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APPARATUS FOR USE IN FILLING CONTAINERS

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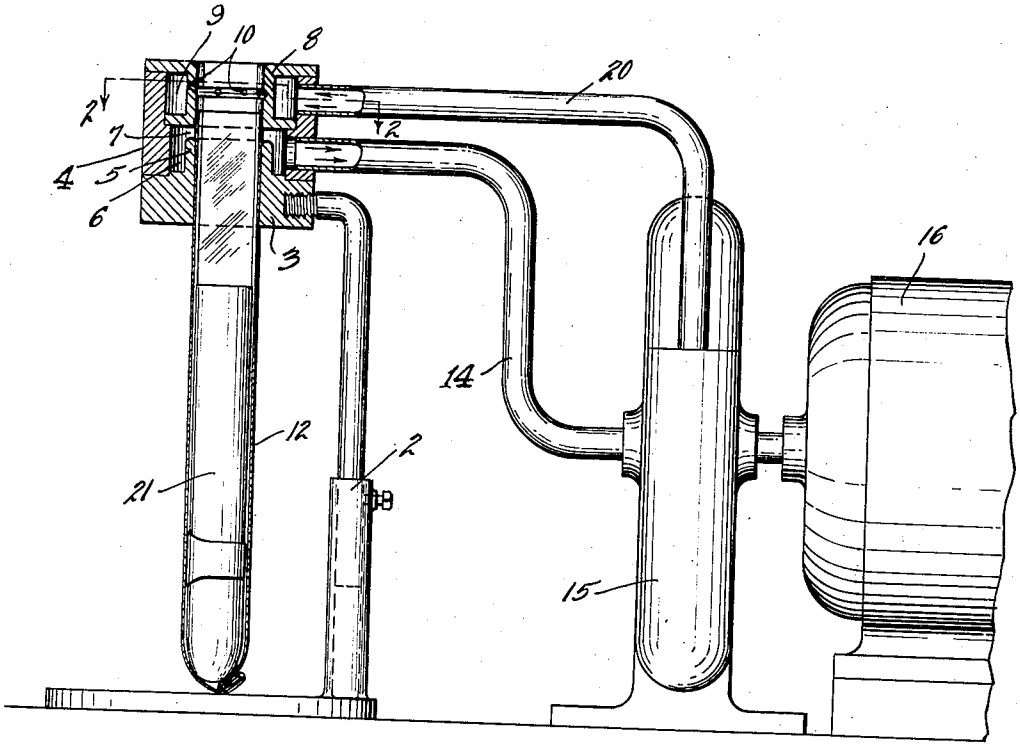

Fig. -1

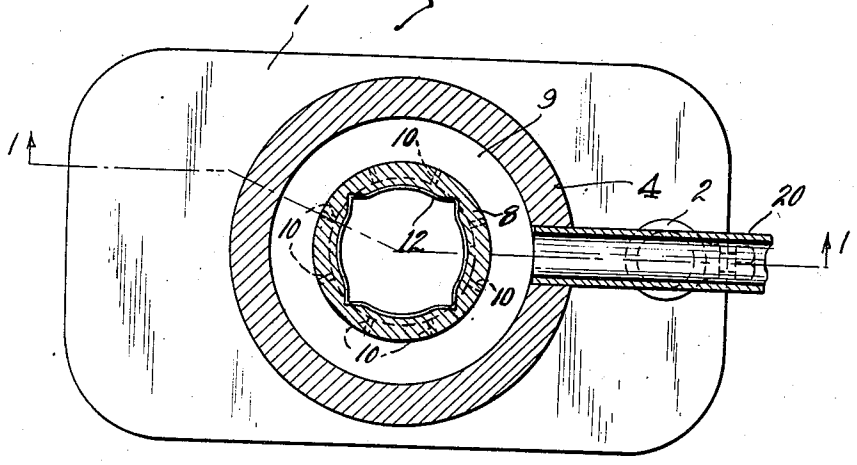

Fig. -2

INVENTOR.
LOGAN A. BECKER.
JOHN M. MUNSON.

BY Ely & Barrow

ATTORNEYS

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UNITED STATES PATENT OFFICE

LOGAN A. BECKER AND JOHN M. MUNSON, OF LAKEWOOD, OHIO, ASSIGNOR TO THE DOBECKMUN COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

APPARATUS FOR USE IN FILLING CONTAINERS

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The present invention has for its object the construction of a device which is to be used in the filling of bags or containers of flexible material. The apparatus here shown is particularly designed and adapted for use in filling envelopes or bags made of light, fragile, transparent, cellulose sheeting, commonly known as "cellophane," with cigars. There has been designed a form of container or bag made of this material which fits a cigar rather snugly and with which considerable difficulty has been experienced in filling the containers due to the material of which the container is composed and to its construction.

The apparatus shown herein will hold the mouth of the bag distended while the cigar is being inserted. It will expedite the filling of the containers and will prevent injury to the containers or contents.

It will be understood that the invention has been described as particularly adapted and intended for the specific purpose of loading cigars into bags or containers of cellulose sheeting. The invention is by no means confined to this particular use, but may be extended to the filling of all types of containers where similar problems have been encountered. The invention is, therefore, not limited to the loading of cigars in the envelopes or bags. Neither is it limited to exact conformity with the detailed structure as variations and modifications may be made in embodiments of the invention without departing from the essential features thereof.

It will also be appreciated that while the invention is shown as a simple apparatus or device to assist in the manual loading of individual bags or containers, the principles employed may be used in any form of loading devices or machinery and may be adapted to automatic packaging machinery of many different articles and operating upon many different forms of containers.

In the drawings, in which a single manual loading unit is shown:

Figure 1 is a side elevation of a unit shown partially in section with a loaded cigar envelope or wrapper thereon; and

Figure 2 is an enlarged section on the line 2—2 of Figure 1.

The device is mounted upon a platform 1, from which rises the adjustable standard 2, the upper end of which carries the ring-shaped holder 3. Above the holder 3 is located the casing 4 which is spaced from the upwardly extending flange 5 on the holder to provide chamber 6. Supported on the casing in position to leave an open space 7 about the flange 5 in communication with the chamber 6, is a nozzle or cap plate 8 which provides a chamber 9 above the chamber 6. A series of downwardly directed openings 10 extend from the chamber 9 to the inner surface of the cap, these openings being comparatively small in cross-section.

The cap 8 and the holder 3 are formed with a central vertical opening or passageway which is approximately the shape of the open container 12. As shown in Figure 2, the opening is substantially rectangular, but the sides are bulged or curved outwardly slightly. The opening is provided with the sharp corners so that the sharp corners of the container will be held in position. The shape of the passageway and the location of the openings 10 will be dictated by the particular container or cover which is being operated upon.

The chamber 6 is a vacuum or suction chamber and is connected by a pipe 14 with the intake of a centrifugal air pump 15 operated by a motor 16. The chamber 9 is a pressure chamber and is in communication with the discharge side of the pump by a pipe 20.

In the operation of the device, the container or cover is dropped into the holder, the bottom of the container resting on the platform 1 and the upper edge of the container being thereby located between the passage 7 and the series of openings 10. In this position the downwardly directed jets of air from the openings 10 will expand or open up the container so that the walls thereof are in sufficiently close contact with the opening 7 whereupon the suction exerted through the opening 7 will pick up and hold the sides of the container against the inner surface of the passageway. It is not necessary that the jet or jets of air under pressure be main-

tained during the entire operation of loading, it being essential only that the air under pressure open the container to a sufficient extent so that the sides will be engaged by the suction. The air under pressure may then be discontinued. While the container is held in position by the suction, the contents are placed in the container. In the case of a cigar 21, the top of the cigar is below the holder 3 so that the filled container may be removed from beneath the holder.

The adjustment which has been provided adapts the device for different sizes of containers and cigars.

It will be appreciated that the invention comprises the invention as applied to bags, covers or containers generally and is not limited to the specific object stated herein. It is also to be noted that the exact location of the several elements may be changed and other modifications and changes may be made in the details of the invention without departure from the scope thereof as set forth in the claims.

What is claimed is:

1. In a device for facilitating the loading of containers, the combination of a support, a holder located above the support having a passageway therein, means for exerting suction on the surface of the passageway, and a nozzle in the passageway having means for directing a jet of air downwardly into the passageway, said means being located above the point where the suction is applied.

2. In a loading device, the combination of means for supporting the upper end of a flexible container, means for applying suction at a point near the upper edge of the container to hold the container against the support, and a nozzle located above the said point and having a passage so located as to direct a jet of air into the upper end of the container.

3. In a device for spreading and filling of flexible containers, the combination of means for simultaneously exerting suction on the exterior of the container and means for directing a jet of air into the mouth of the container.

4. In a loading device for spreading flexible containers, the combination of means for directing a jet of air into the open end of a container to spread the same and suction means operating upon the side-walls of the container to hold it in expanded condition.

5. In a loading device for filling flexible containers, the combination of a holder having a passageway in the shape of the mouth of the container in expanded condition, spaced chambers located adjacent the passageway and communicating therewith, means for withdrawing air from one of the chambers and supplying air under pressure to the other, and means for locating the container with the mouth thereof in the passageway between the chambers.

6. In a loading device for filling flexible containers, the combination of a holder having a passageway in the shape of the mouth of the container in expanded condition, spaced chambers located adjacent the passageway and communicating therewith, means for withdrawing air from one of the chambers and supplying air under pressure to the other, means for locating the container with the mouth thereof in the passageway between the chambers, and means for directing the air under pressure towards the mouth of the container.

7. In a device for the purposes set forth, a holder having a passageway therein of cross-section corresponding to the mouth of a flexible container in expanded condition, the holder having a suction opening in the passageway, means for locating the container with the upper end thereof at the suction opening, a series of apertures located outwardly of the suction opening and directed toward the suction opening, and means for forcing air under pressure through the apertures.

LOGAN A. BECKER.
JOHN M. MUNSON.