Aug. 28, 1962 J. P. GREENE 3,051,352

SHEET MATERIAL DISPENSER

Filed July 2, 1959 3 Sheets-Sheet 1

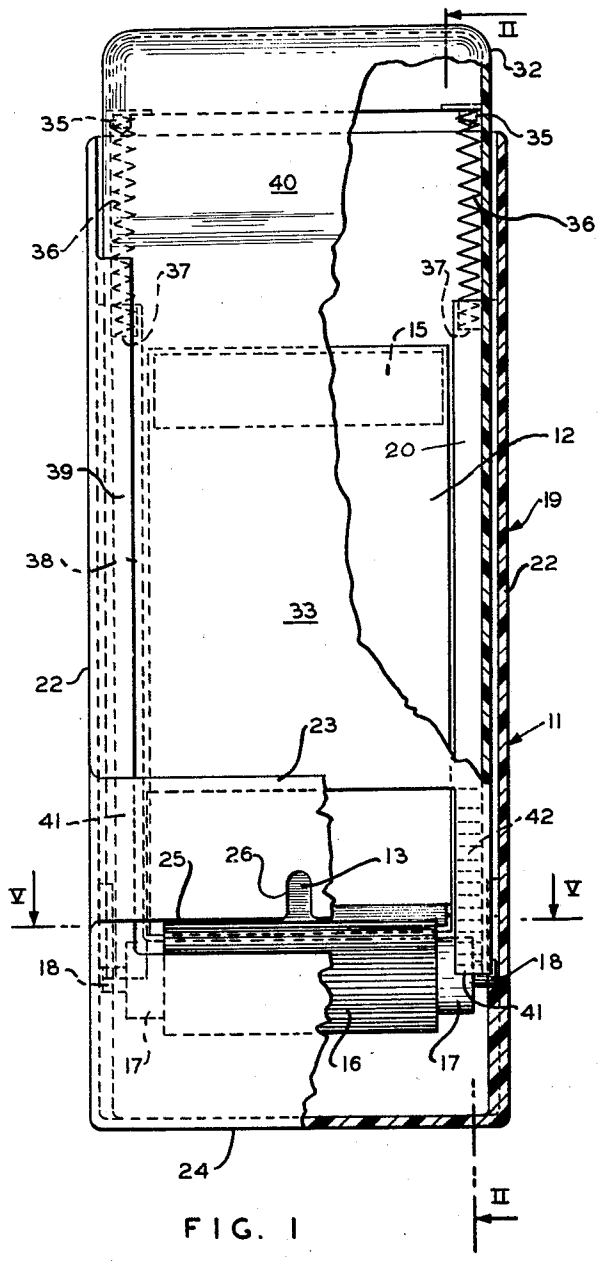


FIG. 1

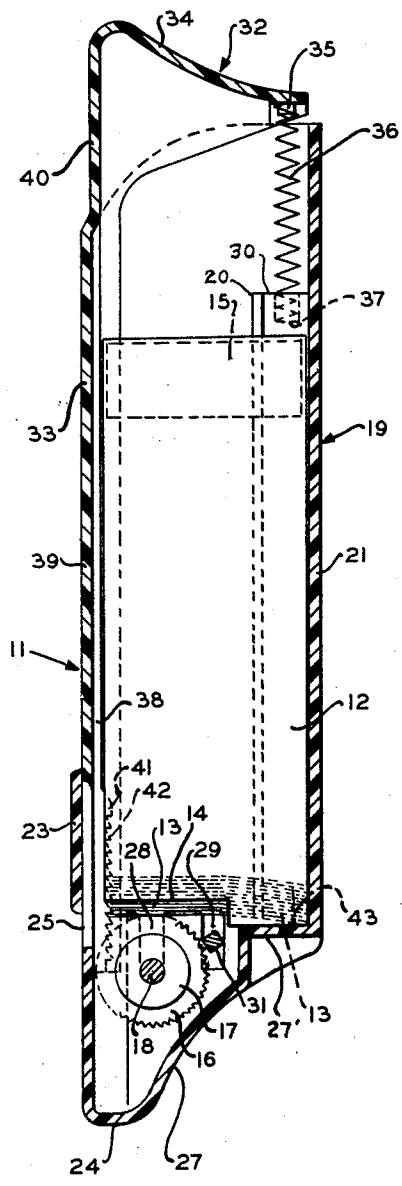


FIG. 2

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Aug. 28, 1962 J. P. GREENE 3,051,352

SHEET MATERIAL DISPENSER

Filed July 2, 1959 3 Sheets-Sheet 2

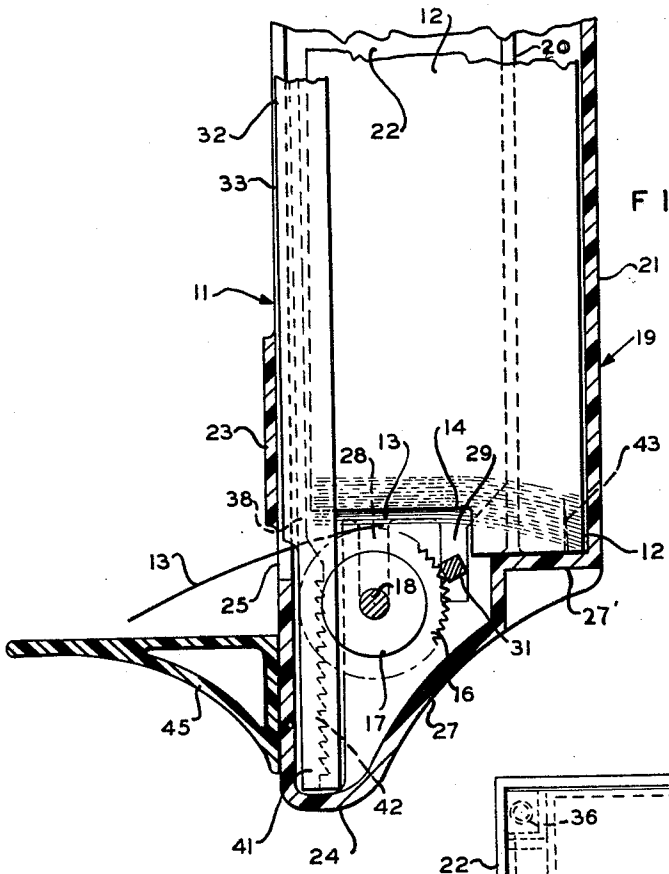


FIG. 3

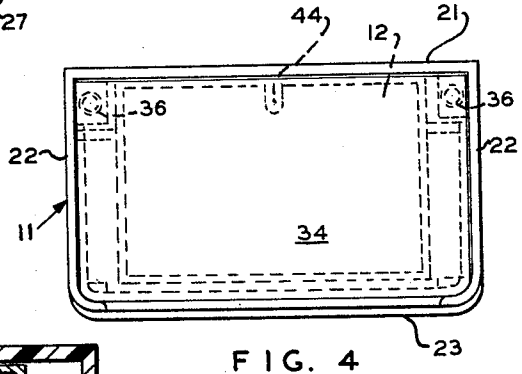


FIG. 4

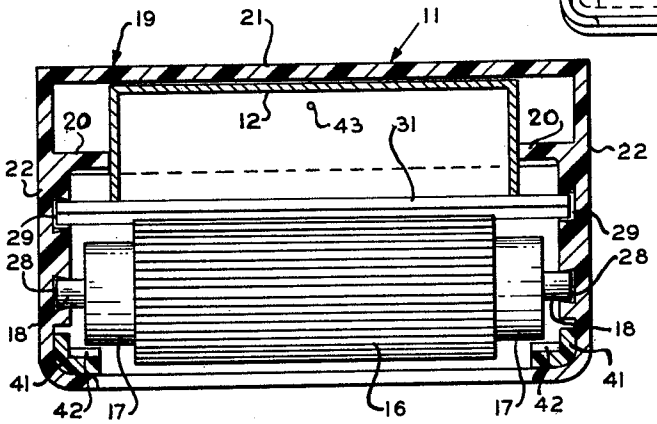


FIG. 5

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Aug. 28, 1962 J. P. GREENE 3,051,352

SHEET MATERIAL DISPENSER

Filed July 2, 1959 3 Sheets-Sheet 3

FIG. 6

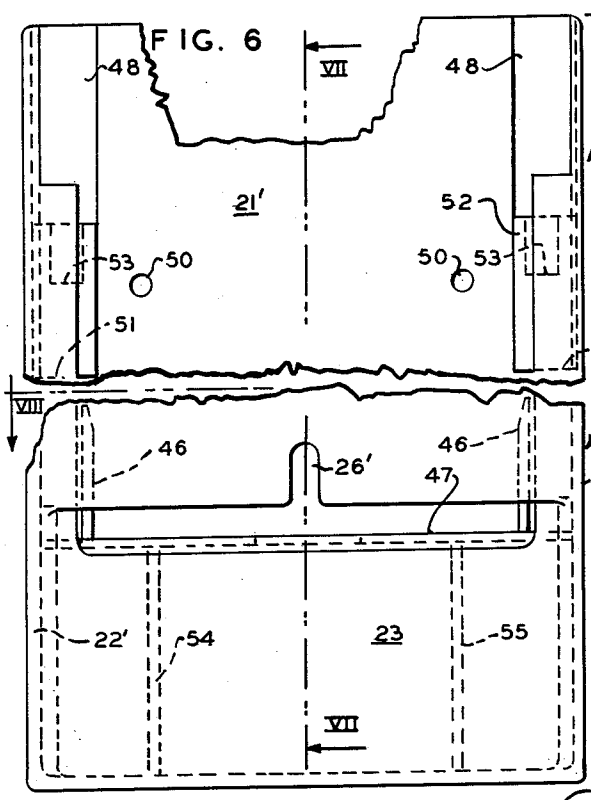


FIG. 7

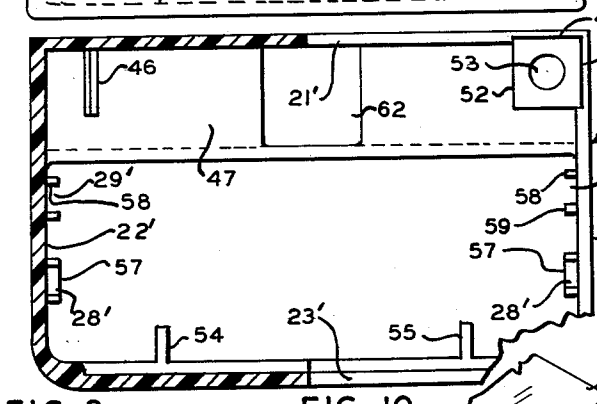


FIG. 8

FIG. 10

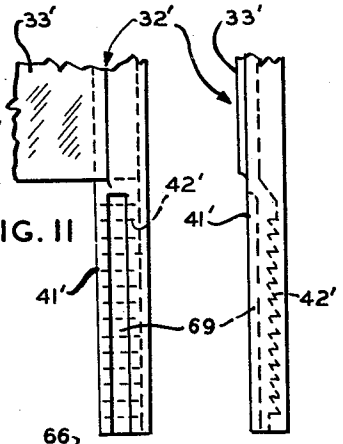


FIG. 11

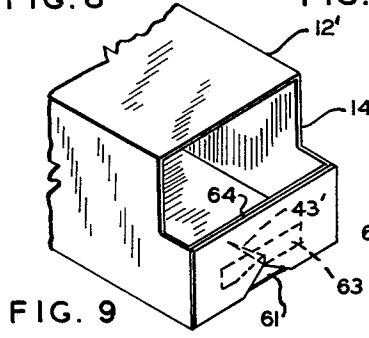


FIG. 9

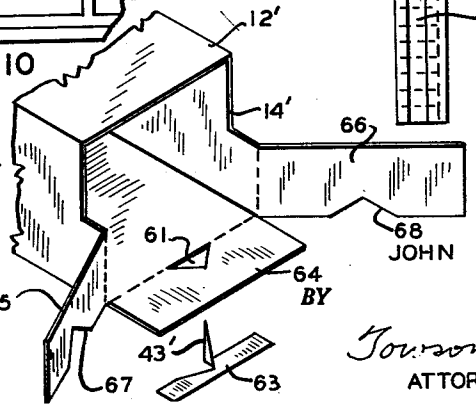


FIG. 12

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3,051,352

SHEET MATERIAL DISPENSER

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Filed July 2, 1959, Ser. No. 824,698
19 Claims. (Cl. 221—26)

This invention relates to dispensers for sheet material or leaves and, more particularly, to such for feeding convenient sections, as from a stack or roll, of such material, an illustrative example being cleansing leaves, one at a time through a slot in the front wall of an enclosing housing.

With the development of soap or other cleansing material in the form of sheet material, as rolls or loose leaves or sheets to take the place of cakes or liquid, the problem arises as to how to dispense such leaves, one at a time, to users without wastage. If the leaves were merely stacked, a prospective user with wet hands, even if he tried to take only one leaf from the top of such a stack, would inevitably waste or upset the stack while not accomplishing any more from the standpoint of cleansing effect. The invention of the present application avoids such wastage while providing for the feeding, one at a time, of such cleansing leaves, or sections from a roll, as an example of sheet material in general which may be handled by my dispenser.

An object of the present invention is the provision of a dispenser for sheet material comprising an enclosing housing, a roll of such material, or carton of leaves thereof disposed therein and opening downwardly and forwardly, and means for feeding (cutting leaves from a roll if used) the bottom leaf from said carton (or a leaf cut from such a roll) through the front wall of said housing upon a single operation by the user.

Another object of my invention is to provide a dispenser for sheet material which may be in the form of stacked leaves, a carton holding said leaves and with a supporting wall therebeneath at only the rear part thereof, feeding means supportingly underlying the free edge portion of said leaves, a housing enclosing said carton and feeding means and with a slot in its front wall adjacent the free edges of the lowermost of said leaves when engaging said feeding means, a combination cover and actuating device normally closing the top and upper front portion of, and slidable up and down with respect to, said housing, means resiliently holding said combination device in its uppermost position, said device actuating the feeding means when depressed to pull out the bottom one of said leaves.

A further object of my invention is to provide a dispenser for sheet material from a supply thereof, which may be in the form of leaves stacked in a carton and a feeding weight thereabove, said carton having a supporting bottom wall portion, apertured to allow for the elimination of waste portions of said leaves, an upstanding restraining needle extending from said wall portion, a resilient roller underlying the free edge portion of said leaves, said roller having reduced end portions and journal means, a housing enclosing said carton, having front and rear grooves at opposite end walls, in which front grooves said roller is journaled with allowance for vertical movement, a slot in the front wall of said housing adjacent the free edges of the lowermost of said leaves when engaging said roller, means closing the top and upper front portion of said housing and slidable up and down to a limited extent with respect thereto, spring means urging said closing means to uppermost position, projections from said closing means frictionally engaging said roller end portions to turn the latter when said closing means is depressed and pull out of said slot the bottom one of said

leaves, and an anti-feedback device disposed in said rear grooves to prevent reverse movement of said roller.

These and other objects and advantages will become apparent from the following detailed description when taken with the accompanying drawings. It will be understood that the drawings are for purposes of illustration and do not define the scope or limits of the invention, reference being had for the latter purpose to the appended claims.

In the drawings, wherein like reference characters denote like parts in the several views:

FIGURE 1 is a front elevational view of a first form of a device embodying my invention, with parts broken away to more clearly show the interior construction.

FIGURE 2 is a vertical sectional view on the line II—II to FIGURE 1 in the direction of the arrows, with the combination cover and actuating device in its uppermost or released position.

FIGURE 3 is an enlarged fragmentary vertical sectional view corresponding to FIGURE 2, but showing the combination cover and actuating device in lowermost or leaf-feeding position, with a leaf in the process of being dispensed and, as an alternative, a small shelf outstanding from the front wall of the dispenser to catch a dispensed leaf and prevent it from dropping on the floor.

FIGURE 4 is a plan of the dispenser to the scale of FIGURES 1 and 2.

FIGURE 5 is a horizontal sectional view, to the scale of FIGURE 3, on the line V—V of FIGURE 1 in the direction of the arrows.

FIGURE 6 is a fragmentary front elevational view of a second or modified form of housing for my dispenser.

FIGURE 7 is a fragmentary vertical sectional view of the housing on the line VII—VII of FIGURE 6, in the direction of the arrows.

FIGURE 8 is a fragmentary partial plan and partial horizontal sectional view on the line VIII—VIII of FIGURE 6, in the direction of the arrows.

FIGURE 9 is a fragmentary perspective view directed at a lower front corner of a second or modified form of carton for a dispenser embodying my invention.

FIGURE 10 is a view corresponding to FIGURE 9, but showing the lower end of the carton opened up and the prong, for impaling leaves or sheets to be dispensed, removed therefrom and shown separately to more clearly illustrate the construction.

FIGURE 11 is a fragmentary front elevational view of the lower portion of a modified form of combination cover and actuating device, separated from the housing of FIGURES 6, 7 and 8, and especially illustrating the right-hand operating leg depending therefrom.

FIGURE 12 is a side elevational view of the portion of the combination cover and actuating device with operating leg illustrated in FIGURE 11.

Referring first to FIGURES 1 to 5, inclusive, of the drawings in detail, there is shown a leaf dispenser generally designated **11**. This dispenser is illustrated as specifically for use with a carton of stacked leaves, but may be adapted for holding a roll of the material to be dispensed and cutting leaves therefrom as desired for use. It includes a carton or refill box or other device **12** holding a supply of sheet material, an example being a stack of leaves which may consist of soap or other cleansing material. The illustrated embodiment is well adapted for feeding leaves of material entitled, "Detergent Film Composition," as described and claimed in the Robert J. Anderson application, Ser. No. 762,938, filed Sept. 24, 1958. The carton **12**, if used, opens downwardly and is cut away at its lower front portion, as indicated at **14**, so as to expose the front and lower portions of the stack of leaves **13**. In order to insure feeding of the leaves **13**, even when the stack gets low, a desirably "throw-away" weight **15** is placed on top of the stock.

Supportingly underlying the free edge portion of the leaves or other supply of sheet material 13 is a feeding means, here shown as a roller 16. It is desirably formed of natural white rubber, neoprene or similar resilient material, and/or having its outer surface suitably roughened, corrugated, knurled or ribbed to frictionally engage the lower surface of the bottom leaf 13 to ensure feeding thereof. The roller 16 here shown is made of natural white rubber and has 45 outstanding straight 60° knurls or teeth evenly spaced. It desirably has end portions which may be separately formed of reduced section, as indicated at 17, and is carried on a shaft 18.

The parts just described are all enclosed in a housing 19 made of suitable desirably plastic material, an example being medium to high impact styrene, desirably having an imperforate rear wall 21, imperforate side walls 22, and a front wall 23. The front wall extends only a short way from the bottom 24 to leave a slot 25 through which the leaves 13 may be fed. The slot is extended or notched in its center, as indicated at 26, to provide an opening for determining when the supply of leaves is nearly depleted. The uppermost part of the front wall 23 of the housing is outwardly offset, as illustrated in FIGURES 2 and 3, from the lower part thereof, and continued a short distance to overlap the lower end of a cover to be described. The lower end portion of the housing curves upwardly and inwardly from its front end, as indicated at 27, and terminates in a shelf 27' on which the lower end of the carton 12 rests.

Each of the side walls 22 is provided with a vertical rib 20 which extends almost the full length or height of the housing 22. These ribs are attached to or integral with said side walls 22 and support and position the refill carton in the center of the housing. They also lend support to two small blocks 30 which may be cemented or otherwise held in place for support of return springs 36. Said side walls are also each provided with front and rear grooves, 28 and 29, opening toward one another to respectively receive the roller shaft 18 and an anti-feedback device, which may be a rod or bar 31. This bar is so shaped, and the relationship between the grooves 28 and 29 is such, that it allows turning of the roller in a counterclockwise direction, as viewed in FIGURES 2 and 3, to feed leaves from the dispenser, but prevents clockwise rotation of said roller by moving down in its supporting grooves and jamming against the peripheral surface of the roller. Although preferably non-circular, such as square or hexagonal, it may be of other shape, such as round, if used with a knurled or appropriately constructed roller 16.

Closing the top and front portion of the housing is a combination cover and actuating device 32, desirably formed of material corresponding with or similar to that of the housing 19, with a front portion 33 underlying the front wall 23 of the housing 19 and covering the carton 12. The device 32 has an upper wall 34 sloping downwardly and rearwardly from the front wall 33 and terminating in depending pins 35 encircled by the upper ends of the resilient actuating return means, such as helical springs 36. The lower ends of these springs are received on supporting shoulders or in appropriate sockets 37, which may be in the blocks 30.

The front wall 33 of the cover 32 is provided at its sides with flanges 38 set back of the front face. These may be considered as formed by outwardly embossing the central portion of said front face below a top panel 40 thereof, leaving side edge portions continued in the plane of said top panel. These flanges 38 are overlapped by flanges 39 on the housing and on which they slide. Said flanges 38, below the lower edge of the main part of the front portion 33, are extended as operating legs 41.

The rear surfaces of these legs 41 are provided with teeth 42, or otherwise roughened, to engage the portions 17 of the roller to effect the desired turning thereof upon downward movement of the cover 32, manually or upon

engagement by a member such as an elbow of the user. Such downward movement of the cover 32 is limited to an extent just enough to prevent a leaf 13 from being fed all the way out so that it might fall from the dispenser on the floor or on a small shelf or rack 45. A leaf is desirably left hanging out from the dispenser, after an operation of the cover 32, and must be grasped and pulled out the last fractional inch. Such a shelf 45, if used, could be mounted in any desired manner just under the feed slot 25, if it were desired to feed the leaves to fall free from the dispenser.

The shape of the top portion 34 of the cover is such that the tendency is to pull outwardly thereon and thereby cause the toothed legs 41 to more strongly engage the roller extensions 17. Upon release of the cover 32, however, the resiliency of these extensions tends to move the legs 41 outwardly from the FIGURE 3, portion to that of FIGURE 2 as the springs 36 raise the cover, so that there is no strong feedback action on the roller 16, such action in any event being inhibited by the bar 31.

In order to prevent the multiple feeding of leaves 13 from a carton 12, an upstanding small but sharp prong or needle 43 is desirably provided inside of said carton and on which the rear edge portions of the leaves are impaled. As an alternative, such a needle could be located in the housing 19 in a similar position and extend through the lower wall of the carton or refill box 12. However, it is desirable to have the needle in the refill carton to prevent leaves or leaflets from falling therefrom during the loading operation; that is, when placing the refill box in the dispenser housing.

In practice, as it is found that the leaves 13 will be smoother on one side than on the other, the feeding action is more positive if the rough side of a leaf is in contact with the feed roller. However, it is not essential that the leaves be so positioned, as the dispenser will work when the smooth side of a leaf is in contact with the roller. The weight 15, employed in the cartridge to press the material against the feed roller and thus increase the frictional force acting on the leaves, which effects the pulling of the downmost leaf from the dispenser during operation, desirably has a notch or relieved portion 44 to receive the needle 43.

Referring now to the embodiment of my invention illustrated in FIGURES 6 to 12, inclusive, there is shown a portion of a dispenser, generally designated 11', and including a carton or refill box 12' shown in detail in FIGURES 9 and 10, for holding a stack of leaves or other sheet material. The carton 12' opens downwardly and is cut away at its lower front portion as indicated at 14', so as to expose the front and lower portions of the leaves, which may be like those designated 13 in the first embodiment.

In the present embodiment, the housing 19' has two vertical ribs 46 facing inwardly toward each other, projecting upwardly from the bottom wall 47, forwardly from the rear wall 21' and tapered at their tops. These ribs replace the ribs 20 of the first embodiment for the support and positioning of the refill carton 12' in the center of the dispenser. The portions of the side and rear walls at the back corners of the housing are slightly inset, as indicated at 48 and 49, from the top to a ledge portion 51, the purpose of which is to supportingly receive a block 52 in each of said rear corners, replacing the blocks 30 of the first embodiment. These blocks 52 provide shelves or sockets 53 to receive return springs, such as those designated 36 of the first embodiment, Said blocks may be cemented or otherwise secured in place, if desired. The rear wall 21' may have a plurality of apertures 50 to receive means for attachment to a wall of a room or other supporting structure.

A further change in the housing 19' over the first form is the provision of generally vertical laterally spaced ribs 54 and 55 extending rearwardly from the front wall 23' of the housing and terminating at the lower edge of the

slot 25' through which the sheet material is fed. The upper ends of said ribs 54 and 55 slope rearwardly and upwardly, as indicated at 56 in FIGURE 7, to properly guide the sheet material from the roller, such as 16 of the first embodiment, to the slot 25'. Inasmuch as these ribs extend inwardly beyond the knurls or roughened portion of the roller, that portion is made short enough to lie between said ribs 54 and 55 with enough clearance to avoid binding.

In the present embodiment, the groove 28' for receiving the shaft, such as 18, of a roller, such as 16, is provided at the upper end portion of a rigidifying rib 57 extending inwardly from the inner side of each side wall 22' of the housing 19'. Likewise, the rear grooves 29' to receive an anti-feedback device, like that designated 31 in the first embodiment, are defined by two ribs 58 and 59 extending inwardly from each side wall 22'.

In the embodiment of FIGURES 1 to 5 inclusive, there is a prong or needle 43 on which the leaves 13 are impaled. If this needle cleanly slices each leaf or film as the latter is pulled away, the function is very satisfactory. If, however, a leaf or film should fail to be sliced by the needle, a small generally triangular-shaped piece will be torn from such material and may lodge behind the needle.

Once such a condition starts, it may continue with each successive operation of removing a leaf from the dispenser, until a stack of triangular-shaped pieces builds up in the carton behind the needle and eventually supports the whole stack of leaves so that such stack no longer rests on the feed roller. At this point, the friction between the feed roller and the bottom leaf may have become so reduced that it is impossible to feed such bottom leaf from the stack. The carton must then be removed and the area behind the needle cleared out.

The present embodiment eliminates such a possibility of trouble by providing a hole 61 (here shown generally triangular) in the bottom wall of the carton and a corresponding or generally registering hole 62 (here shown rectangular and of area big enough to pass anything that drops through the hole 61) in the dispenser housing 19'. These holes, by lining up with one another, provide a clearance area through which the triangular pieces of the film or leaves are free to fall. However, the addition of this hole 61 to the refill carton requires that a change be made in the design of the impaling instrument. It is here no longer practical to use a device similar to a thumbtack, since there is no material, such as cardboard, in the area of the hole to support it.

Therefore, I have provided a relatively long strip of metal from which may be slit and bent up a desirably tapered prong, sharp needle or knife-like portion 43', which may be about ⅜" in length. The strip may be a generally-rectangular piece of steel 63, for example, about 1½ to 2" long and, say ¼" or more in width and about .01" thick. The plane of this piece of steel 63 is parallel to and adjacent the bottom of the refill carton 12'. It may be held in place, after first passing the impaling needle or prong portion 43' thereof through the hole 61 in the inner flap 64 of the carton 12', bending up to the position of FIGURE 9 from that of FIGURE 10, and then sequentially overlapping it by the flaps 65 and 66, which are notched, as indicated respectively at 67 and 68, to correspond with the hole 61, and gluing or otherwise suitably connecting said flaps to the flap 64 and to each other to provide the structure illustrated in FIGURE 9.

It will, therebore, be seen that I have provided the equivalent of the prong or needle 43 of the first embodiment in a similar location while allowing for the elimination of the waste triangular pieces which may be produced during the use of the dispenser. Although a round needle is disclosed in the first and a flat pointed projection in the second embodiment, I do not wish to be limited to the specific shape of the impaling instrument.

Referring now to FIGURES 11 and 12, there is shown the modified form of the legs 41' which extend from the front portion 33' of the second embodiment of the combination cover and actuator 32'. As in the preceding embodiment, these legs are provided with teeth 42' or otherwise roughened, to engage portions corresponding to those designated 17 of the roller 16 of the first embodiment, to effect the desired turning thereof on downward movement of the cover 32'. Here, the legs 41', instead of having flat front surfaces, are each provided with an outwardly opening groove 69 which lightens the construction without undesirably decreasing its strength. Other than the changes above disclosed in connection with the second embodiment, the same may correspond with the first embodiment.

From the foregoing disclosure, it will be seen that I have devised a cleansing leaf dispenser including a housing 19, for a stack of leaves 13, a combination cover and actuating device 32, a feed roller 16, an anti-feedback bar 31 to prevent reverse turning of said roller, and springs 36 for returning the cover to its normal position.

Having now described the invention in detail in accordance with the requirements of the patent statutes, those skilled in this art will have no difficulty in making changes and modifications in the individual parts of their relative assembly in order to meet specific requirements or conditions. Such changes and modifications may be made without departing from the scope and spirit of the invention, as set forth in the following claims.

I claim:

1. A dispenser for sheet material comprising a housing for enclosing said material, feeding means in said housing supportingly underlying the free edge portion of and frictionally engaging said material, said housing having a slot in its front wall adjacent the free edge of the material when engaging said feeding means, a combination cover and actuating device for said feeding means closing the top and upper front of and slidable up and down with respect to said housing, and spring means for supporting said combination device in upper position and returning it to that position after actuation.

2. A dispenser as recited in claim 1, wherein there are a pair of generally vertical laterally spaced ribs extending rearwardly from said housing front wall, with upper ends terminating at the slot and sloping rearwardly and upwardly to properly guide the sheet material to said slot.

3. A dispenser as recited in claim 1, wherein the material is stacked leaves in a refill carton, the housing encloses said carton, said housing having a shelf underlying the lower rearward portion of said carton for holding it in place.

4. A dispenser as recited in claim 3, wherein there is an impaling device comprising a flat strip of steel, sealed in the bottom wall of said carton, with a uniformly-tapered sharp-pointed slit from an edge of said strip intermediate its ends and projecting upward into the stacked leaves thereabove.

5. A dispenser as recited in claim 3, wherein said combination device has projections extending down to actuatingly engage the feeding means when said device is depressed and pull out of said slot the lowermost one of said leaves.

6. A dispenser as recited in claim 3, wherein the carton holds a weight above the stack of leaves to assist in directing them to the feeding means.

7. A dispenser as recited in claim 3, wherein the lower wall of said carton has an upstanding sharp restraining instrument on which the lowermost of the leaves in said carton are impaled.

8. A dispenser as recited in claim 1, wherein the feeding means is in the form of a roller which supportingly underlies and frictionally engages the free edge portion of said material, said roller having reduced end portions, operatively engageable by said actuating device, and a carrying shaft.

9. A dispenser as recited in claim 8, wherein said housing has grooves in opposite side walls in which said shaft is slidably received and can journal.

10. A dispenser as recited in claim 8, wherein said housing has grooves in opposite side walls and there is a non-circular anti-feedback bar vertically slidable in said grooves to engage the inner portion of said roller and be turned thereby as the combination device is depressed, actuating the roller, but wedge back of said roller and prevent reverse movement when said device is released.

11. In a dispenser for stacked leaves, a carton holding said leaves and with a supporting wall portion therebeneath at only the rear portion thereof, a roller supportingly underlying the free edge portion of said leaves and frictionally engaging the lowermost one of the same, said roller having a carrying shaft, a housing enclosing and with an underlying wall supporting said carton, having grooves in opposite end walls, in which said shaft is slidably received and can journal, and with a slot in its front wall adjacent the free edges of the lowermost of said leaves when engaging said roller, a combination cover and actuating device closing the top and upper front portion of said housing and slidable up and down with respect thereto, spring means urging said device to uppermost position, legs extending from said combination device and frictionally engaging said roller to turn it when said device is depressed and pull out the lowermost one of said leaves, and an anti-feedback device to engage the inner portion of said roller and prevent reverse movement when the cover is released and raised by said springs.

12. In a dispenser as recited in claim 11, wherein the supporting wall portion carries an upstanding sharp instrument to impale the lower portion of said stacked leaves, is apertured back of said instrument to permit discharge of portions of said leaves torn off during operation, and the underlying wall is at a corresponding position apertured for reception of said torn off portions.

13. In a dispenser for stacked leaves, a carton holding said leaves, and a feeding weight thereabove, and with a supporting wall portion and upstanding restraining needle therebeneath at only the rear portion thereof, a resilient roller supportingly underlying the free edge portion of said leaves and frictionally engaging the lowermost one of the same, said roller having reduced end portions and a carrying shaft, a housing enclosing and with an underlying wall supporting said carton, having front and rear grooves in opposite walls, in which front grooves said shaft is slidably received and can journal, and with a slot in its front wall adjacent the free edges of the lowermost of said leaves when engaging said roller, a combination cover and actuating device closing the top and upper front portion of said housing and slidable up and down to a limited extent with respect thereto, spring means urging said device to uppermost position, projections from said combination device frictionally engaging said roller end portions to turn said roller when said device is depressed and pull out of said slot the lowermost one of said leaves, and a non-circular anti-feedback bar vertically slidable in said rear grooves in the opposite end walls of said housing, to engage the inner portion of said roller and be turned thereby as the combination device is depressed, but wedge back of said roller and prevent reverse movement when said device is released by said spring means.

14. In a dispenser as recited in claim 13, wherein the carton supporting wall portion and the housing underlying wall portion have registering apertures behind the needle for the elimination of waste portions of the leaves torn off by the needle during operation of the dispenser.

15. In a dispenser for stacked leaves, a carton holding said leaves, a resilient roller supportingly underlying the free edge portion of said leaves and frictionally engaging the lowermost one of the same, said roller having reduced end portions and a carrying shaft, a housing enclosing and with an underlying wall supporting said carton, grooves in opposite walls in which said shaft is slidably received and can journal, and with a slot in its front wall adjacent the free edges of the lowermost of said leaves when engaging said roller, a combination cover and actuating device closing the top and upper front portion of said housing and slidable up and down to a limited extent with respect thereto, spring means urging said device to uppermost position, and projections from said combination device frictionally engaging said roller end portions to turn said roller when said device is depressed and pull out of said slot the lowermost one of said leaves.

16. In a dispenser as recited in claim 15, wherein there are grooves, disposed rearwardly of the grooves in opposite walls, and a non-circular anti-feed-back device vertically slidable in said rearwardly-disposed grooves to engage the roller and be turned thereby when said roller is turned by said projections but prevent said roller from turning in the opposite direction when said device is raised by said spring means.

17. A dispenser for sheet material comprising a housing, a carton of said material disposed in and having a lower wall portion resting on a housing lower wall portion, an upstanding sharp restraining instrument carried by said carton lower wall portion, and a stack of leaves of said sheet material in said carton and with the lower part of said stack impaled on said instrument adjacent their rear edges, and said housing having a slot adjacent its lower end for allowing the lowermost leaf of the stack to be withdrawn when outward force, overcoming the restraining action of the instrument, is exerted on the lower surface thereof.

18. A dispenser as recited in claim 17, wherein there is a weight disposed in the carton above the stack of leaves to assist in directing them to be impaled on said instrument for withdrawal one by one.

19. A dispenser as recited in claim 17, wherein the restraining instrument comprises a flat strip of steel, sealed in said lower wall portion of the carton, with a uniformly-tapered sharp-pointed prong slit from an edge of said strip intermediate its ends and projecting upward into the leaves thereabove.

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