June 5, 1928. 1,672,236

S. H. VARNDELL

MACHINE FOR DELIVERING ARTICLES

Filed Aug. 4, 1927 4 Sheets-Sheet 1

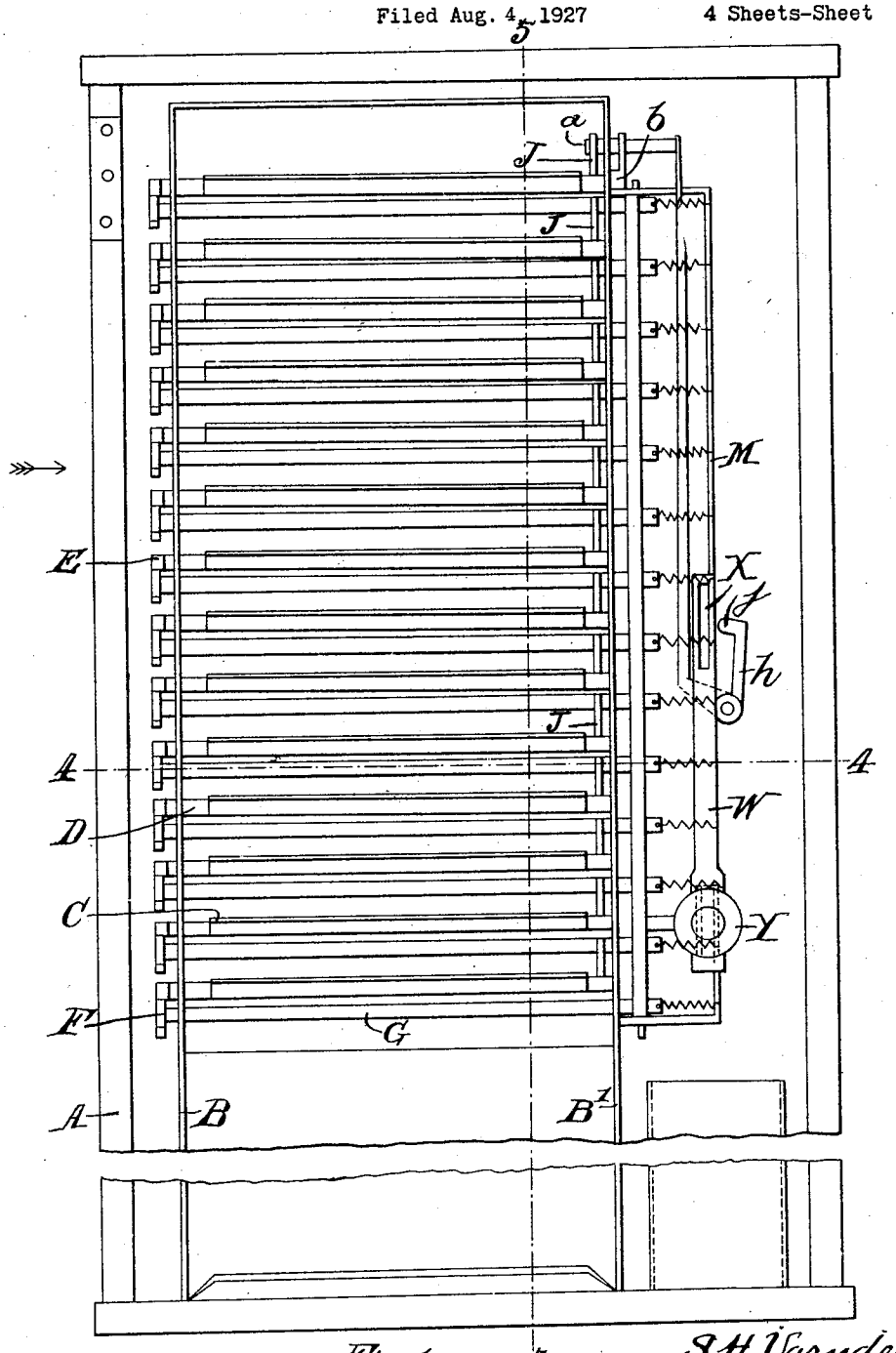


Fig. 1.

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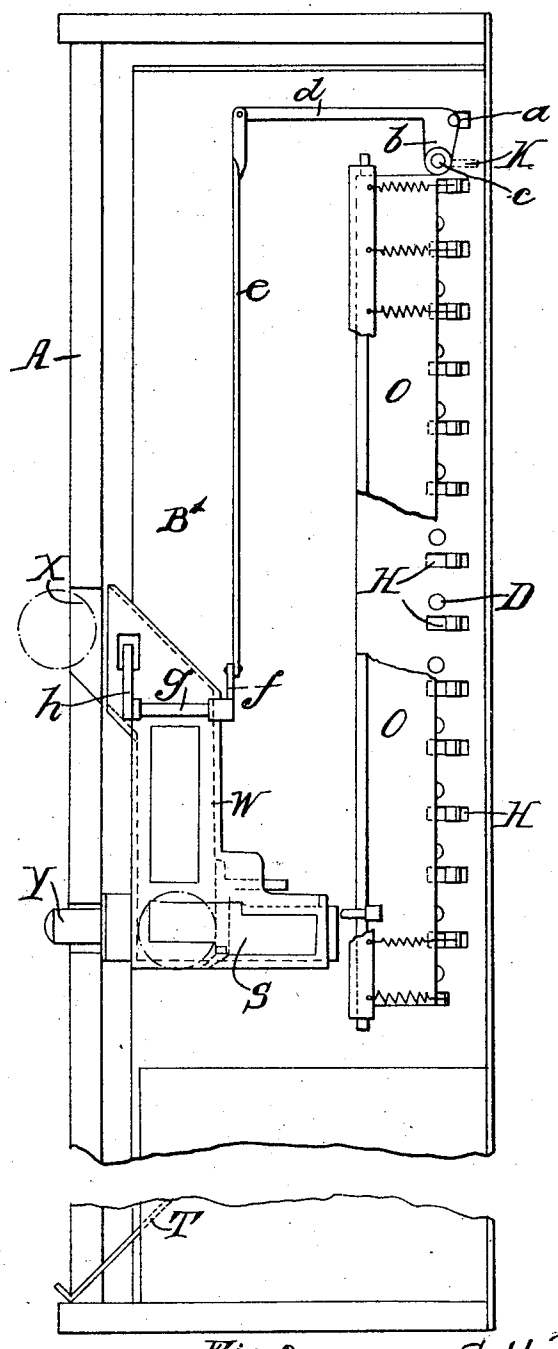


Fig. 2.

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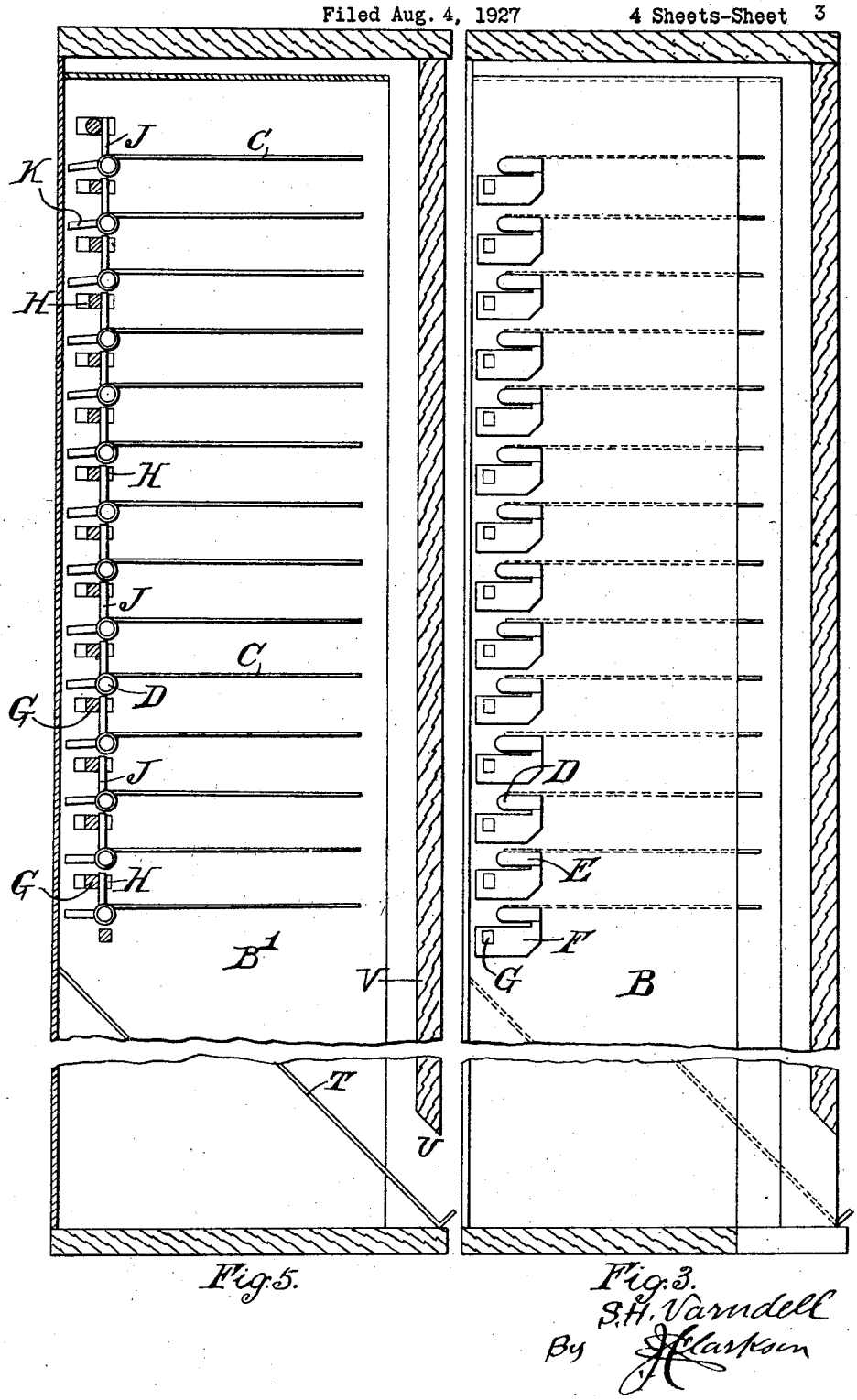


Fig. 5.

Fig. 3.

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MACHINE FOR DELIVERING ARTICLES

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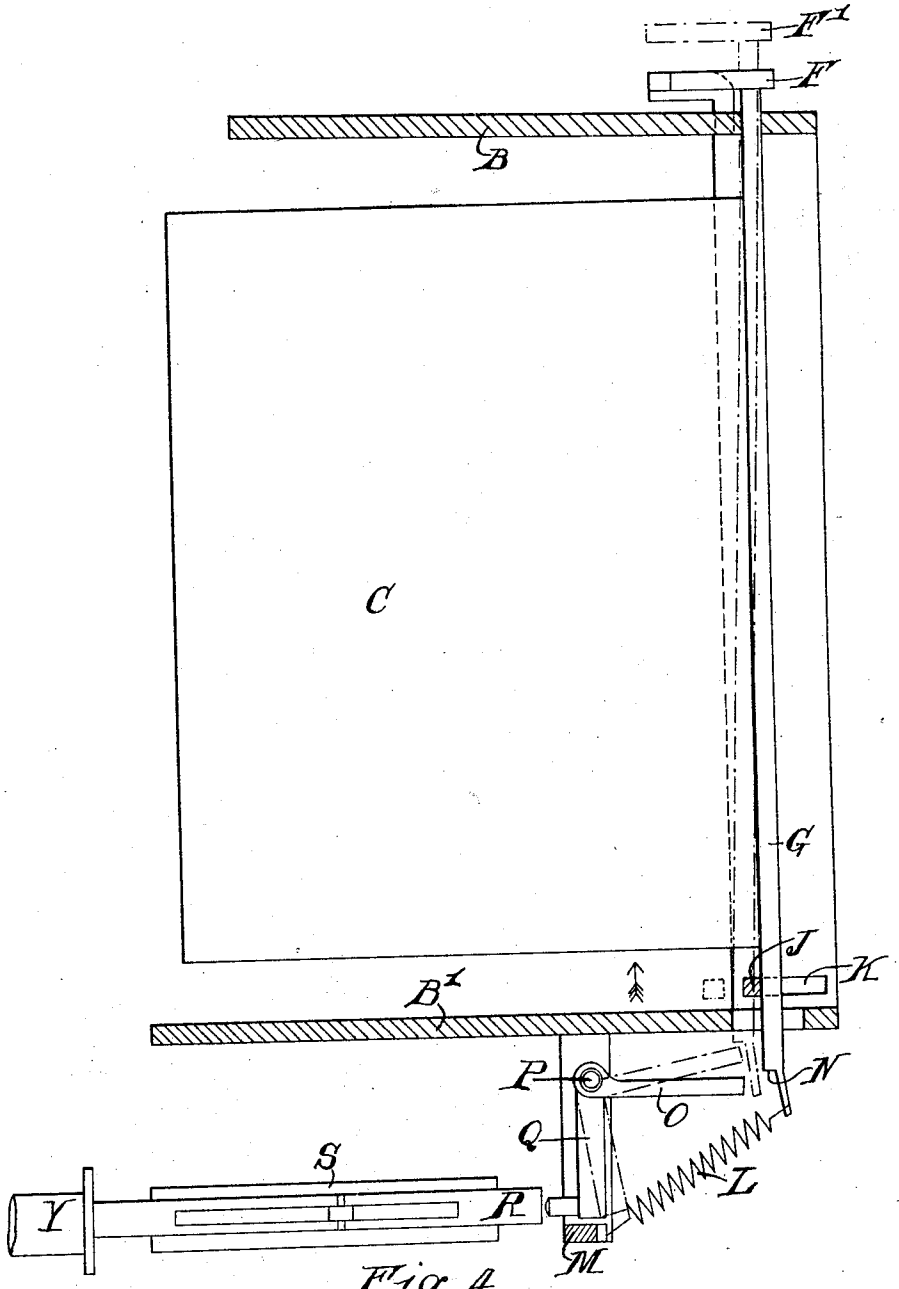


Fig. 4.

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By J. Harrison

Patented June 5, 1928. 1,672,236

UNITED STATES PATENT OFFICE.

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MACHINE FOR DELIVERING ARTICLES.

Application filed August 4, 1927. Serial No. 210,613, and in Great Britain August 13, 1926.

This invention relates more especially to machines for delivering towels for use in public lavatories such as those of railway coaches; but is applicable to other machines for the delivery of other articles.

The type of machine to which the invention relates comprises a set of shelves placed one above another in an inner frame or casing and each pivoted in relation thereto by a rearward pivot axis, such axis consisting usually of a bar which is rigid with the shelf and passes at its ends through holes in the side walls of the casing; and the invention has for its object to provide improved means by which the shelves are released, one by one, by means of a single slider.

According to this invention, each shelf, which is pivoted to turn about its rear edge, is provided with an arm at one end thereof projecting at right angles to the shelf axis said arm being supported by a bracket carried on the end of a bar parallel to the shelf and movable endwise in relation to the frame of the machine, but prevented from turning in relation thereto. Each said bar, at the end remote from the bracket, is free to move backward and forward horizontally and the rear edge of each shelf, near the end opposite the bracket, is provided with an upwardly extending arm adapted to press back the corresponding end of the bar immediately above it when the shelf is up; and means are provided whereby, when the said shelf falls, the said end of the bar is moved forward into the path of a part which is moved by the operator, so that the falling of each shelf from the bottom successively upwards, sets the apparatus for releasing the shelf above.

A convenient application of the invention is described with reference to the drawings herewith, of which:—

Figure 1 is a front elevation of the machine in its box or casing but with the front cover of the box removed to show parts within.

Figure 2 is an elevation of the machine as seen from its right hand side.

Figure 3 is an elevation of the machine as seen from the left hand side.

Figure 4 is a sectional plan view to an enlarged scale, the section being taken on the line 4, 4, of Figure 1; and,

Figure 5 is a vertical section taken on the line 5, 5, of Figure 1, and looking in the direction of the arrow of that figure.

In these drawings:—A is a box or casing in which is mounted an inner frame comprising two vertical walls B B′. C, C, C, are sheet metal shelves each of which is attached at its rear edge to a round spindle D which passes at its ends through the frame walls B B′. Each spindle D at its left hand end is provided with a forward arm E (see especially Figure 3) which is normally supported by a bracket F carried on the end of a square bar G which at its left hand end, as seen in Figure 1, passes through a square hole in the frame side B. It is to be understood that each shelf has a bar G placed just below it. The lowermost bar G at its right hand end passes through a square hole in the frame wall B′, but all the other bars G at their right hand ends pass through a horizontal slot H (see Figure 5) so that these bars can be moved backwards and forwards at their right hand ends. They are also free to move endwise in the frame members B B′. Each spindle D rigid with and supporting a shelf is provided near its right hand end with two arms one of which J is normally vertical while the other K is normally substantially horizontal and projects rearwardly. Each bar G is constantly pressed in a forward and right hand direction by means of a spring L (see especially Figure 4) connecting between the extreme right hand end of the bar G and a fixed vertical post M. Each bar G has an abutment face N with which, when it is forward in its slot, a vertical plate O engages, the plate O being pivoted to turn about a vertical axis P to which is attached a lever arm Q (see especially Figure 4) actuated by a push rod R of a coin freed apparatus S which may be of any convenient type. T (see Figure 5) is a chute down which the towels fall to an opening U at the bottom of the front cover V. W (see Figure 2) is a coin chute by which the coin passes from the coin slot X to the coin-free apparatus S. Y is a knob on the pusher rod R for operation from outside the front of the machine.

The action of the apparatus is as follows:—Assuming that each shelf carries a towel, that is to say that the machine is full, a coin having been inserted and the coin-freed apparatus released, the operator

presses the knob Y inwards and this causes the push-rod R to press back the lever Q (see Figure 4) which gives the plate O a movement inwards in the direction of the arrow of Figure 4. The plate O then presses in the lowermost bar G which alone lies in its path. All the other bars G are back out of the path of the plate O because each of them is held back by the vertical arm J of the shelf below. The plate O, by pressing the lowermost bar G to the left (as seen in Figure 1) causes its bracket F to be moved out until it assumes the position indicated by dotted lines at F′ in Figure 4, so that it no longer supports the arm E of the lowermost shelf. The latter therefore falls and the respective towel goes down the chute T from the bottom of which it can be reached by the operator. The bottom shelf having fallen, its arm J moves forward and no longer holds back the right hand end of the bar G immediately above whose bracket F supports the arm E of the bottom shelf but one. This bar G is also then positively pressed forward by the corresponding arm K. The abutment at its right hand end is therefore now in the path of the plate O so that at the next operation of the machine it will be moved to the left and thus release the second shelf. It will be clearly understood now that each operation of the machine causes a shelf to fall and the shelf which falls is always the lowest of those which have not already fallen. Each bar G after its operation is prevented from returning to its normal position endwise, by the respective arm E which has fallen between the respective bracket F and the outer surface of the wall B.

A very considerable advantage of the construction lies in the fact that the slider R operates only one set of mechanism at a time, all the other mechanisms remaining stationary.

The uppermost shelf also carries arms J and K of which the arm J normally keeps back a pin *a* of a lever *b* (see Figure 2), but when the top shelf falls the arm K presses forward against the pin *a* of the lever *b* which is fulcrumed at *c* and has a main arm *d*. This latter is pivoted to a link *e* which is pivoted at its lower end to an arm *f* on a short shaft *g* which carries at its other end an arm *h* with a finger *j* (see Figure 1). When the top shelf falls the pin *a* goes forwards either of its own accord or by pressure from the arm K thus depressing the link *e* which has the effect of causing the finger *j* to enter the coin chute and prevent the insertion of a coin into the machine.

Any suitable device such as a vertical bar with fingers may be provided for lifting the shelves; but it is found in practice that the most convenient method is to raise them by hand. Starting with the bottom shelf they can all be restored to their normal position simply by sweeping the fingers over their front edges upwards. As each shelf comes to its horizontal position its arm E allows the respective bracket F and bar G above to go back to the normal and the right hand end of each bar G moves back under the pressure of the arm J of the respective shelf.

If, when an attendant comes to the machine, there are still some of the shelves up and therefore holding towels, and it is desired to release these shelves in order to change the stock, this can be readily done without the insertion of a coin simply by pressing in the plate O.

Having fully described my invention what I claim and desire to secure by Letters Patent is:—

1. A machine for delivering articles, comprising a set of shelves on which the articles are placed, each shelf being pivoted to turn about its rear edge, an arm at one end of each shelf projecting at right angles to the shelf axis, a bracket in respect of each shelf for supporting the said arm, a bar which carries the said bracket at one end and is movable endwise in relation to the frame of the machine to free the bracket from the arm to allow the respective shelf to fall, each said bar except the lowermost at the end remote from the bracket being mounted so as to be free to move backwards and forwards horizontally, means whereby said end of the bar is pressed back when the shelf below is raised, and means whereby, when the said shelf falls, said end of the bar is moved forward into the path of a part which is moved by the operator, whereby the fall of each shelf from the bottom successively upwards sets the apparatus for releasing the shelf above.

2. A machine for delivering articles, comprising a set of shelves on which the articles are placed, each shelf being pivoted to turn about its rear edge, an arm at one end of each shelf projecting at right angles to the shelf axis, a bracket in respect of each shelf for supporting the said arm, a bar which carries the said bracket at one end and is movable endwise in relation to the frame of the machine to free the bracket from the arm to allow the respective shelf to fall, each said bar except the lowermost at the end remote from the bracket being mounted so as to be free to move backwards and forwards horizontally, an upwardly extending arm projecting from the rear edge of each shelf near the end opposite to the bracket adapted to press back the corresponding end of the bar immediately above it when the shelf is up, and means whereby, when the said shelf falls, the said end of the bar is moved forward into the path of a part which is moved by the operator, whereby the fall of each shelf, from the bottom successively

upward, sets the apparatus for releasing the shelf above.

3. A machine for delivering articles comprising a set of shelves on which the articles are placed, each shelf being pivoted to turn about its rear edge, an arm at one end of the shelf projecting at right angles to the shelf axis, a bracket for supporting the said arm, a bar which carries the said bracket at one end and is movable endwise in relation to the frame of the machine to free the bracket from the arm to allow the respective shelf to fall, each said bar except the lowermost at the end remote from the bracket being mounted so as to be free to move backwards and forwards horizontally, means whereby said end of the bar is pressed back when the shelf below is raised, means whereby, when the said shelf falls, the said end of the bar is moved forward into the path of a part which is coin-freed and moved by the operator, whereby the fall of each shelf, from the bottom successively upward, sets the apparatus for releasing the shelf above, an arm projecting at right angles from the rearward edge of the uppermost shelf, and means operated by such arm for preventing the insertion of a further coin in the cam chute.

4. A machine for delivering articles comprising a set of shelves on which the articles are placed each shelf being pivoted to turn about its rear edge, an arm at one end of each shelf projecting at right angles to the shelf axis and parallel to the shelf, a bracket in respect of each shelf for supporting the said arm, a bar which carries the said bracket at one end and is movable endwise in relation to the frame of the machine to free the bracket from the arm to allow the respective shelf to fall, each said bar except the lowermost at the end remote from the bracket being mounted so as to be free to move backwards and forwards horizontally, means whereby said end of the bar is pressed back when the shelf below is raised, and means whereby, when the said shelf falls, the said end of the bar is moved forward into the path of a part which is moved by the operator, whereby the fall of each shelf, from the bottom successively upward, sets the apparatus for releasing the shelf above.

5. A machine for delivering articles comprising a set of shelves on which the articles are placed, each shelf being pivoted to turn about its rear edge, an arm at one end of each shelf projecting at right angles to the shelf axis, a bracket in respect of each shelf for supporting the said arm, a bar which carries the said bracket at one end and is movable endwise in relation to the frame of the machine to free the bracket from the arm to allow the respective shelf to fall, said arm being adapted to fall between said bracket and the frame of the machine to prevent the return of the bracket when the operating means are released, each said bar except the lowermost at the end remote from the bracket being mounted so as to be free to move backwards and forwards horizontally, means whereby said end of the bar is pressed back when the shelf below is raised, and means whereby, when the said shelf falls, said end of the bar is moved forward into the path of a part which is moved by the operator, whereby the fall of each shelf from the bottom successively upwards sets the apparatus for releasing the shelf above.

6. A machine for delivering articles comprising a set of shelves on which the articles are placed, each shelf being pivoted to turn about its rear edge, an arm at one end of each shelf projecting at right angles to the shelf axis, a bracket in respect of each shelf for supporting the said arm, a bar which carries the said bracket at one end and is movable endwise in relation to the frame of the machine to free the bracket from the arm to allow the respective shelf to fall, each said bar except the lowermost at the end remote from the bracket being mounted so as to be free to move backwards and forwards horizontally, an upwardly extending arm projecting from the rear edge of each shelf near the end opposite to the bracket adapted to press back the corresponding end of the bar immediately above it when the shelf is up, means whereby, when the said shelf falls, the said end of the bar is moved forward into the path of a part which is moved by the operator, whereby the fall of each shelf, from the bottom successively upward, sets the apparatus for releasing the shelf above, and a third arm normally projecting rearwardly from the rear edge of each shelf and near the end opposite to the bracket, such third arm acting positively to move forward the corresponding end of the bar immediately above when the respective shelf falls.

7. A machine for delivering articles comprising, a set of shelves on which the articles are placed, each shelf being pivoted to turn about its rear edge, an arm at one end of each shelf projecting at right angles from the shelf axis, a bracket in respect of each shelf for supporting the said arm, a bar which carries the said bracket at one end and is movable endwise in relation to the frame of the machine to free the bracket from the arm to allow the respective shelf to fall, each said bar except the lowermost at the end remote from the bracket being mounted so as to be free to move backwards and forwards horizontally means whereby said end of the bar is pressed back when the shelf below is raised, means whereby, when the said shelf falls, the said end of the bar is moved forward into the path of a part which is moved by the operator, whereby the

fall of each shelf, from the bottom successively upward, sets the apparatus for releasing the shelf above, and a spring in respect of each bar said spring connected with the respective bar and also connected at its other end to a fixed part of the machine and acting to return the bar to the normal position when the respective shelf is raised to allow the bracket on the bar to move into position to retain the arm of the shelf.

8. A machine for delivering articles, comprising a set of shelves on which the articles are placed, each shelf being pivoted to turn about its rear edge, an arm at one end of each shelf projecting at right angles to the shelf axis, a bracket in respect of each shelf for supporting the said arm, a bar which carries the said bracket at one end and is prevented from turning in relation to the frame of the machine but is movable endwise in relation thereto to free the bracket from the arm to allow the respective shelf to fall each said bar except the lowermost at the end remote from the bracket being mounted so as to be free to move backwards and forwards horizontally, means whereby said end of the bar is pressed back when the shelf below is raised, and means whereby, when the said shelf falls, the said end of the bar is moved forward into the path of a part which is moved by the operator, whereby the fall of each shelf, from the bottom successively upward, sets the apparatus for releasing the shelf above.

In witness whereof I have hereunto signed my name this 19th day of July 1927.

SYDNEY HERBERT VARNDELL.