This invention relates generally to repair tools, accessories and the like, for patching unlathed gypsum board (Sheetrock) walls or the like and, more particularly, to an expandable device for closing the interior rear-faced portions of a wall opening requiring repair so that plaster may be applied in the opening with the device serving to "back-up" the plaster.

The repair of fairly large diameter holes in unlathed walls such as Sheetrock, etc., has been difficult, since spackle or other patching compound in its plastic unset condition cannot be applied without backing to hold the patching compound in place.

The device in accordance with the invention resolves these difficulties. More specifically, there is provided a mechanism having an expandable frame which mounts a collar or hood supporting structure. The hood or bonnet body comprises a series of ribs arranged annularly in affixed equi-spaced pivotal relation to the collar. Intermediate each of the ribs is a preferably flexible membrane such that the ribs and series of membranes may collapse or expand in umbrella-like fashion. When collapsed, the hood and frame may be inserted, for example, through a wall opening to be patched, and thereafter the hood may be expanded against the rear face of the wall to be provided backing for patching plaster.

In two embodiments disclosed herein, various means are provided for moving the hood into the aforementioned position and securing the hood in a backing position. Details of these embodiments and the principles of the invention will be made clear by an examination of the following description and accompanying drawing in which:

FIGURE 1 is a perspective view of a first embodiment of the invention wherein a relatively shallow depth partition having two opposing wall sheets is under repair.

FIGURE 2 shows the placement of the device of FIGURE 1 initially within the shallow partition.

FIGURE 3 illustrates the expansion of hood portions of the device in backing relation to the rear face of the wall to be repaired.

FIGURES 4 and 5 disclose sequentially details of the hood-rib expansion mechanism.

FIGURE 6 illustrates an alternate embodiment according to the invention; and

FIGURES 7 and 8 illustrate the sequence of operation employing the alternate form of embodiment.

We refer now to the drawing, and initially, to one particular embodiment of the invention shown in FIGURES 1-5 thereof. As illustrated in FIGURE 1, the device 10 has a main body frame 11 including axially extending parallel pins 11a, 11b fastened securely onto a base and screw swivel assembly 11c. The opposite ends of pins 11a and 11b are held in a ring 12. A screw shaft 13 extends through the ring 12 toward and into the base and screw assembly 11c wherein it is held but may turn freely, as in a bearing, about its axis. Similarly, the ring 12 acts as a bearing for the screw shaft 13 without engagement between threaded portions of the shaft 13 and the inner supporting bore of the ring.

A third principal portion of the device 10 comprises an assembly including a bonnet body 14 affixed to a central, axially movable mounting means, the combined pivot cluster 16 and bonnet rib stop 17. The bonnet body is constructed of a plurality of ribs 14a pivotally mounted in equi-spaced relation in the pivot cluster 16. Intermediate each rib 14a and attached thereto are webs 14b preferably of a flexible material which, together with ribs 14a, may collapse diametrically toward the axis of the frame 11 or expand outwardly therefrom in umbrella-like fashion until abutting against rib stop 17. The pivot cluster 16 and rib stop 17 are slidably received along the pins 11a and are restrained thereby from rotation. The pivot cluster and rib stop are in threaded engagement with the screw shaft so that rotation of the screw shaft will produce translation of the pivot cluster, rib stop and bonnet body along frame 11 axially toward or away from the base and screw swivel assembly 11c.

The operation of the device 10 will now be described. In FIGURE 2 has been shown a wall 18 such as might be formed by oppositely facing sheets 19 and 20 of gyspum board (Sheetrock) laid over studs (not shown). As is conventional, a shallow wall space 21 would thus be formed of approximately four inches. Assuming that sheet 19 has been damaged by having an opening 19a formed therein, the device 10 of the present invention would be used accordingly as follows to assist the repair of opening 19a by the application thereto of spackle, plaster, or any suitable mastic.

As illustrated, the device 10 with the bonnet rib stop 17 in abutting or near abutting relation to the base and screw swivel assembly 11c and with the bonnet body collapsed, would be inserted directly into the opening 19a until the base and screw assembly is against the rear face of sheet 20. A pressure sensitive adhesive 22 may be applied to the outer surface of the base and screw swivel assembly 11c which will cause the latter to affix itself to the sheet 20. If adhesive 22 is used the frame 11 will be restrained from rotation thereby, or may be additionally restrained by grasping the ring 12 and pins 11a, 11b when the bonnet body is released. Thereafter, the screw shaft 13 may be turned using a screwdriver in the slotted head 13a to advance the bonnet body 14 into the position indicated in FIGURE 3 whereby the bonnet body 14 will be brought up flush against the rear of sheet 19 to completely close the rear of opening 19a. Spackle, plaster, etc., may then be efficiently applied against the opposing outspread bonnet body to fill the opening 19a for repair of same. The end of screw shaft 13 may be snipped off if extending from the front face of sheet 19 below the surface thereof for final repair. It is obvious, however, that the screw head 13a may be recessed sufficiently to obviate this step.

In the embodiment of FIGURES 6-8, an alternate form of the device is illustrated which has particular application when a relatively deep partition has to be repaired or where an opposing interior second wall surface is not available.

The device of FIGURES 7 and 8 includes a bonnet body 30, pivot cluster 31, and bonnet rib stop 32 similar in all respects to the named elements of the previous embodiment. There are rigidly secured upon the end of a frame member 33. The frame member 33 includes as an extension thereof a draw bar 34. As illustrated in FIGURE 7, the draw bar may be used to expand the bonnet body against the rear face of the wall opening to be repaired, and thereafter a pin 36 may be inserted into an appropriately spaced opening 37 of the draw bar to extend across the front face of the opening. Initially, patching compound will be used to fill the inner recesses of the opening as a first stage of the repair operation. With the patching compound set, thereby securing the bonnet body by adhesion, the pin 36 may then be removed from the portion of the draw bar 34 protruding above. The portion of draw bar 34 projecting from outer wall surface will be snipped off prior to finishing the
patching operation as a smooth continuation of the outer face of the wall.

It will be understood that the foregoing description relates to a particular embodiment of the invention and is therefore merely representative. Therefore, in order to fully appreciate the spirit and scope of the invention, reference should be made to the appended claims.

What is claimed is:

1. A plug for blocking an opening in a wall prior to the application of plaster thereto for repair purposes comprising an elongated frame, a collar mounted on said frame, a collapsible membraneous bonnet body affixed to said collar for insertion therewith behind the wall to be repaired, said bonnet body comprising a series of ribs one end of each being pivotally connected in spaced relation to the collar annularly about said frame, a flexible membraneous material interconnecting each of said ribs substantially along each length thereof to form a collapsible umbrella-like hood, the hood when collapsed being smaller in diameter than said wall opening and when expanded, having a diameter larger than said opening, the ribs being permitted movement to a position entirely behind and in contact with said wall to cause the hood to expand into flat adjacent relationship with the rear face of said wall in order to cover said opening to receive plaster, and means for drawing and for affixing said body into adjacent relationship with said rear face, said last-mentioned means permitting access to the wall opening from the front face of the wall defining same for the application of plaster to fill said opening.

2. The plug according to claim 1 in which said collar includes stop means abutting said ribs when the latter are expanded into radial perpendicular relation to said frame.

3. The plug according to claim 2 in which said collar is mounted for slideable axial movement along said frame, said frame includes an inner end adapted to abut the inner surface of an oppositely facing second wall in the intervening space between the second wall and the wall defining said opening and screw means for advancing said collar toward the rear face of the opening and for maintaining contact of said bonnet body about the rear of said opening, the inner end of said frame having an adhesive to secure said inner end to the second wall.

4. The plug of claim 2 in which the means for drawing said bonnet body is a draw bar extension of said frame having a series of transverse openings along its length and the means for affixing said bonnet body is a pin received in one of said draw bar openings, said pin being of sufficient length to extend beyond the edges of said wall opening, the distance along the frame between said collar and pin being approximately the thickness of the wall containing said wall opening.

5. A plug for blocking an opening in a wall prior to the application of plaster thereto for repair purposes which comprises an elongated frame including a flat base and two rods anchored in said base in spaced parallel relation to a principal axis of said plug, said rods being connected at the end opposite said base by a ring, a screw shaft in said ring and in said base at one end thereof for free rotation relative to said base and ring, a screw projecting axially beyond the ring to provide access from the end of the frame opposite the base to turn said screw shaft, a flat annular member in threaded engagement with said screw shaft and in slideable axial engagement with said rods, a plurality of spaced ribs pivotally engaged at one of their ends to said annular member adjacent to the face of said member opposite said base, said pivotal connection being such that said ribs may collapse in an axial direction away from said base and may expand radially to be perpendicular to said axis until stopped by contacting the adjacent face of said annular member, and flexible webs joining each adjacent rib throughout its length to form in effect a flat surface for backing up the application of plaster and the like when said rib and webs have been drawn toward and against the rear surface of said wall opening by rotation of said screw shaft.

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