To all whom it may concern:

Be it known that we, BENJAMIN J. BAUM and CLARENCE W. ODERMATT, citizens of the United States, residing at the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Nested-Paper-Cup Separators, of which the following is a specification.

Our invention relates to the class of machines or apparatus used by candy manufacturers for separating the individual paper-crimp cases or bon-bon cups from the standard nested packages in which they are received.

It has been the custom for the operator to do the work by hand, but this involves the objectionable and unhygienic practice of moistening the fingers with the tongue in order to slip each cup successively from its position in the comparatively tightly composed nest. This practice has been, to some extent, supplanted by the provision of machines or apparatus embodying, generally, a receptacle in which the nested packages are subjected to a current of air which has the effect of separating the nests into their component parts. It is to this type of machine that our invention relates, and it consists in the novel machine which we shall hereinafter fully describe, and which has for its object the economical effective and continuous breaking up of the nests and the separation of the cups which compose them.

Referring to the accompanying drawings:

Figure 1 is an elevation, broken and partly in section, of our machine.

Fig. 2, is a detail view showing the attachment of a screen section to the discharge end of the outlet pipe, if found desirable.

Fig. 3 is a section, enlarged, on the line 3-3 of Fig. 1.

1 is a base plate, from which rise legs 2, which carry and support the receptacle 3. This receptacle has the general shape of a double cone the bases joining into the throat of the lower cone leads the air inlet pipe 4, which is fitted with a blower 5. In the throat of the lower cone, just above the entrance of the air pipe is located an open mesh or screen abutment 6, in practice composed of cross-rods, as seen in Fig. 3.

Into the upper portion of one side of the upper cone leads the feed pipe 7, the entrance to which is guarded by a spring controlled flap 8.

Slidably telescoped upon a collar 9 of the upper cone is a hand-hole pipe section 10, held normally by a thumb nut at 11, and provided with side hooks 12.

Slidably telescoped upon the section 10 is the outlet pipe 13, which, in its continuation or terminal, discharge portion is reduced in diameter at 14, and curved over until its end opens downwardly.

The outlet-pipe is provided with hooks 13" and is adjustably carried by a bracket 15 supported by a standard 16 rising from the base plate 1. In the face of the bracket are slots 17, into which pass and play the studs 18 secured to the outlet pipe. Thumb nuts 19 are fitted on said studs, and by their manipulation, the whole outlet pipe 15 may be adjusted and set vertically, thereby varying the effective length of the outlet passage to suit different conditions as will be presently explained. The discharge end of the outlet pipe may terminate at such a distance above the barrel into which the separated cups are dropped as to prevent the air current from said pipe unduly blowing about or disturbing said cups in the barrel.

But in case it be found desirable to deliver the cups without a free drop directly into the barrel, we may as shown in Fig. 2, hang a screen pipe section 20 from the discharge end 14 of the outlet pipe, and carry said section down approximately to the level of the top of the barrel 21. This section while serving to deliver the cups into the barrel directly, will by its screen-like character permit the air to escape sidewise, and not reach the barrel in volume enough to disturb its contents.

The operation of the machine is as follows:

The packages of nested paper-crimp cases or bon-bon cups are fed by the attendant in such quantity as is found proper, through the feed pipe 7 into the receptacle 3. In the receptacle the packages meet the uprising air current from the blower 5. The screen abutment 6 prevents the cups from choking the throat of the receptacle. The effect of the air is to carry the packages outwardly against and up along the diverging sides of the lower cone and thence against and along the converging sides of the upper cone, by which latter they are directed inwardly to-
ward the axis of the receptacle, and turning over and over, drop down again and again into the sphere of the air and their movement repeated. Thus they are churned about, as it were, and the air entering between the cups of the nest parts them, and gradually so breaks them up into smaller and smaller divisions, until as these divisions grow smaller and lighter, they float up with the current into the entrance or beginning of the outlet pipe 13.

The force of the air current is so proportioned to the weight of the cups, that as long as two individuals hold together, the couple will not rise far enough in the outlet passage to get beyond control, but when the couple separates, each cup will then be light enough to be carried on in the outlet pipe 13 and positively through its reduced terminal portion 14 to the discharge end.

Now, in order to control with precision the proportion of air force to the gravity of the cup, provision is made to regulate the effective length of the outlet pipe, by manipulating the thumb-nuts 19 and lifting or lowering said pipe. This adjustment will provide for the floating of cups to just the right height according to the weight of the particular material of which the cups are made, or according to their size and consequent varying weight. It also provides for a nice regulation of the floating height of the cups so that by no chance will associated cups pass out.

In some cases, the attendant may overload, and so choke up the machine. When this occurs, it is only necessary to lift up the hand-hole section 10 and hang it by rings over the hooks 12 on said section, and the hooks 12' on the outlet pipe 13. The operator may then pass his hand into the receptacle 3 and remove as many of the nested packages as will relieve the congestion.

We claim:
1. A machine for the described purpose comprising a receptacle with a controllable feed opening; means at one end of the receptacle for introducing a current of air; an outlet pipe from the other end of the receptacle; and means for adjusting support of the outlet pipe for varying the effective length thereof.

2. A machine for the described purpose comprising a receptacle with a controllable feed opening; means at one end of the receptacle for introducing a current of air; an outlet pipe from the other end of the receptacle; and means for adjusting support of the outlet pipe for varying the effective length thereof.

3. A machine for the described purpose comprising a receptacle with a controllable feed opening; means at one end of the receptacle for introducing a current of air; a pipe section telescopically fitted to the other end of said receptacle; and an outlet pipe fitted to said pipe section.

4. A machine for the described purpose comprising a receptacle with a controllable feed opening; means at one end of the receptacle for introducing a current of air; a pipe section fitted to the other end of said receptacle; an outlet pipe telescopically fitted to said pipe section; and means for adjustably supporting the outlet pipe for varying the effective length thereof.

5. A machine for the described purpose comprising a receptacle with a controllable feed opening; means at one end of the receptacle for introducing a current of air; a pipe section fitted to the other end of said receptacle; an outlet pipe telescopically fitted to said pipe section; and means for adjustably supporting the outlet pipe for varying the effective length thereof, said outlet pipe having its terminal discharge portion of reduced diameter.

6. A machine for the described purpose comprising a receptacle the walls of which diverge from its ends to its middle; means for introducing a current of air at one end of the receptacle; means for introducing the material to be affected to said receptacle; an outlet pipe from the other end of said receptacle; and means for adjustably supporting the outlet pipe for varying the effective length thereof.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

Benjamin J. Baum.
Clarence W. Odermatt.
Witnesses:
Wm. F. Booth,
D. B. Richards.