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FIREPLACE FRONT WITH DOUBLE-FOLD DOORS

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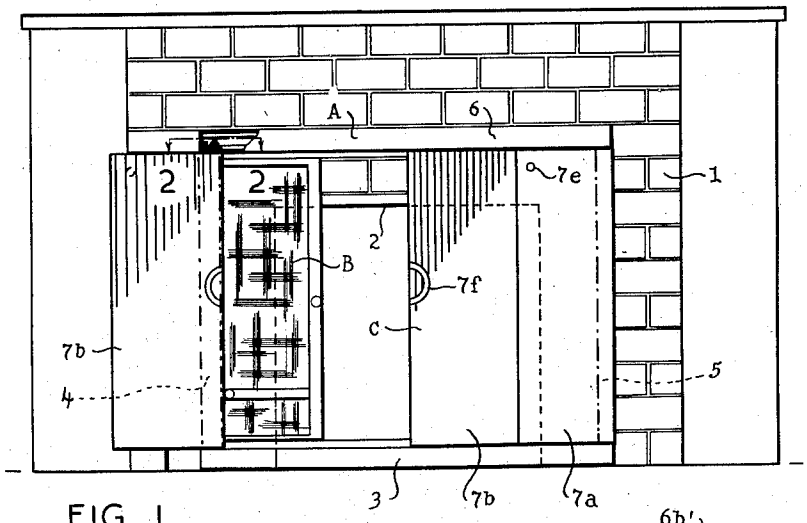


FIG. 1.

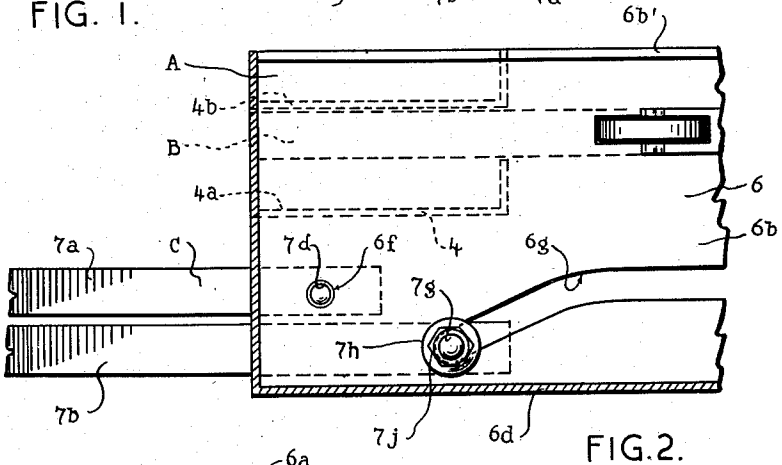


FIG. 2.

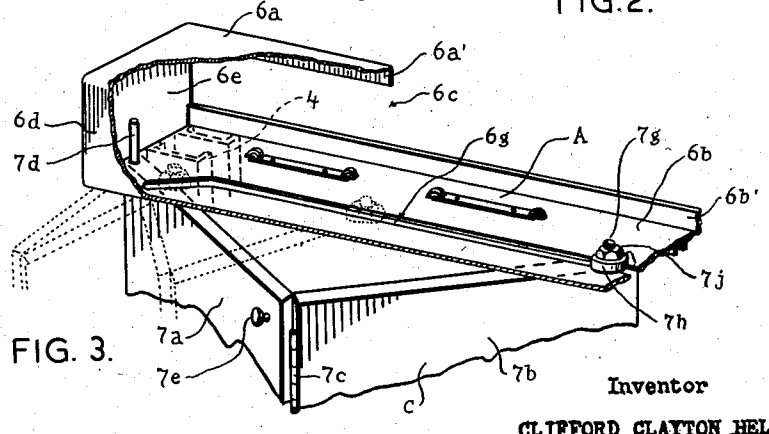


FIG. 3.

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FIREPLACE FRONT WITH DOUBLE-FOLD DOORS

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3 Claims. (Cl. 160—118)

The present invention relates to improvements in a fireplace front, especially one adapted to be applied to the front of an open fireplace and comprising a screen-carrying frame with doors hinged to the opposite sides thereof as disclosed in my United States Patent No. 2,627,914 granted February 10, 1953, and my copending application Serial No. 404,532. The doors are preferably of the double-fold type with each door consisting of two hingedly connected sections so that when the respective doors are opened to opposite sides of the fireplace front they lie in two laterally overlapping folds, extending outwards from the frame but there occupy only approximately one-half the width of the opening they had formerly covered. This invention concerns particularly the novel frame structure and the mounting and guiding of the doors in such frame.

It is desirable that the doors when closed fit snugly in the frame, open smoothly with controlled guiding and when in open position lie neatly, compressed in double-fold, extending outwards from opposite sides of the frame and in a plane paralleling the front of the fireplace structure.

Accordingly, it is an object of this invention to provide a fireplace front having a frame of generally improved construction and in which double-fold doors hinged to opposite sides of such fireplace front frame lie recessed, in closed position, between forwardly projecting portions of the top and bottom rails of the novel frame.

It is a further object of the invention to provide a fireplace front having an improved frame structure in which the top and bottom rails accommodate the hinge pivots of the doors and in either or both of which rails guides are provided to control the movement of the free edges of the inner sections of the double-fold doors.

A still further object of the invention is to provide a fireplace front having double-fold doors with a concealed improved and simplified sliding movement control guide connection between the inner or free edge of the doors and the frame of the fireplace front.

To the accomplishment of these and related objects as shall become apparent as the description proceeds, the invention resides in the construction, combination and arangement of parts as shall be hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereunto appended.

The invention will be best understood and can be more clearly described when reference is had to the drawings forming a part of this disclosure wherein like characters indicate like parts throughout the several views.

In the drawings:

Figure 1 is a front elevation of a fireplace front arranged against the face of a fireplace, in which the instant guided, double-fold doors are embodied, part of the fireplace front being broken away to show the novel structure of frame and doors;

Figure 2 is an enlarged transverse, horizontal section through the frame top rail, as taken on line 2—2 of

Figure 1, looking in the direction indicated by the arrows; and

Figure 3 is a perspective detail showing structure and assembly of the frame top rail and one of the guided, double-fold doors, an appropriate portion of the top rail being broken away.

Arranged in front of a fireplace structure 1 to cover the fireplace opening 2, my improved fireplace front screen sections B mounted in the frame and slidable outwardly to opposite sides to afford access to the fireplace opening 2, and sliding movement in said frame A and adapted when closed to overlie said screen sections B and when open to lie in double-fold extending outwardly from the sides of the frame and in a plane paralleling the face of said fireplace structure 1.

The improved frame A consists of a bottom rail or plate 3 that may serve as the base, opposite side posts 4 and 5 and a top rail or cross bar 6. The bottom and top rails 3 and 6 are each preferably formed of a metal member in the shape of a U disposed on its side with the arms 6*a* and 6*b* of the U serving as spaced upper and lower sides of the member and wtih the open end 6*c* of the U facing to the rear, i. e., toward the face of the fireplace and the closed base 6*d* of the U to the front. End sections 6*e* close in opposite ends of the U member and the rearwardly extending top and bottom arms 6*a* and 6*b*, at their inner ends, have short inturned confronting vertical flanges 6*a'* and 6*b'* respectively that, also united to the end sections 6*e*, serve to rigidify these horizontal rails and while tending to impart a finished appearance to the rear side of the frame and partially conceal the hollow interior of the rails yet allow ready access thereto.

Each of the side posts 4 and 5 consists of a laterally spaced pair of rearwardly facing shallow channel members, such as 4*a* and 4*b* respectively, each welded at top and bottom to the top and bottom rails 6 and 3, with the rearmost channel members on opposite sides preferably located at the rear corners of the rails and the front channel members spaced directly in front of them a sufficient distance to allow the screen sections B to slide freely therebetween. It will be noted, however, by referring particularly to Figure 2, that while the top and bottom rails 6 and 3 terminate at the rear flush with the double channel sides, the said rails project forwardly for a considerable distance beyond the front of the side posts to provide an accommodating recess for the combined hinging and sliding double-fold doors C.

In the recess provided by the over-hanging or forwardly projecting fronts of the top and bottom rails 6 and 3, the double-fold doors C are mounted in a special manner. Each of the pair of doors will be seen to consist of an outer section 7*a* and an inner section 7*b* that are connected at their adjoining edges by a hinge 7*c* and are of a height to fit snugly between the top of the bottom rail and the bottom of the top rail and are hingedly mounted in the accommodating recess so provided by pivot pins 7*d* extended into the outer panels 7*a* near the outer edge through vertically aligned perforations such as 6*f* in the top and bottom rails.

To facilitate the initial opening of the double-fold doors C, a knob 7*e* is provided near the top inner corner of the outer door section 7*a* and for normal open and closing of the doors, a handle 7*f* is mounted near the inner edge of the inner door section 7*b* about midway of the height thereof while to impart positive guidance or control to the movement of the double-fold door, a novel sliding connection between the inner section of the door and the frame is provided. In the lower arm 6*b* of the top rail, a pair of elongated slots 6*g* run in opposite directions from near the center of the rail toward the ends. At their inner ends and for the greater part

of their length these slots 6*g* are aligned with the pivot pins 6*f* forwards at an angle of approximately 30 degrees and terminate short of the pin but forwardly thereof by a distance greater than the thickness of a section of the double-fold door. A threaded stud 7*g* rising from the top of each inner section 7*b* near the inner free edge thereof passes through its respective slot 6*g* and carries a washer 7*h* that slides along the upper side of the slotted rail arm 6*b*, being confined on the stud as by a nut 7*j*.

As each double-fold door C is opened by initially pulling outwards on the knob 7*e*, the outer panel or section 7*a* hinges on its pivot pins 7*d* and the inner section 7*b* hinges by pivoting on the stud 7*g* at its inner end which simultaneously slides outwards in its guide slot 6*g*. This hinging of the connected sections 7*a* and 7*b* on their respective fixed and sliding pivots continues in double-fold relation with their hinge connected or butt edges projecting almost directly forwardly into the room, when the sliding pivot stud 7*g* reaches the angularly veering outer end portion of the slot 6*g* which causes the inner door section stud 7*g* to swing its section 7*b* outwardly of the outer door section 7*a* which at the time turns quickly through an arc of about 90 degrees to take up a fully opened position, extending outwards from the end of frame A in a plane paralleling the face of the fireplace structure, having swung through a full 180 degrees, as seen in Figure 2, and the inner section 7*b* closely overlying it in double-fold relation when the stud 7*g* reaches the end of the slot 6*g* and acts as a "stop" to limit the door opening movement. Such fully opened, double-fold position of the door will be seen in elevation on the left side of Figure 1 and in sectional plan detail in Figure 2. It will also be noted, from reference to all three figures of the drawing how the pivots and guide slots are disposed with respect to the overhanging portions of the rails that project forwardly of the vertical side posts, how the double-fold doors, in open as well as closed position, are recessed within the overhang of the rails, except for the parts of the doors that when open extend beyond the ends of the frame. To cause the doors to close smoothly, it is only necessary to press the handle 7*f* toward the centre of the frame and the door sections swing, stretch out and glide into completely closed position, neatly recessed within the overhanging forwardly projecting fronts of top and bottom rails.

From the foregoing description taken in connection with the accompanying drawings, it will be manifest that an improved fireplace front with double-fold doors is provided that will fulfil all the necessary requirements of such a device, but as many changes could be made in the above description and many apparently widely different embodiments of the invention may be constructed within the scope of the appended claims without departing from the spirit or scope thereof, it is intended that all matters contained in the said accompanying specification and drawings shall be interpreted as illustrative and not in a limitative or restrictive sense.

Having thus described the invention, what I claim as new is:

1. In a door structure the combination of a frame adapted to be applied to an opening including a bottom rail, a pair of spaced side members rising from opposite ends of said bottom rail, and a top rail extending across the top of said side members, said rails projecting forwardly beyond said side members to provide a recessed seat, and a pair of double-fold doors recessed in said

frame between said overhanging top and bottom rails and lying in front of said side members to hide and conceal the same in both closed and open positions, each double-fold door consisting of hingedly connected outer and inner sections, said top and bottom rails of said frame having a pair of vertically aligned perforations near each end in the forwardly projecting portion of said rails, and said outer section of each door having a vertically projecting pivot pin at both top and bottom near its outer edge seating in said perforations and on which said door is swingable through 180 degrees from fully closed to fully opened position, guide means for each of the inner sections of said double-fold doors comprising an elongated slot in the forwardly projecting portion of one of the frame rails running from near center toward the end of the rail which slot at its inner end and for the greater part of its length is in axial alignment with said pivot pin perforation but near its outer end veers forwards at approximately 30 degrees to terminate short of the said pivot pin perforation but forwardly thereof, and a guide stud rising from the top of the inner section of the door near the inner edge thereof passing through said slot and slidable therein when the door is opened and closed whereby the two hingedly connected sections of the door are caused on the opening of the door to first hinge gradually together into almost fully double-fold position extending forwardly from the frame into the room and then together to swing quickly through approximately 90 degrees into fully double-folded and open position, the pair of double-fold doors extending in opposite directions from the ends of said frame and in longitudinal alignment therewith, in planes paralleling the face of said frame structure and axially parallel to the elongated guide slot.

2. The combination as defined in claim 1, wherein the perforations in the frame rails for the pivot pins of the doors' outer sections are disposed directly in front of the frame side members and spaced forwardly thereof a distance exceeding that of the pivot pin from the outer edge of the outer section of the door and spaced in from the end of the rails a distance substantially equal to the distance the pivot pin is in from the edge of the door section, whereby when the door is closed the outer edges thereof lie substantially in line with the outer edges of the frame side members.

3. The combination as defined in claim 1, wherein the elongated slots for the guide studs on the inner sections of the doors that veer forwardly at their outer ends terminate directly in front of the frame side members and spaced forwardly of the said pivot pin perforations by a distance greater than the thickness of a section of said double-fold door and spaced laterally from registry with the inner edge of the frame side members by a distance substantially equal to the distance the guide stud is in from the inner edge of the inner section of the door, whereby when the door is open the inner edges thereof lie substantially in line with the inner edges of the frame side members.

References Cited in the file of this patent

UNITED STATES PATENTS

1,219,863	Phillips	Mar. 20, 1917
1,570,958	Frantz	Jan. 26, 1926
2,627,914	Helwig	Feb. 10, 1953
2,684,714	Corey	July 27, 1954