

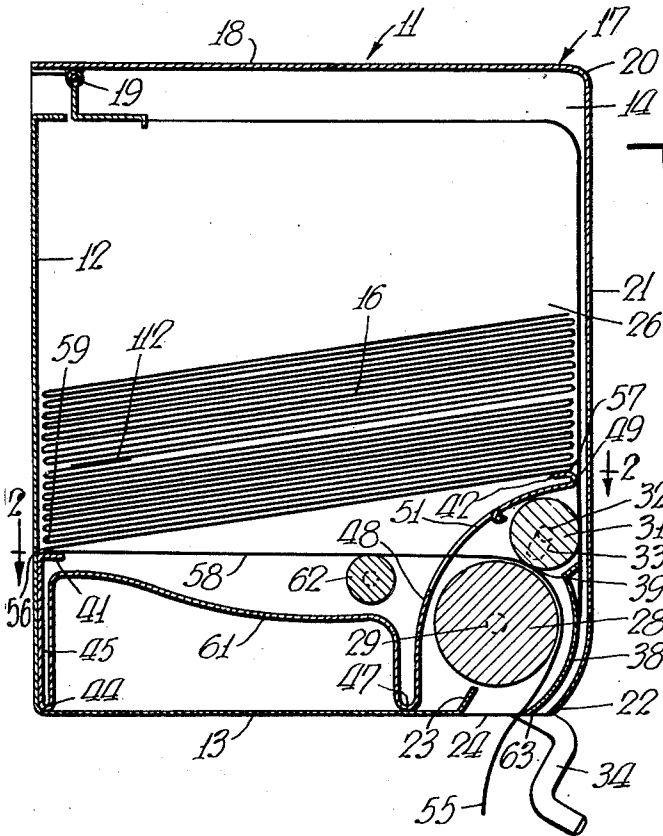
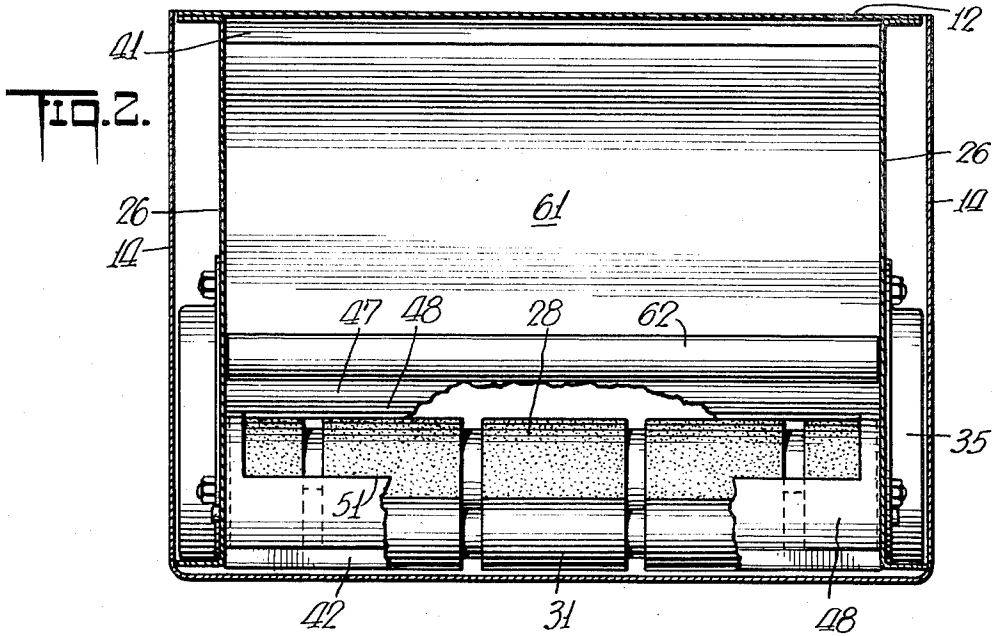
Oct. 8, 1957

M. M. MARCUSE  
SHEET DISPENSING UNIT

2,809,082

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2 Sheets-Sheet 1



INVENTOR  
Moses M. Marcuse  
BY *Dean Fairbank Hirsch*  
ATTORNEYS

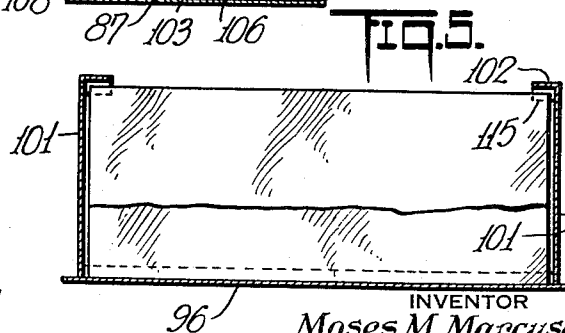
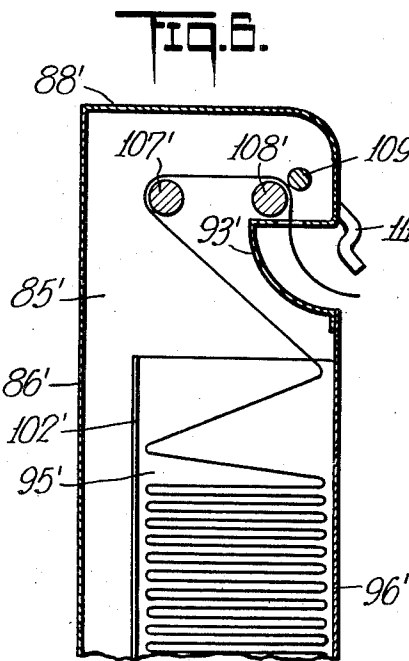
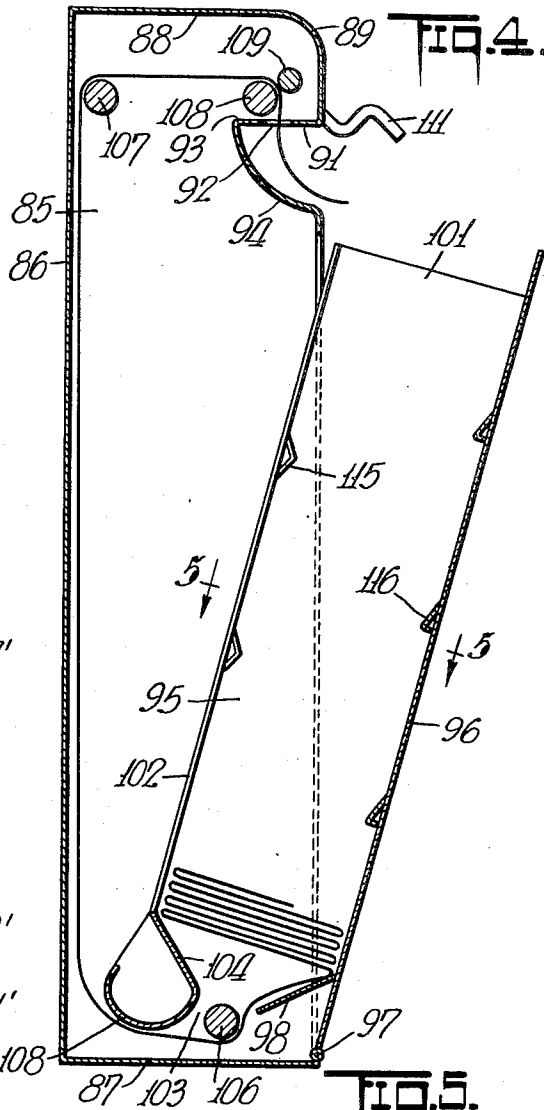
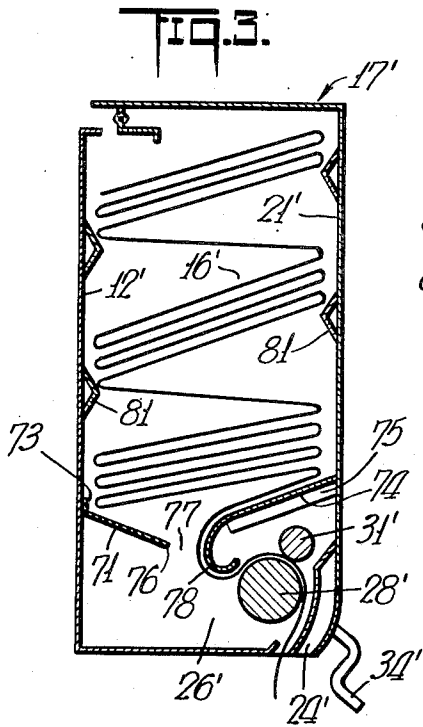
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INVENTOR  
Moses M. Marcuse  
BY *L. Fairbank & Hirsch*  
ATTORNEYS

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2,809,082

**SHEET DISPENSING UNIT**

Moses M. Marcuse, New York, N. Y., assignor to West Disinfecting Company, a corporation of New York

Application January 8, 1953, Serial No. 330,269

6 Claims. (Cl. 312-39)

This invention relates to dispensing units, more particularly for dispensing sheets of toweling from a continuous web of zig-zag folded paper arranged in a substantially rectangular block.

While sheet material such as paper toweling, dispensed from a roll in a cabinet, is useful in establishments with but few wash rooms where an attendant is readily available to supply a new roll upon exhaustion, the use of such rolls has serious limitations in large establishments with many wash rooms to be serviced generally only once a day in the tour of a single attendant. For in many cases, the remaining substantial amount of paper on a roll would either have to be wasted upon replacement with a fresh roll or, later in the day, the roll would be completely spent and no paper available until the next day.

Where sheet dispensing units containing zig-zag folded paper toweling are refilled in such manner that the newly added paper toweling is first removed after each filling, it is apparent that the older paper remaining in the unit would gradually dry out and deteriorate.

It is accordingly among the objects of the invention to provide a dispensing unit for zig-zag folded paper which is neat and need not be much more bulky than the volume of paper accommodated therein, which has but few, simple parts not likely to become out of order and which lends itself to mass production manufacture at relatively low cost, which unit may readily and expeditiously be replenished without discarding any remaining paper and without need for re-threading through the feed rollers after the initial loading, and which may readily be operated to deliver any desired length of paper toweling without likelihood of jamming of such toweling as it is fed from the unit and with assurance that the paper remaining in the unit will be dispensed before the newly added paper.

Referring now to the drawings in which are shown one or more of various possible embodiments of the several features of the invention,

Fig. 1 is a longitudinal sectional view of a dispensing unit,

Fig. 2 is a transverse sectional view taken along line 2-2 of Fig. 1,

Fig. 3 is a longitudinal sectional view of another embodiment of the invention,

Fig. 4 is a longitudinal sectional view of still another embodiment,

Fig. 5 is a transverse sectional view taken along lines 5-5 of Fig. 4 and

Fig. 6 is a fragmentary view similar to Fig. 5 of a modification.

Referring now to Figs. 1 and 2 of the drawing, the preferred embodiment of the dispensing unit shown, desirably comprises a substantially rectangular container 11 which may be secured to a convenient wall, post or partition in any suitable manner. The container has a back wall 12, a bottom wall or floor 13 and side walls 14 and is open at the top and front thereof to facilitate the in-

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sertion of a substantially rectangular block 16 of zig-zag folded paper toweling.

A substantially L-shaped cover member 17, which serves to close the open top and front of the container, is pivotally mounted at the rear of its top wall portion 18 between the side walls 14 as at 19 near the rear of their upper edges. The top portion 18 of the cover member is curved as at 20 at its junction with its front portion 21, the lower edge 22 of which, when the cover is in closed position will be substantially aligned with floor 13. The floor 13 desirably has an upturned flange 23 at its outer edge which is spaced from the bottom edge 22 of front portion 21 of the closed cover 17, thus to define dispensing opening 24.

Positioned in the container between the side walls 14 and spaced therefrom are a pair of upstanding guide walls 26 between which the block 16 of zig-zag folded paper is accommodated in the container.

Extending transversely across the container adjacent the dispensing opening 24 is a feed roller 28 mounted on a shaft 29 which desirably is rotatably mounted at its ends in the guide walls 26.

Associated with the feed roller 28 and extending parallel thereto is a pressure roller 31 mounted on a shaft 32, the ends of which extend through transversely aligned slots 33 in guide walls 26. The pressure roller is normally urged against the feed roller by suitable springs (not shown) so that paper between such rollers may be advanced by rotation of said feed roller. The feed roller may be rotated desirably by drive mechanism (not shown) of the type disclosed in the patent to Wooster No. 2,411,917 which provides for rotation of such feed roller only when a handle 34 is turned and which precludes withdrawal of toweling by a direct pull thereon. The drive mechanism may be positioned in a housing 35 located between a pair of adjacent walls 14 and 26, the duplicate housing at the opposite end being empty and provided merely for symmetry.

In order to ensure that the web of paper advanced by the rollers 28 and 31 will move out of the dispensing opening 24, a curved deflector plate 38 positioned in the container adjacent the nip 39 of rollers 28, 31 serves as a guide for the web of paper from said rollers to the dispensing opening 24.

Means are provided to ensure that only a single layer of the zig-zag folded paper will be drawn at one time from the block 16 to and through rollers 28 and 31. As shown in Fig. 1, such means desirably comprises a pair of spaced supporting members 41 and 42 positioned respectively adjacent the back wall 12 and the front wall 21 and extending transversely across the container.

Although the supporting members may be formed in any suitable manner, in the embodiment herein shown, a substantially rectangular section of suitable sheet metal is reversely bent as at 44 to form a rear wall 45 positioned adjacent the back wall 12 of the container with the upper edge thereof bent inwardly to form a flange defining the supporting member 41. The metal sheet is also reversely bent upward as at 47 to provide a curved portion 48 which extends from back of roller 28 to the front wall 21, the upper edge of such curved member being inwardly bent as at 49 also to form a flange defining the supporting member 42. As shown, the height of the curved member which extends over both of the rollers 28 and 31 is greater than that of the wall 45 so that the block 16 of paper is supported on such flanges at an incline, as shown.

The paper block as it rests in the casing is thus of rhomboid shape, almost the entire length of its bottom extending obliquely across the opening between flanges 41 and 42, which latter extend inwardly but little beyond the respective folds of the paper block. The casing is of

depth such that the front and back of the rhomboidal block extends adjacent the respective front and back of the casing.

In the embodiment, herein shown, the sheet metal section desirably extends between the guide walls 26 and the lower edges 44 and 47 of the wall 45 and the curved member 48 respectively rest on the bottom wall 13 of the container and the paper web extends through an opening 51 in member 48 and between rollers 28 and 31.

To load the dispensing unit shown in Figs. 1 and 2, the cover 17 is pivoted upwardly and the leading edge 55 of the bottom-most sheet of zig-zag folded paper in the block 16 is passed through opening 51; between rollers 28 and 31 and guided around roller 28 out of dispensing opening 24. The block of paper is then positioned between guide walls 26 so that the folded edge 56 of the sheet which now forms the bottom-most layer of the block rests on the flange 41 and the folded edge 57 of the sheet immediately thereabove is positioned on flange 42. The cover 17 is then moved to and locked in closed position and the unit is ready for use.

In operation, as the handle 34 is turned, the roller 28 will be rotated to pull on the span of paper 58 between the nip 39 of the rollers and the flange 41. As a result, the folded edge 56 will be moved off flange 41 and the folded edge 59 immediately thereabove will move onto such flange. As the roller 28 is further rotated the span of paper 58 will drop onto the panel 61 between walls 45 and 48, the guide roller 62 retaining the forward portion of such span aligned with the nip of rollers 28 and 31.

As the feed roller 28 is further rotated, more and more paper will be expelled from the dispensing opening 24 and when a sufficient length of paper has been thus dispensed, the operator may release the handle 34 and sever the paper by pulling against the lower edge 63 of the deflector plate 38.

Upon further rotation of handle 34, the folded edge 57 will be moved off ledge 42 which thereupon supports the folded edge immediately thereabove.

Thus paper will alternately be drawn from the opposed edges of the block and each time a folded edge is drawn off its associated ledge, a layer or loop of paper will be released for ready discharge by feed roller 28. Since the supporting ledges 41, 42 are narrow as shown, they exert but little friction against the paper so that only a single fold of paper will be released from one ledge or the other at one time, and there is no likelihood of more than a single ply of paper being drawn between the rollers and jamming of the unit is precluded.

An alternative embodiment shown in Fig. 3 is identical in many respects to that shown in Figs. 1 and 2 and corresponding parts bear the same reference numerals primed.

The unit shown in Fig. 3 is intended to carry a considerably larger block of zig-zag folded paper than the unit shown in Figs. 1 and 2.

The supporting member 71 shown in Fig. 3 desirably comprises a substantially rectangular strip of sheet metal affixed at its rear edge as at 73 to the back wall 12' of the container and extending transversely therealong, said supporting member 71 being inclined downwardly as shown. The supporting member 74 also comprises a substantially rectangular strip of sheet metal which desirably has a downwardly bent flange 75 at each of its lateral edges which are affixed to the guide walls 26'.

The ledge 74 also is inclined downwardly from the front of the container and the inner edge thereof which is spaced from the inner edge 76 of ledge 71 to define an opening 77, is reversely curved as at 78.

As the unit shown in Fig. 3 is designed to carry a relatively large block of paper, means are provided to reduce the pressure of such block against supporting members 71, 74 to prevent so much pressure, friction or clinging together of the folded paper sheets as might lead to more than one fold being withdrawn at a time.

To this end, a plurality of transverse deflector

protuberances 81 are affixed as by soldering to the inner face of the back wall 12'. Similar protuberances 81 are also affixed to the inner face of the front wall 21' of the cover 17' at levels intervening between successive protuberances on wall 12'. The protuberances are inclined inwardly and downwardly at their upper faces.

The unit shown in Fig. 3 is loaded in the same manner as that shown in Figs. 1 and 2 so that a block of zig-zag folded paper is positioned in the container with its opposed bottom-most folded edges resting on supporting members 71 and 74 respectively. The span of paper from the folded edge on supporting member 74 is threaded through the opening 77, around the reversely bent portion 78 and between the rollers 28' and 31' to be advanced by the rotation of handle 34' in the manner described with respect to the embodiment shown in Figs. 1 and 2.

The cover 17' is then closed which will move the protuberances 81 thereon between the folded edges of the paper in the block 16' and the protuberances 81 on wall 12' will also be interposed between layers of folded paper. Consequently, as portions of the block will be carried in oblique relation as shown, by various pairs of protuberances 81, the supporting members 71 and 74 will only carry a portion of the weight of the block.

As paper is fed through the dispensing opening 24' by rotation of feed roller 28', the opposed folded edges of block 16' will alternately be pulled off the supporting members 71 and 74 as described with respect to the embodiment shown in Figs. 1 and 2 also to ensure that only a single layer of paper will be withdrawn at a time.

The alternative embodiment shown in Fig. 4 is designed to receive a block of zig-zag folded paper considerably greater in volume than that stored in the units shown in Figs. 1 and 2 or in Fig. 3. The unit shown in Fig. 4 desirably comprises a substantially rectangular container having side walls 85, a rear wall 86, a bottom wall 87 and a top wall 88. The container is designed to be mounted on a suitable post or partition with the bottom wall 87 resting on the floor of the room in which the unit is positioned.

The container has a front wall 89 only at the upper portion thereof with an inwardly bent portion 91 at its lower edge that has an opening 92 therethrough defining a dispensing outlet and then is reversely bent as at 93 to define a deflector plate 94. The portion of the container below the deflector plate 94 forms a substantially rectangular cavity in which is positioned a supply hopper 95. This hopper 95 desirably has a substantially rectangular front wall 96 pivoted at its lower edge as at 97 to the front edge of the bottom wall 87 of the container. Rising from the bottom of the hopper is a pair of spaced parallel walls 101 with inwardly turned flanges 102 at its free longitudinal edges. The lower end of the hopper has an oblique wall 98 extending downward from the front, and an oblique wall 104 extending downward from between flanges 102 at the rear. Said oblique walls define an opening 103 therebetween through which the paper is fed about a roller 106 that is journaled in side walls 85. Wall 104 is curved rearwardly and upwardly as at 108 to guide the paper.

As the unit shown in Figs. 4 and 5 is also designed to contain a relatively large block of paper, means are also provided to reduce the pressure of such block against supporting members 98, 104 to ensure that paper may readily be withdrawn from the block. To this end, a plurality of transverse deflector protuberances 115 are affixed as by soldering to inturned flanges 102, and similar protuberances 116 which extend across front wall 96 are affixed thereto at levels intervening between successive protuberances 115.

Positioned adjacent the rear wall 86 of the container and near its top is a horizontal guide roller 107. In addition, a pair of rollers 108 and 109 similar to rollers 28 and 31, shown in Figs. 1 and 3, is positioned adjacent

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front wall 89. The roller 109 is a pressure roller normally urged against feed roller 108 which may be rotated by handle 111 through mechanism similar to that shown in the patent to Wooster above referred to.

To load the unit shown in Figs. 4 and 5, the hopper 95 is pivoted outwardly, as shown, and a block of zig-zag folded paper is positioned therein with the bottom-most folded edges thereof resting on inclined ledges 104 and 98 adjacent the inturned flanges 102 and front wall 96 of the hopper respectively.

As portions of the block of paper will be supported by protuberances 115 and 116, only a portion of the weight of such block will be carried by members 98 and 104.

A span of paper is drawn from the bottom of the block of paper, passed through opening 103, around curved wall 108, upwardly and around roller 107 and thence between pressure roller 109 and feed roller 108 through dispensing outlet 92 out of the container. When the unit has thus been loaded, the hopper is pivoted inwardly and locked in such closed position. In the operation of the unit, the feed roller 108 is rotated by handle 111 to draw paper from the block in the hopper first from one folded edge and then from the other folded edge, as heretofore described. Consequently, there is no likelihood of jamming of the paper.

As the operating handle 111 and the outlet 92 of the unit shown in Figs. 4 and 5 may be approximately four feet above the floor, the unit is convenient to operate and by reason of its large volume need only be serviced at infrequent intervals.

The embodiment of Fig. 6 is externally similar to that of Fig. 4 but the paper is dispensed therein from the top rather than from the bottom of the tall stack or block of zig-zag folded paper.

The construction of Fig. 6 will be evident from that of Figs. 4 and 5, corresponding parts being designated by the same reference numeral primed.

Since the paper is fed from the top of the block or stack, there is no danger of jamming due to the weight of paper being supported, for which reason the protuberances 115, 116 are not required in this embodiment. The paper is fed directly from the top of the block or stack about the roller 107'.

While in the embodiment of Figs. 4 and 5, the supply of paper is replenished by introducing further paper from the top of the hopper, it is replenished in the embodiment of Fig. 6 by introduction from the bottom.

In the embodiment of Fig. 6, as in that of Figs. 4 and 5, it is noted that the paper is consumed in the order in which it is introduced in the hopper.

The units herein shown and described may be recharged expeditiously without waste and without unloading the paper remaining in the container. Thus it is merely necessary to place a drop of glue or other adhesive on the topmost sheet of the block in the unit, as shown at 112 in Fig. 1, and then press thereagainst the bottom-most sheet of a new block, or if desired, the topmost sheet of the block in the unit may be connected to the bottom-most sheet of the new block by pressure sensitive tape.

It will be understood that where desired, instead of the single sheet as specified throughout, a double-ply of sheet may be dispensed.

As many changes could be made in the above construction, and many apparently widely different embodiments of this invention could be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A dispensing unit for a continuous length of zig-zag folded toweling comprising a substantially rectangular

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container for holding a block of such toweling, a substantially rectangular sheet bent at one edge to form a rear wall positioned adjacent the back wall of the container with the upper edge of said rear wall being inwardly bent to define one of said supporting ledges, the opposed edge of said sheet being upwardly and outwardly curved with the upper edge of said curved portion being inwardly bent to define the other supporting ledge, said container having a back wall, a front wall and a bottom wall and having a dispensing outlet adjacent the lower edge of said front wall, a pair of spaced supporting means positioned respectively adjusted opposed walls of said container and extending transversely therealong for supporting substantially only the bottom-most opposed edges of such block of zig-zag folded toweling, said supporting means comprises a pair of ledges spaced from the bottom wall and positioned adjacent the back wall and front wall respectively, a substantially rectangular sheet bent at one edge to form a rear wall positioned adjacent the back wall of the container with the upper edge of said rear wall being inwardly bent to define one of said supporting ledges, the opposed edge of said sheet being upwardly and outwardly curved with the upper edge of said curved portion being inwardly bent to define the other supporting ledge, and means affording a passageway for drawing the bottom-most layer of toweling from such block through the space between said supporting means and thence through said outlet.

2. A dispensing unit for a continuous length of zig-zag folded toweling comprising a substantially rectangular container for holding a block of such toweling said container having a back wall, a front wall and a bottom wall, a dispensing outlet at the bottom of said container adjacent the lower edge of said front wall, means for drawing the toweling from the block comprising a pair of rollers positioned adjacent said dispensing outlet, means positioned respectively adjacent opposed walls of said container and extending transversely therealong for supporting substantially only the bottom-most opposed folded edges of said block of zig-zag folded toweling, a substantially rectangular carrier positioned in said container bent at one edge to form a rear wall positioned adjacent the back wall of said container with the upper edge of said rear wall being inwardly bent to define one of said supporting members, the opposed edge of said sheet being upwardly and outwardly curved over said rollers, with the upper edge of said curved portion being inwardly bent to define the other supporting member, said curved portion having an opening through which paper from said block may be threaded between said rollers to be discharged by said rollers.

3. The combination set forth in claim 2 in which said carrier is of sheet metal and is supported by said bottom wall.

4. A dispensing unit comprising a substantially rectangular container having side walls, a rear wall, a top wall and a front wall structure, the latter extending only at the upper portion of the container, affording an open rectangular cavity therebelow, a hopper having a substantially rectangular front wall pivoted at its lower edge to near the front of the bottom wall, said hopper accommodating a block of zig-zag folded sheet material therein, said hopper having downwardly and inwardly inclined bottom ledges supporting the block of sheet material and presenting an outlet therebetween, guide means extending to the rear of the hopper for feeding the sheet material from the bottom thereof thence upward along the rear of the container, and a guide roller near the top of the sheet material for guiding the same to the transverse feed rollers adjacent the front wall, the hopper having transverse protuberances extending obliquely downwardly and inwardly, the protuberances at the front wall being at level intervening between those at the rear of the hopper, and transverse feeding rollers at the top of said container adjacent the front wall structure for ad-

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vancing sheet material from one end of the block, said front wall presenting a dispensing opening therethrough.

5. The combination recited in claim 9 in which the hopper has upright flanges extending inward from the rear portion thereof and in which the guide rearward of the bottom of the hopper is a rearwardly and upwardly curved sheet unitary with the rear oblique ledge.

6. A dispensing unit comprising a substantially rectangular container having side walls, a rear wall, a top wall and a front wall structure, the latter extending only at the upper portion of the container, affording an open rectangular cavity therebelow, a hopper having a substantially rectangular front wall pivoted at its lower edge to near the front of the bottom wall, said hopper accommodating a block of zig-zag folded sheet material therein, and transverse feeding rollers at the top of said container adjacent the front wall structure for advancing sheet material from one end of the block, said front wall presenting a dispensing opening therethrough, and a roller near the top of the container rearward of the feeding rollers guiding the sheet material directly from the upper end of the block to said feeding rollers.

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