

April 19, 1938.

S. P. VAUGHN

2,114,892

METHOD AND APPARATUS FOR ATTACHING COMPRESSIBLE
CLEANING MATERIALS TO HOLDERS OR BACKINGS

Filed Sept. 28, 1936

2 Sheets-Sheet 1

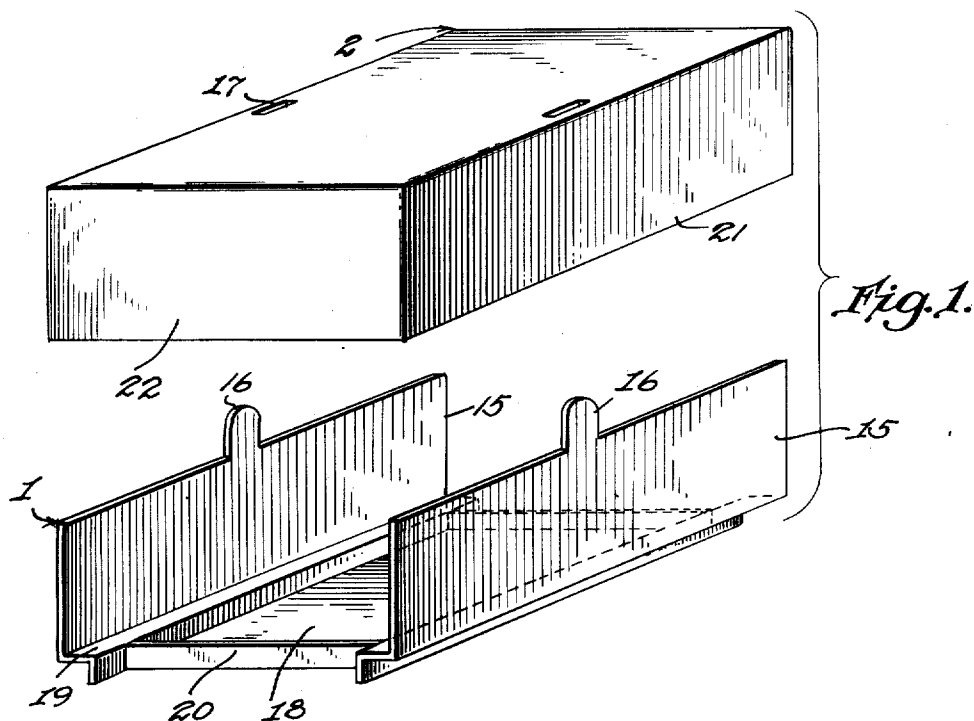


Fig. 2.

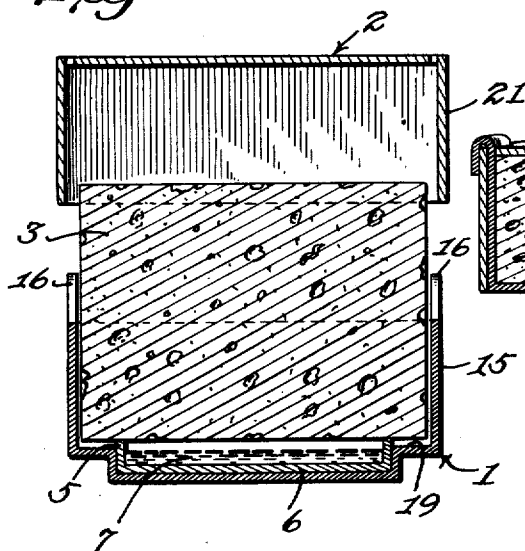
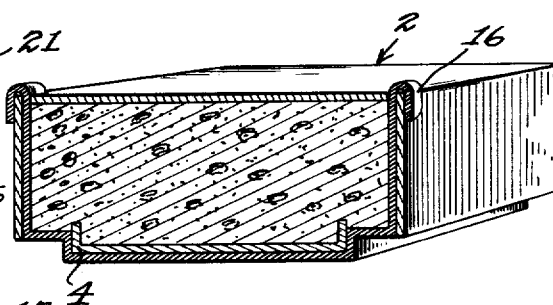


Fig. 3.



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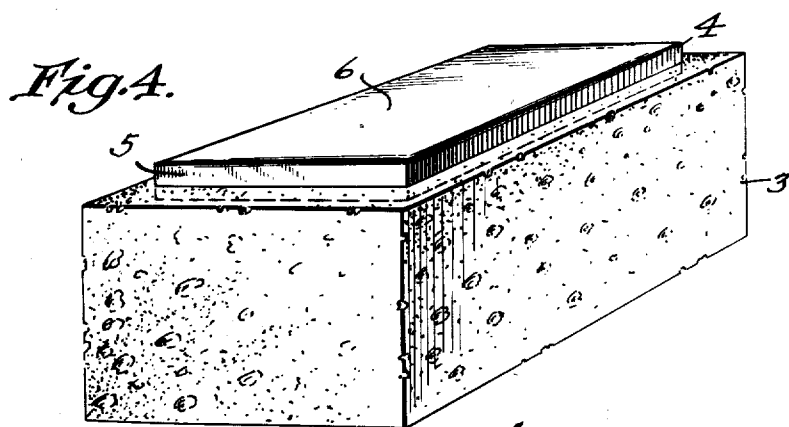
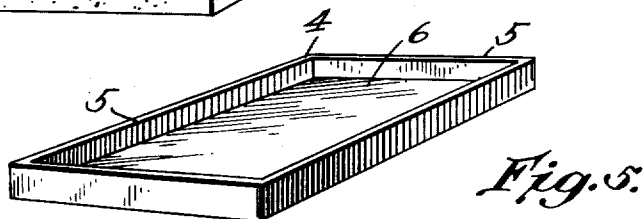
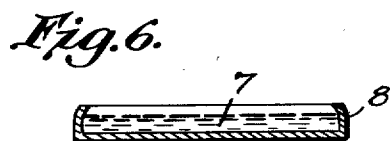
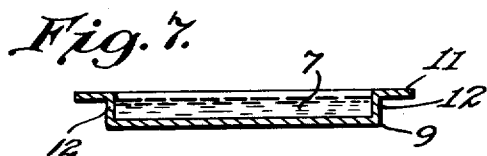
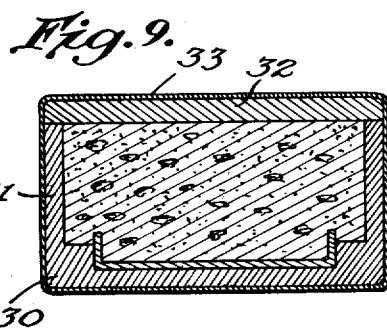
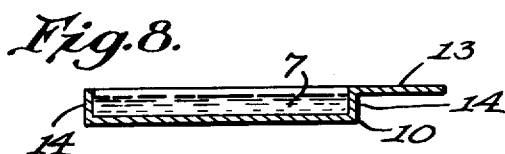
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UNITED STATES PATENT OFFICE

2,114,892

METHOD AND APPARATUS FOR ATTACHING
COMPRESSIBLE CLEANING MATERIALS TO
HOLDERS OR BACKINGS

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Application September 28, 1936, Serial No. 103,058

7 Claims. (Cl. 300—21)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

This invention relates to methods and apparatus for attaching cleaning material to a holder, plate or other backing, and particularly to means for facilitating the attaching of cellulose sponge, steel wool, and other compressible material to metal, wood or other backings.

It is a primary object of this invention to provide a simple, cheap and efficient method of attaching cleaning material to a backing, and one which involves not only a minimum number of manual operations but also a minimum amount of machinery.

Another object of the invention resides in the provision of a simple and inexpensive work clamp for accurately positioning the backing and cleaning material during the process of adhesively connecting the two, and the backing being preferably capable of transmitting heat to the adhesive material in processes in which thermoplastic adhesives are employed.

A further object of the invention is to provide means for compressing together the elements of a cleaning implement, which means also function as a shipping container for the completed article.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings, in which,

Figure 1 is a perspective view of the work clamp and receptacle in disassembled relation.

Figure 2 is a transverse sectional view of the container with a backing head or plate and cellulose sponge material positioned therein, and the presser member or lid about to be pressed downwardly to its operative position.

Figure 3 is a sectional perspective view of the apparatus with the presser member secured in its active position to compress the sponge or other cleaning material against the backing and at the same time to cooperate with its complementary member to provide a shipping container.

Figure 4 is a perspective view of a block of cellulose sponge with a metal backing or holder attached thereto.

Figure 5 is a perspective view of the metal backing per se.

Figures 6, 7 and 8 are sectional views of slightly modified forms of backing plates; and

Figure 9 is a transverse sectional view of a modified apparatus for aligning the backing and the cleaning material and pressing the same together during the attaching process.

Referring to the drawings in greater detail the numeral 1 indicates generally the aligning member for the backing and cellulose sponge and nu-

meral 2 indicates the presser member which cooperates with the member 1 to not only firmly hold the two elements of the cleaning device together during the attaching process but also to conjointly form a shipping or packing container for the completed article. These two elements and their manner of operation will be referred to more specifically after the general type of cleaning device shown in Figures 4 to 8, inclusive, has been described.

The cleaning material in the present illustration of the clamping apparatus is cellulose sponge and is designated by numeral 3. The numeral 4 indicates a mop head or backing and in Figures 4 and 5 consists merely of a shallow trough-like member having sides and ends 5 extending at right angles to the base 6. While for purposes of illustration I have shown a block of cellulose sponge and a backing which may be used as a mop head, yet the invention is in no manner limited to mops, but broadly covers a method and means for attaching compressible cleaning material to a backing.

The head 4 during the attaching process is placed in inverted position as shown in Figures 2, 3 and 5 and partly filled with adhesive 7, either thermoplastic or otherwise, as preferred. The block of cellulose sponge 3 is then applied as will appear hereinafter.

The backing shown in Figure 6 is identical with that just described except that the side walls 8 are bowed inwardly slightly. This construction permits the backing with its attached cleaning material to be readily inserted in and removed from an appropriate holder. Thus the cleaning material and its backing may be renewed when necessary. The various backings illustrated are of metal, but they may be of wood or any other desired material.

In Figures 7 and 8 the backings 9 and 10, respectively, are quite similar to that shown in Figure 5 except that the backing 9 is provided with a continuous right angular flange 11 extending entirely around the side walls 12, and the backing 10 is provided with a right angular flange 13 of greater width and extending from only one of the side walls 14. These flanges serve to cooperate with portions of the cleaning material which are flexed laterally during wringing operations.

The backings may be provided with any desired type of socket or the like for receiving conventional operating handles, if the cleaning device is intended for use as a mop. Inasmuch as the means for connecting operating handles forms no

part of the present invention it is not deemed necessary to either describe or illustrate such details.

As stated hereinbefore the backing may be made of metal, wood, or other material, but where a thermoplastic adhesive is used as the connecting means between the cleaning material and backing it is desirable that the latter be formed of metal so as to facilitate transmission of heat to the adhesive.

Reverting to the novel work clamp for aligning the backing and sponge of the illustrated cleaning device, and for firmly compressing them together during the attaching operations, the member 1 is preferably stamped from sheet metal and bent up to provide side walls 15 having upwardly-extending locking lugs 16 for cooperation with slots 17 in the combined presser and lid 2. The central portion of the blank is provided with a depressed portion 18 of substantially the width of the backing and forming longitudinal ledges 19 of a width substantially equal to the distance which the cleaning material extends beyond a side of the backing. The depth of the depression is somewhat shallower than the overall depth or thickness of the backing for a purpose which will later appear. End flanges 20 are bent upwardly from the depressed portion of the blank and are spaced apart a distance substantially equal to the length of the backing. It will be apparent therefore that the backing is snugly received and centered in the depressed portion of the container section 1 and that the walls 15 prevent lateral movement of the sponge or other cleaning material.

While the container 1 is shown and described as formed of sheet metal it will be obvious that other sheet material such as cardboard may be employed unless a thermoplastic adhesive requiring the easy transmission of heat is used for connecting the elements of the mop.

The combined presser and closure 2 may be formed of cardboard and is provided with side walls 21 and end walls 22, the former being adapted to overlap the side walls 15 of the container while the end walls 22 serve to close the open ends of the container and prevent longitudinal movement of the cleaning material with respect to the backing.

In practicing the method and in using the apparatus, the inverted head or backing is placed in the depression 18 of the container member 1 and is thereby centered with respect to the container by the end flanges 20 and the downwardly-extending side walls of the ledges 19. The adhesive is then placed in the member 4; the quantity being sufficient to only partly fill the cavity in the backing, thereby leaving a substantial portion of the flange 5 exposed and avoiding liability of forcing a part of the adhesive over the sides of the backing when the sponge block 3 is compressed into position. The adhesive employed may be cellulose cements, rubber cements, waterproof glues, sealing wax or the like. The block of cellulose sponge 3 or other compressible cleaning material is thereafter inserted between the side walls 15 of the container 1, as indicated in Figure 2, with its bottom resting on the upper edge of the flanges 5. The combined presser and closure 2 is now forced down onto the member 1, as indicated in Figure 3, with the locking lugs 16 extended upwardly through slots 17 and bent downwardly, as indicated. The closure is thus securely fastened in position and the package ready for shipping.

When the presser 2 is forced downwardly to its

final position, that is, from the position shown in Figure 2 to that shown in Figure 3 the portion of the sponge circumscribed by the flange 5 is forced into contact with the adhesive in the inverted backing, and the portion of the sponge in immediate contact with the flange is forced against it to such extent as to form an effective seal therewith and thus prevent overflowing of the liquid onto the exterior of the backing and associated parts. This sealing action between the cleaning material and backing thereby insures a clean looking product when the package is opened for display or use of the article. The cleaning material of course absorbs a portion of the adhesive and when the latter has dried or set the cleaning material will be firmly and securely attached to the backing and in perfect alignment therewith. The depth of the side walls 15 of the container should be sufficiently less than the thickness of the cleaning material to insure a tight contact between it and its backing when the cover 2 is forced downwardly to the final position indicated.

The modified clamping device shown in Fig. 9 is intended for repeated use in the compressing and setting operations and is not intended to be used as a shipping container. In this form of the invention the body member 30 may be formed of relatively thick wooden walls 31, and a wooden presser and closure 32; the members being temporarily clamped together by a metal band 33. The interior of the body 30 is substantially the same as that heretofore described; being provided with a shallow depression corresponding to the size and shape of the backing, and a compartment above the depression corresponding substantially to the shape and size of the sponge block or other cleaning material. In this form also the side walls 31 are substantially less in height than the vertical dimension of the cleaning material so as to permit of the proper amount of pressure being applied between the compressible cleaning material and its backing.

The methods described may be carried out entirely by manual operations or by machinery, as desired. In the event that machinery is employed a traveling belt or the like would be used and the containers 1 or 30 mounted thereon in series. Should a thermoplastic adhesive be employed as the binding means between the backing and cleaning material, hot plates or the like should be employed to maintain the adhesive in proper working condition until the presser member is secured in position and these plates could form a part of a traveling belt where a high production rate is desired.

From the foregoing description taken in connection with the accompanying drawings it will be apparent to those skilled in the art that I have devised a novel method and apparatus for adhesively securing cellulose sponge and other cleaning materials to heads or backings; that the method is simple, cheap and efficient in operation and may be carried out either manually or with the aid of machinery; that the apparatus employed is both simple and inexpensive and serves to insure proper alignment of the parts as well as to firmly hold them in tight contact during the setting of the adhesive, and that the apparatus is so designed as to serve as a shipping container and of such inexpensive construction as to permit of its being discarded when the article has reached its destination.

In accordance with the patent statutes I have described what I now believe to be the preferred

embodiment of the invention, but it will be obvious that various changes may be incorporated in both the method and apparatus without departing from the spirit of the invention and it is intended that all such changes be included within the scope of the appended claims.

The invention described herein may be manufactured and used by the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What I claim is:

1. The method of adhesively securing compressible cleaning material to a backing, which comprises placing adhesive substance to a substantial depth on the bottom of a backing having walls to retain the adhesive in the backing, placing the cleaning material over the backing and resting on the walls and projecting thereover, and compressing the material so that the part within the walls unites with the adhesive and the part resting on the walls functions as a seal to prevent the escape of the adhesive.

2. The method of adhesively securing spongy cleaning material to a backing and preparing the united article for shipment, which comprises placing a backing in a container, placing adhesive substance on the backing, arranging the cleaning material over the backing, and pressing a closure downward to unite the adhesive with the cleaning material and simultaneously close the container.

3. The method of adhesively securing spongy cleaning material to a backing and preparing the united article for shipment, which comprises placing in a container a backing having walls to retain the adhesive substance in the backing, arranging the cleaning material over the backing with the material resting on the walls and projecting thereover, and pressing a closure downward to unite the adhesive with the cleaning material and simultaneously close the container, the cleaning material resting on the walls functioning as a seal to prevent the adhesive from escaping into the container.

4. A combined receptacle for uniting cleaning material and backings and packaging the same, which includes a container, means in the bottom of the container for spacing the backing from the inner walls of the container, said backing adapted to receive an adhesive, said container adapted to receive a block of compressible cleaning material of substantially the width of the container, and a closure for compressing the material against the backing and closing the container.

5. A combined receptacle for uniting compressible cleaning material and backings and packaging the same, which includes a container having a central depression in its bottom for the reception of the backing, said backing adapted to receive an adhesive, the side walls of the container being spaced apart a distance corresponding to the width of the cleaning material, and a closure for compressing the material against the backing and closing the container.

6. A combined receptacle for uniting compressible cleaning material and backings and packaging the same, which includes a container, means in the bottom of the container for spacing the backing from the walls of the container, said backing adapted to receive an adhesive, the walls of the container spaced apart a distance corresponding to the width of the cleaning material and having a height substantially less than the vertical dimension of the cleaning material, a closure for compressing the cleaning material against the backing and closing the container.

7. The method of adhesively securing compressible cleaning material to a backing, which comprises interposing an adhesive substance of substantial depth between the compressible material and a backing having walls to confine the adhesive within the backing, and compressing the cleaning material against the backing so that the part within the walls will unite with the adhesive and the part in contact with the walls will function as a seal to prevent the escape of the adhesive.

SIDNEY P. VAUGHN.

Patent No. 2,114,892

Granted April 19, 1938

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The above entitled patent was extended October 2, 1951, under the provisions of the Act of June 30, 1950, for 7 years and 173 days from the expiration of the original term thereof.

Commissioner of Patents.

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2. The method of adhesively securing spongy cleaning material to a backing and preparing the united article for shipment, which comprises placing a backing in a container, placing adhesive substance on the backing, arranging the cleaning material over the backing, and pressing a closure downward to unite the adhesive with the cleaning material and simultaneously close the container.

3. The method of adhesively securing spongy cleaning material to a backing and preparing the united article for shipment, which comprises placing in a container a backing having walls to retain the adhesive substance in the backing, arranging the cleaning material over the backing with the material resting on the walls and projecting thereover, and pressing a closure downward to unite the adhesive with the cleaning material and simultaneously close the container, the cleaning material resting on the walls functioning as a seal to prevent the adhesive from escaping into the container.

4. A combined receptacle for uniting cleaning material and backings and packaging the same, which includes a container, means in the bottom of the container for spacing the backing from the inner walls of the container, said backing adapted to receive an adhesive, said container adapted to receive a block of compressible cleaning material of substantially the width of the container, and a closure for compressing the material against the backing and closing the container.

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