April 14, 1931. J. M. DARST 1,801,193

BAG CLOSURE

Filed June 21, 1928

Fig. 1.

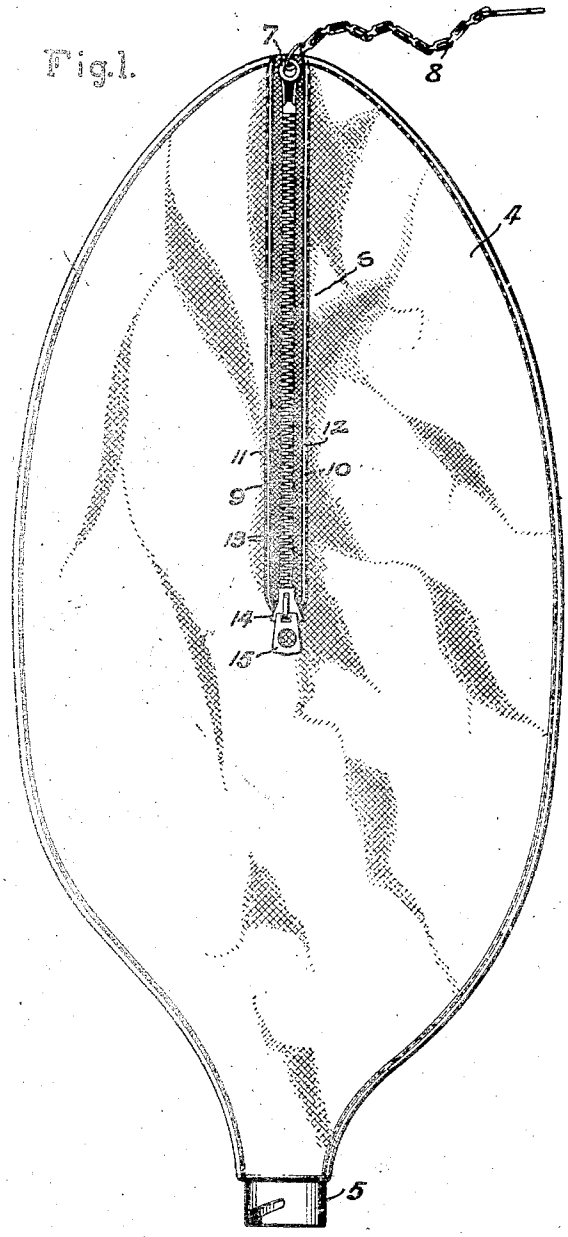


Fig. 2.

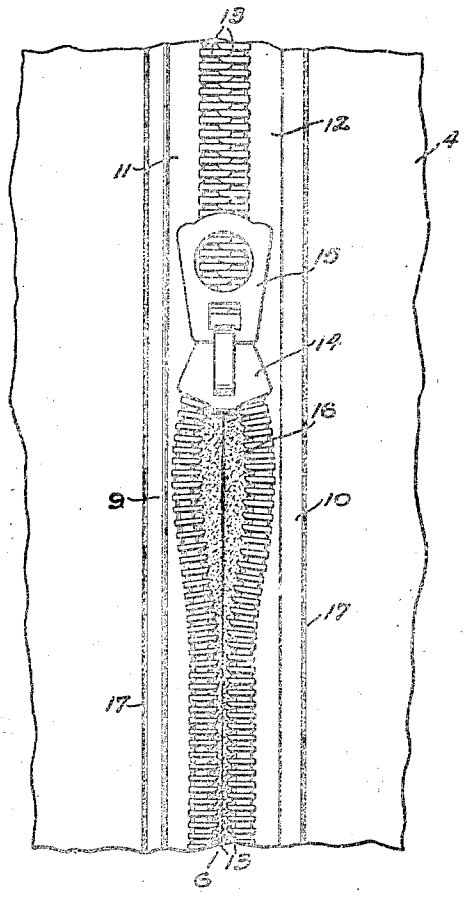


Fig. 3.

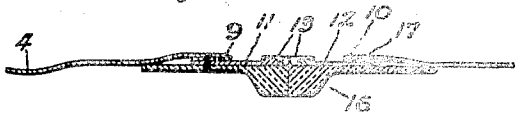
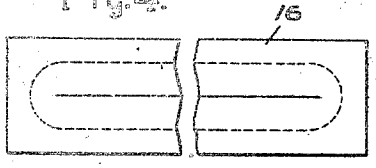


Fig. 4.



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Patented Apr. 14, 1931

1,801,193

UNITED STATES PATENT OFFICE

JAMES M. DARST, OF EAST CLEVELAND, OHIO, ASSIGNOR TO ELECTRIC VACUUM CLEANER COMPANY, INC., OF CLEVELAND, OHIO, A CORPORATION OF NEW YORK

BAG CLOSURE

Application filed June 21, 1928. Serial No. 287,204.

In the use of vacuum cleaners, it is necessary from time to time to empty the bags of accumulated material and this of itself is an extremely disagreeable task. As a general rule the discharge openings are relatively small and the lips of the opening are held together by some sort of a clamp. If the openings are large enough to freely discharge the dirt the clamps of necessity have to be of corresponding size. If the clamps are large they more or less interfere with the free handling of the cleaner and are also unsightly. As a result a compromise is effected and the opening and clamp are made smaller than they should be for the best results, although large enough in most cases to permit the discharge of dirt and other material without having to pull the same out through the opening by hand, although generally the bag has to be shaken vigorously.

The so-called "zipper" closing devices which are so largely used on overshoes, traveling bags and similar devices possess all but two of the desirable features for a vacuum cleaner bag closer for they can be made as long as desired and may extend lengthwise thereof. They are open to the very serious objection that they are not tight enough to prevent fine dust from being blown through the joints between the engaging metal parts. This can readily be determined by the fact that light will shine through the small spaces between said parts. The second objection arises from the fact that the bag openings are not completely closed at their ends although sufficiently so for ordinary purposes. I have discovered, however, that such devices can be usefully employed if additional and suitable means for sealing are provided. For such sealing I employ elastic strips within the bag which at their abutting edges are substantially thicker than the cloth of which the bag is composed and are stitched to the bag a sufficient distance away from the edges or lips so as not to interfere with the free actuation of the closing and opening device.

For a consideration of what I believe to be novel and my invention, attention is directed to the accompanying description and the claims appended thereto.

In the drawing which is illustrative of my invention, Fig. 1 is a view of an elevation of a vacuum cleaner bag; Fig. 2 is an enlarged view showing the closing and sealing means for the dirt-discharging opening; Fig. 3 is a cross-section of the same and Fig. 4 is a plan view of the sealing means.

4 indicates a bag made of cloth which is usually employed for such purposes, 5 a metal tube adapted to be connected to the discharge opening of the fan casing of a vacuum cleaner and through which the dust-laden air enters the bag, and 6 the discharge opening. Because of the flexible character of the closing and sealing means I am able to make the opening as long as may be desired to freely discharge dirt, by extending it lengthwise of the bag instead of limiting it to the upper and rather narrow end, as is commonly the case. The opening may be situated wherever is the most convenient. The upper or outer end of the bag has an eyelet 7 and a means such as a chain 8 for supporting it from the handle of the cleaner.

To the lips 9 and 10 of the opening are stitched strips of fabric 11 and 12, each of which has a series of hooks or devices 13, the hooks or devices of one strip interlocking with those of the other in a manner well understood. 14 indicates the slider for moving the hooks into interlocking engagement, and 15 the handle or tab for moving the slider.

Inside of the bag is located a sealing means 16 made of flexible material which is capable of making a tight joint. I have found soft rubber to be satisfactory for the purpose. To strengthen it at the points of attachment it is desirable to incorporate therein a sheet of fabric. It is preferable in order to ensure a good joint to make the abutting edges of the seal several times thicker than the cloth of which the bag is composed and to compress the sealing material at the meeting edges. In order not to make the sealing means so thick as to interfere with the flexibility of the bag as a whole or to be bulky, it may be made thick at the center and thin on both edges. This also facilitates securing the parts together. For simplicity the rows of stitches 17 which secure the strips of hooks to

the lips are also utilized to secure the sealing means. This has the advantage of using each row of stitches for a double purpose.

As previously stated, the type of mechanical bag closer herein illustrated is open to the disadvantage that the ends of the opening are not quite closed although nearly so, and while this is quite satisfactory for ordinary purposes is not so for vacuum cleaner bags because fine dust will blow out in a stream at these points. This difficulty is overcome in a simple manner. The sealing means is initially in a single undivided strip as shown in Fig. 4, which is a little longer at each end than the mechanical closing means. The strip is sewed to the bag along both sides and across the top and bottom along lines which are entirely outside of or beyond the lips of the opening in the bag. The dotted lines in Fig. 4 illustrate these stitches. As previously stated, the rubber sealing strip and the strips of hooks are secured by the same rows of longitudinally-extending stitches 17. The next step is to longitudinally cut the strip with a knife between the opposed rows of hooks with the result that the assemblage has the arrangement best shown in Fig. 2. The cut stops short of each end as shown in Fig. 4 so that even though the hooks do not completely close the bag opening at the ends no dust can escape at these points.

It will be observed from Fig. 2 that the edges of the sealing strips are in contact in the lower part of the figure whereas the ends of cooperating hooks are slightly spaced apart. This means that when the hooks are interlocked the abutting edges of the strip are under sufficient compression to make an effective seal. The fact that the rows of hooks are stitched on in their separated condition and that the hooks have to be interspersed to interlock means that in cutting the strip as described there is automatically provided the necessary amount of material at the abutting edges of the seal to cause compression when the slider is moved to interlock the hooks. Making the sealing strip in one piece and thereafter slitting it is advantageous because it is simpler to sew one piece to a bag than two and because it ensures that the cut or slit will always be in the proper position and that there will always be a sufficient amount of material to be compressed and form a seal when the bag is closed.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a bag having a discharge opening and a slide actuated closing device therefor, the combination of a sealing means fastened to the bag and located adjacent each of the lips of the opening, the parts of the sealing means being brought into and held in edgewise abutting contact by the closing movement of the said device.

2. In a bag having a discharge opening and a slide actuated closing device therefor, the combination of a flexible sealing means for the opening which is stitched to the bag adjacent to the lips of the opening, the adjacent edges of the sealing means being moved into and held in edgewise abutting contact by a movement of said device.

3. In a bag having a discharge opening and a slide actuated closing device therefor, the combination of a flexible sealing means separate from and attached to the bag adjacent to the lips of the opening, said means being substantially thicker at their abutting edges than the material of which the bag is composed and being moved into abutting relation by the closing movement of the device.

4. In a bag having a discharge opening and a slide actuated closing device therefor, the combination of a flexible sealing means for the opening and located on opposite sides thereof, and attaching means therefor which are in spaced relation to both lips of the bag opening, said flexible means being brought into and held in edgewise abutting contact by the closing movement of the device.

5. In a bag having a relatively long discharge opening extending in the direction of its length and a slide actuated closing device therefor, the combination of sealing means which are stitched to the bag on opposite sides of the opening and adjacent thereto, the planes of the stitching being spaced back from the edges of the lips of the opening, said opposed edges of the means being brought into firm abutting relation by the closing movement of the device.

6. In a bag having a relatively long discharge opening extending in the direction of its length and a slide actuated closing device therefor, the combination of a sealing means for the opening comprising strips of flexible material which are relatively thick at their abutting edges and thin at their outer edges, and means for attaching the thin edges of the strips to the bag in planes spaced from the lips of the opening, said device on its closing movement moving the strips into firm abutting relation.

7. In a bag having a discharge opening and a slide actuated closing device therefor, the combination of a sealing means comprising a piece of flexible material which is larger than the opening and is slitted for a greater part of its length to form parallel strips, said piece being completely stitched to the bag around its opening, said device when moved to its closed position holding the edges of the strips under compression.

8. In a dust bag for a vacuum cleaner having a discharge opening and a slide actuated closing device therefor, the combination of a piece of material which forms a seal for the opening, is within the bag, registers with

the opening, is longer and wider than the opening, and has a slit therein which is shorter than the bag opening, and a means common to the closing device and sealing material for fastening them to the bag, said device acting to move the opposed walls of the slit into abutting relation.

In witness whereof I have hereunto set my hand this 16th day of June, 1928.

JAMES M. DARST.