

July 6, 1965

C. F. WALKER
PORTABLE FIRE SHIELD

3,193,017

Filed Feb. 9, 1965

3 Sheets-Sheet 1

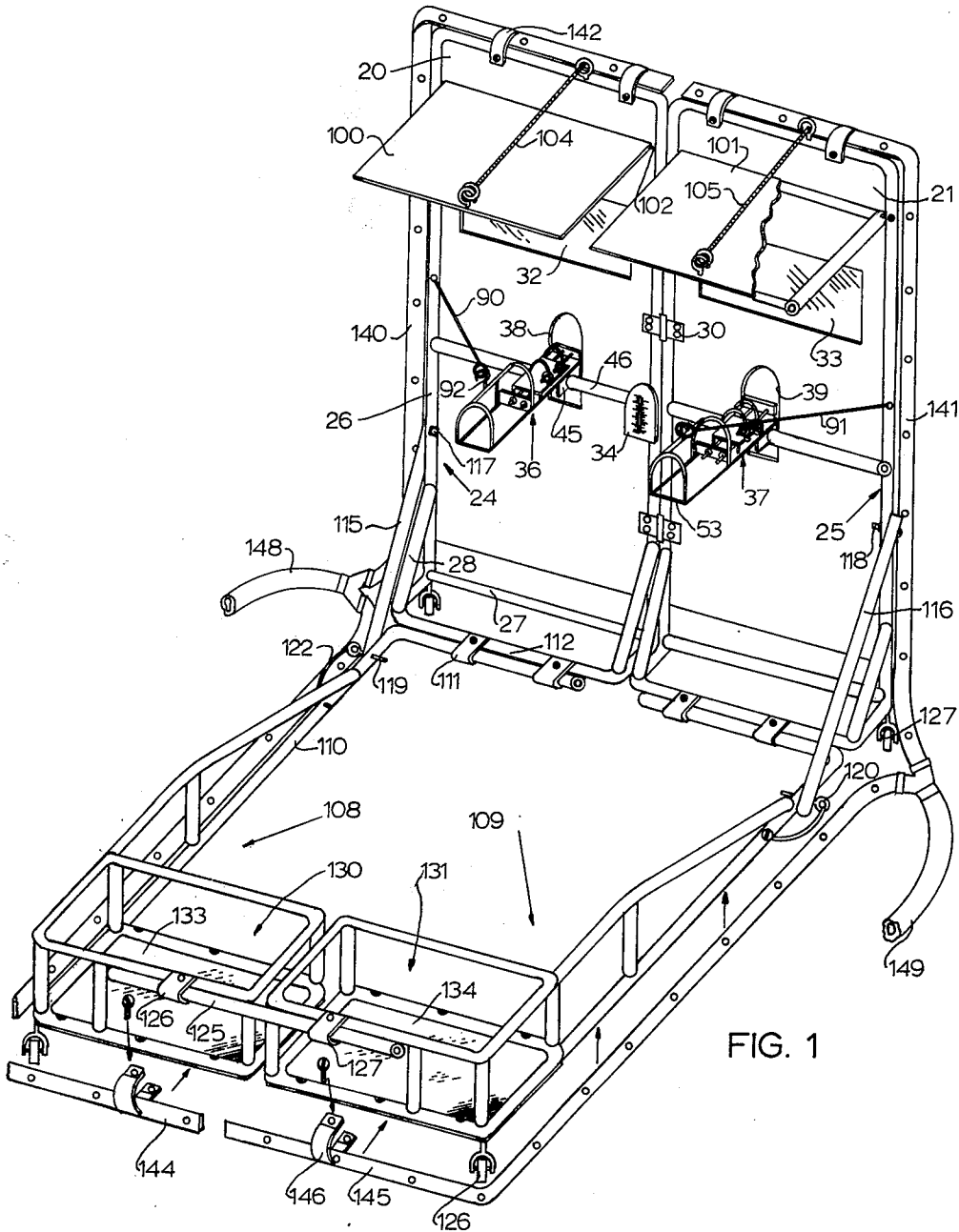


FIG. 1

INVENTOR
Charles F. Walker

BY

B. B. Olive
ATTORNEY

July 6, 1965

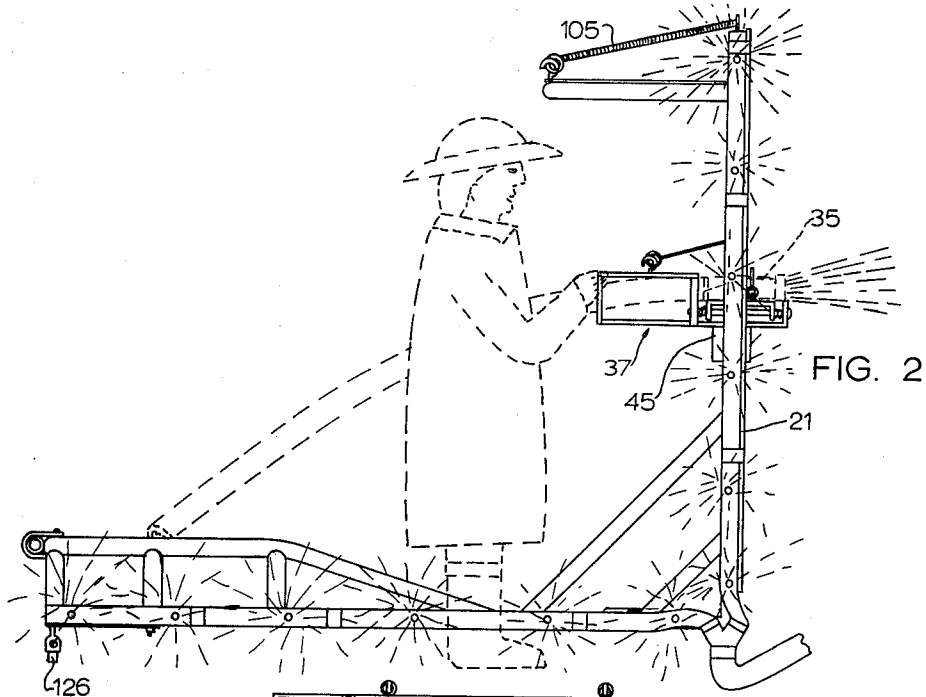
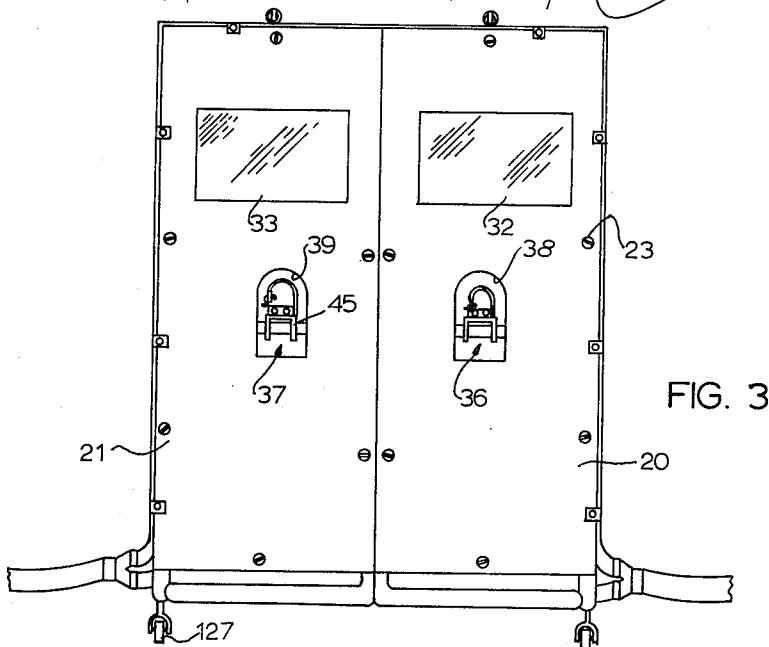
C. F. WALKER

3,193,017

PORTABLE FIRE SHIELD

Filed Feb. 9, 1965

3 Sheets-Sheet 2



INVENTOR.
Charles F. Walker

BY

B. B. Oliver
ATTORNEY

July 6, 1965

C. F. WALKER

3,193,017

PORTABLE FIRE SHIELD

Filed Feb. 9, 1965

3 Sheets-Sheet 3

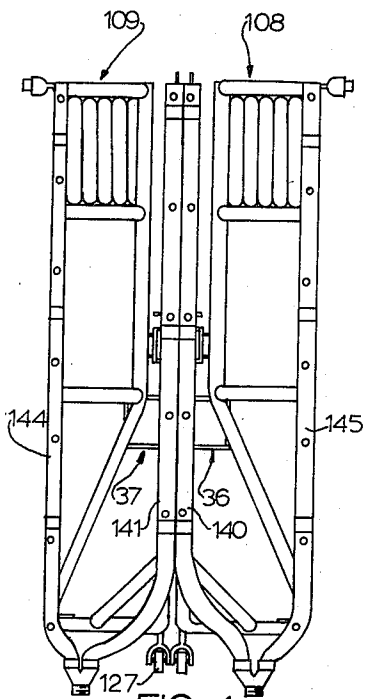


FIG. 4

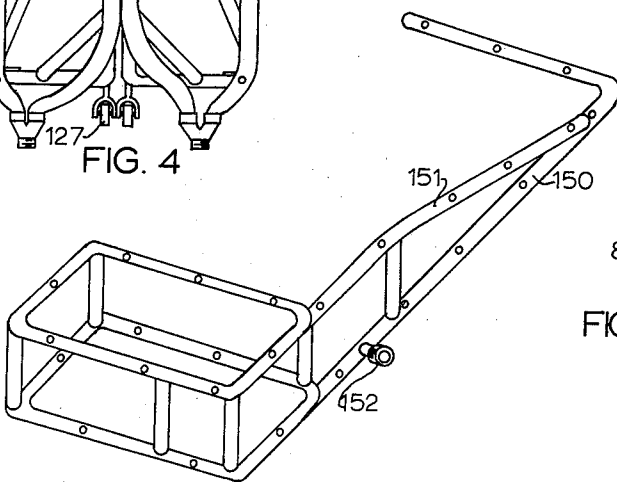


FIG. 9

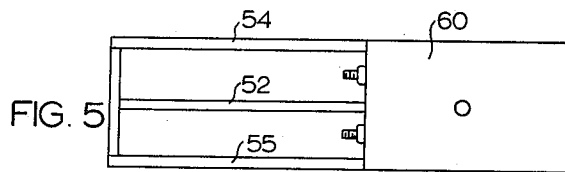


FIG. 5

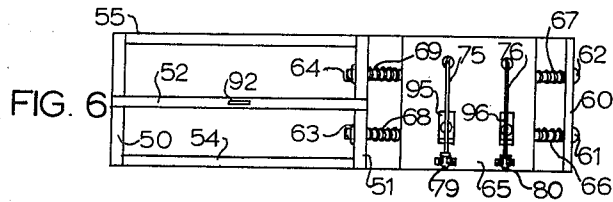


FIG. 6

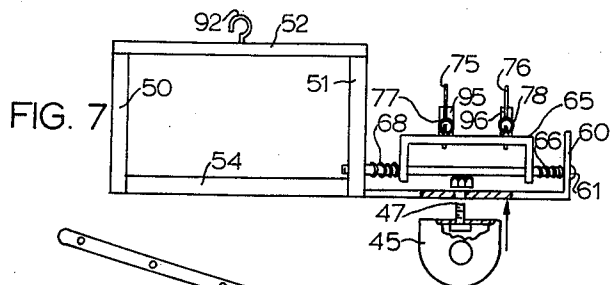


FIG. 7

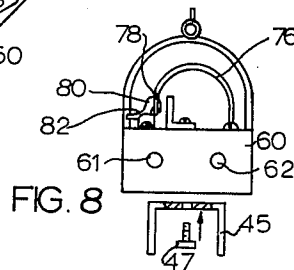


FIG. 8

INVENTOR
Charles F. Walker

BY

B. B. Olive
ATTORNEY

1

3,193,017

PORTABLE FIRE SHIELD

Charles F. Walker, 511 N. Spring St., Greensboro, N.C.

Filed Feb. 9, 1965, Ser. No. 431,376

5 Claims. (Cl. 169—1)

This invention relates to portable fire shields for the protection of firemen working in proximity to a fire. More especially, the invention relates to a portable fire shield and fire hose support which can be collapsed for storage and rapidly erected. The fire shield of the invention is especially useful with untrained personnel in extinguishing high temperature gas and oil fires as sometimes occur in factories, shops, garages and the like.

Various portable fire shields have been proposed for firemen in order to protect the firemen from the hazards of fighting fire at short range. Particularly where the fire is of the nature of a high temperature fire, such as in the case of oil and gas fires, it is desirable to reflect the heat from the firemen and to maintain the temperature in the immediate vicinity of the firemen as low as possible. To this end, it is sometimes the practice for one fireman to fight the fire while another fireman sprays the first fireman with water. Those firemen who are actually fighting the fire are also faced with the problem of having to hold and maneuver hose which is under high pressure. Where the fire is remote from the fire fighting equipment location there is also the obvious need to have shielding equipment which is light in weight and which can be easily erected and operated. For long-distance hauling, such shielding equipment should also lend itself to being folded into a compact form.

A general object of the present invention therefore is to provide an improved portable and foldable fire shield.

Another object is to provide a portable and collapsible fire shield which incorporates means to restrain the end of the fire hose and to absorb the backward force produced by the stream.

Another object is to provide a portable and collapsible fire shield which incorporates means to assist in cooling those firemen who are using the shield.

The foregoing and other objects of the invention will become apparent from the description which follows and from the drawings in which like parts are identified by like reference characters in each of the views, and in which:

FIGURE 1 is a perspective of a portable and collapsible fire shield incorporating the invention and in operating position.

FIGURE 2 is a side elevation view of the shield in operating position.

FIGURE 3 is a front elevation view of the shield in operating position.

FIGURE 4 is a side elevation view of the shield in a folded position looking towards the unhinged edges of the panels.

FIGURE 5 is a bottom view of a fire hose nozzle clamp and support structure employed in the invention.

FIGURE 6 is a top view of the nozzle structure.

FIGURE 7 is a side view of the nozzle structure with its mounting bracket.

FIGURE 8 is an end view of the nozzle structure and mounting bracket.

FIGURE 9 is a perspective of an alternate form of one of the outrigger frames employed in the invention.

With reference to the drawings, a pair of vertically disposed, rectangular, heat reflective, lightweight, thin, metal panels 20, 21 are secured by suitable fastening means such as the screws 23 to a corresponding pair of rectangular, lightweight frames 24, 25. For the panels, it is preferred to use relatively thin aluminum sheet having

2

a polished surface on at least the side facing the fire to be extinguished. Such material gives both the lightweight desired as well as a heat reflective surface. The material chosen for the frames should be in the nature of metal bars and should also be light in weight and for reasons later referred to should provide passageways suitable to carrying pressurized water. For these reasons a preferred frame construction is that employing hollow, cylindrical aluminum tubes such as represented by the vertical side members 26, bottom members 27 and brace members 28. Welding is preferred as a means of joining the various members constituting the frames.

As previously suggested it is desirable for the fire shield to be foldable to assist both in storage and transportation. Frames 24, 25 are therefore hingedly connected by means of hinges 30 such that panels 20, 21 and frames 24, 25 can be folded together as best illustrated in FIGURE 4. To assist in viewing the fire and maneuvering the shield and fire nozzles, the panels 20, 21 are each fitted with respective heat resistant, transparent viewing sections 32, 33 located in openings made in the respective panels. A thermometer 34 is secured to the frame 24 so that the fireman may know how close to approach the fire.

One of the special advantages of the shield of the present invention is to be found in the provision made for supporting and clamping the fire hose ends and nozzles generally represented in dotted lines at 35. For this purpose there is provided a pair of nozzle support and clamp structures 36, 37 which are mounted in additional openings 38, 39 provided in the respective panels 20, 21. Each respective structure mounts on an inverted U-shaped bracket 45 which in turn pivots in a vertical plane around a horizontal frame member as indicated at 46. Each bracket 45 mounts a threaded stud 47 around which the respective nozzle clamp and support structure can pivot for movement in a plane perpendicular to the axis of stud 47. Thus the fire nozzle can within reasonable limits be directed at any angle even after it is clamped in position.

The backward thrust of the fire hose nozzle, the tendency of this thrust to change sporadically due to fluctuations in pressure and the tendency of the end of the hose to twist is accommodated by the features of structure 36 and 37 next to be described. In particular, referring to FIGURES 1, 2, 5, 6, 7 and 8, the end of the hose immediately behind the nozzle is fed through a guide structure which prevents twisting and includes, for each structure, a pair of end brackets 50, 51, a top stiffening tube 52, a bottom end brace 53 (FIGURE 1), and a pair of bottom struts 54, 55. Support and clamping of the nozzle is provided by a U-shaped panel 60 mounting a pair of rods 61, 62 secured by nuts 63, 64. Rods 61, 62 in turn slidably mount an inverted U-shaped panel 65 which is centrally positioned by means of a pair of front compression springs 66, 67 and a pair of rear compression springs 68, 69. Thus, when the nozzle is clamped to panel 65, panel 65 is free to slide back and forth on rods 61 and 62 so as to give the nozzle limited axial movement both rearwardly and forwardly. Clamping of the nozzle to panel 65 is effected by a pair of flexible wire strands 75, 76 which are fixed to panel 65 at one end and which mount circular fastening rings 77, 78 at the opposite end. Spring loaded hooks 79, 80 when pressed down by means of tabs 82 (FIGURE 8) allow the rings 77, 78 to be freed for mounting the nozzle. Once the nozzle is positioned, strands 75, 76 are passed around the nozzle and rings 77, 78 are engaged in the hooks 79, 80 which by means of their spring loading retain the strands in position against the force of the nozzle. L-shaped brackets 95, 96 secured

to panel 65 assist such positioning. Since spring loaded hooks of this general nature are well known in the art and since many other similar clamping means will occur to those skilled in the art, the hooks 79, 80 are not otherwise described in detail. Further stability is secured by detachable ropes 90, 91 which connect to hooks 92.

Protective canopy members 100, 101 are pivotally mounted on the frames 24, 25 by means of the rods 102 which are mounted in the frames and about which the canopies are allowed to swing. The canopies 101, 102 are thus foldable against the respective panels 20, 21 and in use are held in place by detachable springs 104, 105 so as to protect the fireman from the ash, burning paper and similar light debris normally encountered at fires.

In order to provide stability for the panels 20, 21 there is provided a pair of outrigger frames 108, 109 which like frames 24, 25 are preferably made of a lightweight, metal material. For the same reasons mentioned previously with respect to the vertically disposed panel frames 24, 25, the outrigger frames 108, 109 are preferably made of aluminum tubing welded together in the form indicated in the drawings. Each outrigger frame includes a bent main side member 110 which pivotally mounts by means of brackets 111 to a respective vertical frame back base member such as indicated at 112. Each outrigger frame is independently swingable for storage and transportation purposes against the vertical panel frame to which it is pivoted. Thus, outrigger frame 108 swings up and against the back of panel frame 24 and outrigger frame 109 swings up and against the back of panel frame 25. To insure that the panel frames and outrigger frames are rigidly interlocked when in service there is provided a pair of pivoted bars 115, 116 which pivot around mounting screws 117, 118 located in the vertical panel frames and which are detachably secured to the outrigger frames by means of the removable pins 119, 120.

In use, the panels and panel frames are unfolded and aligned and the bars 115, 116 are unfolded and positioned so that pins 119, 120 can be passed through the ends of the bars 115, 116 and through the outrigger frame as shown in the drawings. Suitable cords 122 are secured to the outrigger frame and to the ends of the pins 119, 120 to prevent loss. Further stability is provided by a slidable bar or tube 125 which is passed through two brackets 126, 127 for the purpose of interlocking the rear portions of the outrigger frames. Wheels journaled to the frame such as indicated at 126, 127 assist in moving the shield once so interlocked.

While not necessary to carry out other features of the invention, it will be noted that the rear portion of each outrigger frame are formed as boxlike structure 130, 131 and include floor members 133, 134 whose purpose is to receive and store coiled supplies of fire hose. That is, by providing means to store the fire hose on the fire shield structure itself, the fire shield can be more readily placed in operation and can be made operative independent of a separate hose supply. Furthermore, the added weight of the hose has been found in practice to serve a useful purpose in helping to stabilize the shield preliminary to securing the interlocking bars 115, 116 and 125. The appearance of such stored hose is shown in FIGURE 4.

Previous mention has been made of the need to provide a near continuous spray of water on and around those firemen who are operating the shield in close proximity to a high temperature fire. Reference to the conventional practice of utilizing extra firemen for this purpose has also been made. With the foregoing in mind, attention is next directed to the cooling feature of the fire shield of the invention. In particular, the invention provides for a series of perforated conduits, tubes or other passageways to be located on the outer edges of the panel and outrigger frames for the purpose of receiving

a supply of pressurized water such that a spray of water issues from the openings in the conduits and thus provides the shield and those firemen using the shield with a continuous spray of cooling water. One embodiment of this feature is illustrated in FIGURE 1 in which sections of perforated, flexible, hose indicated at 140 and 141 are secured to panel frames 24 and 25 by means of clamps 142 and similar perforated hose sections 144, 145 are secured by means of clamps 146 to the outrigger frames 108, 109. For purposes of better clarifying other features of the invention, the holes sections 144, 145 are shown in a somewhat exploded type view in FIGURE 1 though it is to be understood that such sections are normally secured to the respective outrigger frames. Connection to a suitable source of pressurized water supply is made through the connecting pipes 148, 149. For example, it has been found that the typical perforated garden hose which is used for soaking lawns when connected to a source of water at conventional household or factory drinking water supply pressure furnishes a practical means for carrying out this aspect of the invention as illustrated in FIGURE 2.

While employment of supplementary perforated hose sections attached to the panel and outrigger frame members has some advantage from the viewpoint of maintenance and production cost, the invention also provides for use of the frame tube themselves as a conduit means. This is illustrated by way of example in FIGURE 9 which shows one of the outrigger frames separated from the remainder of the shield structure. According to this embodiment of the invention the tubular members such as members 150 and 151 are drilled with holes and a source of pressurized water is fed to these members by means of a suitable connecting hose 152. In use such water finds its way to the holes drilled in members 150 and 151 and emits as a spray depending on the exact angle and shape of the holes. One particular advantage of this latter system for providing the desired cooling spray of water is that the water which fills the frame tubes also lends a cooling effect to the tubes so filled and also adds weight to increase the stability of the shield against the force of the fire nozzles mounted in the shield. This extra weight however is of course not present when the shield is being moved since the spray system is normally empty except when in use. It will be understood that any or all of the panel and outrigger frame members can be supplied with such pressurized water and holes can be drilled as desired for particular patterns of water spray. While not shown, it should also be understood that flexible hose such as that illustrated in FIGURE 1 may be employed to connect outrigger frame tubes with panel frame tubes so as to maintain the foldable characteristic and draincocks or the like may be employed to empty the frame of water following use at a fire.

Having described the invention, what is claimed is:

1. A fire fighting shield and fire hose support comprising a pair of vertically disposed rectangular frames of lightweight metal bar construction and hingedly connected at adjacent vertical edges; a pair of lightweight heat reflective metal panels secured to and covering the front of said frames and being foldable together with said frames; a transparent fire resistant viewing section mounted in first openings provided in each of said panels; hose nozzle support and clamp means pivotally mounted in second openings provided in each of said panels below said first openings, said nozzle support and clamp means being adapted to rotate in said second openings around both vertical and horizontal axis and including spring means tending to hold said nozzle in one position while allowing limited axial movement both forwardly and rearwardly therefrom; a pair of outrigger frames of lightweight metal bar construction corresponding to said vertical frame construction, each said outrigger frame being pivotally and separately connected to the back of

5

6

one of said vertical frames at the base thereof and being foldable against the back thereof; and detachable means for interlocking said vertical and outrigger frames such that said panels may be aligned in a vertical plane and said outrigger frames may be horizontally disposed for fire fighting purposes.

2. A fire fighting shield and fire hose support as claimed in claim 1 including supplementary perforated hose means secured to at least one of said frames and means for connecting a pressurized water supply to said hose means whereby to provide a protective water spray on the user of said shield.

3. A fire fighting shield and fire hose support as claimed in claim 1 wherein at least a portion of one of said vertical and outrigger frames comprises hollow tubing and includes openings through the wall thereof and said portion includes means for connecting a pressurized water supply thereto whereby to provide a protective water spray on the user of said shield.

4. A fire fighting shield and fire hose support comprising a pair of vertically disposed lightweight heat reflective metal panels hingedly connected at adjacent vertical edges and foldable together when not in use; frame means hingedly connected to each of said panels and foldable against one side thereof for selectively locking said panels in aligned vertical relation; a transparent fire resistant viewing section mounted in first openings provided

in each of said panels; hose nozzle support and clamp means pivotally mounted in second openings provided in each of said panels below said first openings, said nozzle support and clamp means being adapted to rotate in said second openings around both vertical and horizontal axis and including spring means tending to hold said nozzle in one position while allowing limited axial movement both forwardly and rearwardly therefrom; perforated conduit means secured to at least one of said panels and means for connecting a pressurized water supply to said conduit means whereby to provide a protective water supply on the user of said shield.

5. A fire fighting shield and fire hose support as claimed in claim 4 wherein said frame means comprises perforated hollow light weight metal tubing and said tubing serves as said conduit means.

References Cited by the Examiner

UNITED STATES PATENTS

1,451,006	4/23	Blaw.	
1,667,342	4/28	Blaw	248—82 X
2,818,927	1/58	Broussard	169—1

FOREIGN PATENTS

336,785	10/30	Great Britain.
---------	-------	----------------

EVERETT W. KIRBY, *Primary Examiner*.