to accurate control under these circumstances.

SUMMARY OF THE INVENTION

In this invention the friction feed is accomplished by a lower knurled surface roll and upper rubber faced rolls which advance the continuous ticket web across a horizontal platform having a forward edge corresponding to a bed plate. When the user inserts the appropriate note in the note acceptor, the leading, or endmost, ticket advances from the platform until its perforated line connection to the next ticket is aligned with the platform edge at which time the leading edge of the ticket has entered the arcuate stop means and closed a limit switch. The limit switch opens the circuit to the motor controlling the knurled feed roll while closing a circuit to the solenoid for lowering the breaker bar. The ticket is bridging the gap between the platform edge and the stop and has been given a double bow by a pressure ring and slot which rigidifies and stiffens the ticket like a tautly held paper readying for the impact of the breaker bar. Because the perforated line is proximate the platform edge and the ticket is straight and taut, the bar can strike with a sharp karate type blow exactly on the line, or even slightly away therefrom, and still cause the ticket to separate exactly on the line without lint, cuttings or continual accumulation of error. The stop means continues to support the leading edge of the ticket while the horizontal portion of the breaker bar engages the trailing portion to snap the latter down into a chute while flipping the ticket over to reveal the printed underside. Thus the costly registration chains are avoided and precise, successive separation of tickets obtained by the versatility of the blunt breaker bar means in compensating for any feed errors.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a dispenser constructed in accordance with the invention;

FIG. 2 is a side elevational view of the apparatus shown in FIG. 1 with parts broken away;

FIG. 3 is an enlarged fragmentary front elevation showing the breaker bar means and the ticket bowing means and the feed roll means of the invention; and

FIG. 4 is a side elevational view of the apparatus showing the solenoid for actuating the breaker bar.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The ticket dispenser apparatus 31 of the invention is contained in a framework 32 which fits within the main housing of a conventional lottery ticket dispenser, such as shown in the abovementioned U.S. Pat. Nos. 3,612,372 and 3,734,261 and now well known in the art. The mechanism is actuated by a commercially available note acceptor, not shown, which closes an electric circuit to the feed roll motor 33 upon acceptance of the customer's paper money.

The framework 32 includes a supply compartment 34 for a continuous web 35 of individual lottery tickets 36, separated from each other by perforated lines 37, the web 35 being preferably fan folded as shown. Each successive leading, or endmost, ticket 38 has a leading edge 39, a trailing edge portion 41 and has printed indicia 42 on the underside, the web being advanced with the printed side down. The framework 32 also includes a horizontal platform 43 with a forward edge 44 which serves as a bed plate as will be explained hereinafter.

A ticket delivery chute 45 is provided having a terminal end 46 extending outside the main housing so that tickets dropping down the chute may be picked up by the purchaser.

Powered friction feed means 47 includes a lower feed roll 48 having a knurled surface 49 and fast on a shaft 51 driven by the electric feed roll motor 33 when the electric circuit 52 is closed by the note acceptor start switch 53. Means 47 also includes an upper feed roll 54, formed by a plurality of rubber rings 55 mounted on a shaft 56 and all of predetermined identical diameter to form a pressure or feed nip 57. The clearance or pressure at nip 57 is adjusted by the knurled nuts 58 which tighten the shaft 56 in place in slots in framework 32.

It will be seen that upon rotation of the knurled feed roll, when a note has been accepted by the note acceptor, the web 35 will be advanced to advance the leading, or endmost, ticket 38 across the platform 43, beyond the edge 44, through the segregation station 59 and across the gap 61 until the leading edge 39 engages the stop means 62.

Stop means 62 includes a pair of arcuate elements 63 and 64 depending from the block 65 and each having a recess 66 for receiving and intercepting the leading edge as well as a curved portion 67 which supports the leading edge 39 of the segregated ticket while its trailing edge portion 41 is impacted downwardly to flip the ticket over, printed side up, as it falls down chute 45 (FIG. 2).

Stop means 62 also includes a limit switch 68 which is closed by the contact of the leading edge 39 when that edge is within recess 66 and is exactly one ticket length from the forward edge 44 of platform 43, the

switch 68 opening the circuit to motor 33 to stop the feed roll means 47. Switch 68 also closes a circuit to the solenoid 69 of the breaker bar means 71 to actuate the breaker bar thereof.

Breaker bar means 71 includes the breaker bar 72, which is of right angular cross section with a vertical impact portion 73, having a blunt edge 74 and a horizontal portion 75 for engaging the trailing edge portions 41 of each successive ticket at segregation station 59. As best shown in FIG. 3, breaker bar 72 is pivoted at 76 and provided with a return spring 77, so that when it is drawn downwardly by link 78 and solenoid 69 the breaker bar is lowered with great speed alongside the bed plate formed by forward edge 44 to break off the endmost ticket 38 at the perforated line 37.

A hold down roll 79 extends across framework 32 to prevent any snap-up of the next successive ticket when the breaker bar delivers its blunt karate type blow.

If the web 35 is formed of relatively thin paper which is limp and non-self-supporting, the leading ticket may sag down as it seeks to bridge the gap 61 and thereby miss the stop means and fail to actuate switch 68. This may result in the entire web feeding out on the floor at great loss to the state and great good fortune to the purchaser. Similarly, such a thin web may result in the endmost ticket merely being wiped downwardly by the breaker bar, rather than being separated, thus failing to deliver the ticket. Upon the next actuation, the tickets may then jam up in the stop means.

To overcome any possibility of such misfeeds occurring, ticket bowing means 81 is provided comprising a pair of rubber rings 82 and 83 of enlarged diameter, each having the lower portion thereof received in one of a pair of slots 84 and 85 in platform 43. The slots 84 and 85 extend in the direction of travel of the web and the diameter of rings 82 and 83 is predetermined to create a bow or axially extending temporary corrugation 86 and 87 in each endmost ticket 38 to lend strength and rigidity thereto so that the ticket will advance straight and horizontally across the gap without sag to contact recess 66 and limit switch 68. The bowing means, or guide means, 81 performs a second function in making the ticket taut as it bridges the gap, like a piece of cloth to be cut by a knife, so that even if the breaker bar 72 should not impact exactly at each successive perforated line, the ticket will still be segregated at that line and no accumulation of error will occur.

Suitable switches 88 and 89 are included in circuit 52, to signal that tickets are exhausted so that the note acceptor will not accept money with the machine unable to dispense.

I claim:

1. In a lottery ticket dispenser of the type having a continuous web of individual lottery tickets, separated by perforated lines, guided from a supply compartment to a platform proximate a delivery chute, the combination of:

powered friction feed mechanism, including a lower knurled roll forming a feed nip with an upper rubber roll for advancing said web across said platform;

stop means, mounted on said dispenser one ticket's length beyond said platform, and including an arcuate element having a recess for receiving the leading edge of each successive endmost ticket advanced therealong and a limit switch in said recess

for stopping said feed mechanism when closed by contact with said leading edge;

ticket bowing means, associated with one of said feed rolls and said platform for bowing each successive endmost ticket bridging the gap between said platform and stop means for readying said ticket for severance, while assuring that the ticket travels straight to said stop means; and

breaker means including a breaker bar normally poised out of the path of said tickets proximate the edge of said platform, and power means for moving said bar downward to deliver a karate chop blow at the perforated line separating the endmost ticket engaging said stop means to separate said ticket from said web along said perforated line.

2. A dispenser as specified in claim 1, wherein: said upper roll of said friction feed mechanism is freely rotatable and formed of a plurality of individual rubber rings encircling a shaft and each of identical outside diameter.

3. A dispenser as specified in claim 1, wherein: said ticket bowing means comprises at least one slot in said platform extending in the direction of advance of said web and at least one rubber ring of greater diameter than the diameter of said upper roll and received in said slot;

whereby each successive ticket is distorted down into said slot by said ring to form a bowed portion to strengthen the resistance of said ticket to drooping or bending downwardly.

4. A dispenser as specified in claim 1, wherein: said ticket bowing means is formed by a pair of slots, each on an opposite side of said lower roll in said platform, and a pair of rings on said upper roll, each extending into one of said slots to create a pair of temporary corrugations in each endmost ticket causing said ticket to be self-supporting in advancing from said platform to said stop means.

5. A dispenser as specified in claim 1, plus: a hold down roll mounted to rotate proximate the edge of said platform near the path of movement of said breaker bar, said roll preventing upward movement of the next successive ticket in reaction to the impact of the downward moving breaker bar.

6. A dispenser as specified in claim 1, wherein: the arcuate element of said stop means includes a curved portion adapted to support the leading front edge of each ticket segregated by said breaker bar, while the rearward edge of said ticket is impacted downwardly by said breaker bar to fall down said chute, the ticket thus flipping over to reveal the printing on the underside thereof.

7. Apparatus for dispensing one ticket at a time from a web of such tickets connected to each other by perforated lines, said apparatus comprising:

powered feed rolls having a pressure nip for continuously advancing said web with the leading ticket advancing from a platform edge, through a segregation station, across a gap to a stop in the path of the leading edge;

at least one said stop having a recess for receiving said leading edge and a limit switch in said recess for stopping said feed rolls when closed by contact with said edge;

guide means proximate said platform edge for bowing each successive leading ticket as it bridges said

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gap to stiffen the same to travel in a straight path toward said stop;

pivoted breaker bar means operably mounted at said platform edge to move downwardly to strike each successive ticket engaging said stop with a blunt blow to break off said ticket at its perforated line of joinder to said web; and

a switch for starting said feed rolls to advance said web; and

electric circuit means, including said limit switch engaged by said leading edge at said stop for halting said feed rolls, and actuating said breaker bar

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means to separate each successive leading ticket from said web.

8. Apparatus as specified in claim 7, wherein: said pivoted breaker bar means includes a breaker bar of right angular cross section, having a vertical portion with a blunt edge for impacting said tickets proximate the perforated line thereof and a horizontal portion for impacting the trailing portion of said tickets to cause the same to fall, while the leading portion of said tickets are still supported by said stop means.

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