

[54] PAPER DISPENSER

[76] Inventor: **Paul D. Hoffman**, 11 Englewood Ave., Brookline, Mass. 02146

[22] Filed: **June 1, 1971**

[21] Appl. No.: **148,928**

Related U.S. Application Data

[63] Continuation of Ser. No. 728,106, May 9, 1968, abandoned, which is a continuation-in-part of Ser. No. 538,809, March 30, 1966, abandoned.

[52] U.S. Cl. **83/205; 83/241; 83/282; 83/389; 83/455; 83/563; 83/587; 83/614; 83/649**

[51] Int. Cl.² **B26D 7/02**

[58] Field of Search 83/203, 205, 282, 455, 83/456, 614, 649, 650, 587, 586, 382, 389, 242, 243, 147, 454, 563; 226/5

[56] References Cited

UNITED STATES PATENTS

485,491	11/1892	Denton	83/455
1,039,167	9/1912	Meier	83/242 X
1,565,520	12/1925	Stockton	83/455
1,732,635	10/1929	Chabot	83/587 X
1,763,836	6/1930	Van Veen	83/484 X
1,991,698	2/1935	Powers	83/650 X
2,137,489	11/1938	Harvey	83/147
2,252,086	8/1941	McCarthy	83/455 X

2,348,355	5/1944	Miller	226/5 X
2,400,793	5/1946	Tuska	83/147 X
2,527,739	10/1950	Knabusch et al.	83/282 X
2,531,149	11/1950	Melchor	83/455
2,704,546	3/1955	Rosaver	83/241 X
2,823,969	2/1958	Traver	83/649 X
3,160,047	12/1964	Malloy et al.	83/241 X
3,177,746	4/1961	Langer	83/422 X
3,411,391	11/1968	Drubner	83/242

FOREIGN PATENTS OR APPLICATIONS

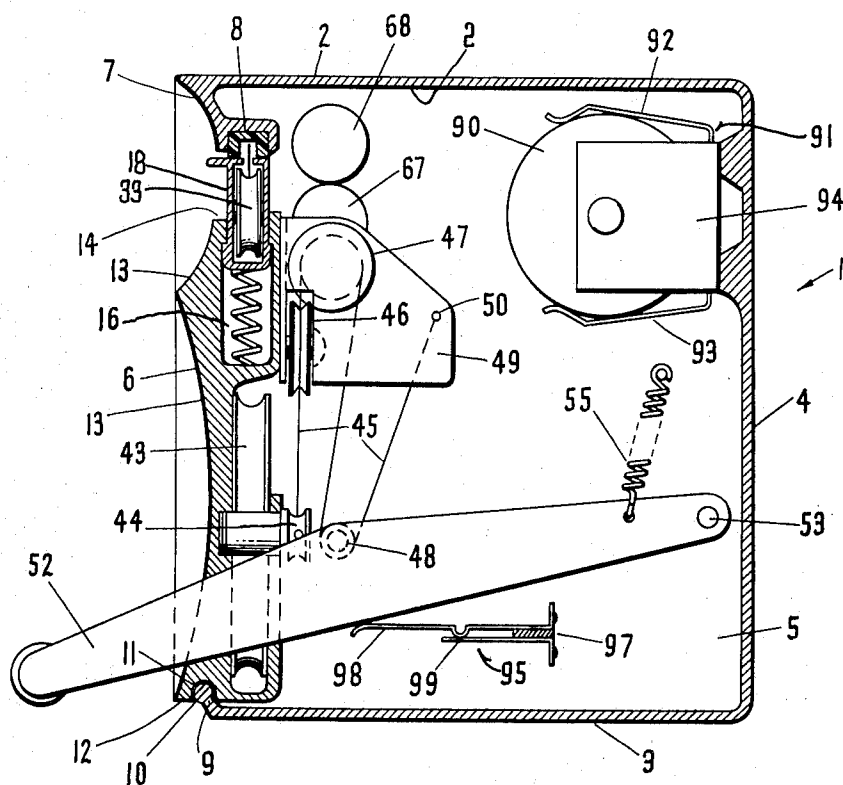
564,056 11/1932 Germany 83/485

Primary Examiner—J. M. Meister

[57] ABSTRACT

A dispenser primarily designed for feeding and severing paper, plastic and aluminum-foil sheets comprising a cabinet having a pivoted, front wall which when closed forms an elongated passage through which a roll of sheet material is fed. A cutting element is supported in the elongated passage of the front wall. An internal mechanism upon actuation feeds the sheet material through the passage to a desired length. The sheet material is then automatically severed by a cutting element which traverses the passage with the sheet material being lightly held at one end within the passage for subsequent removal by the operator.

25 Claims, 14 Drawing Figures



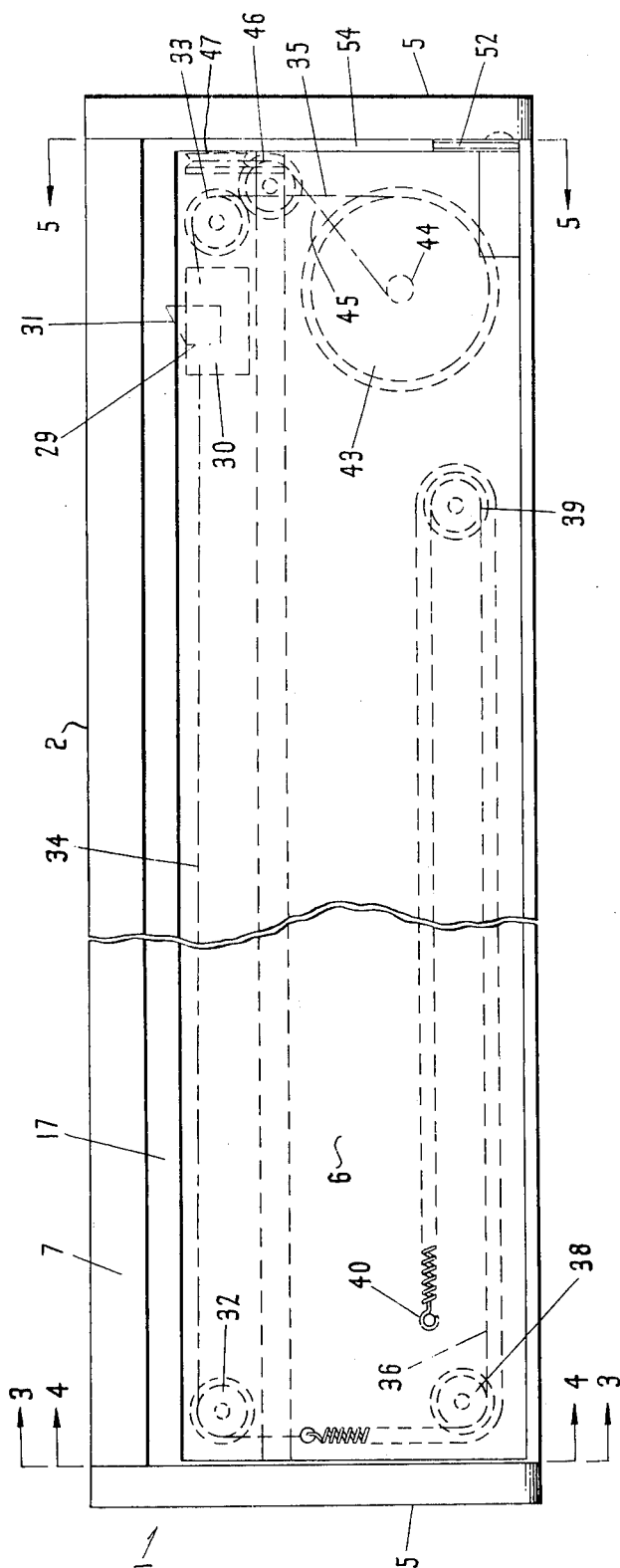


FIG. 1

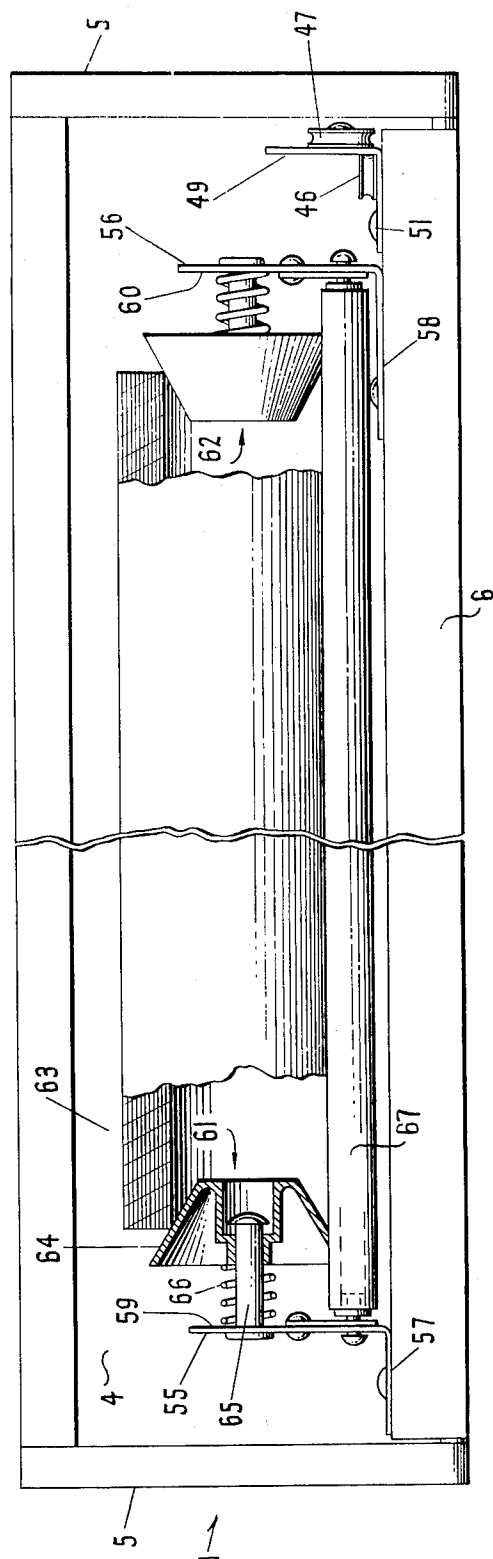


FIG. 2

INVENTOR
Paul D. Hoffman
BY
Wolf, Greenfield & Hicken

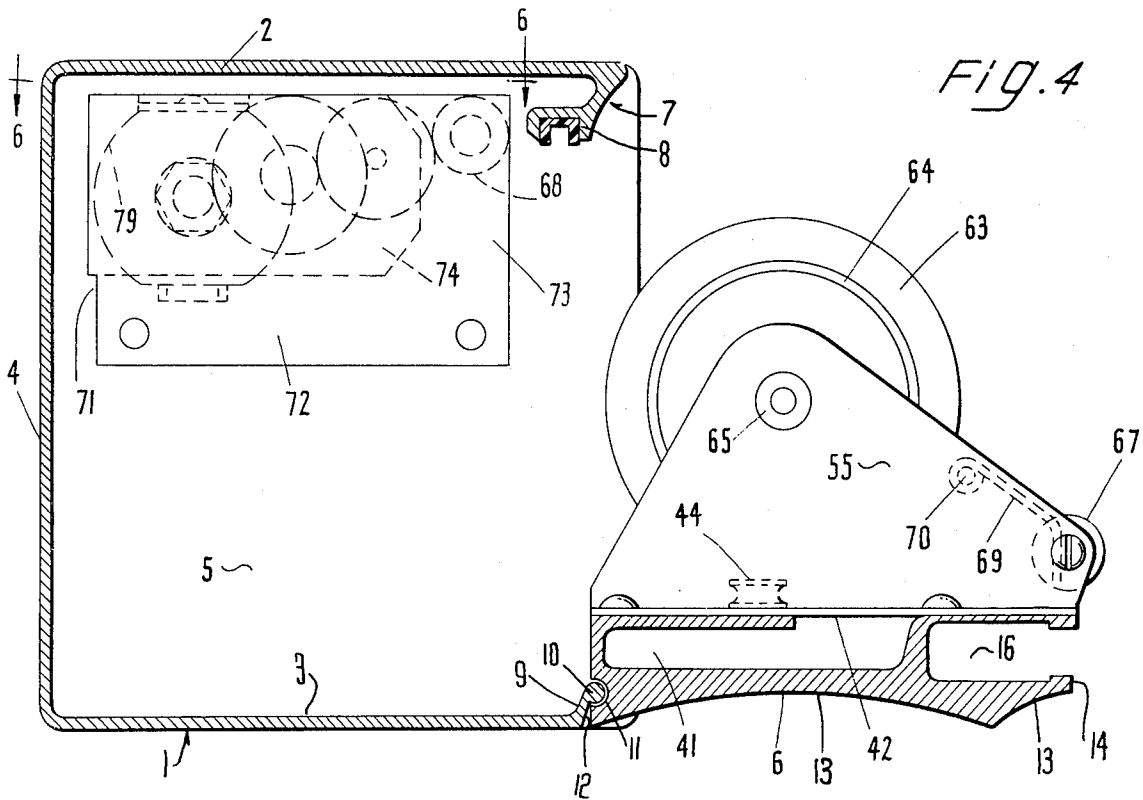
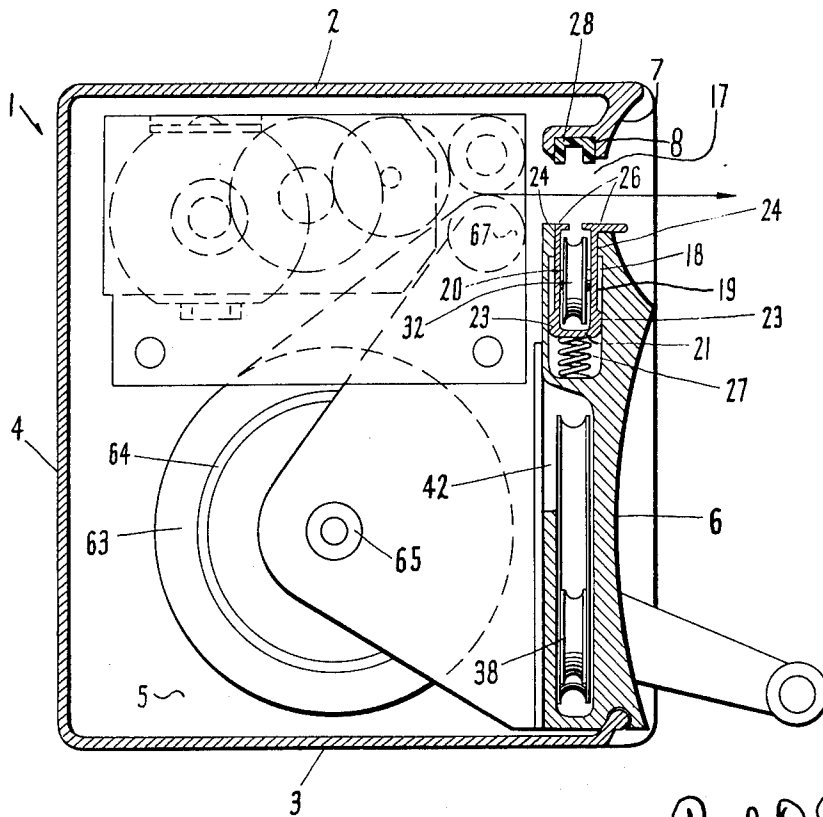


FIG. 3

INVENTOR

Paul D. Hoffman

BY

Wolf, Greenfield & Hicken

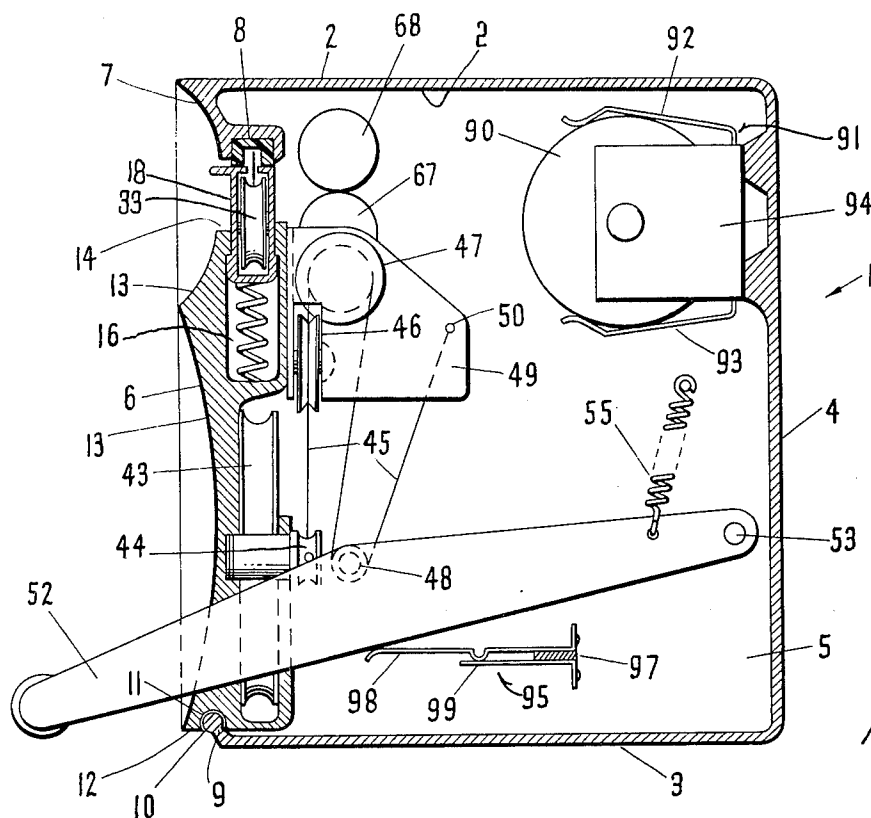


FIG. 5

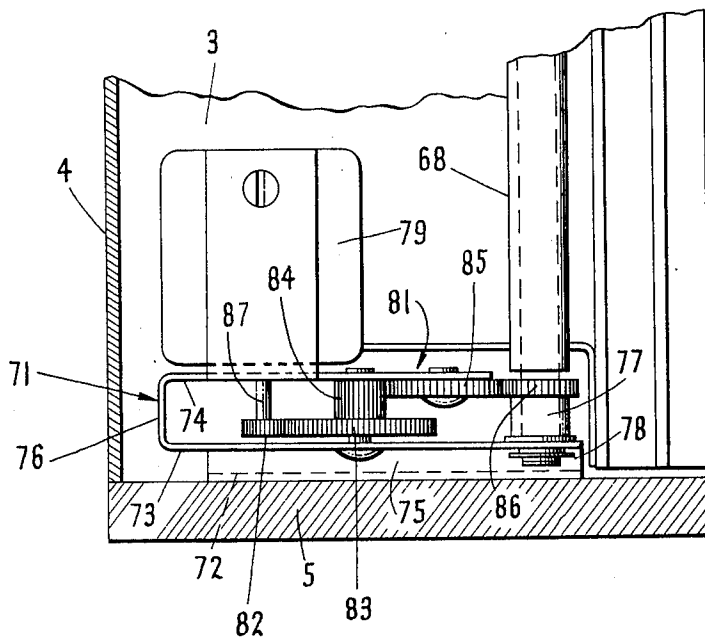


FIG. 6

INVENTOR
 Paul D. Hoffman
 BY
 Wolf, Greenfield & Hicken

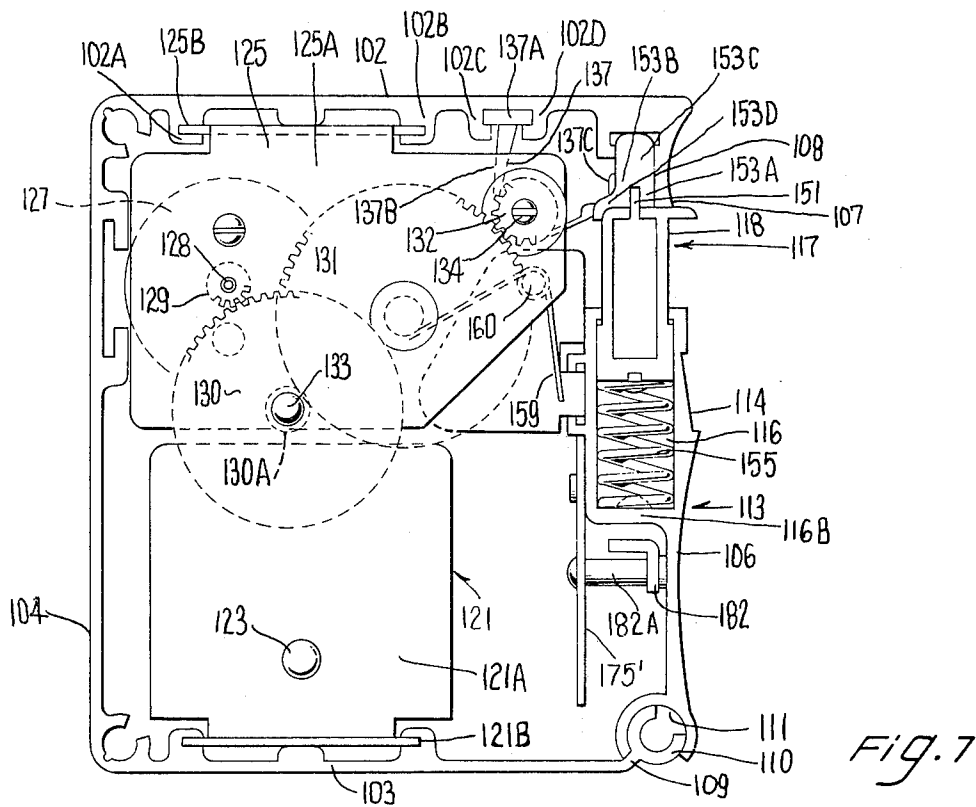


FIG. 7

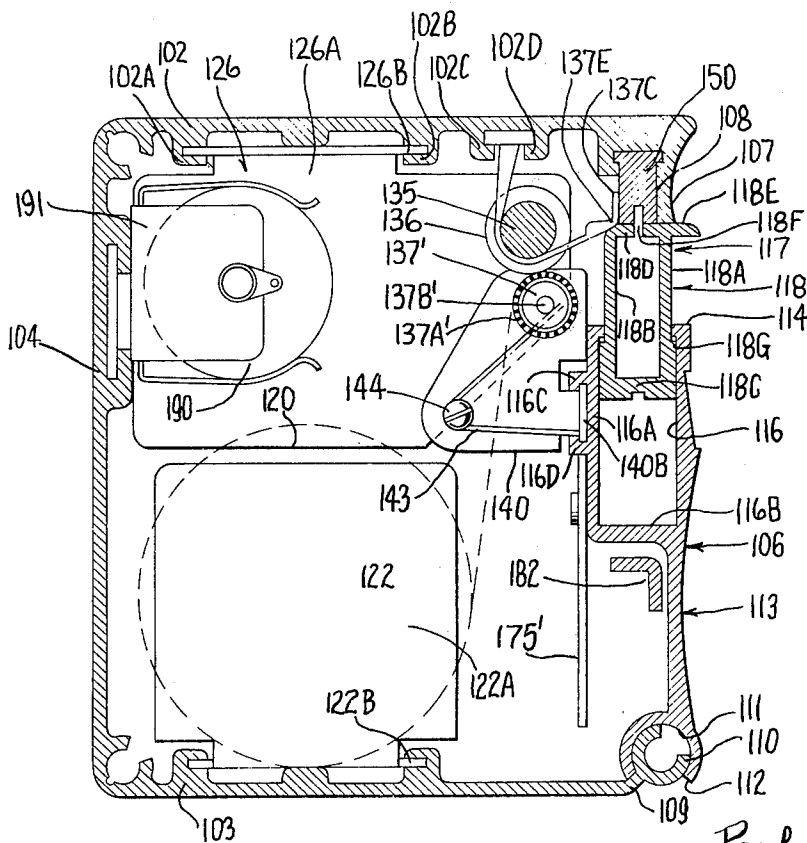
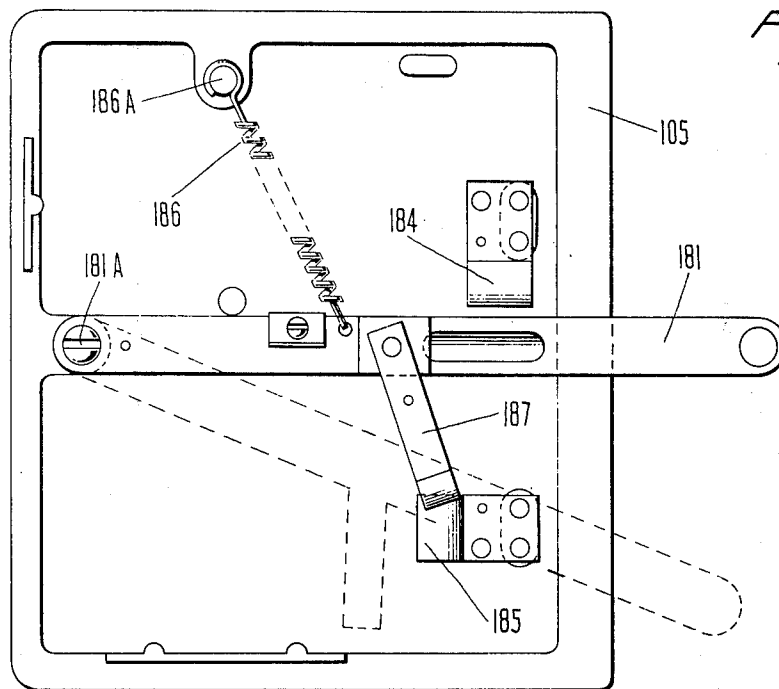
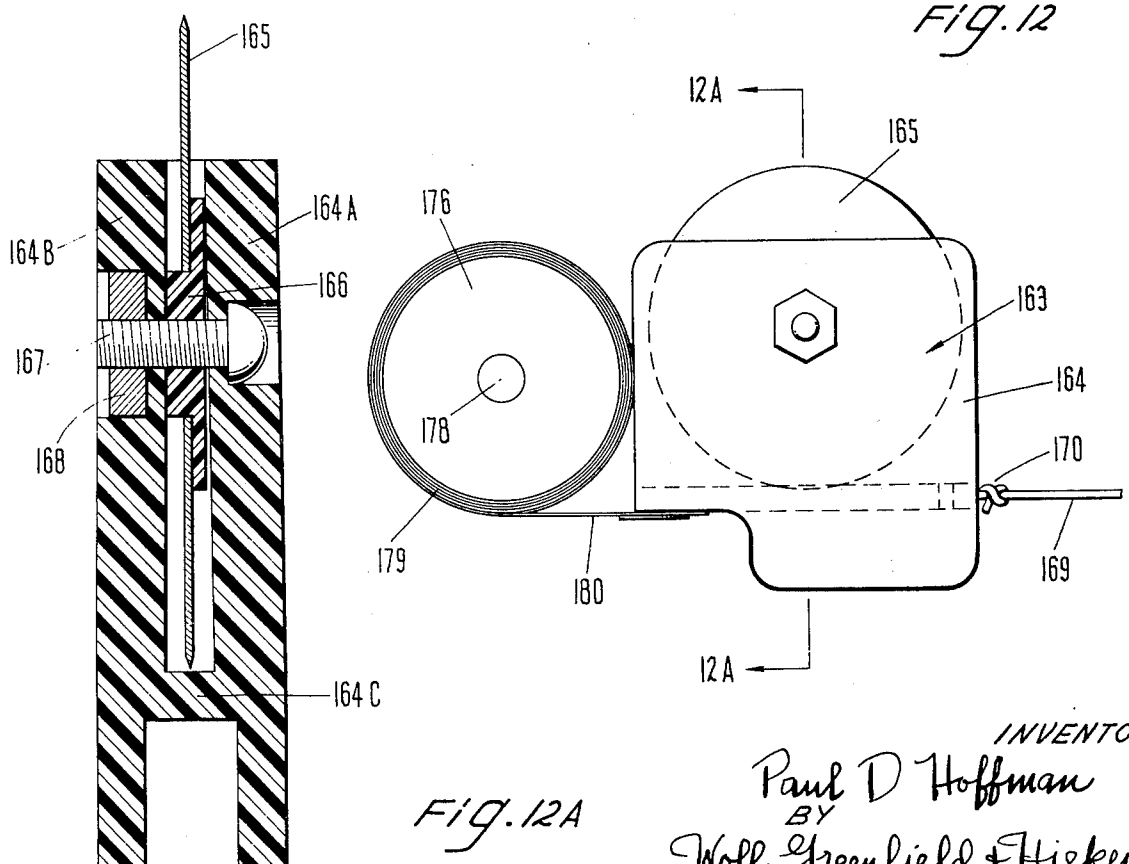


FIG. 8

INVENTOR
Paul D. Hoffman
BY
Wolff, Greenfield & Hicken



INVENTOR
Paul D Hoffman
 BY
Wolff, Greenfield & Hicken

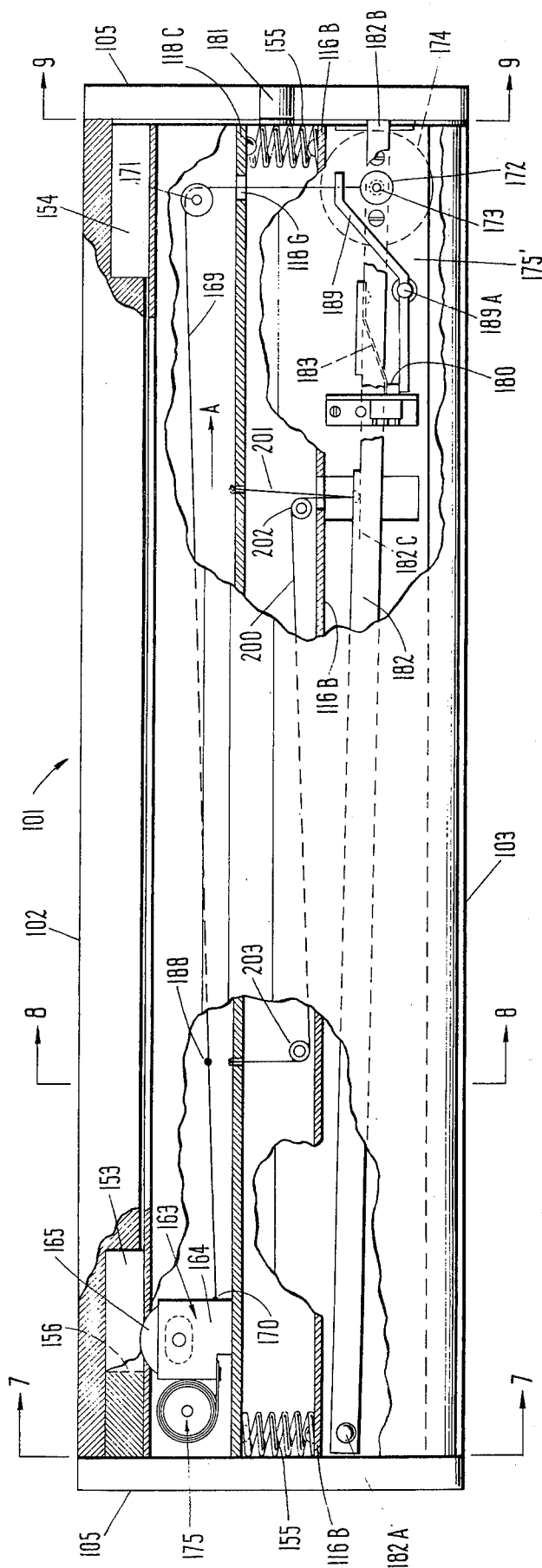


FIG. 10

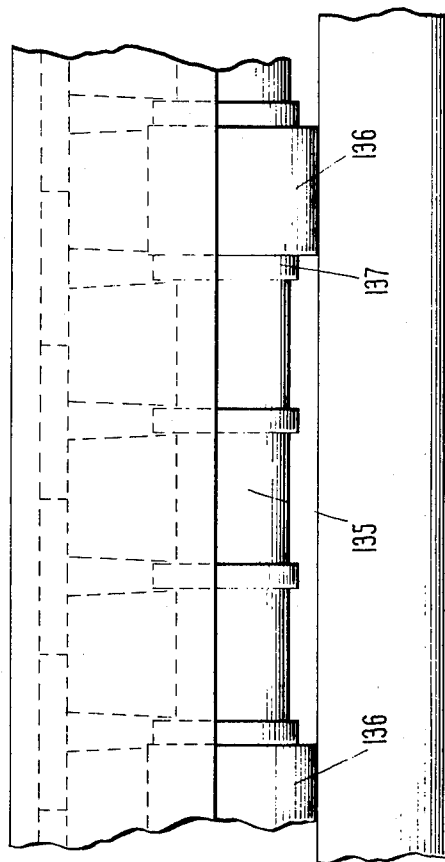


FIG. 11

INVENTOR
 Paul D. Hoffman
 BY
 Wolf, Greenfield + Hickman

PAPER DISPENSER

This application is a continuation of application Ser. No. 728,106, filed May 9, 1968 now abandoned, which in turn is a continuation-in-part of application Ser. No. 538,809, filed Mar. 30, 1966, now abandoned.

SUBJECT MATTER OF THE INVENTION

The present invention relates to a dispenser particularly useful in dispensing sheet material such as paper towels, wrapping paper, aluminum foil, plastic and other sheet material in roll form.

BACKGROUND OF THE INVENTION

It is an object of this invention to provide an attractive, relatively inexpensive compact dispenser for rolls of sheet material. It is also an object of the present invention to provide a compact dispenser for dispensing and cutting from a roll sheet material such as plastic sheets, paper, aluminum foil and other like materials. It is also an object of the present invention to provide a relatively inexpensive compact dispenser that is adapted for use in a household, restaurant or other commercial establishment where it is desirable to dispense and cut sheet material from a roll. A further object of this invention is to provide a dispenser for a roll of sheet material which is easy to operate and which will on actuation cause selected segments of a roll of sheet material to be ejected from the dispenser and automatically severed. A further object of this invention is to provide a dispenser which may be interchangeably used with paper towels, plastic sheet material, aluminum foil or other material which is easy to maintain, refill and actuate and which is relatively inexpensive to manufacture and maintain.

SUMMARY OF THE INVENTION

The present invention provides a dispenser for feeding and severing segments of sheets from a roll of sheet material such as plastic rolls or paper or the like comprising a cabinet having walls defining an elongated passage through which the leading edge of the roll is fed. Means are provided for automatically feeding the leading edge of the roll forwardly through the elongated passage and for cutting the leading end of the roll when a desired segment has been ejected from the dispenser.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing objects and advantages of the present invention will be more clearly understood when considered in conjunction with the accompanying drawings in which:

FIG. 1 is a front elevational view of a dispenser embodying the invention with the front wall closed but shown in fragmented sections;

FIG. 2 is a front elevational view of the embodiment shown in FIG. 1 with the front wall pivoted downwardly;

FIG. 3 is a cross sectional end view taken substantially along the line 3—3 of FIG. 1;

FIG. 4 is a cross sectional end view taken substantially along the line 4—4 of FIG. 1 but with the front wall in an open position;

FIG. 5 is a cross sectional view taken substantially along the line 5—5 of FIG. 1;

FIG. 6 is a fragmentary view taken substantially along the line 6—6 of FIG. 4;

FIG. 7 is a cross sectional view of a modification showing a preferred embodiment of the invention with the cross section taken along line 7—7 of FIG. 10;

FIG. 8 is a cross sectional view taken substantially along the line 8—8 of FIG. 10;

FIG. 9 is a cross sectional view taken substantially along the line 9—9 of FIG. 10;

FIG. 10 is a front fragmentary elevational view of a modification of a preferred embodiment of the invention;

FIG. 11 is an enlarged elevational fragmentary detail of the invention illustrated in the embodiment of FIG. 10;

FIG. 12 is an elevational detail of certain components of the embodiment illustrated in FIG. 10;

FIG. 12A is a cross sectional view taken substantially along the line 12A—12A of FIG. 12; and

FIG. 13 is a schematic of the electrical circuitry used in conjunction with the embodiment of FIG. 10.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

In the embodiment of the invention illustrated there is provided a dispenser having a cabinet 1 formed with integral top, bottom and rear walls 2, 3 and 4 respectively. If desired these walls may be formed of a single extruded piece. The ends of the cabinet are closed with end walls 5 and the forward portion of the cabinet is closed by a hinged front wall or cover 6. The forward edge of the top wall 2 is flared arcuately downward in a depending lip 7 having a channel member 8 integrally formed at its lower edge and open downwardly. The channel member 8 and depending lip 7 extend preferably the length of the cabinet. The bottom wall 3 has an upwardly flared lip 9 terminating in an elongated bead 10 with the bead 10 shaped to form a pivoting joint engaged by a corresponding recess 11 in the lower end of the hinged front wall 6. The hinged front wall 6 is thus able to pivot about the bead 10 with the lower edge 12 of the front wall 6 adapted to engage the forward surface of the lip 9 to limit the pivoting movement of the front wall 6. The front wall 6 may be formed with any suitable decorative surface, such as a surface having concavities 13. The upper edge 14 of the front wall 6 is spaced from the channel member 8 and is provided with a longitudinally downwardly extending channel 16 which is aligned with the upwardly extending channel member 8. An elongated slot or passage 17 is formed between the upper edge 14 of the front wall or cover 6 and the depending lip 7. This passage 17 is normally closed by an adjustable guide bar 18 which is positioned within the downwardly extending channel 16. This guide bar 18 is illustrated as open or down in FIG. 3, closed or up in Fig. 5 and is omitted in FIG. 4 for clarity and completeness of illustration. It should be noted, however, that guide bar 18 would not ordinarily be closed with the handle 52 in its full down position, as illustrated in FIG. 5. The guide bar comprises a U-shaped member having side walls 19 and 20 and a bight portion 21. The lower edges of the side walls 19 and 20 are provided with longitudinally extending, outwardly projecting bosses or shoulders 23 which ride in the downwardly extending channel 16 and limit upward movement of the guide bar 18 by engagement with the inwardly extending shoulders 24 formed at the upper edge of the downwardly extending channel 16. The

upper edges of the side walls 19 and 20 are provided with laterally extending flanges 26 that constrict the opening of the channel formed by the side walls of the guide bar 18. These flanges 26 form lower gripping surface over which the sheet material being dispensed passes. Preferably at least two spaced helical springs 27 are positioned within channel 16 and exert upward tension on the guide bar 18 normally tensioning this guide bar into a position in which the slot or passage 17 is closed. In its closed position the upper surfaces of the flanges 26 normally engage or are in close adjacency to an upper guide member 28. The flange 26 projects forwardly beyond the front surface of wall 6 so as to be easily grasped by one's fingers. This upper guide member 28 comprises an inverted U-shaped channel preferably formed of rubber positioned in and secured to the channel member 8. The channel opening in member 28 and in guide bar 18 are aligned when the front wall 6 is closed.

A cutting element 29 (FIG. 1) is positioned in the guide bar 18 for longitudinal movement between the side walls 19 and 20. This cutting element may comprise a supporting block 30 formed of a low friction material such as Teflon adapted to slide longitudinally between the side wall 19 and 20. A cutting element such as a razor blade 31 is positioned in the block 30 with the cutting edge of the blade extending angularly upward to the left as viewed in FIG. 1.

If desired the cutting edge 31 may comprise a wheel with a razor sharp peripheral edge with the wheel axially supported by a suitable journal means within the block 30 and with a portion of this cutting wheel projecting upwardly to the same extent as the cutting edge illustrated in FIG. 1. Such a wheel like cutting edge is particularly useful for cutting material such as aluminum foil, wax paper and plastic wrap material. Also positioned within the channel formed by the side walls 19 and 20 are pulleys 32 and 33. These pulleys are suitably journaled on pins which extend between and are secured in the side walls 19 and 20. These pulleys 32 and 33 support lines or wires 34 and 35. The wire 34 extends over pulley 32 with one end connected to block 30 and the other end is connected to one end of the helical spring 36 which in turn extends over pulleys 38 and 39. The other end 40 of spring 36 is connected to a pin in turn fixed to the front wall 6. Pulleys 38 and 39 are journaled for rotation within a lower front wall channel 41 (FIG. 4) formed in the front wall and having an opening 42 extending through the rear surface of the front wall 6. The pulleys 38 and 39 are suitably journaled within the channel 41 by pins or other suitable support means. The other line or wire 35 is connected at one end to the block 30 and extends over pulley 33 and is connected at its other end to large pulley 43. Large pulley 43 is also journaled in channel 41 at its right end as viewed in FIG. 1 by a suitable pin which is journaled within appropriate recesses in the front wall. A pulley 44 is fixed to the same pin to which pulley 43 is fixed so that these two pulleys rotate together. A second wire or line 45 has one end secured to the pulley 44. The wire 45 extends over pulley 46, pulley 47, pulley 48 and is anchored at its other end to bracket 49 by pin 50. The bracket 49 is L-shaped with one leg riveted by rivet 51 to the rear surface of front wall 6 (FIG. 2). Pulley 46 is suitably journaled to this leg while pulley 47 is suitably journaled to the other leg. Pulley 46 is parallel with the pulley 44 and is tangentially aligned with pulley 47. Pulley 48 is secured to lever 52. Lever

52 in turn is secured at one end on a pin 53 to the right end wall 5 as viewed in FIG. 1 close to the rear wall 4 and spaced from the bottom wall 3. The other end of the lever extends forwardly through a vertically extending slot 54 formed between the right edge of front wall 6 and the inner edge of the right hand end wall 5. A sufficient length of lever 52 should project so as to enable an operator to grasp the lever outside of the casing. The slot 54 should extend the vertical length of the casing so as to permit pivotable movement of the lever the length of this casing. The pulley 48 is preferably formed intermediate the ends of the lever 52. The lever 52 is normally tensioned upwardly by a helical spring 55 which is engaged at one end to the lever adjacent pivot point 53 and at the other end to the right hand end wall 5 as viewed in FIG. 1.

Also secured to the rear of the front wall 6 are the roll supporting brackets 55 and 56 (FIG. 2). Each of these comprises an L-shaped member with one leg 57 and 58 respectively of each suitably secured by rivets or other means to the rear surface of the front wall 6. The other legs 59 and 60 extend parallel to one another in spaced relationship. Axially supported on each of legs 59 and 60 are spindle supports 61 and 62. These spindle supports are adapted to engage and support for rotation a roll of sheet material 63 having a cylindrical core. The spindle supports 61 and 62 each preferably comprise a frustroconic section 64 journaled for rotation on a pin 65. The pins 65 are in turn supported on the legs 59 and 60. Helical springs 66 coaxial with the pins 65 normally tension the frustroconic section 64 inwardly into firm engagement with the core of the roll of sheet material 63.

Also supported on brackets 55 and 56 is a lower pressure roll 67 (FIG. 4). This roll 67 is journaled in a loose fitting slot with the roll 67 spring tensioned upwardly at its ends toward a drive roll 68 by leaf springs 69 (FIG. 4). Leaf springs 69 are secured at one end by pins 70 to each of the brackets 55 and 56 with the other end of each leaf spring engaging the shaft of roll 67. Drive roll 68 is suitably supported at one end (the left end as viewed in FIGS. 1 and 2) in a motor support bracket 71 (FIG. 6) and the other is suitably journaled on the right hand end wall 5. The motor support bracket 71 may be formed with three parallel offset segments 72, 73 and 74. Segment 72 is connected to segment 73 by a horizontally extending web 75 while segments 73 and 74 are interconnected at the rear of the casing by vertically extending web 76. Roll 68 is supported on the shaft 77 which is journaled for rotation with the roll 68 in segment 73 where it is secured by suitable means 78. A motor 79 is connected to the drive roll 68 for rotation of the drive roll by a gear train generally illustrated at 81. The gear train includes gears 82, 83, 84, 85 and 86 with gear 82 connected to the drive shaft 87 of the motor and interengaging gear 86 keyed to shaft 77 through the pinion gears 83, 84 and idler gear 85. The gears 83, 84 and 85 are suitably journaled and supported on segment 74 with the motor 79 also being supported on this segment. The motor is preferably battery operated with the battery 90 supported in a bracket 91 in turn secured to the rear wall 4 to the right (as viewed in FIG. 1) of the motor 79. The bracket 91 may comprise a conventional battery bracket having arms 92 and 93 adapted to engage in spring tension contact the side wall of the battery or batteries 90. Positive and negative terminals of the battery may be contacted by end elements such as indicated at 94 in FIG. 5. The bat-

tery is suitably wired to the motor in a conventional fashion and is also wired to a switch 95. Switch 95 is secured by suitable insulating means and a bracket 97 to the right hand end wall 5 as viewed in FIG. 1. The feeler or contact 98 of the switch 97 is adapted to be engaged by the lower edge of lever 52 in its extreme downward position so as to close switch contacts 99 and thereby complete an electrical circuit through the battery and motor.

In the operation of this device the lever 52 is normally in an up position. In addition the wire 45 is normally wound about the pulley 44 and the cutting element 29 is normally positioned at the left hand end of slot 17 as viewed in FIG. 1. In addition helical spring 36 is contracted.

When the lever 52 is moved downwardly wire 45 is unwound from the pulley 44 thereby causing the pulley 43 to rotate in a clockwise direction as viewed in FIG. 1. This in turn causes the wire 35 to wind up about pulley 43 pulling the block 29 to the right. Movement of the block 29 to the right is against the tension of helical spring 36. By the time the block 29 has reached the right hand end of passage 17 the lever 52 is in its lowermost position as illustrated in FIG. 5. At this point the lever 52 closes switch 95 and causes the motor 79 to turn on. Actuation of the motor 79 in turn causes rotation of the drive roll 69 through the gear train 81. Rotation of the drive roll 68 in turn feeds the leading edge of the sheet material from the roll 63 which leading edge has previously been positioned between the drive roll 68 and the lower pressure roll 67. This rotation feeds the leading edge of the sheet material through the passage 17 which passage has been opened sufficiently from a normally closed position to pass the paper. The slot is open because the increased tension of helical spring 36 on moving the block 29 to the right overcomes the upward tension of springs 27 on the adjustable guide bar 18. When a sufficient amount of sheet material has been fed through the passage 17 the operator releases tension on the lever 52. The lever moves upwardly under tension of spring 55 thereby disengaging the lever 52 with the switch 95 and causing the motor to turn off. This in turn stops rotation of the pressure roll 68 and consequent feed of the sheet material. As the lever 52 moves upwardly blade 29 moves to the left as viewed in FIG. 1 and wire 45 is rewound about pulley 44 because spring 36 exerts sufficient tension through line 34 on the block 29 and line 35 to cause a counterclockwise rotation of pulley 43. As the block 29 moves to the left tension on spring 36 is reduced a sufficient amount to permit the tension of springs 27 to move the guide bar 18 upwardly so as to clamp the sheet material between the guide bar flange 26 and the guide member 28. At the same time the cutting edge 31 transverses the guide bar and engages the portion of the sheet material which lies between the flange 26 and the guide member 28 thereby severing the leading edge of the sheet material from the main portion of the roll 63. The severed portion of the sheet material however is maintained in the dispenser by the slight pressure on the trailing edge of this leading and severed segment between the laterally extending flange 26 and the guide member 28.

If desired lever 52 and its associate mechanism including line 45, pulleys 46 and 47, and the pulley portion of pin 44 may be eliminated. In this modification a longitudinal slot in the front wall 6 is provided parallel to passage 17. This longitudinal slot extends through

and opens into downwardly extending channel 16. A pin or projection extends through this slot and is integrally connected with the block 30. In this fashion the operator may manually move the block 30 to the left or right. The switch 95 in this arrangement is relocated so that it engages the block 30 on movement to the extreme right hand position as viewed in FIG. 1 of the block 30. Thus in this modified arrangement the operator may move the block 30 to the right to actuate the motor and cause feeding of the sheet material and then manually move the block to the left to cause the motor to turn off and thereby discontinue feed of the sheet material and at the same time manually cut the leading edge of the sheet material. Also contemplated is a cutting element 31 in the form of a shear extending lengthwise of front wall 6 with the shear pivoted at one end of the wall 6 and with the other end engaged by a link to lever 52. When lever 52 is moved upwardly the cutting edge of the shear moves across the passage 17 close to the wall 6 so as to shear any paper positioned in the passage.

Referring now to the embodiment illustrated in FIGS. 7 to 13 inclusive there is illustrated a dispenser and cutter which operate from power sources preferably from two separate battery operated motors. In this preferred embodiment there is provided a cabinet 101 formed with integral top, bottom and rear walls 102, 103 and 104 respectively. If desired these walls may be formed of a single extruded piece of aluminum. The aluminum is preferably anodized particularly in those portions over which the sheet material may pass. It has been found that by anodizing aluminum and rendering it nonconductive, the static electricity of plastic sheet material such as Saran Wrap is minimized or eliminated and that a consequence it is easier to pass the plastic sheet from the dispenser.

The ends of the cabinet are closed with end walls 105. The forward portion of the cabinet is closed by hinged front wall or cover 106. The forward edge of the top wall 102 is flared arcuately downwardly in a depending lip 107 having a channel member 108 integrally formed in its lower edge and opened downwardly. The channel member 108 and depending lip 107 extend preferably the length of the dispenser or cabinet. The bottom wall 103 has an upwardly flared lip 109 terminating in an elongated bead 110 with the bead 110 shaped to form a pivoting joint engaged by a corresponding recess 111 in the lower end of the hinged front wall 106. The hinged front wall 106 is thus able to pivot about the bead 110 with the lower edge 112 of the front wall 106 adapted to engage the forward surface of lip 109 to limit the pivoting movement of the front wall 106. The bead 110 may be shaped in cross section as a segmented cylinder, as illustrated in FIGS. 7 and 8 thus providing a bead of greater outer diameter than a solid bead. It has been found that by providing a bead of greater diameter, as is illustrated by a comparison of bead 110 with the bead 10, that there is less likelihood of the front wall or cover 106 binding. The front wall 106 may be formed with any suitable decorative surface such as a surface having concavities 113. The upper edge 114 of the front wall 106 is spaced from the channel member 108 and is provided with a longitudinally downwardly extending channel 116 which is aligned with the upwardly extending channel member 108. An elongated slot or passage 117 is formed between the upper edge 114 of the front wall or cover 106 and the depending lip 107, (FIG. 7). This

passage 117 is normally closed by an adjustable guide bar 118 which is positioned within the downwardly extending channel 116. This guide bar 118 carries a cutting mechanism and is designed as part of the mechanism for retaining the trailing edge of the severed segment of sheet material. The guide bar 118 will be further described hereafter in connection with the cutting mechanism.

The roll of sheet material contained within the dispenser is illustrated at 120 in dotted outline. This sheet material may comprise aluminum foil, plastic material such as Saran Wrap, paper, wax paper or like material. The roll 120 is retained loosely on the bottom wall 103 between two end plates 121 and 122 shown respectively in FIGS. 7 and 8. These end plates each have vertical walls 121A and 122A respectively and integrally formed horizontally extending walls at the bottom 121B and 122B respectively. The horizontal walls 121B and 122B are secured in opposed channels integrally formed on the inner surface of the bottom wall 103 so that the end plates 121 and 122 may be removed closer or farther apart depending upon the length of the roll being dispensed. A pin 123 may project from one plate 121 or 122 inwardly toward the other plate from a position centrally located on the inner surface of one of the vertically extending walls 121A or 122A. This pin 123 may have a length of approximately 1 to 2 inches. The pin 123 is used to retain the roll of sheet material within the dispenser by engaging the core of the roll. The end plates 121 and 122 may be suitably secured against longitudinal movement in the opposed channels on the bottom wall 103 by suitable means including, for example, a suitable cement.

End brackets 125 (FIG. 7) and 126 (FIG. 8) are secured at opposite ends of the dispenser adjacent to the end walls 105. These end brackets may be similar in construction for convenience in manufacture and may consist of a vertically extending end plate 125A and 126A and a horizontally extending plate 125B and 126B. The horizontally extending plates 125B and 126B are suitably and permanently secured in the top wall 102 by interengagement of the side edges of the horizontally extending plates 125B and 126B with the aligned channels 102A and 102B integrally formed in the top wall 102.

End bracket 125 supports motor 127, shown in dotted outline in FIG. 7, with the motor extending inwardly from the inner surface of the vertical plate 125A. The shaft 128 of the motor extends through the plate 125A toward end wall 105 and has a gear 129 keyed to it. Gear 129 forms a part of the gear train that also includes gears 130, 130A, 131 and 132. Each of these gears is supported for rotation on shafts extending from the outer surface of the plate 125A. Gears 130 and 130A are keyed to the same shaft 133 with gear 130 meshing with gear 129 and with gear 130A meshing with gear 131. Gear 131 in turn meshes with gear 132. Gear 132 is keyed to shaft 134 of the roller 135 (FIG. 8). Roller 135 extends the length of the dispenser and has its other end suitably journaled in the end bracket 126. Suitable locking collars or mechanisms are provided to secure the roller 135 against axial movement while permitting rotational movement through the gear train previously described. The roller 125 carries a series of rubber rings 136 which are preferably spaced approximately 2 apart along the length of the roller 135. These rings 136 have an outer diameter such as to bear against roller 137 which will be de-

scribed in greater detail hereafter. These rubber rings 136 are preferably approximately at least $\frac{1}{2}$ inch in axial length, however, conventional O-rings of resilient plastic or rubber may also be used.

A plurality of stripper fingers 137 is secured to the upper wall 102 and extends around the rear under and forwardly of roll 135. These stripper fingers 137 are preferably spaced apart approximately $\frac{1}{2}$ to $\frac{3}{4}$ inch along the length of the roll 135 and function to secure the rings 136 against lateral movement and, in addition, function to strip the roll of material being fed from the dispenser from the roll 135. In dispensing plastic material such as Saran Wrap these stripper fingers 137 are quite important because such plastic material has a tendency to cling to the roll unless positively stripped from it by the fingers 137. These fingers 137, which are also illustrated in FIG. 11, may be formed of an injection molded material such as nylon. The fingers have a horizontally extending head 137A. The sides of the heads 137A are secured between opposed channels 102C and 102D formed in the upper wall 102. Extending downwardly from the head 137A is a shank 137B which arcuately curves behind and under roll 135. The free end of the shank 137B extends forwardly toward the front wall 106 with the end angled upwardly to form an upwardly extending lip 137C. The lip 137C lies close to the rear edge of channel member 108, as illustrated in FIG. 7. The free end of the shank 137B resiliently and lightly engages the rear upper portion of the guide bar 118 and 137E, as illustrated in FIG. 8, when the guide bar is in its uppermost position.

The lower roller 137' preferably is formed with a resilient knurled or grooved cover 137A'. The roller 137' is coextensive with roll 135 and is designed to function as a bearing surface for the rings 136 when roller 135 is driven by the motor 127. Roller 137' is supported at its ends by brackets 140 at each end. These brackets 140 are similar in shape and construction. The bracket 140 which supports the right end of the roller 137' as viewed from the front of the machine is illustrated in FIG. 8. The other bracket which is similar in shape and construction and which supports the left end of the roller 137' is not shown. The se brackets 140 are each provided with a rearwardly extending plate 140A that extends rearwardly from the forward wall 106 and a laterally extending plate 140B. Laterally extending plate 140B is secured to the parallel wall 116A integral with the forward wall 106 that defines channel 116. The parallel wall 116A is connected to the forward wall 106 by a bight portion 116B. The lateral plate 140B is secured between opposed channels 116C and 116D integrally formed on the rear of the parallel wall 116A. The roller 137' has an axle 137B' which is secured in vertically extending slots (not shown) in the plates 140A. The roller 137' is tensioned upwardly by torsion springs 143. Two torsion springs 143 are provided with one secured to each of the plates 140A by screws 144 which thread through a helical portion of the spring intermediate its ends into the plate 140A. One end of each spring 143 bears against the axle of shaft 1137' while the other engages an edge of channel 116D thereby exerting an upward force on the roller 137' tensioning its toward and into normal engagement with the rings 136.

Positioned within the upwardly extending channel member 108 is a guide 150. This guide extends longitudinally of the channel member 108 a length at least coextensive with the length of travel of the cutting element hereafter described. The ends of the guide 150,

however, terminate within the channel member 108 a spaced distance from the end walls 105 with the space thereby defined within the channel member 108 sufficient to receive front wall retaining elements 153 and 154 (FIG. 10) hereafter described in greater detail. The bottom surface of the guide 150 which is coextensive with the bottom edge of the channel member 108 is formed with a slot 151 its entire length. The slot 151 is designed to guide and receive the cutting element hereafter described.

The guide bar 118 which is secured within the longitudinally downwardly extending channel 116 is formed with forward and rear walls 118A and 118B. These walls are interconnected at their lower end by a bight portion 118C. The upper end of wall 118B is formed with a forwardly extending lip 118D and the upper end of wall 118A is formed with an integral horizontal wall 118E. The horizontal wall 118E and lip 118D are aligned in the same plane and are spaced apart to define a longitudinally extending slot 118F with the slot 118F longitudinally aligned with the slot 151. The guide bar 118 is secured within the channel 116 by the interengagement of the inwardly flared lips on the upper edge 114 and the shoulder section 118C at the bottom of the bar 118.

The guide bar 118 is tensioned upwardly in the channel 116 by a pair of helical springs 155 (FIG. 7 and FIG. 10). The lower ends of these springs 155 rest on the bight 116B while the upper ends engage the lower surface of the bight 118C. The springs 155 may be positioned against lateral movement by any suitable means as, for example, by a pin secured at its bottom end to the bight 116B and extending upwardly through the center of the helical spring 155 and aligned with a hole in the bight 118C. Alternately bosses or buttons such as illustrated in FIG. 77 or FIG. 10 may be utilized.

The front wall retaining elements 153 and 154 are secured respectively at the left and right ends of the guide bar 118 as viewed in FIG. 10. These front wall retaining elements may be substantially identical in configuration. They provide in cross section, (as illustrated in FIG. 7) a front wall 153A, a rear wall 153B and an interconnecting bight 153C. A rearwardly and downwardly extending lip 153D engages the forwardly extending lip 118D. Retaining element 154 may have the cross section described along its entire length. Preferably, however, retaining element 153 has the cross section described extending from its left end to the dotted line 156, as illustrated in FIG. 10. To the right of the dotted line, as illustrated in FIG. 10 at 156, the bight 153C and wall 153B are cut away to provide room for the cutting element hereafter described when it is at its extreme left end position, as illustrated in FIG. 10. The retaining elements 153 and 154 move downwardly when the guide bar 118 is retracted within the channel 116 against the tension of springs 155. The upper edges of these retaining elements 153 and 154 may thus be retracted downwardly to a position below the lower edge of lip 107 thus permitting the forward wall 106 which carries the guide bar 118 to pivot to and from a vertical position in which the retaining elements 153 and 154 are vertically aligned with the channel 108. When the retaining elements 153 and 154 are moved upwardly on release of the guide bar 118 they engage and fit within the channel 108 on either side of the guide 150 thus locking and retaining the forward wall 106 in the vertical position as illustrated in FIG. 7. A spring 159 (FIG. 7) is secured to the end bracket 125

by a screw 160 extending through a helical turn in the spring. The forward end of the spring 159 is normally tensioned against the rear of the forward wall 106 when it is in its upright position to secure it in a relatively rigid position.

The cutting element generally illustrated at 163 is positioned within and is adapted to move longitudinally of the guide bar 118. This cutting element includes a carriage 164 and cutting blade 165. The carriage 164 is positioned within and is adapted to be moved longitudinally of the guide bar 118 within the channel defined by the forward and rear walls 118A and 118B. The cutting blade which is carried by the carriage 164 projects upwardly through the slot 118F and into the slot 151. The cutting element is best illustrated in FIGS. 12 and 12A. The carriage 164 consists essentially of opposed walls 164A and 164B interconnected by a bight 164C. The walls 164A and 164B have lateral and height dimensions such as to substantially occupy the space defined by the walls 118A and 118B and to permit easy sliding of the cutting element 163 the length of the guide bar 118. The cutting blade 165 is preferably a circular cutting blade which is mounted on a hub 166 in turn journaled for rotation on the screw 167 which is threaded through the walls 164A and 164B and which is secured to these walls by a nut 168. Preferably the blade 165 is keyed to rotate with the hub 166. This may be attained by making the hole in the blade and the corresponding portion of the hub which fits through it rectangular in shape. Thus by tightening the screw 167 sufficiently the hub 166, and consequently the blade 165, may be secured by frictional interengagement against rotation. It has been found that by providing a circular blade which can be adjusted to rotate or not to rotate that different types of materials may be cut successfully. For example, when cutting plastic such as Saran Wrap, it is important that the blade 165 be fixed and not capable of rotating otherwise the Saran Wrap will bind and will not cut satisfactorily. On the other hand it is important to provide a rotating blade when cutting other materials such, for example, as aluminum. Otherwise the blade will wear and not cut satisfactorily if it is not capable of rotating when passing aluminum through the dispenser. The arrangement illustrated in FIGS. 12 and 12A also provides a means for simple replacement of blades 165 when they become worn. In order to provide access to the head of the screw 167 so that the blade 165 may be selectively tightened or loosened, a slot or hole is formed in rear wall 118B to the left of the bar 118 in axial alignment with the screw 167 when it is in the position illustrated in FIG. 10.

The cutting element 163 is moved longitudinally in the bar 118 in the direction of arrow A (FIG. 10) by a string 169. String 169 extends longitudinally within the guide bar 118. One end of the string 169 is connected to the carriage 164 at 170 by suitable means. The string extends around a roller 171 that is axially supported for rotation at the right end of bar 118 between the walls 118A and 118B. The string extends downwardly through aperture 118G and bight 116B to and engages spool 172. Spool 172 is mounted on the keyed to shaft 173 of motor 174. Motor 174 is suitably secured to the rear surface of cover plate 175 (FIG. 8). Cover plate 175 in turn is secured to the rear surface of wall 116A and extends longitudinally of and downwardly from this wall 116A. On actuation of the motor 174 from a power source as hereafter described, the spool 172 rotates taking up the string 169 and thus causing the car-

that there is no overfeed, contact 187 which is insulated from 181 engages the contact 185 almost immediately upon release of the arm 181. When the contact 185 engages the contact 181 the terminals 127A and 127B of the drive motor 127 are shorted without draining the battery 190. This shorting effectively acts as a brake and prevents override of the rollers 132 and 137.

As the arm 181 continues to move upwardly under the influence of the spring 186 it electrically contacts the contact 184 and closes a circuit through the now closed slide switch 180. Motor 174 is thus electrically connected to the battery 190 which in turn causes the spool 172 to rotate drawing the cutting element 163 lengthwise of the bar 118 in the direction of arrow A. The length of sheet material which has been fed through the aperture 117 is severed by the cutting element 163 when the blade 165 cuts through the length of sheet material which is clamped between the upper edge of the bar 118 and the channel member 108. After cutting element 163 has traversed the width of the sheet material the clamping effect is retained and the severed sheet is held between the guide bar 118 and the channel member 108.

When the ball 188 reaches the lever 189, lever 189 pivots about point 189A thus causing the slide switch 180 to move upwardly and open the circuit to the motor 174 thus turning the motor off. The motor 127 is prevented from overriding by the immediate grounding of its terminals 127A and 127B. This grounding is effected when the contact 187 moves almost immediately into electrical connection with contact 185 on the upward movement of the lever arm 181. The electrical interengagement of contacts 185 and 187 effectively shorts the terminals 127A and 127B without drawing power from the battery 190. This acts as a brake and effectively prevents override of the roller 132.

When the motor 174 is turned off the negator spring assembly 175 returns the carriage 164 to its initial position as illustrated in FIG. 10. The negator spring assembly 175 should be adjusted so that there is always a degree of tension applied to the carriage 164 in the direction opposite to the direction of arrow A thus assuring an arrangement in which the string 169 will always remain relatively taut so as not to jump the roller 171.

As defined herein, container is intended to include means for supporting a roll of material regardless of whether such support also includes covering elements or walls enclosing the roll in whole or in part.

What is claimed is:

1. A dispenser for feeding and severing segments of sheets from a roll of sheet material such as towels or the like comprising,
 - a cabinet having opposite side walls and longitudinally extending walls including a front wall, means forming an elongated passage at said front wall, means positioned intermediate said side walls for supporting a roll of sheet material on its axis with the leading edge adapted to project through said elongated passage,
 - means pivotally securing said front wall along one edge thereof to one of said longitudinally extending walls with said passage formed between said front wall and a longitudinally extending wall,
 - an electric motor means connecting said motor to said roll-supporting means for rotating said roll and feeding said sheet through said passage,
 - a cutting element comprising a blade having an upwardly projecting edge, a block supporting said

blade, a longitudinally extending guide bar supported at said front wall for guiding said block across said dispenser,

- a lever, means interengaging said lever with said motor and said cutting element whereby actuation of said lever causes sequential operation of said motor and said cutting element,
- means for actuating said motor in response to movement of said lever in one direction and means for actuation of said cutting element in response to movement of said lever in a second direction, and
- means for stopping said motor on movement of said lever from a motor-actuating position in said second direction.

2. A dispenser as set forth in claim 1 wherein said means for actuating said cutting element includes spring means tensioning said block in a transverse direction, means interconnecting said block and lever for moving said block against said spring tension in a direction opposite said transverse direction on movement of said lever in said one direction.

3. A dispenser as set forth in claim 2 wherein said lever is pivotally secured at one end of said dispenser for vertical movement, said means interengaging said lever and motor including switch means positioned to be engaged by said lever on movement thereof in said one direction.

4. A dispenser as set forth in claim 1 wherein said means connecting said motor to said roll includes,
 - a pair of rolls including a drive roll, means supporting said pair of rolls in parallel, closely spaced relation with said pair of rolls adapted to engage opposite sides of said leading edge, a gear train interconnecting said motor and one of said pair of rolls, and
 - means supporting one of said rolls on said front wall and the other of said rolls to other of said walls.

5. A wall dispenser as set forth in claim 1 having means hinging said front wall along a longitudinal edge to one of said other longitudinally extending walls,
 - said elongated passage formed between the upper edge of said front wall and one longitudinally extending wall and including a longitudinally extending guide bar having an upwardly open channel formed therein, support means resiliently tensioning said guide bar toward said one longitudinally extending wall while securing it to said forward wall whereby said passage is normally constricted,
 - a drive roll and idler roll means supporting said rolls within said cabinet with said rolls parallel to one another and to said passage, said means connecting said motor to said roll of sheet material including a gear train having a gear at one end connected to said motor and a gear at the other end connected to said drive roll, said drive roll adapted to frictionally engage the leading end of said roll of sheet material,
 - said cutting element comprising a blade having an upwardly projecting edge, a block supporting said blade and positioned within said channel of said guide bar for movement longitudinally therein,
 - said means for actuating said cutter comprising spring means tensioning said block in a transverse direction, means interconnecting said block and lever for moving said block against said spring tension in a direction opposite said transverse direction on movement of said lever in one direction, and
 - switch means for actuating said motor positioned to be operatively engaged by said lever on

movement of said lever in said one direction and disengaged on movement of said lever in a direction opposite to said one direction.

6. A dispenser for feeding and severing segments of sheets from a roll of sheet material such as towels or the like comprising,

a cabinet having opposite side walls and longitudinally extending walls one of which comprises a front wall, said front wall having a fixed portion and a pivotable portion with an elongated passage defined therebetween, means positioned intermediate said side walls for supporting a roll of sheet material on its axis with the leading edge adapted to project through said elongated passage,

means pivotally securing said pivotable portion of said front wall to a second of said longitudinally extending walls and said fixed portion of said front wall to a third of said longitudinally extending walls,

a cutting element, means supporting said cutting element on said front wall, means for actuating said cutting element including components at least in part supported on said front wall.

7. A dispenser as set forth in claim 6 having sheet material engaging means, means supporting said sheet material engaging means in said elongated passage for resiliently engaging severed segments of said sheet whereby severed segments of said sheet may be supported at one end in said cabinet.

8. A dispenser for dispensing and segmenting sheets from a roll of material comprising,
a container for said roll,
means defining an elongated aperture through which the leading edge of said roll may be fed,
means for unrolling said roll and feeding variable lengths thereof through said aperture,
means for severing the lengths of said roll including a rotatable blade,

carriage means supporting said rotatable blade and means forming an elongated channel parallel to said aperture for guiding said carriage means as said blade is cutting,
and means for selectively locking said rotatable blade in said carriage whereby said blade may be secured against rotation when said carriage is drawn lengthwise of said aperture.

9. A dispenser as set forth in claim 8 wherein said blade is removably secured to said carriage.

10. A dispenser as set forth in claim 8 comprising means for opening and closing said aperture.

11. A dispenser as set forth in claim 10, wherein said means forming an elongated channel forms at least in part said means for opening and closing said aperture and said means for opening and closing said aperture comprises a guide bar secured to a wall of said container and said means for closing said aperture comprises spring means engaging said guide bar urging toward a position closing said aperture.

12. A dispenser for dispensing and segmenting sheets from a roll of material comprising:
a container for said roll,
means defining an elongated aperture through which the leading edge of said roll may be fed,
means for unrolling said roll and feeding variable lengths thereof through said aperture,
means of severing the lengths of said roll,
wherein said container has a wall, a guide bar extending lengthwise of said wall and adapted to be

moved to close said aperture, said means for severing comprising a cutting element, means supporting said cutting element on said guide bar for movement longitudinally thereof, means for biasing said bar toward said closed position, means for moving said bar against said bias to a position in which said aperture is open, and means for sequentially actuating said means for unrolling and said means for severing.

13. A dispenser as set forth in claim 12 including means for sequentially moving said guide bar against the bias of said means for biasing before said means for unrolling is actuated and means for allowing said means for biasing to move said bar before said cutting element is moved in said longitudinal direction.

14. A dispenser for dispensing and segmenting sheets from a roll of material comprising:

a container for said roll,
means defining an elongated aperture through which the leading edge of said roll may be fed,
means for unrolling said roll and feeding variable lengths thereof through said aperture,
and means for severing the lengths of said roll fed through said aperture from the roll to form segmented sheets,
wherein said means for unrolling said roll includes a pair of rollers,
means supporting said rollers parallel to one another and adjacent said aperture for rotation in opposite directions,

one of said rollers having at least one annular segment of greater diameter than the major portion of the roller and having a surface on said annular segment adapted to frictionally engage sheets passing through said aperture, and coact with the other of said rollers to pass said sheets through said aperture,

resilient finger means extending between said rollers and extending away from said one roller whereby sheets passing between said rollers will be deflected by said fingers,

and means for opening and closing said aperture and wherein said fingers are each secured at one end to a wall of said container and the other end extends toward said aperture with said other end adapted to be deflected by said means for opening and closing said aperture.

15. A dispenser as set forth in claim 14 having means for resiliently supporting said other roller in biased engagement with said annular segment.

16. A dispenser for dispensing and segmenting sheets from a roll of material comprising:

a container for said roll,
means defining an elongated aperture through which the leading edge of said roll may be fed,
means for unrolling said roll and feeding variable lengths thereof through said aperture,
said means for unrolling said roll includes a pair of rollers, one of which has at least one annular groove in the surface thereof,
finger means disposed in said groove whereby sheets passing between said rollers will be deflected by said finger means from said one roller,
means for opening and closing said aperture wherein said finger means are secured at one end and the other end is adapted to guide said sheet through said aperture when said aperture is open,

17

and means for severing the length of said roll fed through said aperture from the roll to form segmented sheets when said aperture is closed.

17. A dispenser is set forth in claim 16, having means for resiliently supporting said other roller in biased engagement with said annular segment.

18. A dispenser as set forth in claim 16, wherein said finger means includes a plurality of fingers each secured at one end to a wall of said container and said one roller has a plurality of grooves formed by a series of longitudinally aligned sleeves coaxially mounted on a shaft at spaced intervals with said fingers arranged one each between adjacent sleeves.

19. A dispenser for dispensing and segmenting sheets from a roll of material comprising:

a container for said roll,
means defining an elongated aperture through which the leading edge of said roll may be fed,
means for unrolling said roll and feeding variable lengths thereof through said aperture,
means for severing the lengths of said roll including a moving cutting element,
carriage means supporting said cutting element,
means forming an elongated channel parallel to said aperture for guiding said carriage means as said cutting element is severing,
and motor means coupled to said carriage means for drawing said carriage in one direction and spring means for moving said carriage means in the opposite direction.

20. A dispenser as set forth in claim 19, wherein said spring means comprises a helical spring connected at its outer end to said carriage means and a cylindrical member supported at the other said channel about which said helical spring is wound.

21. A dispenser for dispensing and segmenting sheets from a roll of material comprising:

18

a container for said roll,
means in part including a front wall of said container defining an elongated aperture through which the leading edge of said roll may be fed,
means for unrolling said roll and feeding variable lengths thereof through said aperture,
means for severing the lengths of said roll fed through said aperture from the roll to form segmented sheets,

said front wall and said container including an elongated recess having an arcuate cross-section integral with one and an elongated bead pivotally mated with said recess and integral with the other of said front wall and container to form a hinge.

22. A dispenser as set forth in claim 21, wherein said bend is formed of a segmented portion of a cylinder and wherein said container includes means for limiting the movement of said front wall.

23. A dispenser as set forth in claim 6, including means for operatively disengaging said means for actuating said cutting element when said pivotable portion of said front wall is open.

24. A dispenser as set forth in claim 18, wherein said means for opening and closing said aperture includes an elongated guide bar, means for moving said guide bar parallel to its longitudinal axis toward a closed position, lever means for moving said guide bar from said closed position, said lever means including means for actuating said means for unrolling.

25. A dispenser as set forth in claim 24, including means forming a channel longitudinally in said guide bar, means supporting said severing means for movement lengthwise in said channel and means actuatable by movement of said lever means for causing movement of said severing means in said channel.

* * * * *

40

45

50

55

60

65