Jan. 5, 1943. V. R. CRAMER 2,307,570

FIREPLACE SCREEN

Filed Oct. 4, 1940

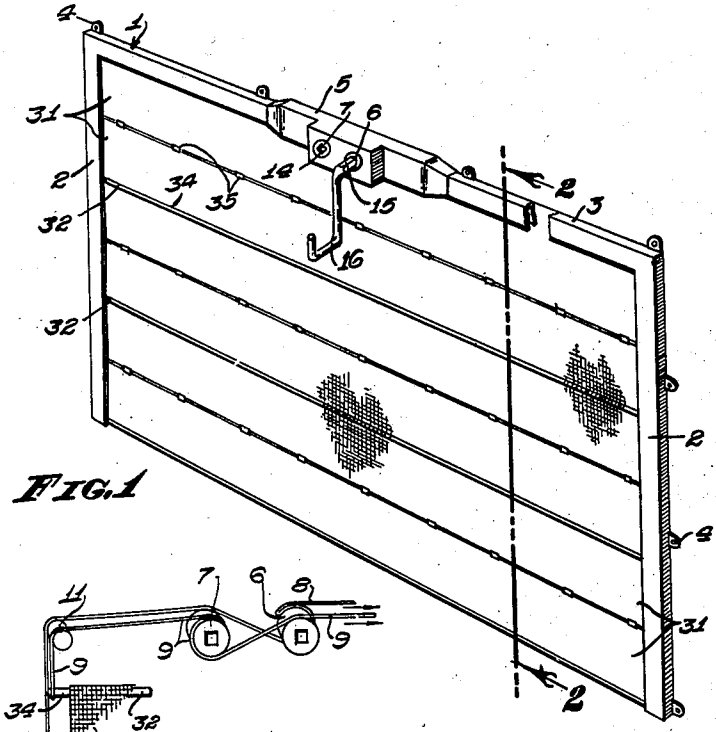


FIG. 1

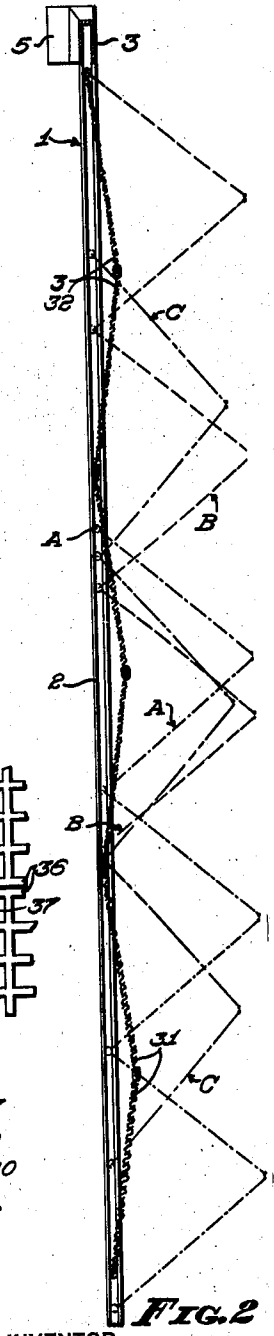


FIG. 2

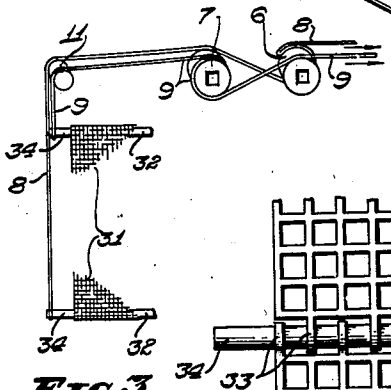


FIG. 3

FIG. 4

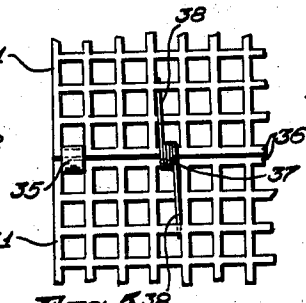


FIG. 5

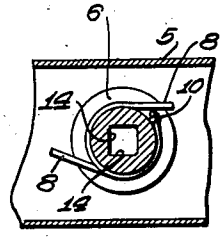


FIG. 7

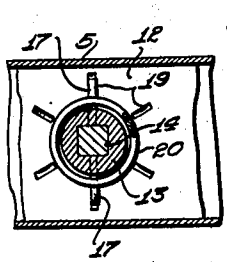


FIG. 8

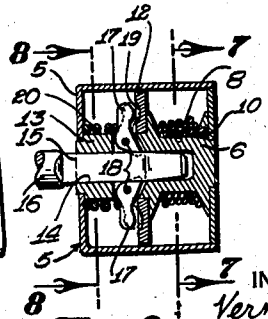


FIG. 6

INVENTOR
Vernon R. Cramer
BY Carlos G. Stratton
ATTORNEY

Patented Jan. 5, 1943 2,307,570

UNITED STATES PATENT OFFICE

2,307,570

FIREPLACE SCREEN

Vernon R. Cramer, Lomita, Calif.

Application October 4, 1940, Serial No. 359,670

9 Claims. (Cl. 160—193)

My invention relates to fireplace screens, and among the objects of my invention are:

First, to provide a fireplace screen which may be adjusted vertically to cover only the lower part of the fireplace opening, to cover only the upper part, to cover any intermediate part, or to cover the entire fireplace opening;

Second, to provide a fireplace screen which may be adjusted to the position most effective to prevent sparks from flying from the fireplace and at the same time provide the maximum unobstructed opening for discharge of heat and for viewing the fire;

Third, to provide a fireplace screen which tends to prevent smoke discharge into the room, particularly when the fire is being kindled, this being accomplished by raising the screen a few inches from its bottom position so that the main free air path is below the fire;

Fourth, to provide a fireplace screen which incorporates a novel apparatus for moving the screen, the apparatus being so arranged that no handling of the screen itself is required, and said apparatus being particularly easy to operate so that a woman or child may adjust the screen without difficulty;

Fifth, to provide a novel clutch mechanism which automatically assumes a locked position when an operating tool is removed, and which automatically unlocks when the operating tool is inserted.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawing merely shows and the following description merely describes one embodiment of the present invention, which is given by way of illustration or example only.

With the above and other objects in view as may appear hereinafter, reference is directed to the accompanying drawing, in which:

Figure 1 is a perspective view of my screen shown in its extended position.

Figure 2 is an enlarged longitudinal sectional view thereof taken through 2—2 of Figure 1 and showing by dotted and broken lines various adjusted positions of the screen.

Figure 3 is a schematic view illustrating the manner in which the control cables and reels are arranged.

Figure 4 is an enlarged fragmentary elevational view showing one of the primary hinge connections between adjacent screen sections and the guide rods.

Figure 5 is a similar enlarged fragmentary elevational view showing one of the secondary hinge connections between adjacent screens.

Figure 6 is a transverse sectional view of the screen operating reel mechanism with the operating handle shown in position.

Figure 7 is a sectional view thereof through 7—7 of Figure 6 showing the reel locking mechanism.

Figure 8 is a sectional view thereof through 8—8 of Figure 6 through the reel itself.

In the drawing, like reference characters designate similar parts in the several views.

The fire screen is provided with a frame 1 formed of channel-shaped vertical frame members 2 and an upper cross frame member 3, likewise channel-shaped. The open sides of the frame members are directed inwardly toward the area which they define. The frame members are adapted to be secured to the margins of a fireplace opening by suitable outwardly directed spaced lugs 4.

The cross frame member 3 which extends along the upper side of the fireplace opening is provided at its mid portion with a reel housing 5 which is, in effect an enlargement of the frame members. Within the reel housing 5 are mounted two reels 6 and 7. These are arranged in parallel horizontal axes at right angles to the cross frame member and receive cables 8 and 9 respectively. Each cable is attached to its reel at an intermediate portion of the cable by means of an anchor loop 10, as shown in Figure 6, and is wound so that its two ends extend in opposite directions as shown in Figure 3.

The two cables extend along the cross frame member 3 and pass around guides 11, then downwardly within the vertical frame members 2, where they attach to the screen, as will be described hereinafter.

A partition plate 12 is provided within the housing which extends across the forward sides of the reels. The reels are provided with forwardly directed hubs 13 which extend through and are journaled by the plate and continue through corresponding openings in the front side of the housing. The hubs and reels are provided with sockets 14 of square cross section which are adapted to receive a correspondingly shaped end 15 of a crank member 16.

Space is provided between the partition plate and forward side of the housing for a reel locking mechanism. Each locking mechanism includes a pair of dog levers 17 which fit in diametrically opposite slots in the walls of the hub

13 and are journaled by pins 18. The radially inner ends of the dogs extend into the socket 14, while their outer ends extend radially in front of the partition plate. A series of radiating grooves 19 are formed in the partition plate. A spring 20 surrounds the hub and urges the outer ends of the dogs into engagement with the grooves 19 to secure the hub and reel against rotation, as shown by dotted lines in Figure 6. When, however, the end 15 of the crank 16 is inserted, the radially inner ends of the dogs are engaged, as shown by solid lines in Figure 6, the dogs are held free of the grooves and the corresponding reel may be rotated. Thus removal of the crank automatically locks the reel in position, while insertion of the crank unlocks the reel.

The screen per se, comprises a plurality of screen sections 31 which may be constructed from woven screen material or stamped meshwork. Each screen section is in the form of a rectangular panel extending between the vertical frames. The screen sections are connected at alternate adjacent edges by guide bars 32, the vertical wires of the screens being bent around the bars to form hinge loops 33. The ends 34 of the guide bars 32 extend beyond the ends of the screen sections and into the vertical frame members.

The remaining sides of the screen sections are connected by bands 35 which are formed around adjacent horizontal wires 36 of the screen sections. In addition, coil springs 37 are looped around the wires 36 with their ends 38 anchored to the screen sections. The coil springs urge the screen sections into folding positions as indicated in Figure 2. If desired, the bands 35 may be eliminated and the springs only used.

The two ends of cable 8 are attached to the ends of the lowermost guide bar 32. Similarly, the two ends of cable 9 are attached to the uppermost guide bar. Thus rotation of reel 6 raises the lower side of the screen, or permits it to lower by gravity; while rotation of reel 7 raises or permits lowering of the upper side of the screen.

As shown in Figure 2, the screen may be lowered all or part way to the bottom of the fireplace opening, such a position being indicated by the broken lines A. Or, if desired, the screen may be raised from the bottom as indicated by broken lines B. Still further it may be placed in an intermediate position, as indicated by broken lines C.

While I have illustrated and described what I now regard as the preferred embodiment of my invention, the construction is, of course, subject to modifications without departing from the spirit and scope of my invention. I, therefore, do not wish to restrict myself to the particular form of construction illustrated and described, but desire to avail myself of all modifications which may fall within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A fireplace screen comprising: a plurality of vertically folding screen sections; hinge means joining said screen sections and including guide rods extending beyond the ends of said screen sections; retainers for connection to the margins of a fireplace and adapted to slidably receive said guide rods; and means in independently controlling connection with the upper and lower screen sections to facilitate folding said screen sections.

2. A fireplace screen comprising: a plurality of screen sections; hinges joining said screen sections, alternate hinges including guide rods extending beyond the ends of said screen sections and the other hinges including spring means tending to cause folding of said screen sections into zig-zag form; a mounting frame fitting the margins of a fireplace opening and including guide channels adapted to receive said guide rods; and folding means incorporated in said mounting frame and including means connected with the corners of the screen structure formed by said screen sections to facilitate folding either side thereof toward the other.

3. A fireplace screen comprising: a vertically folding screen structure having a plurality of horizontally hinged screen sections; vertical guide means at the opposite sides of said screen structure; and supporting means connected with the side portions of the upper and lower screen sections to facilitate folding either the upper or lower portions of said screen structure toward the other portion.

4. A screen for a fireplace opening comprising a frame, a plurality of screen sections hinged together within the frame, the top section having a pivotal axis and the portion containing such axis being bodily movable downward from the top of the frame, means at the ends of the sections mounted to move along the sides of the frame, and operative mechanism connected with said means of the upper section to facilitate movement vertically of the portion of the upper section containing the axis to fold and extend the screen sections.

5. A screen for a fireplace opening comprising a frame, a plurality of vertically folding screen sections hinged together, the end sections having pivotal axes and such axes being bodily movable vertically, means extending beyond the ends thereof and movable along the sides of the frame, and operative mechanism connected with said means to facilitate movement vertically and independently of each other, of the axes of the end sections for folding and extending the screen sections.

6. A screen for a fireplace opening comprising a frame having facing fireproof channel members defining an opening, a plurality of screen sections hinged together within the frame, the top section having a pivotal axis and the portion containing such axis being bodily movable downward from the top of the frame, means at the ends of the sections engaging the channels and movable therealong, and operative mechanism connected with said means of the upper section to move it vertically to facilitate folding and extending the screen sections.

7. A screen for a fireplace opening comprising a frame, a plurality of screen sections hinged together within the frame, the top section having a pivotal axis and the portion containing such axis being bodily movable downward from the top of the frame, spring means mounted on the sections and bodily movable therewith, tending to move the screen sections into folded positions, means at the ends of the sections mounted to move along the sides of the frame and operative mechanism connected with said means of the upper section to facilitate movement of the sections to folded and extended positions, said mechanism including positive brake means to maintain the screen sections in adjusted positions.

8. A screen for a fireplace opening, comprising a frame, a plurality of vertically folding screen sections, means at the ends of the sections mounted to move along the sides of the frame,

the sections being foldable in a downward direction by gravity, and operative mechanism connected with said means to move the upper and lower sections independently in an upward direction.

9. In combination with a vertically folding fireplace screen, a control and folding and unfolding means comprising: a pair of reel and cable means, one means connected with the lower side portions of said screen and the other with the upper side portions thereof; independent operating and locking mechanisms for said reel and cable means, whereby the upper and lower sides of said screen may be moved and secured independently, and fireproof means enclosing the cable means at the side of the screen.

VERNON R. CRAMER.