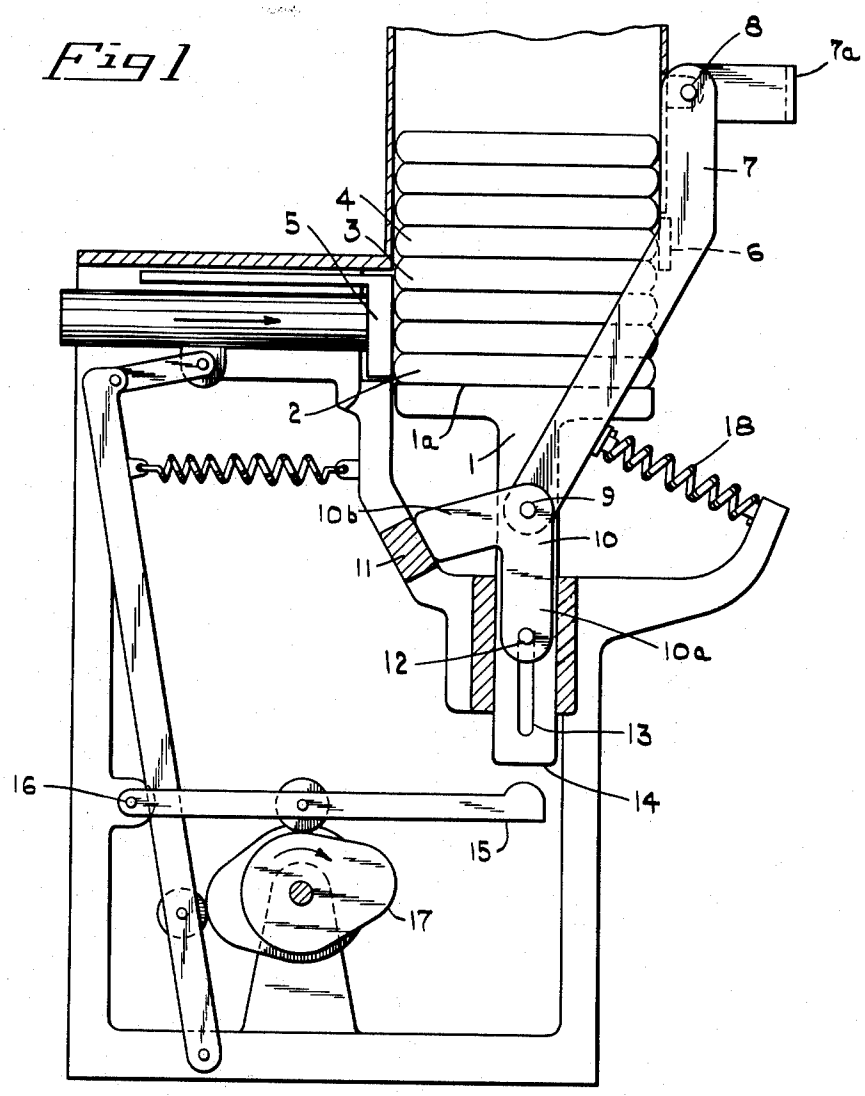
Oct. 11, 1955 F. KOVAC 2,720,338

SEPARATING APPARATUS FOR ARTICLES OF VARYING THICKNESS

Filed May 17, 1954 2 Sheets-Sheet 1

Fig 1



INVENTOR.
FERDINAND KOVAC

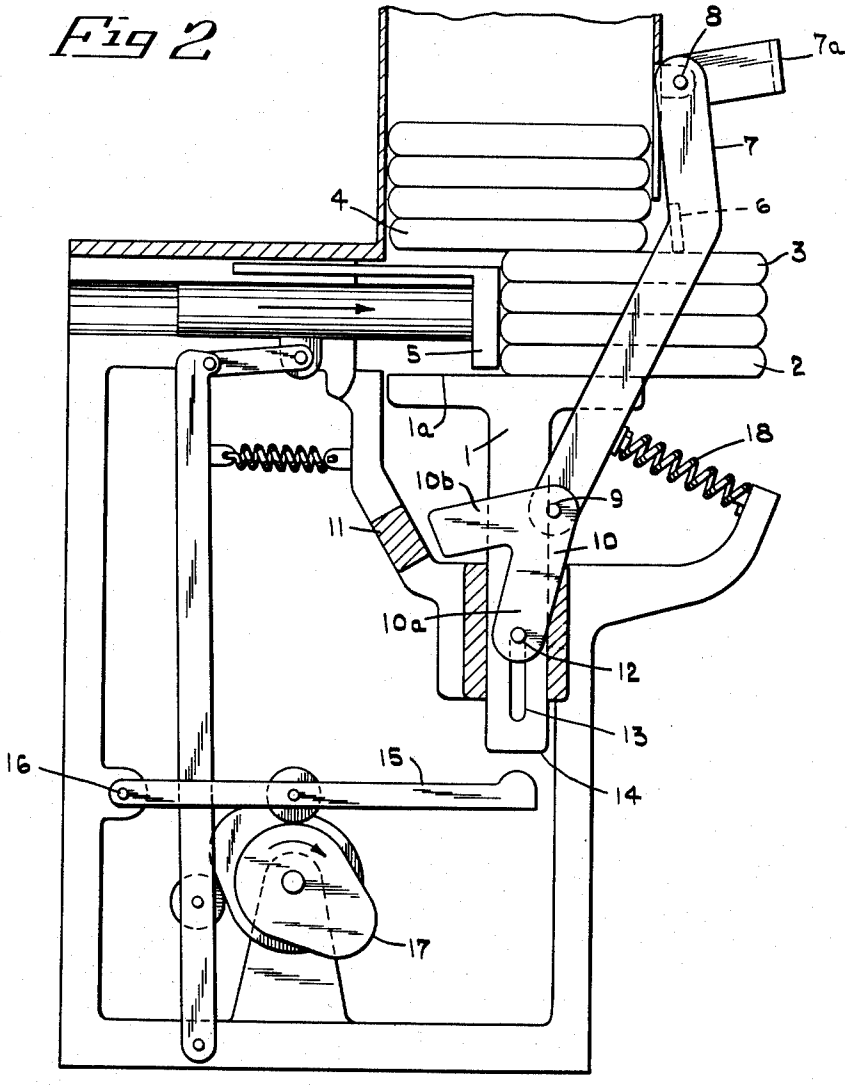
BY

Oct. 11, 1955 F. KOVAC 2,720,338

SEPARATING APPARATUS FOR ARTICLES OF VARYING THICKNESS

Filed May 17, 1954 2 Sheets-Sheet 2

Fig 2



INVENTOR.
FERDINAND KOVAC

BY

United States Patent Office 2,720,338
Patented Oct. 11, 1955

2,720,338

SEPARATING APPARATUS FOR ARTICLES OF VARYING THICKNESS

Ferdinand Kovac, Hannover, Germany, assignor to Werner Bahlsen, Hannover, Germany

Application May 17, 1954, Serial No. 430,344

Claims priority, application Germany May 15, 1953

15 Claims. (Cl. 221—243)

The present invention relates to an apparatus for separating a predetermined number of articles of varying thickness from a pile of stacked articles, and more particularly to an apparatus in which baked articles, such as crackers, are separated from a stacked pile.

It is frequently necessary to separate a predetermined number of articles from a pile of stacked articles. If the articles are not of the same thickness, as is frequently the case in baked articles, it is very difficult to assure that the same number of articles is always separated from the pile.

It is one object of the present invention to provide an apparatus for separating and expelling a predetermined number of articles of slightly varying thickness from a pile of stacked articles.

It is another object of the present invention to provide an apparatus for expelling from a pile of stacked articles a predetermined number of articles supported on a stack holding member in such manner that articles of a thickness greater than normal engage an actuating member which effects retraction of the stack holding member so that the correct number of thicker articles can be expelled.

It is a further object of the present invention to provide means for preventing retraction of the stack holding member by the weight of the supported pile.

It is yet another object of the present invention to provide periodically operated means for returning the stack holding member from a retracted position to its normal position so that expelled articles do not have to overcome the force required for returning the stack holding member.

With these objects in view the present invention mainly consists in apparatus comprising, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to the path so as to expel a predetermined number of articles, or in other words, a unit of articles, from a pile of stacked articles of slightly varying thickness; a movable actuating member located on one side of the path of said expelling member and being movable between an inoperative position and an operative position; a stack holding member located on the other side of the path and engaging one end of the pile of stacked articles, the stack holding member being movable between a normal position spaced from the actuating member a smaller distance corresponding to the thickness of a unit of normal articles and a retracted position spaced from the actuating member a greater distance corresponding to a unit of thicker articles; and operating means connecting the actuating member with the stack holding member so that the stack holding member moves to its retracted position when the actuating member is moved to its operative position by an expelled unit of thicker articles.

An expelled unit of articles having normal thickness will pass between the actuating member and the stack holding member, while the adjacent article will be held by the actuating member, since the friction between the

expelled unit and the adjacent article is insufficient to move the actuating member.

If, however, the expelled unit of articles is thicker than normal, it will engage the actuating member and move the same to its operative position so that the stack holding member moves to its retracted position in which the distance between the actuating member and the stack holding member is sufficient to permit passing of a thicker unit of articles.

The expression "a unit of articles" is used in the present application to define a predetermined number of articles, and at least one article.

Preferably, the stack holding means has a horizontal supporting face for supporting a vertical pile of stacked articles, and is formed with a vertical slot into which a pin of the operating means projects so that a relative movement between the stack holding member and the operating means is possible. In this embodiment periodically operated means are provided for returning the stack holding member to its normal position, while a spring or the force of gravity is used for returning the actuating member to its inoperative position.

The operating means are preferably a pair of pivoted levers movable between an angular position and a substantially aligned position. The stack holding member is held in its normal position when the pair of levers is in angular position and moves to its retracted position when the levers are aligned.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Fig. 1 is a side view of the apparatus in one operational position; and

Fig. 2 is a side view of the apparatus in another operational position.

Referring now to the drawings, a stack holding member **1** has a supporting face **1***a* on which a pile of stacked articles **2**, **3**, **4** of slightly varying thickness is supported. These articles may be crackers or similar baked articles. An expelling member **5** is movable along a predetermined path across the supporting face **1***a* for expelling the crackers **2**, **3** from the pile of stacked crackers. When the expelling member **5** returns to its initial position shown in Fig. 1, the cracker **4** and the crackers above the same drop on to the surface **1***a*, and are ready for the next operation. An actuating member **6** is secured to a first lever **7** which is pivoted on shaft **8**, and located on one side of the path of member **5**. The lower edge of the abutment member **6** permits passing of an expelled unit of articles of normal thickness, but is engaged by a unit of articles having a greater thickness, as illustrated in Fig. 1. It will be apparent that the unit of thicker articles **2**, **3** expelled by the expelling member **5** to the right in Fig. 1 will engage the actuating member **6** and pivot the lever **7** about the shaft **8**. The lever **7** is engaged by resilient means **18** which urges the lever **7** and the actuating member **6** into the inoperative position shown in Fig. 1, and the force of spring **18** is sufficient to hold the cracker **4** above the expelled unit when a unit of crackers of normal thickness is expelled without engaging the actuating member **6**.

The stack holding member **1** has a guide portion **14** which is guided for vertical movement and formed with a slot **13**. A second angular lever **10** is pivoted to the first lever **7** by the pin **9** and includes a first arm **10***a* and a second arm **10***b*. A pin **12** is secured to the end of the first arm **10***a* of lever **10** and projects into the slot **13** so that the stack holding member **1** is supported on

pin 12, and thereby through the lever means 7, 10 on the shaft 8.

A lever arm 15 is pivotally supported on a stationary support 16 and has an end portion located opposite the guide portion 14. A rotary cam 17 engages the lever arm 15 and periodically moves the same to an operative position engaging the guide portion 14 and moving the stack holding member in upward direction.

The device operates in the following manner:

When the expelling member is moved along its predetermined path across the supporting face 1*a*, the unit of stacked articles is expelled between the actuating member 6 and the supporting face 1*a*, if the articles are of normal thickness. A unit of thicker articles 2, 3 engages the actuating member 6 and moves the same from the inoperative position shown in Fig. 1 to the operative position shown in Fig. 2 so that the first lever 7 pivots about its pivoting point 8 against the action of the spring 18 whereby the first lever 7 and the second lever 10, or more particularly the lever arm 10*a*, assume the aligned position shown in Fig. 2. In this aligned position the distance between the point 8 and the pin 12 is increased so that the stack holding member 1 moves from its normal position shown in Fig. 1 to a retracted position shown in Fig. 2 in which its supporting face 1*a* is spaced from the lower edge of the actuating member 6 a greater distance permitting passing of an expelled unit of thicker articles 2, 3. The return of the lever means 7, 10 and of the stack holding member 1 to normal position may be accomplished by gravity, for instance by the weight of the horizontal arm 7*a* of lever 7, or by the spring 18 after the expelling member 5 has been returned to its initial position. Upon the return of the expelling member 5 to its initial position, the pile of articles will drop onto the supporting face 1*a*, and the device will be ready for the next expelling operation.

In the arrangement illustrated in Fig. 1, the weight of the pile of articles urges the stack holding member downwardly and tends to move the lever means 7, 10 into the aligned position against the action of spring 18. For relieving the spring 18 during normal operation, an abutment member 11 is provided which engages the second arm 10*b* of the second lever 10. In the position of Fig. 1, the abutment member 11 holds the lever means 7, 10 in the illustrated position against the action of the weight of the pile of articles, while permitting movement of the lever means into aligned position under the action of the actuating member 6.

The periodically operated means 15 are preferably provided for improving the operation of the device. The cam 17 actuates the arm 15 when the stack holding member is in retracted position and lifts the same to its normal position which is possible due to the slot 13 in the guide portions 14 of the stack holding member 1. Consequently, the spring means 18 does not have to overcome the weight of the stacked articles for returning the stack holding member to its normal position but are dimensioned for moving only the lever means 7, 10. Since little force is required for the movement of the lever means after the stack holding member has been raised by arm 15, it is possible to omit the spring 18 and to return the lever means 7, 10 by gravity. In any event very little force is required for moving the actuating member 6 into its operative position so that the article 3 which engages the actuating member 6 is not subject to high pressure. By suitably varying the distance between the actuating member 6 and the article 3, the pressure can be substantially eliminated so that the lever means 7, 10 can only be moved back to initial position by raising the stack holding member 1 by the lever arm 15.

From the above description it will be understood that the lever means 7, 10 and the pin 12 constitute operating means connected to the actuating member 6 and to the stack holding member 1, 14.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of apparatus for separating articles from a pile of stacked articles differing from the types described above.

While the invention has been illustrated and described as embodied in an apparatus for expelling a unit of articles of varying thickness from a pile of stacked articles, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; and operating means connecting said actuating member with said stack holding member so that said stack holding member moves to said retracted position when said actuating member moves to said operative position whereby an expelled unit of thicker articles passes between said actuating member and said stack holding member.

2. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and having a supporting face adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position in which said supporting face is spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position in which said supporting face is spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; and operating means connecting said actuating

member with said stack holding member so that said stack holding member moves to said retracted position when said actuating member moves to said operative position whereby an expelled unit of thicker articles passes between said actuating member and said supporting face of said stack holding member.

3. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; and a pivoted lever means supporting said actuating member for movement between said inoperative and operative positions and engaging said stack holding member so that the same moves to said retracted position when said actuating member moves to said operative position whereby an expelled unit of thicker articles passes between said actuating member and said stack holding member.

4. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a pivoted first lever supporting said actuating member for movement between said inoperative and operative positions; and a second lever pivoted at one end thereof to said first lever, and being connected at the other end thereof to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position.

5. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a first lever pivotally supported on said one side of said path and supporting said actuating member for movement between said inoperative and operative positions; a second lever pivoted at one end thereof to said first lever; and a pin secured to the other end of said second lever and being pivotally connected to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position.

6. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and having a supporting face adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position in which said supporting face is spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position in which said supporting face is spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a first lever pivotally supported on said one side of said path and supporting said actuating member for movement between said inoperative and operative positions; a second lever pivoted at one end thereof to said first lever; and a pin secured to the other end of said second lever and being pivotally connected to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position.

7. In a device of the type described, in combination, an expelling member movable along a predetermined horizontal path and having a predetermined thickness in vertical direction so as to be adapted to expel a unit of articles from a vertical pile of stacked articles of slightly varying thickness; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and having a horizontal supporting face adapted to support the lower end of said pile of stacked articles, said stack holding member being movable in vertical direction between a normal position in which

said supporting face is spaced from said actuating member a smaller distance adapted to correspond to the normal thickness of a unit of articles and a retracted position in which said supporting face is spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a first lever pivotally supported on said one side of said path and supporting said actuating member for movement between said inoperative and operative positions; a second lever pivoted at one end thereof to said first lever; and a pin secured to the other end of said second lever and being pivotally connected to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position.

8. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a first lever pivotally supported on said one side of said path and supporting said actuating member for movement between said inoperative and operative positions; a second lever pivoted at one end thereof to said first lever; a pin secured to the other end of said second lever and being pivotally connected to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position; and periodically operated means for moving said stack holding member from said retracted position to said normal position.

9. In a device of the type described, in combination, an expelling member movable along a predetermined horizontal path and having a predetermined thickness in vertical direction so as to be adapted to expel a unit of articles from a vertical pile of stacked articles of slightly varying thickness; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and having a horizontal supporting face adapted to support the lower end of said pile of stacked articles, said stack holding member being movable in vertical direction between a normal position in which said supporting face is spaced from said actuating member a smaller distance adapted to correspond to the normal thickness of a unit of articles and a retracted position in which said supporting face is spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a first lever pivotally supported on said one side of said path and supporting said actuating member for movement between said inoperative and operative positions; a second lever pivoted at one end thereof to said first lever; a pin secured to the other end of said second lever and being pivotally connected to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position; and periodically operated means for moving said stack holding member from said retracted position to said normal position.

10. In a device of the type described, in combination, an expelling member movable along a predetermined horizontal path and having a predetermined thickness in vertical direction so as to be adapted to expel a unit of articles from a vertical pile of stacked articles of slightly varying thickness; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and having a horizontal supporting face adapted to support the lower end of said pile of stacked articles, said stack holding member being movable in vertical direction between a normal position in which said supporting face is spaced from said actuating member a smaller distance adapted to correspond to the normal thickness of a unit of articles and a retracted position in which said supporting face is spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a first lever pivotally supported on said one side of said path and supporting said actuating member for movement between said inoperative and operative positions; a second lever pivoted at one end thereof to said first lever; a pin secured to the other end of said second lever and being pivotally connected to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position; a pivoted lever arm having one end located opposite said stack holding member; and rotary cam means engaging said pivoted lever arm and moving the same from an inoperative position spaced from said stack holding member to an operative position engaging said stack holding member and moving the same from said retracted position to said normal position.

11. In a device of the type described, in combination, an expelling member movable along a predetermined horizontal path and having a predetermined thickness in vertical direction so as to be adapted to expel a unit of articles from a vertical pile of stacked articles of slightly varying thickness; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and having a horizontal supporting face adapted to support the lower end of said pile of stacked articles, said stack holding member being movable in

vertical direction between a normal position in which said supporting face is spaced from said actuating member a smaller distance adapted to correspond to the normal thickness of a unit of articles and a retracted position in which said supporting face is spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a first lever pivotally supported on said one side of said path and supporting said actuating member for movement between said inoperative and operative positions; a second angular lever pivoted to said first lever and including a first arm and a second arm, said first and second levers being movable between an angular position in which said first arm extends at an angle to said first lever and a substantially aligned position in which said first arm is substantially aligned with said first lever; a pin secured to said first arm and being pivotally connected to said stack holding member so that the same moves to said retracted position when said first lever and said first arm are in said aligned position, said first lever and first arm moving to said aligned position when said actuating member moves to said operative position; resilient means urging said first lever and said first arm into said angular position; and an abutment engaging said second arm in said angular position and preventing movement of said first lever and first arm to said aligned position due to the action of gravity of said pile of articles.

12. An arrangement as claimed in claim 11 and including cam operated means for moving said stack holding member from said retracted position to said normal position.

13. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; resilient means urging said actuating member into said inoperative position; and operating means connecting said actuating member with said stack holding member so that said stack holding member moves to said retracted position when said actuating member moves to said operative position whereby an expelled unit of thicker articles passes between said actuating member and said stack holding member.

14. In a device of the type described, in combination, an expelling member movable along a predetermined path and having a predetermined thickness in a direction transverse to said path so as to be adapted to expel a unit of articles from a pile of stacked articles of slightly varying thickness arranged transverse to the path of said expelling member; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and adapted to engage one end of said pile of stacked articles, said stack holding member being movable in said transverse direction between a normal position spaced from said actuating member a smaller distance adapted to correspond to the normal transverse thickness of a unit of articles and a retracted position spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position; a pivoted first lever supporting said actuating member for movement between said inoperative and operative positions; a second lever pivoted at one end thereof to said first lever, and being connected at the other end thereof to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position; and resilient means engaging said first lever and urging said actuating member into said inoperative position.

15. In a device of the type described, in combination, an expelling member movable along a predetermined horizontal path and having a predetermined thickness in vertical direction so as to be adapted to expel a unit of articles from a vertical pile of stacked articles of slightly varying thickness; a movable actuating member located on one side of said path and being movable along said path between an inoperative position and an operative position; a stack holding member located on the other side of said path and having a horizontal supporting face adapted to support the lower end of said pile of stacked articles, said stack holding member being movable in vertical direction between a normal position in which said supporting face is spaced from said actuating member a smaller distance adapted to correspond to the normal thickness of a unit of articles and a retracted position in which said supporting face is spaced from said actuating member a greater distance adapted to correspond to a unit of thicker articles so that said actuating member is engaged by an expelled unit of thicker articles when said stack holding member is in said normal position and is moved by the expelled unit to said operative position, said stack holding member being formed with a vertical slot; a first lever pivotally supported on said one side of said path and supporting said actuating member for movement between said inoperative and operative positions; a second lever pivoted at one end thereof to said first lever; a pin secured to the other end of said second lever engaging said slot and being pivotally connected to said stack holding member, said first and second levers being movable between an angular position in which said stack holding member is held in said normal position and a substantially aligned position in which said stack holding member is held in said retracted position, said first and second levers moving to said aligned position when said actuating member moves to said operative position; a pivoted lever arm having one end located opposite said stack holding member; and rotary cam means engaging said pivoted lever arm and moving the same from an inoperative position spaced from said stack holding member to an operative position engaging said stack holding member and moving the same from said retracted position to said normal position with said pin sliding in said slot.

References Cited in the file of this patent

UNITED STATES PATENTS

972,649	Rose	Oct. 11, 1910
2,347,391	Benning	Apr. 25, 1944