

June 30, 1953

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2,643,929

DISPENSING DEVICE

Filed Nov. 10, 1948

2 Sheets-Sheet 1

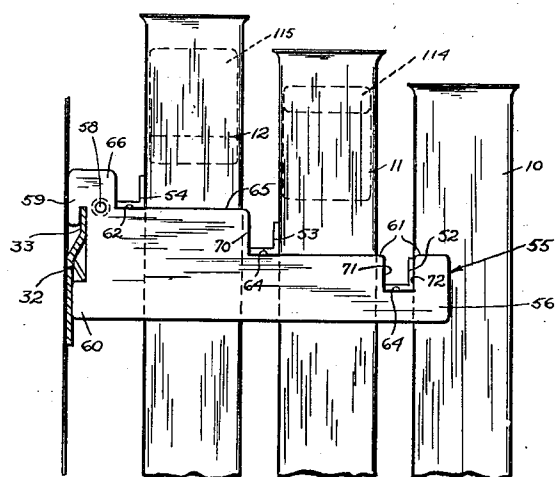


FIG. 1

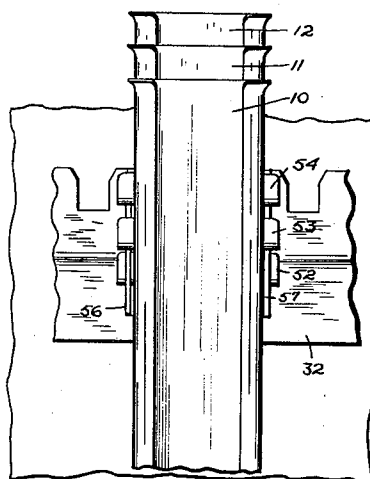


FIG. 2

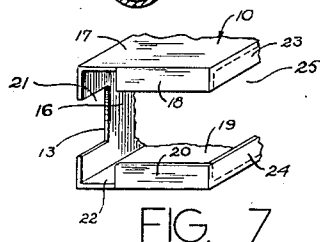
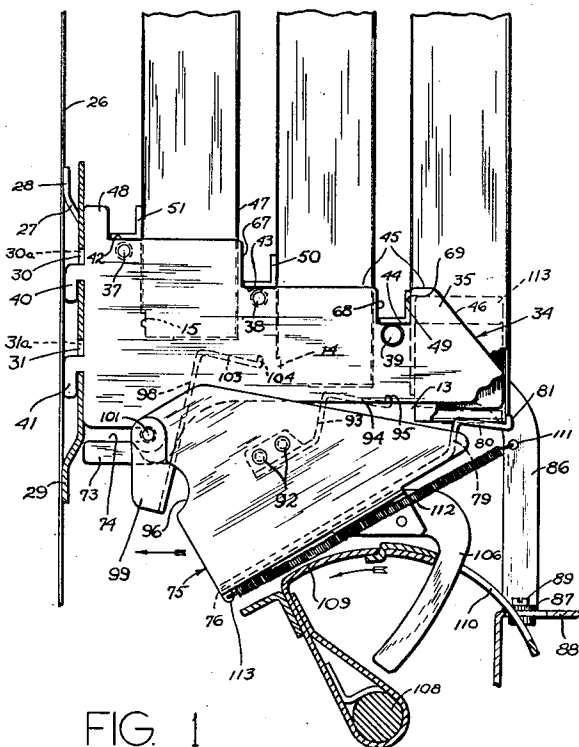


FIG. 7

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2 Sheets-Sheet 2

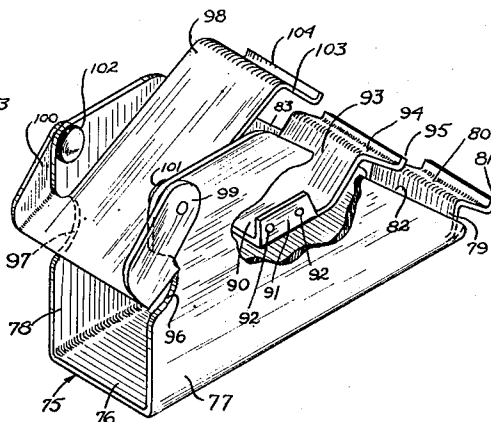
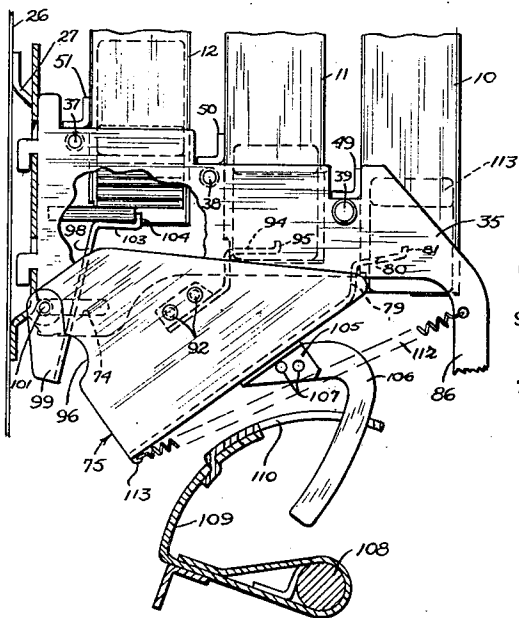
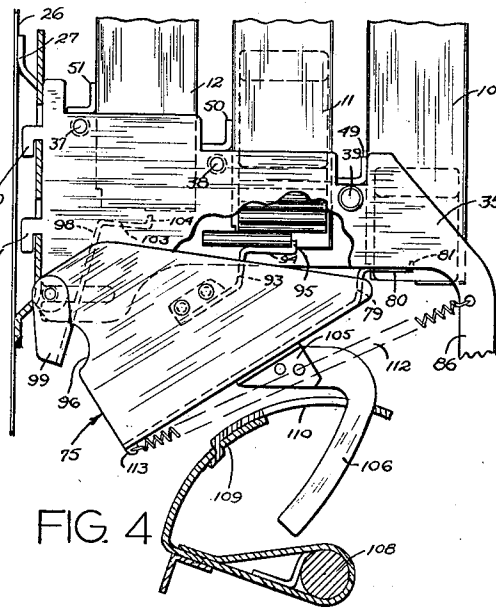
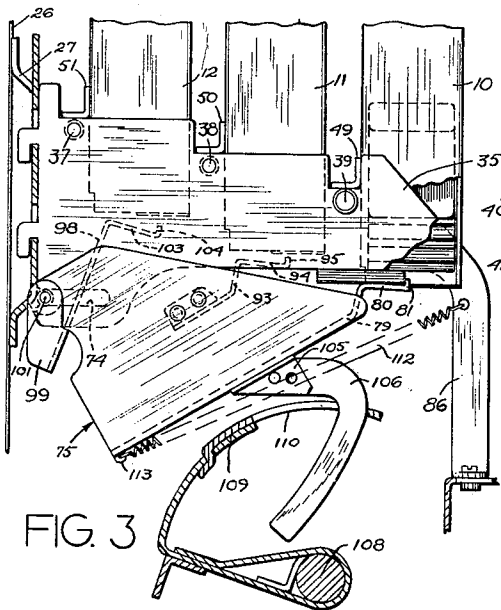


FIG. 5

FIG. 6

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DISPENSING DEVICE

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Application November 10, 1948, Serial No. 59,235

4 Claims. (Cl. 312-67)

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This invention relates to improvements in dispensing devices and has for a principal object the provision of a device for dispensing book matches.

Another object of the invention is the provision in a match dispenser for book matches of a plurality of columns for containing said matches and ejector means for ejecting matches from said columns sequentially.

Another object of the invention is the provision in a book match dispenser of a plurality of vertical columns for containing book matches, and an ejector member moving in a path below all of the columns and carrying an ejector element for each column, said ejector elements being so arranged that each is brought into cooperation with the matches in its column when the matches in the preceding column have become exhausted.

Other objects and advantages of the invention will be apparent to those skilled in the art upon a study of the following specification and the accompanying drawings.

Referring to the drawings, which are given by way of example to illustrate the invention:

Figure 1 is a full elevation of the device showing a group of columns adapted to contain book matches to be dispensed;

Figure 2 is an elevation of the device, as seen from the right side of Figure 1;

Figure 3 is an elevation broken away and showing the ejector means delivering matches from the first column in the series;

Figure 4 is a view similar to Figure 3, except that the first column in the series has become exhausted and the ejector means is shown ejecting matches from the second column;

Figure 5 is a view similar to Figures 3 and 4, except that the first and second columns have become exhausted and the ejector means is ejecting matches from the third column;

Figure 6 is a perspective view, partly broken away, of the match ejector employed in the device; and

Figure 7 is a perspective view of the bottom of one of the columns adapted to contain book matches and showing the arrangement of the discharge opening and other openings therein.

Referring first to Figures 1 and 2, my new and improved match dispenser includes, by way of example, tubular columns 10, 11 and 12, each adapted to be loaded with book matches, and these books are usually so positioned therein that they are alternately arranged with their large ends (the ends containing the match heads) facing the front and facing the back.

The left sides of each of said columns, at the

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bottom thereof, are provided with discharge openings through which the match books are ejected laterally. For example, the column 10 is provided with match discharge opening 13, column 11 is provided with a match discharge opening 14, and the column 12 is provided with a match discharge opening 15. The lower end of the column 10 is shown in perspective in Figure 7 and the other columns 11 and 12 have their lower ends identical therewith. Column 10, as stated above, has a discharge opening 13 formed therein. This is formed by cutting out the wall 16 so that it terminates. The wall 17 has at the bottom thereof, a horizontal tab 18, which forms a ledge on which the bottom match book rests. The wall 19 also has a tab 20 formed integral therewith and in parallel spaced relation to the tab 18, and it also forms a ledge upon which the bottom book of matches in the column may rest.

The space 21 between the left end of the tab 18 and the wall 16, as seen in Figure 7, and the space 22 between the left end of the tab 20 and the wall 16, together with the opening 13, form a discharge opening for the books of matches which allows each to fall downwardly before it is entirely ejected from the column 10. The column 10 has, opposite the wall 16, a pair of spaced longitudinal tabs 23 and 24 with a slotted opening 25 therebetween. This slot opening facilitates the loading of the column with book matches and at the bottom thereof, this slot forms a clearance for the ejector elements to be presently described.

A supporting wall 26 has a bracket 27 secured thereto in any suitable manner, for example, by spot welding at the points 28 and 29. A slot 30 is formed in the bracket near the point 28, and a second slot 30a is shown at 27, to the rear of and in alignment with the slot 30, and another slot 31 is formed in the bracket in spaced relation to the slot 30. In alignment with the slot 31, and to the rear of it is a slot 31a. Spaced upwardly from the bracket 27, in accordance with the height of the columns used, is a bracket member 32, the main body of which lies in contact with the wall 26 and an offset portion 33 thereof performs a function to be presently described. A support 34 consists of two identical plate members 35 and 36 secured together by tie rods 37, 38 and 39.

A plate 35 has angular tabs 40 and 41 which extend through the holes 30 and 31 and as the support is pressed downwardly, these tabs hook onto the solid portions of the bracket 27 and are firmly supported thereon. The plate mem-

ber 36 has identical hook-shaped tabs thereon which engage the holes 33a and 31a.

The plate member 35 has its upper surface formed into a series of steps, one step being indicated at 42, one at 43, and one at 44. The step 44 is formed in and breaks the plate surface 45 for a purpose to be presently described, and a beveled surface 46 joins the surface 45. The plate surface 47 has formed integral therewith at the left end thereof, as seen in Figure 1, a tab 47. Between the surface 47 and the surface 45 is a vertical surface 67. The step 44 is bounded by vertical sides 68 and 69.

Each of the columns has secured thereto an angle member. The angle member on the column 10 is designated by the numeral 49. The angle member on the column 11 is designated by the numeral 50, and the angle member on the column 12 is designated by the numeral 51. These angle members are all the same distance from the lower end of the column so that when they engage the stepped portions of the support, the lower ends thereof are also stepped. The column 10 also carries an angle member 52, near the upper end thereof, the column 11 carries an angle member 53, and the column 12 carries an angle member 54.

A second support, 55, is formed of supporting plates 56 and 57. These plates are identical and they may be secured together by tie rods, such as the tie rod 58.

The plate 56 has an angular tab 59 formed integral therewith on the left end thereof and this tab hooks over the offset portion 33 of the bracket member 32. A tab 60, also on the left end of the plate member 56, engages the bracket 32 and ensures that the plate 56 is substantially level. The plate 57 is identical and has a corresponding angular tab, like 59, which engages the offset portion of the bracket 32. The plate member 56 has its upper surface formed into a series of steps, one step being indicated at 62, one at 63, and one at 64. The step 64 is formed in and breaks the plate surface 61 for a purpose to be presently described.

The plate surface 65 has formed integral therewith at the left end thereof, as seen in Figure 1, a tab 66. Between the surfaces 65 and 61 is a vertical surface 70, and step 64 is bounded by vertical sides 71 and 72.

In assembling the columns onto these spaced supports 34 and 55, the column 12 is first positioned on the supports with its angle members 51 and 54, respectively, engaging the surfaces 47 and 55. The column is pressed to the left until the angle member 51 abuts the tab 48 and the angle member 54 abuts the tab 66. Then, the column 11 is positioned with its angle member 50 on the step 43 and its angle member 53 on the step 64 and is pressed to the left until the bracket 50 abuts the surface 67 and the bracket 53 abuts the surface 70. Then, the column 10 is positioned on the supports with the angle member 49 positioned on the step 44 between the surfaces 68 and 69 and with the angle member 52 on the step 64 between the surfaces 71 and 72.

When the columns 10, 11 and 12 are so positioned, their lower ends are stepped relative to each other to correspond with the steps formed in the supports 34 and 55.

The plate 35 has formed integral therewith a depending portion 73 and formed in said depending portion is a horizontal slot 74. This slot extends into the plate 35 from the left end, as seen in Figure 1. The plate 36 is identical with

the plate 35 and has a corresponding slot formed therein which is in horizontal alignment with the slot 74.

The plate 35 has a depending leg 84, the lower end 85 of which forms a foot. The plate 36 has a similar depending leg 86, the lower end 87 of which forms a foot, and these feet are secured to a support 88 spaced apart from the supporting wall 26, by means of bolts 89.

An ejector device, generally designated by the numeral 75, which may best be seen in Figure 6, has a body portion generally in the form of a channel, which has a central web 76 and side portions 77 and 78. The central web 76 has a portion 79, which is bent upwardly, as shown in Figure 1, and a portion 80, which is angular with respect to the portion 79, and a third portion 81 which is also bent upwardly to form a hook or match book engaging member. The side portion 77 has a beveled end 82 and likewise, the side portion 78 has a beveled surface 83 which is substantially parallel to the surface 82.

A web 90 has side lugs, one of which is shown at 91, formed integral therewith, and forming a fit between the portions 77 and 78 of the channel body. One of the lugs is secured to the portion 77 by means of rivets 92 and the other is secured to the wall portion 78 in the same manner.

The web 90 has a portion 93 which extends upwardly substantially parallel to the portion 79, previously described, and a portion 94 angular with respect thereto, and a hook portion 95 formed integral therewith so that the portion 94 is substantially parallel to the portion 80 and the hook 95 is substantially parallel to the hook 81. The left end of the portion 77 of the channel body has a curved depression 96 formed therein and the end of the side portion 78 of the channel body has a like curved depression 97 formed therein.

The web 98 has oppositely disposed lugs 99 and 100 formed integral therewith and a stud 101 extending through aligned holes in the side portion 77 of the member 75 is in alignment with a stud 102 which is positioned in aligned holes in the lug 100 and the side portion 78 of the member 75. The stud 101 forms a working fit in the horizontal slot 74 formed in the plate 35. The stud 102 engages and forms a working fit in a like slot formed in the plate 36 which is in alignment with the slot 74.

The leg 99 has one end engaging the curved depression 96 and the lug 100 has one edge engaging the curved depression 97 and thus the web 98 is substantially parallel to the web 93 at the web portion 79.

Formed integral with the web 98 is a portion 103 which is angular with respect to the main body of the web 98 and substantially parallel to the web portions 94 and 80. The web portion 103 has formed integral therewith a hook portion 104 which is substantially parallel to the hook portions 95 and 81.

Secured on the lower surface of the central web 76 of the ejector member 75 is an angular bracket 105 to which is secured a curved arm 106 by means of rivets or spot welds 107.

Below the curved arm 106 is supported on suitable bars (not shown) a shaft 108 to which is secured a curved bail 109 which has an elongated slot 110 therein. The curved arm 106 extends through the slot 110 and is adapted to be moved by the bail, as will presently be described.

The depending lug 86 has a hole 111 formed

therein and one end of a spring 112 engages the hole 111. The other end of the spring engages a hole formed in a lug 113, which is secured on the lower surface of the left hand end of the ejector member 75, as seen in Figure 1, thus the spring 112 urges the ejector member 175 to the right, as seen in Figure 1, to a point where the studs 101 and 102 are at the extreme right ends of the horizontal slots, one of which is shown at 74. Since the urge of the spring is diagonally upward, the web portion 80 of the hook for ejecting matches from the first column is urged up against the lower match book in that column. When that column is exhausted, the web portion 94 of the hook 95 is urged against the lower match book in the second column by the spring 112 and likewise, when the second column is exhausted, the web portion adjacent to the hook member 104 is urged against the lower book of matches in the third column.

From the above, it will be seen that my new and improved match dispenser employs a single ejector member which constitutes the only moving member and it automatically engages the match book in the next column when the present column is exhausted.

As the bail shaft 108 is swung through an arc in a counter-clockwise direction, as shown in Figure 1, the bail 109 which is fixed on this shaft also moves through an arc in a counter-clockwise direction, and through the medium of the curved arm 106 the ejector member 75 is moved toward the left, with the result that the lowest hook of matches in the column 10 is also moved toward the left, to a point where it is discharged from the column, whereupon it falls upon the surface 76 within the channel body of the ejector member, slides downwardly to the left edge thereof, and falls into a suitable delivery chute (not shown).

Figure 3 shows the ejector member 75 moving to the left and the hook 81 is pushing the lowest book of matches out from column 10. Now, when the supply of matches in the column 10 has become exhausted, the web 94, as above described, is urged by the spring 112 into contact with the lowest book of matches in the column 11, due to the fact that the column 10 is empty. In other words, as long as there are matches in column 10, the web 80 bears against the lowest match book in that column and consequently the webs 94 and 103 are prevented from contacting the lowest books of matches in columns 11 and 12. However, since the supply of book matches in column 10 is exhausted, there is no book of matches in the bottom of column 10 to be engaged by the web 80, and consequently, the ejector member is swung upwardly about the studs 101 and 102 and pivots until the web 94 is in contact with the lowest book of matches in the column 11, so that as the bail 109 is moved in a counter-clockwise direction, the hook 95 engages the lower book of matches in the column 11, and it is pushed to the left and discharged therefrom.

In Figure 4, this action is shown. It can be seen that the hook 95 has engaged and is pushing the lowest book out from the bottom of column 11.

When the supply of book matches in column 11 has become exhausted, the web 94 has nothing to bear against, so the spring 112 urges the web 103 into contact with the lowest book of matches in column 12, so that the hook 104, when the ejector is moved toward the left, pushes said

lowest book of matches out of column 12. This action is shown in Figure 5.

The column 10 is provided with a weight 113 which is generally U-shaped in form and in which the space between the legs of the U is wider than the width of the hook 81, so that the latter may pass therethrough, the weight being so positioned in column 10 that the legs of the U extend downwardly, that is to say, that the U is inverted. The column 11 is provided with an identical U-shaped weight 114 and this weight is likewise positioned in column 11 with the legs of the U extending downwardly. Column 12, the last column in the series, is also provided with a U-shaped weight 115 which is identical with the weights 113, 114, except that in this column the weight is positioned so that the legs of the U extend vertically. These weights function as follows: The weights 113 and 114, due to the fact that they are inverted, urge the packages in the columns downwardly and when the last package has been vended from either the column 10 or the column 11, the ejecting hooks 81 or 95 may pass through the space between the legs of the U unimpededly, so that the hook 104 can engage and dispense articles from the column 12. The weight 115 in the column 12 is not inverted, so it functions to urge the articles downwardly in the column and when the last item is dispensed therefrom, the hook 104 engages the solid portion of the weight and locks the ejecting mechanism against movement.

Although I have herein shown and described by way of example one embodiment of the invention, it is obvious that many changes may be made in the arrangements shown and described, and it is also obvious that a greater or lesser number of columns may be employed by providing on the ejector member, a corresponding number of hooks and adjacent webs, without departing from the spirit of the invention, as set forth in the following claims.

What is claimed is:

1. In a dispensing machine having a stepped support, a plurality of article columns mounted on said support so that the lower end of each has a lateral exit on a different level from the others, aligned lateral slots in said support, a single ejector member carrying studs at one end thereof positioned in said slots, means to move said ejector member along a path defined by said slots beneath all said columns, a plurality of article engaging members rigidly secured to said ejector member in spaced relation to each other, the spacing between them being equal to the spacing of said columns, and spring means urging the other end of said ejector member upwardly to move a succeeding engaging member thereon to a position to engage and deliver articles from a succeeding column after the articles in the preceding one have become exhausted.

2. In a dispensing machine, a stepped support, a plurality of article columns mounted on said support, a lateral exit formed on the lower end of each of said columns, whereby said lateral exits are on different levels, aligned elongated slots formed in said support and disposed substantially horizontally therein, a single ejector member and means to move the same reciprocally, opposed studs carried by said ejector member and engaging said slots, thereby defining said path, a plurality of article engaging members mounted on said ejector member in spaced relation to each other, the spacing therebetween being proportionate to the spacing of said columns

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on said support, and spring means urging one end of said ejector member upwardly, whereby said article engaging members may sequentially engage and dispense the articles in said columns.

3. A dispensing machine according to claim 2, 5 in which an inverted U-shaped weight is positioned on the articles in at least one of said columns for urging the articles therein downwardly, the space between the legs of said U being positioned to clear the engaging member 10 of any column in which the articles have become exhausted, so that said ejector member may move the engaging member for the succeeding column to a position to deliver articles therefrom.

4. In a dispensing machine, a plurality of article columns each having a lateral exit, all said exits facing in the same direction and being on different levels, an article engaging member for each of said columns, a single ejector member forming a support and having all said engaging

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members rigidly secured thereto, means at one end of said support for defining a path along which said support may be moved, spring means urging the other end of said support upwardly, and means for moving said support back and forth along said path, said spring means being adapted to move said support to bring an engaging member for a succeeding column into engagement with articles therein after the supply of articles in the preceding column has become exhausted.

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