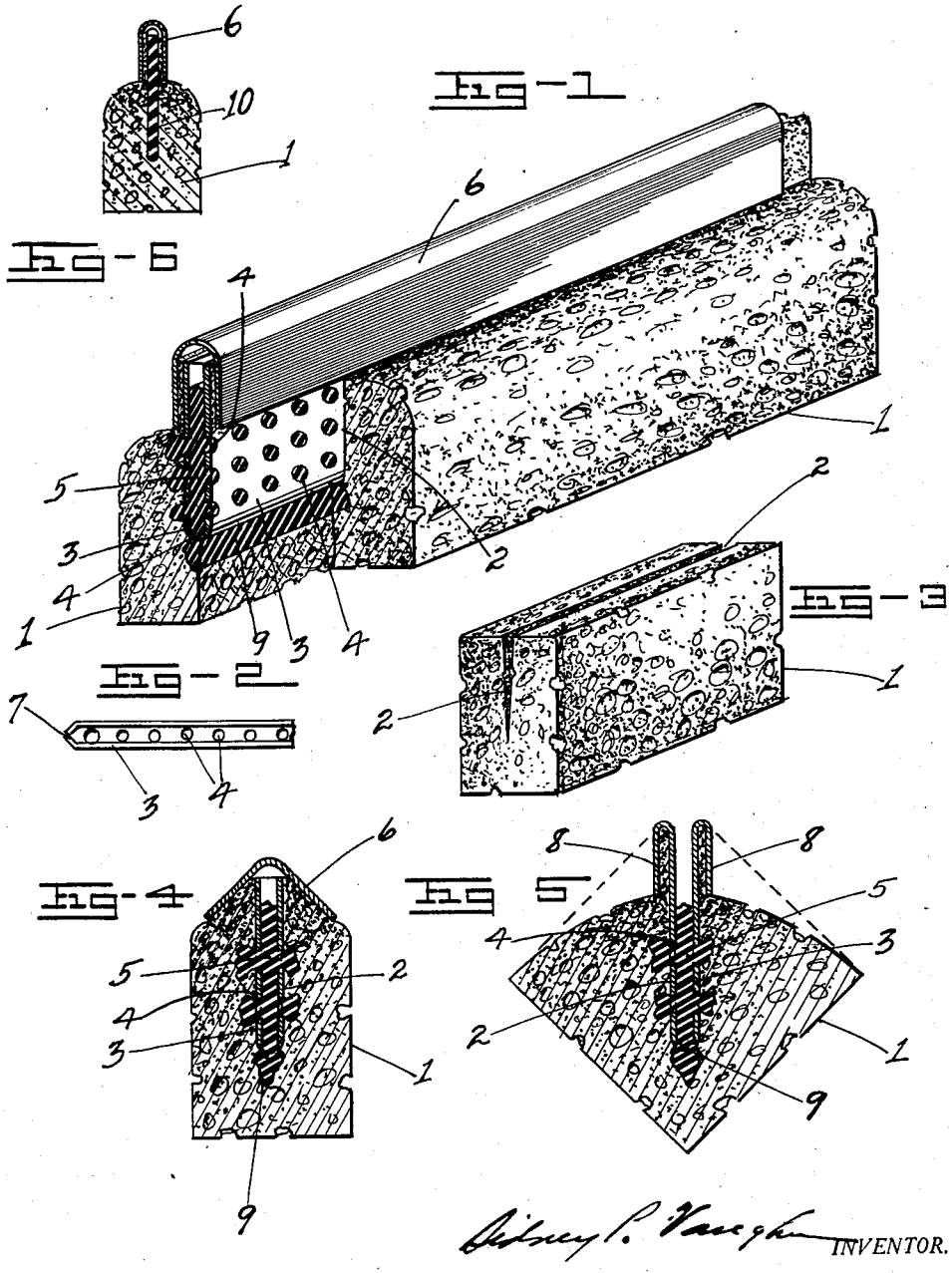
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CLEANING DEVICE

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CLEANING DEVICE

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4 Claims. (Cl. 15—244)

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This invention relates to cleaning devices in which a compressible material such as sponge or felt is used as the cleaning element.

Heretofore the prevailing method of attaching a compressible material to a backing or holding member has been to wrap a rectangular sheet of spongy material around a head or holding member and to clamp the edges of the sheet thereto in some manner. Another method has been to clamp one edge of a thick strip of spongy material with a channel member, usually U shaped in cross section. While these methods may be satisfactory for felt, and for rubber sponge in some instances, they are not suitable for fastening to a backing a sponge material known as "cellulose sponge". "Cellulose sponge" is soft and pliable when wet, yet hard when dry. When it is wetted, it expands considerably, and when dried out it shrinks in proportion. Due to these peculiar properties "cellulose sponge" must be attached to a backing member in such a manner as to allow free contraction and expansion. When a strip of the sponge is clamped by one edge, the sponge must be stiffened by a core member to a certain extent to prevent too much flexing at the point where clamped, otherwise, if the sponge was flexed at the point where clamped when in a dry state, it would break very quickly.

In this invention the principal object is to provide in a cleaning device embodying "cellulose sponge" or other compressible material as the cleaning element, a core member that will stiffen the compressible material and prevent abnormal distortion of the material when the direction of forces applied in cleaning operations are changed, yet allow a certain amount of flexibility so that the sponge can adjust itself to the surfaces being cleaned.

A further object is to provide in a cleaning device utilizing "cellulose sponge" as a cleaning element, a core member to stiffen the sponge, and clamping means to hold the sponge securely attached to the core member.

A further object is to provide in a cleaning device utilizing "cellulose sponge" as a cleaning element, a foraminous core member, cementing means for securely attaching the sponge to the core member, and a backing securely clamped thereto, so that the cleaning device may be readily attached to any suitable form of holder and used in scrubbing floors, windows, walls, ceilings, and the like.

Other objects and advantages of the invention will become apparent from a study of the following description, taken in connection with the accompanying drawing wherein:

Fig. 1 illustrates a perspective view of the cleaning device with one end shown in sectional form to illustrate the form of construction.

Fig. 2 illustrates a partial plan view of the core element.

Fig. 3 illustrates in perspective an elongated block of sponge material in which a longitudinal slit is formed and adapted to receive a core member.

Fig. 4 illustrates a cross section of the cleaning device illustrated in Fig. 1, partially assembled.

Fig. 5 illustrates a cross section of a modified form of construction.

Fig. 6 illustrates a cross section of another modified form of construction.

Like numerals refer to like parts throughout the several views.

Referring to the drawing, Fig. 1 illustrates the preferred form of the cleaning device embodying my invention, and Figs. 2, 3 and 4 illustrate the various parts used in the assembly of the device. The cleaning device comprises a block 1 of compressible cleaning material such as "cellulose sponge", a foraminous core member 3, and a metal clamping member 6 provided to secure the edges of the sponge to the core member. The block 1 of sponge has a longitudinal slit 2 formed therein as illustrated in Fig. 3 to receive an elongated core member 3 substantially U shaped in cross section and having openings 4 formed therein. A rubber cement 5 is poured into the channel of the core member to secure the sponge to the core. A part of the cement passes through the openings 4 and permeates the pores of the sponge. When the cement has set or has been cured it will hold the sponge securely attached to the core member. To provide a simple means for attaching the cleaning device to any suitable form of holder, and to give it a finished appearance, a channel member 6, V shaped in cross section, is placed on top of the core member 3 as illustrated in Fig. 4, and the edges of the channel 6 clamped to secure the slitted edges of the sponge to the core member, as illustrated in Fig. 1.

Since the core member 3 has less depth than the slit 2 formed in the block of sponge, the rubber cement, when poured into the channel of the core member, will pass through the openings 4 in the bottom of the core member and form a flexible rubber tongue 9 extending downwardly throughout the length of the block of sponge. The elastic rubber tongue increases the stiffness of the sponge but allows sufficient flexibility to

permit the sponge to adjust itself to the surfaces being cleaned. It is very desirable that the sponge be secured to the core member at as many points as possible, so that the sponge will not crawl around the core member when the direction of forces are changed in cleaning operations.

Fig. 5 illustrates a modified form of construction somewhat similar to that illustrated and described in my co-pending application Ser. No. 180,990, filed Dec. 21, 1937. In this application the core member is shown as being a foraminous metal channel 3, U shaped in cross section, with the edges 8 of the channel turned outwardly and downwardly to clamp the slitted edges of the sponge tightly against the walls of the channel.

Fig. 6 illustrates illustrates a form of construction somewhat similar to that illustrated and described in my co-pending application Ser. No. 180,989 filed Dec. 21, 1937. In this application I show the slit 2 as being formed in one of the narrow sides of the block of sponge as illustrated in Fig. 3. Instead of using a foraminous core member U shaped in cross section, I use a rubber strip 10 in which is inserted in the slit and preferably cemented to the sponge. The slitted edges of the sponge are secured to the core member by a channel clamping strip 6 as illustrated in Fig. 6. The rubber strip 10 increases the stiffness of the sponge, but has sufficient flexibility to permit the sponge to adjust itself to the surfaces being cleaned.

The cleaning device illustrated and described herein may be used for many purposes, and more particularly as a cleaning element for mops and the like. No holding member with handle is shown in the drawing as they may be made in many forms.

Modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

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

I claim:

1. A cleaning device comprising an elongated block of compressible cleaning material substantially rectangular in cross section, a slot formed lengthwise therein on one side, a foraminous channel shaped core element in said slot, said core member being substantially U shaped in cross section and arranged in the slot with the bottom of the U toward the bottom of the slot, and a cementing material in the channel of said core element for securing the walls of the slotted portion of the cleaning material to the core element.

2. A cleaning device as described in claim 1 and including a channel member substantially U shaped in cross section arranged to clamp the slotted edges of the cleaning material to the core element.

3. A cleaning device as described in claim 1, wherein the cementing material is allowed to penetrate the cleaning material to a substantial depth below the bottom of the core element to form a flexible tongue extending the length of the block of cleaning material.

4. A cleaning device comprising an elongated block of compressible cleaning material, a slot formed lengthwise therein on one side, a foraminous channel shaped core member in said slot and substantially U shaped in cross section with the bottom of the U arranged toward the bottom of said slot, outwardly and downwardly extending walls from the top of the U shaped core member arranged to clamp the adjacent edges of the cleaning material to the walls if the core member, and a cementing material in the channel of said core member for securing the slotted portion of the cleaning material to the walls of the core.

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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 174 days from the expiration of the original term thereof.

Commissioner of Patents.