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F. G. OLSON
PNEUMATIC PICKUP DEVICE

2,384,334

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Fig. 1.

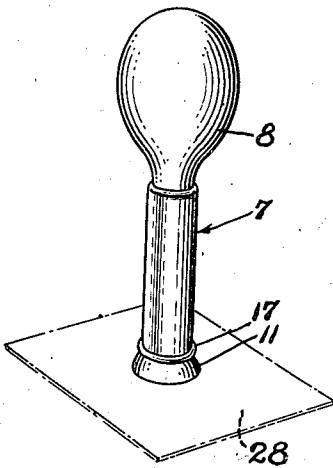


Fig. 2.

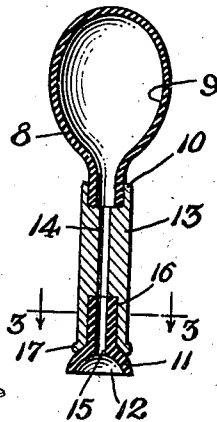


Fig. 3.

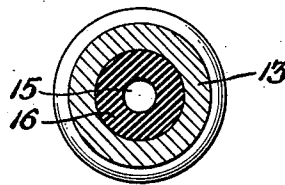


Fig. 4.

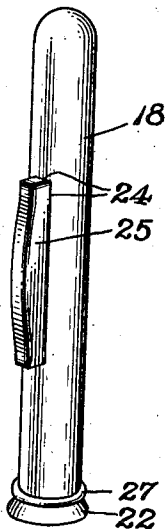


Fig. 5.

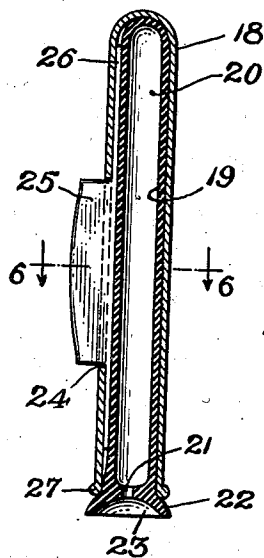
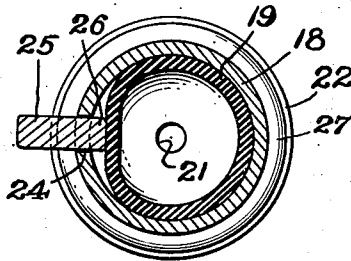


Fig. 6.



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UNITED STATES PATENT OFFICE

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PNEUMATIC PICKUP DEVICE

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4 Claims. (Cl. 294-64)

My invention relates to pneumatically operated pickup devices which are especially adapted for use in connection with picking up, holding, and/or releasing, such objects as photographic slides, chemical slides, postage stamps, small sheets of paper, or cardboard, and other similar objects which are rather difficult to pick up with the fingers, it being necessary in picking up such thin objects to raise them from the supporting surface with the nails; thus any delicate article such as chemical slides, or photographic slides, would be scratched or marred, also as well such articles similar to postage stamps, which are to be preserved in a collector's album. With my invention such articles may be handled very rapidly, quickly, and effectively, and also located or positioned in any particular position; for example, when mounting component smaller drawings to make a composite drawing, or where it is necessary that the portions to be mounted be covered with adhesive, and positioned in the space allocated therefor in a most exacting manner. My device thus can be very conveniently and readily manipulated for the said purposes.

One object of my invention is to provide an article of the aforementioned character which is comprised of pneumatic bulb means, suction cup means, and an adapter for component assembly of the said structure.

Another object of my invention is to provide a pneumatic pickup device comprising, tubular retainer means, a tubular resilient element telescopically fitted within the said tubular means provided with suction cup means, and pressure controlling and applying means to expel the air within the said tubular resilient pressure or suction means.

Another object of my invention is to provide an article of the aforementioned character, which is practical in construction, useful and efficient in its operation for the purposes heretofore designated, and of such simple construction that it will lend itself readily to economical quantity production.

Other features, objects, and advantages, inherent in my invention will become apparent from an examination of the accompanying drawing, having reference to the ensuing description, wherein like numerals are used to designate like parts, and in which;

Fig. 1 is a perspective view of one form of my invention shown in the operation of picking up a thin sheet of paper, or similar element.

Fig. 2 is a longitudinal cross-sectional view of Figure 1.

Fig. 3 is a transversal cross-sectional view taken on the line 3-3 of Figure 2.

Fig. 4 is a perspective view of another form of my invention.

Fig. 5 is a longitudinal cross-sectional view of Figure 4.

Fig. 6 is a transversal cross-sectional view taken on the line 6-6 of Figure 5.

Referring to the form shown in Figures 1, 2, and 3, the invention is, generally, designated 7, and is comprised of a bulb element 8 having a rather thin wall construction 9, and made, preferably, of resilient material such as soft rubber. The said bulb-like element is provided with an extension 10 adapted to fit snugly in the adapter 13 which is made of plastic material, metal, wood, or any other rigid substance.

The element 13 is provided with a beaded portion 17 and also an enlarged recess to accommodate the suction cup element 11, having the extension 16 snugly secured within the said recess of the said adapter 13. The suction cup 11 is provided with a concave portion 12 communicating with a recess 15 which is coaxially related to a similarly sized bore 14 in the adapter element 13, furnishing a path for expelling the air in the bulb-like element 8 thru the channels 14 and 15; and by applying pressure to the suction cup 11 a sheet of thin material such as 28 may be readily picked up and held. In order to release the same, it is, only necessary to depress the bulb-like element 8 a little further than it had been depressed when picking up the sheet-like element 28. This will cause additional air to be expelled and drop the thin sheet-like element 28 in any particular allocation designated for it, on a chart, or map, or table, where it is to be specifically positioned. In order to pick up the element 28, it is, merely, necessary to place the suction cup 11 in contact with the upper surface of the said element, press the suction cup and also simultaneously expel some of the air from the pressure bulb 8, then by releasing the pressure bulb and holding the adapter 13 by the body, the element 28 can be conveniently moved about.

The form shown in Figures 4, 5, and 6 operates in the same manner, with the exception that the resilient means is completely sheathed and enclosed, and there is a manipulating handle element 25 which operates slidably in an elongated slotted opening 24 in the outer tubular casing 18 which is, preferably, closed at one end and beaded at its open end as shown at 27. Within this outer casing 18 is inserted the resilient tubular element, generally, designated 19 and having a cavity 20

being closed at one end, yet terminating at its remaining end in a suction-like structure 22, having a concave recess 23, and a communicating opening 21 furnishing a path for the air within the cavity 20 to be expelled or to re-enter the said cavity.

In operation, the body element 18 is held suitably in the hand and the handle depressing element 25, which is provided with an elongated pressure distributing extension 26 positioned within the tubular element 18, confined between one wall of the resilient element 19 and the outer wall of the element 18, so that when the said handle 25 is depressed by the thumb, air will be expelled thru the channel 21 and the suction cup being positioned on a thin element to be lifted causes the said element to adhere to the pneumatic device when the handle 25 is released. In order to release the material so held, by depressing the handle 25 to a point where additional air is expelled therefrom, the object so held will be released and may be deposited at any point. It can be seen that the article which I have provided is of great advantage in preserving articles of sheet-like construction such as postage stamps, photographic slides, chemical slides, and such other articles which should not be marred as they might be from handling with the fingers, or finger nails, as heretofore explained and elucidated; and furthermore, it permits of gripping an object of a rather thin structure in such a manner that its perimetral edges are open to view and can be readily positioned on any allocated area, if it be desired that the same be so positioned with reference to other delineations on that area.

If the space allotted for an article is defined by perimetral lines the article can be deposited in congruent relationship with the area so allotted or designated, without requiring shifting or otherwise manipulating as when the hand or fingers are used. Ofttimes, when such articles are coated with adhesive it is very difficult to move them about once they have been dropped. With my device they can be positioned at the exact space allotted for their position.

Altho, I have herein shown, described, and revealed, rather succinctly, the nature of the construction and operation of my invention, and inasmuch as I believe it to be susceptible of many modifications, alterations, and improvements, I hereby reserve the right to all such modifications, alterations, and improvements coming within the scope and spirit of my invention, also those falling within the embodiment of the accompanying drawing, and as well those lying within the purview of the foregoing description, features, and advantages to be attained; my in-

vention to be limited only by the subjoined claims.

Having thus disclosed and revealed my invention, what I claim as novel and desire to secure by Letters Patent is:

1. A device of the character described comprising, a rigid tubular element closed at one end, a resilient tubular element closed at one end telescopically fitted within the said first-mentioned tubular element, the said resilient tubular element terminating in a suction cup portion projecting beyond the open end of the said first-mentioned tubular element, and pressure exerting means adapted to collapse the said resilient tubular element, the said pressure exerting means consisting of a rigid strip element interposed between the walls of the said rigid and the said resilient tubular elements, and a handle secured to the said rigid strip element slidably confined within a slotted portion in the said rigid tubular element, the said handle projecting beyond the outer surface of the said rigid tubular element.

2. A device of the character described comprising, a rigid tubular element closed at one end, a resilient tubular element closed at one end telescopically fitted within the said first-mentioned tubular element, and pressure exerting means adapted to collapse the said resilient tubular element, the said resilient tubular element provided with a suction cup portion at its open end.

3. A device of the character described comprising, a rigid tubular element closed at one end and provided with a slotted portion in its body, a resilient tubular element closed at one end and terminating in a suction cup shaped portion, the said rigid and the said tubular elements telescopically assembled so that the said suction cup portion extends beyond the open edge of the said rigid tubular element, and collapsing means operatively confined within the said slotted portion adapted to collapse the said resilient tubular element.

4. A device of the character described comprising, a rigid tubular element closed at one end, a resilient tubular element closed at one end and provided with a suction cup portion at its other end, the said resilient tubular member telescopically fitted within the said rigid tubular member, and pressure exerting means adapted to collapse the said resilient tubular element, the said pressure exerting means consisting of a rigid strip element interposed between the walls of the said rigid and the said resilient tubular elements, and a handle secured to the said rigid strip element slidably confined within a slotted portion in the said tubular element, the said handle projecting beyond the outer surface of the said rigid tubular element.

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