April 24, 1951 C. J. DAVIES 2,550,455

TRIM PANEL AND METHOD OF MAKING THE SAME

Original Filed Sept. 23, 1946 2 Sheets-Sheet 1

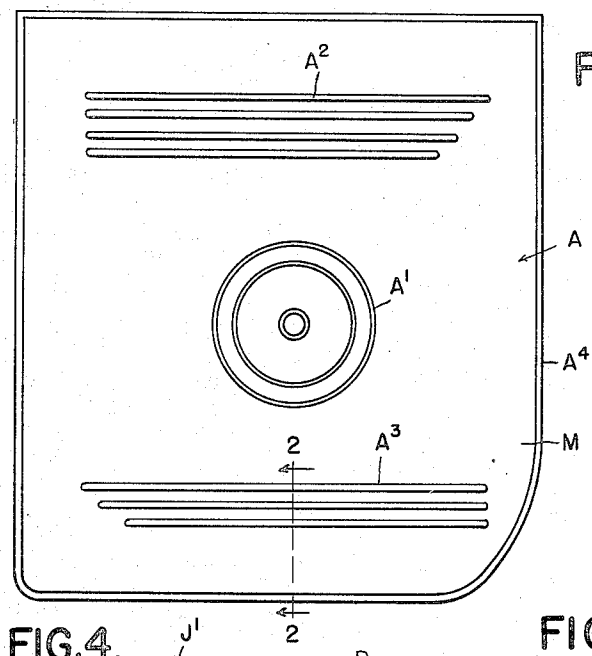


FIG.1.

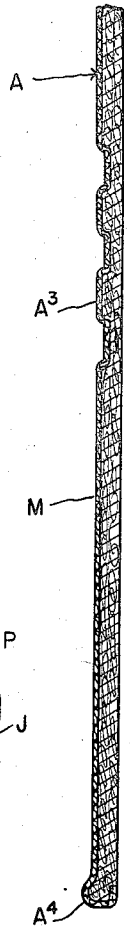


FIG.2.

FIG.4.

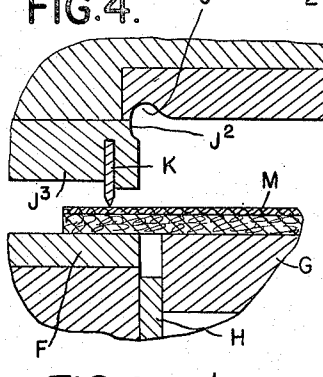


FIG.5.

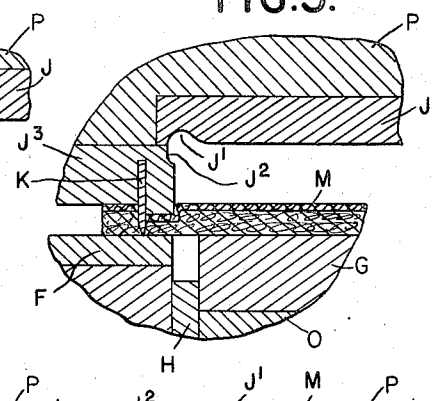
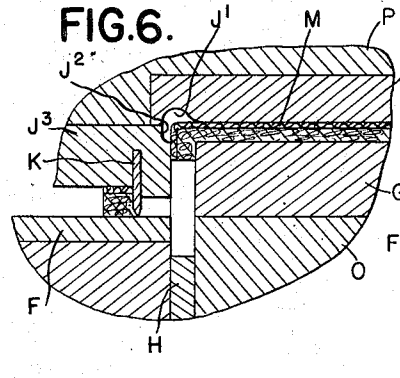


FIG.6.



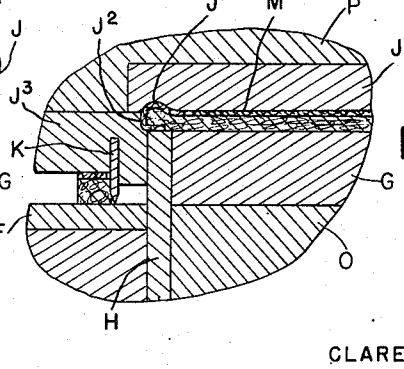


FIG.7.

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TRIM PANEL AND METHOD OF MAKING THE SAME

Original Filed Sept. 23, 1946 2 Sheets-Sheet 2

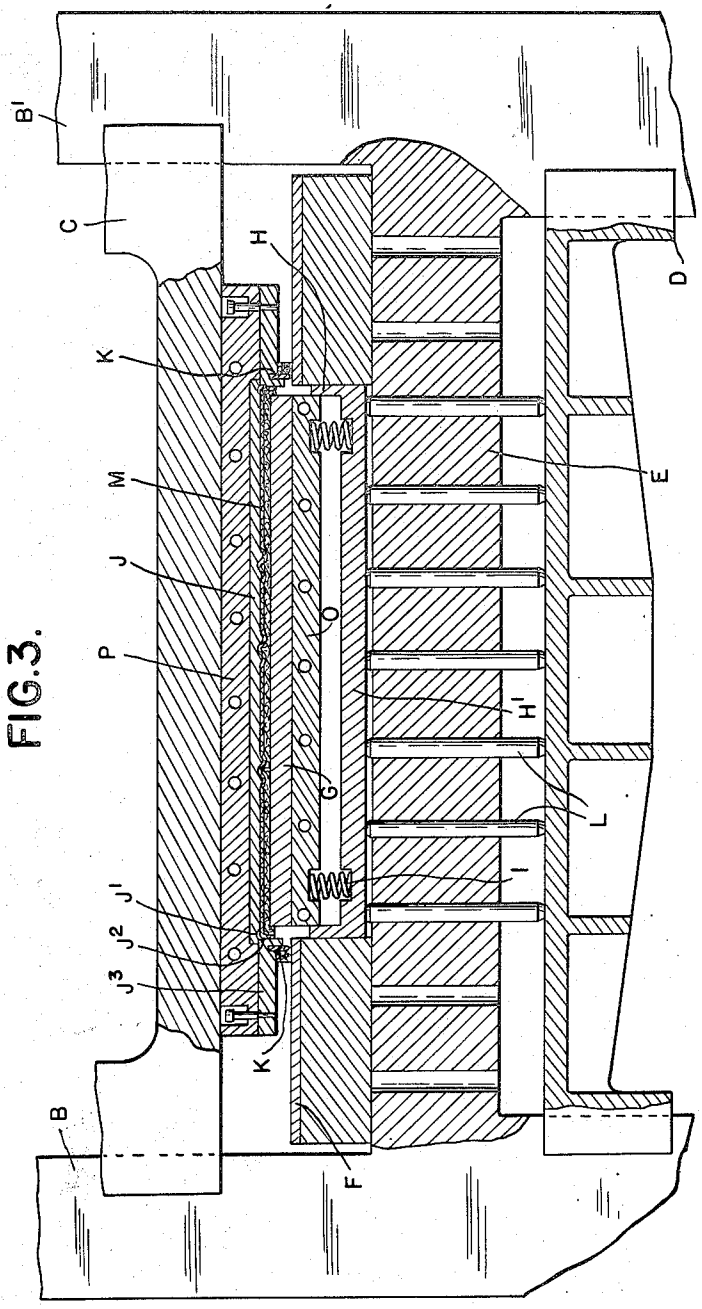

FIG. 3.

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TRIM PANEL AND METHOD OF MAKING THE SAME

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Original application September 23, 1946, Serial No. 698,669. Divided and this application March 8, 1948, Serial No. 14,022

7 Claims. (Cl. 154—116)

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The invention relates to trim panels designed for use on walls and doors to impart an ornamental finish thereto. More particularly, the invention relates to that type of structure comprising a body portion of impregnated fibers and a fabric covering for the external surface thereof fashioned with the desired ornamental design. The instant application is a division of my pending application for Patent Serial No. 698,669 filed September 23, 1946, issued May 14, 1950, as Patent No. 2,500,895.

It is the object of the invention to obtain a structure of this type having improved characteristics and more particularly in the construction of the border or edge portion of the panel.

It is a further object to improve and simplify the method of forming such structure and with these objects in view the invention consists, first, in the improved panel; and, second, in the method of forming the same as more fully hereinafter set forth.

While the claims in the instant application are confined to the panel and the method of forming the same, I have for greater clarity included a description of apparatus which may be used in carrying out the method.

In the drawings:

Fig. 1 is an elevation of a trim panel which specifically forms the interior finish for an automobile door;

Fig. 2 is a section on line 2—2, Fig. 1;

Fig. 3 is a sectional elevation showing a portion of the press together with the rams and dies for forming the panel; and

Figs. 4, 5, 6 and 7 are enlarged sections of a portion of Fig. 3 illustrating the sequence of operations in the forming of the reinforced edge portion of the panel.

In the general process of forming trim panels, of the type above referred to, a bat or layer of loose fibers together with a fabric cover on one or both sides thereof is placed between heated dies in a press and subjected to high compression. This will compact the fibers which have a binding material commingled therewith and, while still retained under pressure, a curing is effected which permanently binds the fibers to each other and to the fabric cover. The desired design or ornamentation is produced by the shape of the dies, so that after curing has been accomplished a substantially rigid ornamental panel is formed. Various fibers may be used for the body material and also various binding agents such as, for example, phenol formaldehyde, urea formaldehyde or other synthetic resins. However, one specific

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construction may be formed of sisal fiber with any suitable thermo-setting binding agent.

The construction as above described will have a fabric finished face but with unfinished edge portions. It is, therefore, a primary object of my invention to obtain a finished edge or border portion which is completely covered by the fabric and which also forms a reinforcing and strengthening element of the panel. It is a further object to accomplish this edge forming operation substantially simultaneously with the operation for forming the body portion of the panel.

The specific panel illustrated in Fig. 1 has a substantially flat body portion A provided with a central circular ornament A′ formed of parallel circular grooves, and top and bottom ornaments A^2 and A^3 formed of parallel horizontal grooves. Completely surrounding the panel is a border bead A^4 which generally is formed as follows. The panel blank is first cut to slightly larger dimensions than those of the finished panel. The edge portion on each side is return bent to bring the fabric cover around and beneath the same, and said return bent portion is then subjected to greater pressure to further densify the fiber filling. This method is preferably automatically carried out in apparatus of the following construction.

Apparatus

B and B′ are upright frame members of a press and C and D are upper and lower rams movable toward and from each other. Between these rams is a cross-member E of the frame on which is supported an annular bed-plate F having its inner contour corresponding to the form of the trim panel. Within the member F is a die member G and between the members F and G is an annular die member H, having a bottom portion H′ extending beneath but separated from the die member G. Springs I yieldably support the die member G on the bottom H′ so as to be normally flush with the bed H. An upper die J is secured to the ram C and has projecting downward therefrom the cutting blades K for trimming the blank to the desired contour. This, however, is larger than the inner edge of the bed member F to provide material for the return bend. The border portion of the die member J is formed as more clearly illustrated in Figs. 4, 5, 6 and 7 and includes a groove portion J′ extending obliquely into the die above the general plane of the panel, and which overlaps the bed member F. A return bend portion J^2 is formed preferably in a separate plate J^3, which latter has flange extending downward below the die J and has its inner

periphery in line with that of the bed member F and the outer edge of the die member H. Thus, together the portions J' and J^2 of the die members J and J^3 form a bead cavity for the return bent portion of the panel. Between the lower ram D and the bottom portion H' of the die member H are pins L which during the operation of the press will raise the die member H and through the medium of the springs I will also raise the die member G.

Operation

In the operation of the apparatus above described, the fiber bat is laid upon the lower die member G to extend beyond the same over the annular bed member F and the cover M, which may be either woven fabric or felt, is placed on top of the bat. The first operation is the descent of the upper ram (the operating mechanism for the rams not being illustrated) which presses down the blade member K to cut both the cover and the fiber bat to the proper contour. The lower ram is then raised, the upper ram remaining stationary, and through the medium of the pins L die members H and G are raised. Inasmuch as the border portion of the blank extends over the bed member F and beneath the die member J^3, this portion will be bent downward when the die member G is raised to compress the fibers against the upper die member J. This initial movement of the die member G is accomplished without materially compressing the springs I, but as the resistance due to the compression of the fibers increases the springs I will be compressed so that the annular die member H will be moved upward relative to the die member G and will engage the downturned portion of the blank. This portion will then be forced upward against the oblique face J' which cams it outward into the bead cavity formed by the portions J' and J^2. As this cavity extends outward beyond the inner contour of the die member J^3, it will produce a complete return bend in the border portion of the blank. Also, the compression pressure exerted on this border portion will be greater than that exerted by the die member G so that the fibers in this portion of the blank will be further densified. After the completions of the operations of the rams, the dies G, J and J^3 will remain stationary in relation to each other while the curing of the blank is effected. This is preferably accomplished by heat. To this end, the die members G and J are heated preferably by members O and P, respectively, adjacent thereto, which members are provided with passages for receiving steam or other fluid heating means. The pressure and the heat are continued until the blank is completely cured after which the rams are retracted and the completed panel removed.

What I claim as my invention is:

1. A trim panel comprising a compressed bonded fiber body having a fabric cover on the outer face thereof, the margin of said panel being formed with an outwardly projecting enlarged bead having the fabric cover extending around and beneath the same and adhering thereto.

2. A trim panel comprising a compressed fiber body bonded with a synthetic resin and having a fabric cover on one face thereof adhered thereto by said resin, the margin of said panel being formed with an enlarged bead having the fabric cover extending around the same and having a more highly compressed fiber core.

3. In a method of forming trim panels comprising compressing a blank composed of a fiber bat impregnated with an uncured binding agent and a fabric cover on one face thereof and curing the same while under compression; the step of cutting a blank of larger dimensions than the finished panel, bending a marginal portion of said blank to form a transversely extending flange with its outer face within the finished dimension of the panel and in applying end pressure against said flange and simultaneously camming outward the portion thereof adjacent to the bend to form a return bend constituting an enlarged bead with the fabric cover extending around the same, said end pressure being sufficient to more highly densify the fibers of said bead.

4. A trim panel comprising a compressed bonded sisal fiber body having a fabric cover on the outer face thereof, the margin of said panel being formed with an enlarged outwardly projecting bead having the fabric cover return bent around the same and adhering thereto.

5. A trim panel comprising a compressed sisal fiber body bonded with a thermo-setting agent and having a fabric cover on the outer face thereof, the margin of said panel being formed with an enlarged outwardly projecting bead, and having the fabric cover return bent around the same and adhering thereto.

6. A trim panel comprising a compressed bonded vegetable fiber body having a fabric cover on the outer face thereof, the margin of said panel being formed with an enlarged outwardly projecting bead having the fabric cover return bent around the same and adhering thereto.

7. In a method of forming trim panels comprising compressing a blank composed of a fiber bat impregnated with a thermo-setting bonding agent and a fabric cover on one face thereof, and heating while under compression to effect a curing; the step of cutting a blank of larger dimension than the finished panel, bending a marginal portion of said blank to form a transversely extending flange with its outer face smaller in dimension than the finished dimension of the panel, applying end pressure against said flange while permitting a controlled amount of outward expansion whereby the bend will be changed into a return bend with the fabric cover extending around the same.

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