No. 776,829. PATENTED DEC. 6, 1904.

B. F. ENNIS.

DEVICE FOR SEPARATING COLLATED ARTICLES.

APPLICATION FILED JULY 8, 1904.

NO MODEL.

Fig. 1.

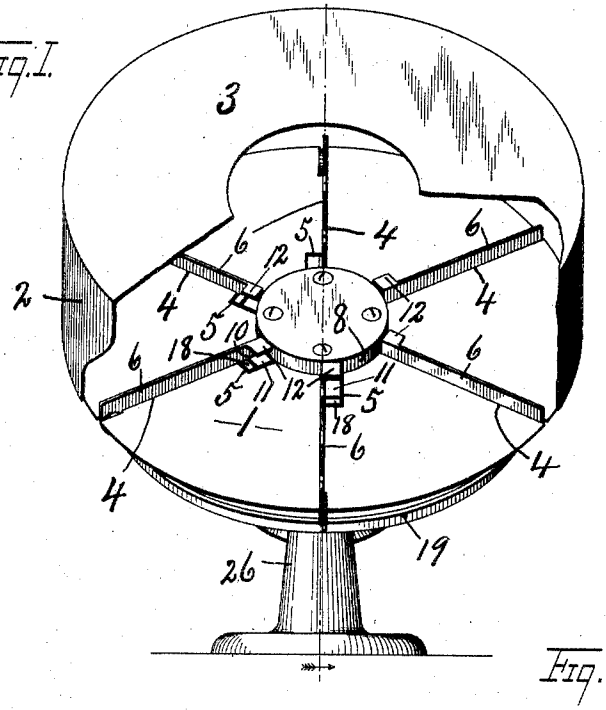


Fig. 3.

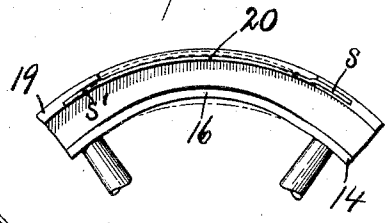
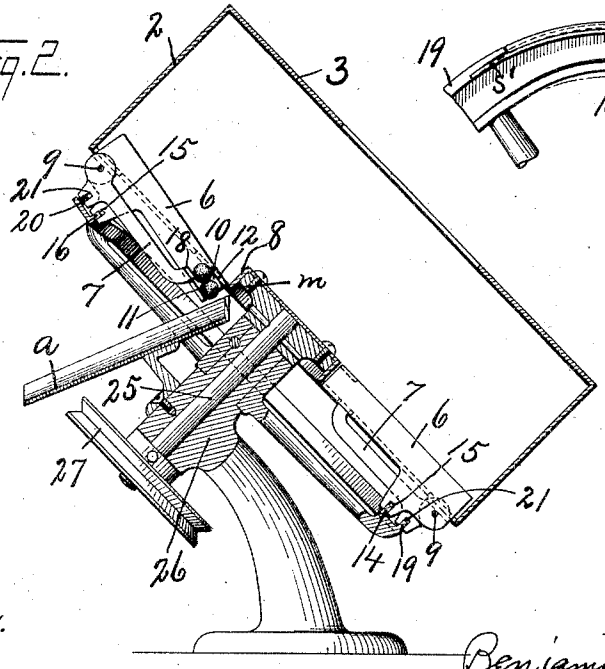


Fig. 2.



WITNESSES.

B. E. Robinson.

J. E. Arthur

INVENTOR.

Benjamin F. Ennis

BY

Howard P. Denison

ATTORNEY.

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No. 776,829. Patented December 6, 1904.

UNITED STATES PATENT OFFICE.

BENJAMIN F. ENNIS, OF SYRACUSE, NEW YORK.

DEVICE FOR SEPARATING COLLATED ARTICLES.

SPECIFICATION forming part of Letters Patent No. 776,829, dated December 6, 1904.

Application filed July 8, 1904. Serial No. 215,836. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. ENNIS, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Devices for Separating Collated Articles, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to a device for separating collated articles in which the articles are caused to collect promiscuously at the low side of an inclined plane and are then elevated in limited quantities by a rotary sweep or sweeps and allowed to gravitate to a suitable discharge opening or conduit where they are expelled one by one by an additional movement of the sweep. This device is particularly useful in connection with conseal filling-machines such as that set forth in Patent No. 745,972 to F. A. Robinson, issued December 1, 1903, to feed the conseal-disks one by one to the holders or to a suitable righting device, whereby each disk is deposited on the holder in proper position for receiving the powdered medicament from the filler.

The primary object, however, is to produce a simple mechanism whereby small light articles which cannot be easily and quickly separated by hand can be separated and fed successively one by one from a promiscuous quantity without liability of mutilating or crushing such articles.

Other objects and uses will appear in the following description.

In the drawings, Figure 1 is an elevation of a revolving hopper, partly broken away to disclose the interior mechanism which forms the subject-matter of my present invention. Fig. 2 is a sectional view taken on line 2 2, Fig. 1. Fig. 3 shows a portion of the cams which control the operation of the movable separating-fingers or selectors.

Similar reference characters indicate corresponding parts in all the views.

In carrying out the objects stated I provide a rotary inclined bed or table 1 with a circular inclosing wall 2 and a top 3, all of which parts are united and constitute a rotary hopper in which the articles are placed promiscuously by hand or by mechanical means, if desired. The table 1 constitutes what may be termed the "bottom" of the hopper and is formed with one or more radial slots 4 and discharge-openings 5, in which are movable suitable fins or sweeps 6 and cut-off fingers 7, the openings 5 being located at the inner ends of the slots 4 and are of sufficient size to permit one of the articles to pass freely and easily therethrough. At the inner ends of the slots 4 is an annular abutment 8, which projects centrally from the bottom 1 into the hopper and serves to check the backflow of a limited quantity or number of the articles which have been brought up or elevated to the high side of the table 1 by one of the sweeps 6 and also serves to bring the innermost article into alinement with one of the discharge-openings 5.

I have shown in Fig. 1 a series of six sweeps 6, which are spaced equidistant apart and extend radially from the circular wall 2 to the abutment 8 and normally project inwardly or upwardly from the table 1 a distance substantially equal to the projection of the abutment 8 for the purpose of sweeping or elevating a limited number of the articles from the low side to the high side of the conveyer, so that as soon as these articles pass the horizontal plane in their forced upward movement they begin to gravitate along their respective fins or sweeps toward their respective discharge-openings 5.

Each fin or sweep is pivoted at its outer end at 9 to the bottom or table 1 and is adapted to rock on its pivot in the slot 4 and opening 5, the inner end being provided with a suitable pocket or guide 10, which is open at both ends and is provided with lower and upper walls 11 and 12 of substantially the same area as but slightly less area than the opening 5, so as to move freely in said opening.

The walls 11 and 12 are spaced apart a sufficient distance to easily receive a single article, and as the fin is rocked these walls are alternately brought into registration with the bottom 1, thus bringing the pocket 10 alternately above and below said bottom to receive and discharge the articles one at a time. This movement of the fins or sweeps 6 is controlled by an inclined circular track or guide 14, which

is fixed and enters a groove 15 in the lower edge of the fin 6 and is provided at its high side with a cam 16, Fig. 3, by which the fin is forced downwardly as it travels to the high side of the table, Fig. 2, thus bringing the pocket 10 beneath the table 1 and permitting the article to escape through the open inner end of the pocket into a guide or chute *a*. While the pocket 10 is in this position the upper wall 12 closes the opening 5 and prevents any of the other articles from entering said opening; but as soon as the fin begins its descent by the continued rotation of the hopper the cam 16 rocks the inner end of the fin upwardly until the pocket 10 is again brought above the table 1 and the lower wall 11 is alined with said table and closes the opening 5, each fin or sweep being held in its up position by the circular track during the greater part of the revolution of the hopper.

During the depression of the fin or sweep by the cam 16 in the operation of discharging one of the articles, as *m*, it is desirable to hold back the other articles which may have been brought up by the elevating-sweep, and I therefore provide each fin 6 with a cut-off or detent 7, which is fulcrumed at its outer end on the same pivot as its fin or sweep 6. The inner end of each detent 7 is provided with a jaw 18, which is normally held in the same plane as the lower wall 11 of its sweep 6 by means of a fixed inclined circular track 19, having a spring or yielding section 20 at its high side. This track enters a groove 21 in the lower edge of each detent, and the spring 20 is arranged so that as each sweep is depressed by the cam 16 the spring tends to hold the detent of such sweep in its normal position—that is, with the jaw 18 in the same plane as the bottom or table 1; but if a second article should project partially into the pocket 10 it will be caught between the upper wall 12 and jaw 18, as seen in Fig. 2, and therefore the detent will also be depressed against the action of the spring 20 and the second article will be held in such position until after the discharge of the first article from the pocket and until the sweep returns to its normal position, whereupon the article which is thus held will be released and will fall back into the base of the hopper. In order to accomplish this movement of the fin and its detent as just described, the spring 20 constitutes a portion of the track 19, but is secured at one end, *s*, while its other end, *s'*, is free, as seen in Fig. 3, and the cam 16 is located so that the spring is relaxed at about the same time that the sweep returns to its normal position.

Any means may be employed for rotating the hopper; but I have shown the table 1 as secured to a shaft 25, which is journaled in a suitable support 26 and is provided with a pulley 27, adapted to be connected to any source of power. (Not shown.)

In the operation of my invention the hopper is supported with its bottom in an inclined plane, and the articles are fed therein by hand or otherwise either before or while the hopper is rotating. These articles collect by gravity in the base of the hopper and are carried up to the high side of the bottom by the sweeps and then gravitate inwardly toward the center along the sweep and into the pocket 10, from which they are discharged one by one through the opening 5.

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

1. In a device for separating collated articles, the combination of a rotary table having a discharge-opening, a sweep rotating with the table and having a pocket receiving a single article discharged through said opening, means to rotate the table, and additional means to tilt the sweep to discharge the article from its pocket, and a yielding cut-off coacting with the sweep to prevent the entrance of more than one article into the pocket.

2. In combination, a hopper having a rotary inclined bottom, a sweep rotating with the bottom and having a pocket movable into and out of the hopper to receive and discharge a single article, means to rotate the bottom, and additional means to actuate the pocket into and out of the hopper.

3. In combination, a hopper having a rotary inclined bottom, a sweep rotating with the bottom and having a pocket movable into and out of the hopper to receive and discharge a single article, means to rotate the bottom, additional means to actuate the pocket into and out of the hopper, and a yielding cut-off device coacting with the sweep to prevent the entrance of more than one article into the pocket.

4. In a device for separating collated articles, the combination of a rotary hopper having an inclined bottom provided with a series of discharge-openings, tiltable sweeps rotating with the hopper and each having a pocket receiving a single article from its discharge-opening, means to rotate the hopper, means to tilt the sweep when they reach the high side of their plane of rotation, whereby the articles in said pockets are carried to be discharged.

In witness whereof I have hereunto set my hand this 6th day of July, 1904.

BENJAMIN F. ENNIS.

Witnesses:
H. E. CHASE,
HOWARD P. DENISON.