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3,475,990

PROTECTIVE SHIELD DEVICES FOR TOOLS AND THE LIKE

Filed Jan. 16, 1968

2 Sheets-Sheet 1

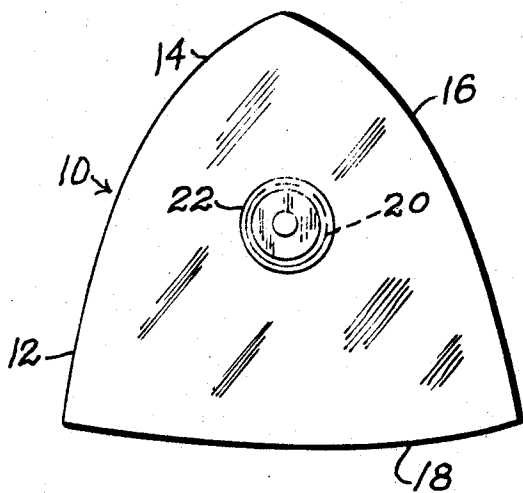


Fig. 1

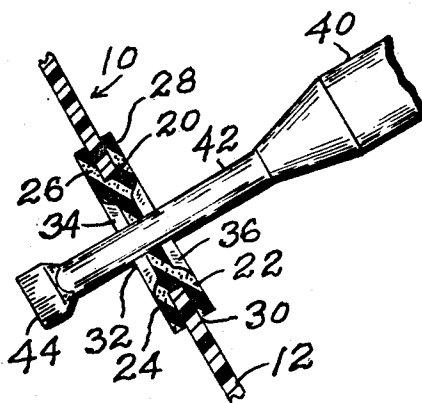


Fig. 2

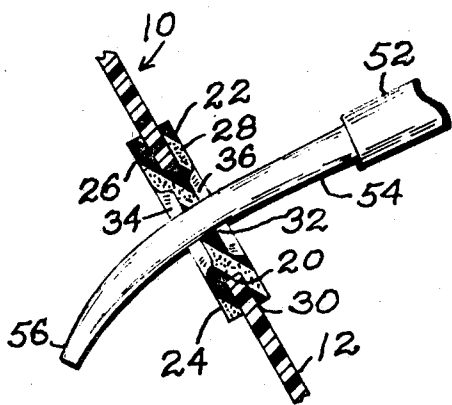


Fig. 4

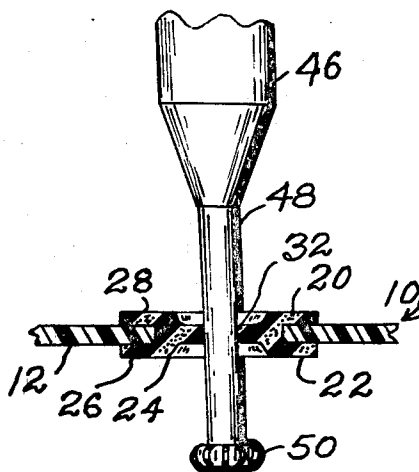


Fig. 3

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Fig. 7

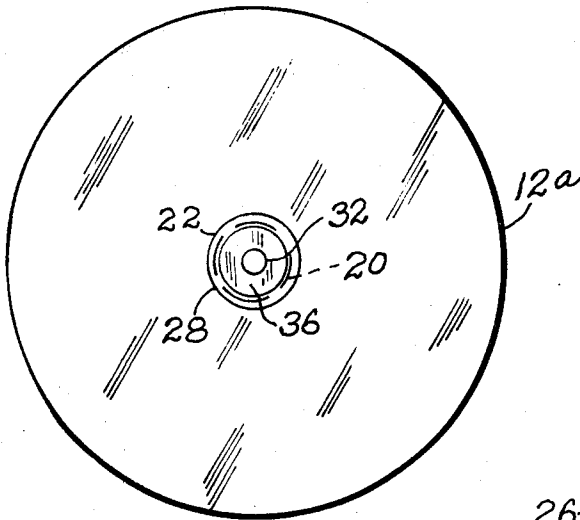
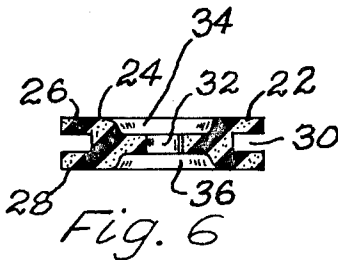
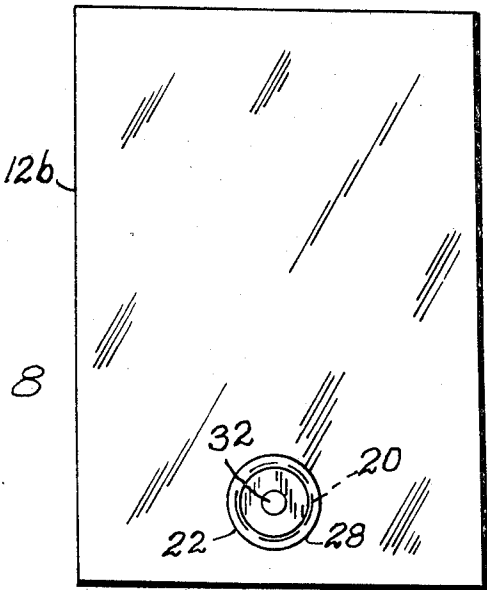
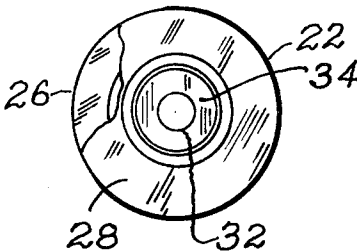


Fig. 5



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2 Claims

ABSTRACT OF THE DISCLOSURE

A protective shield device for mounting on tools of various kinds to afford protection to the operator from cuttings, debris, chips and the like resulting from tool operation. It includes a transparent major shield body portion through which the operator can see the tool head in work, and has an opening with a socket bushing seated therein of resilient material, the socket bushing having an opening formed therein with inwardly projecting inner flange through which the shank of the tool is inserted for a tight frictional grip. Thus the tool supports the shield device and there is no interference with the vision of the operator through the transparent shield body portion. Various shapes of shield body portion permit adaptation to blocking differing types or patterns of debris dispersion from the tool, and also to interfit with constricted or odd shaped areas where the tool is to work.

This invention relates to improvements in protective shields and like for tools and the like.

An object of the invention is to provide a novel and improved protective shielding device for use with tools of various types, in order to obstruct the flight of any fragments, particles, or other portions of the object being worked upon by the tool and dislodged or cut therefrom, so as to avoid their damage or injury to the person of the operator of the tool.

Another object of the invention is to provide a novel and improved device for use as a tool shield, which is so constructed as to be readily attached to a tool without use of any tools, and which allows the operator of the tool to continue its use on metals, plastics, stones, masonry, or other materials, which would necessarily cause cutting off, or dislodgement of fragments, or other portions of the material being worked upon, the tool shield being generally in sheet form and transparent so the operator can see therethrough with ease, but suitably dimensioned and shaped as to stand in the path of any such flying or moving fragments or particles being dislodged, and hence preventing their damaging impingement upon the face, eyes, hands, or other portions of the body of the operator.

A further object of the invention is to provide a novel and improved device for use as a tool shield, in which there is a main shield body in sheet form, preferably of transparent lightweight material, and provided with a hub portion of soft resilient shock absorbent material inserted into an opening in the main shield body and securely seated therein, the hub portion having an opening for receiving and snugly engaging the shank or other similar portion of the tool, so that the shield is carried on the tool and stands in the path of flying fragments or other material cut off from or dislodged from the material being worked upon, and thus protects the operator from injury.

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Still another object of the invention is to provide a novel and improved hub or core member formed of soft resilient material which is insertable in an opening in a tool shield which is used for protecting a tool operator from fragments case loose from the material being worked upon, the hub member being provided with an opening or socket for engaging the shank of a tool.

Still a further object of the invention is to provide a novel and improved tool shield device which includes a major body portion formed of transparent sheet material which is shaped to stand in the path of flying fragments resulting from the operation of the tool, and shaped for fitting into restricted or odd-shaped corners or other spaces for operator protection, the tool shield device being simple in construction, formed of a minimum number of parts, and which is capable of manufacture by mass production methods at low cost, and for use with various types of tools, such as chisels, drills, chippers, liquid sprayers, and other tools, especially those which are operated by power means.

Those and other objects and advantages of the invention will become apparent from the following description of a preferred embodiment thereof, as illustrated in the accompanying drawings, formed a part hereof, and in which:

FIGURE 1 is a front elevational view of a shield according to the invention.

FIGURE 2 is a fragmentary sectional elevational view taken through the central hub portion of FIGURE 1, and showing the shank of a tool such as a power chisel inserted through the central hub portion.

FIGURE 3 is a fragmentary sectional elevational view somewhat similar to that of FIGURE 2 and showing the shank of a tool such as a rotary drill press inserted through the central hub portion.

FIGURE 4 is a fragmentary sectional elevational view somewhat similar to that of FIGURE 2, and showing the shank of the nozzle portion of a blow-gun or the like inserted through the central hub portion.

FIGURE 5 is a plan view showing the insert hub socket portion of FIGURES 1 to 4, apart from the main shield body, the view being partly broken out.

FIGURE 6 is a transverse sectional elevational view taken through the insert hub socket portion of FIGURE 5.

FIGURE 7 is a face view showing a modified form of the composite shield body and hub portion according to the invention.

FIGURE 8 is a face view showing another modified form of composite shield body and hub portion according to the invention.

In connection with the use of tools, particularly those known as power driven tools, such as drills, chisels, jackhammers, and others, various problems have arisen in affording the operator protection from the fragments, particles, and cuttings broken or cut off from the material being worked upon with the tool. Many types of very serious injuries have arisen to the operator or those standing close to him, due to such flying fragments, and due to the somewhat erratic and unpredictable paths which may be taken by the material dislodged or cut away by the tool, and the nature of the material being worked upon. The present invention provides means for interposing between the operator and the working end of the tool, a protective shield which effectively blocks the path to the body of the operator, and hence affords him maximum protection. At the same time, the invention by using transparent

main shield body, allows the operator to get a good and continuous view of the working end of the tool which is essential for good work.

In order to understand clearly the nature of the invention, and the best means for carrying it out, reference may be had to the drawings, in which like numerals denote similar parts throughout the several views.

As shown, there is a shield device generally indicated at 10 in FIGURES 1, 2, 3 and 4, and the shield device including a major shield body portion 12, formed of relatively thin material of sufficient strength to block passage of particles, cuttings, or other debris from a tool. It has been found and is preferred to make the shield of plastic sheet material which is transparent, so that the operator can look therethrough and hence obtain a continuous view of the working end of the tool and of the material being worked upon. In the form shown in FIGURE 1, the major body portion 12 may be shaped as shown, roughly triangular in contour, with its edges at 14, 16 and 18 rounded as shown in FIGURE 1, or these edges may also be formed in straight lines rather than curved, to suit the shape of corners or other odd shaped spaces into which the tool is to be operated.

As shown further in FIGURES 1 to 4, the main shield body portion 12 has an opening 20 formed therein for the reception of a hub or socket bushing member 22, which is shown apart from the shield members or bodies in FIGURES 5 and 6 in detail. The hub or socket bushing member 22 is preferably formed of soft resilient material, such as rubber, soft plastics or the like, and has a socket bushing body 24, with annular flanges 26 and 28, of greater diameter than the main body portion thereof, so as to form an annular outwardly open groove 30 for the reception of the edge marginal portions of the opening 20, when the bushing member 22 is inserted therein as shown in the views.

As seen best in FIGURES 5 and 6, there is a central or axial opening 32 formed through the socket bushing member 22 to allow the shank or nozzle portion of the tool to be extended therethrough, and this opening 32 is enlarged at the top and bottom as at 34 and 36, to allow for easy entry of the portion of the tool being inserted therethrough. As the entire socket bushing member or grommet member 22 is made of a single piece of rubber or rubber like material which is resilient and readily deformable, the opening yields sufficiently to allow insertion of the tool shank or the like, and to maintain its grip thereon.

Thus, in FIGURE 2, there is shown a hand or power chisel 40, with its shank 42 inserted through the socket bushing opening, and with its working chisel end portion 44 effectively shielded by the shield body 12 and its bushing, so that any chips or debris from the chisel end can not hit the operator, while at the same time, he can see perfectly through the transparent shield body 12.

In FIGURE 3 there is shown a drill press 46, the shank 48 of which is inserted through the rubber bushing 22, with its working end carrying a cutter 50, drill or other tool, with similar visibility and protection for the operator from chips and debris.

FIGURE 4 shows how a blow-gun 52 has its nozzle shank 54 inserted through the opening in the rubber bushing 22, with its nozzle outlet end at 56, the nozzle being used for various purposes, such as sand blasting, shot blasting, air blasting and cleaning, liquid spraying, and the like uses. The shield provides good protection for the operator with good visibility of the work.

FIGURE 7 shows another modified form of the protective shield device, in which the rubber socket bushing member 22 is inserted and seated in an opening formed through the shield body portion 12a, which is similar in construction to that of shield body member 12 of FIGURE 1, except that it is rounded or circular in form. This is adapted especially where the tool being used tends to give off its chips, or other debris in a somewhat circular

dispersion pattern, and the diameter of the shield body portion 12a can be made as large as needed, it being seen also that the operator may have shield bodies of several diameters as needed.

FIGURE 8 shows another modified form of the protective shield device, in which the rubber socket bushing member 22 is inserted and seated in an opening formed through the shield body portion 12b, which is similar in construction to that of shield bodies 12 and 12a of FIGURES 1 and 7, but somewhat rectangular or oblong in contour as shown. The location of the socket bushing member 22 is seen for example near the bottom edge of the shield body, which is of utility in fixed tools, such as in shapers, lathes, milling machines, grinders and the like, although its location can be varied as needed for the work. The large shield protects the operator while affording tool visibility.

It is thus seen that in all forms of the shield devices shown in FIGURES 1, 7 and 8, the location of the rubber socket bushing member can be varied to suit the situation, and thus in the FIGURE 1 type, the socket bushing 22 may be at the geometric center, equidistant from the three corners of the shield body, or slightly displaced therefrom, or even near one of the corners, where the drilling or grinding takes place near an interior corner intersection of walls.

Although a preferred embodiment of the invention has been described in detail, it is to be understood that various changes may be made in size, shape, materials and arrangement without departing from the spirit and scope of the invention as claimed.

I claim:

1. A protective shield device for use with tools and the like, comprising major tool shield body means constructed and arranged for protecting an operator of a tool, said major tool shield body means comprising a shield body portion formed of substantially transparent sheet material, hub socket bushing means carried by said major tool shield body means and constructed and arranged for releasable engagement therewith, said major tool shield body means having an opening formed therein for engagement with said hub socket bushing means, said hub socket bushing means comprising a hub socket bushing body formed of resilient material extensible through said opening in said shield body portion, and mutually spaced first and second flanges on said hub socket bushing body and of greater diameter than that of said opening in said shield body portion to overlies its marginal portions for secure seating of said bushing means therein, and tool engaging means carried by said hub socket bushing means and constructed and arranged for releasable engagement with a tool, said tool engaging means comprising an inwardly projecting annular third flange carried by said hub socket bushing means and having a second opening formed therethrough for reception of a shank and other portion of a tool inserted therethrough, for tight releasable frictional engagement with said tool portion for supporting said protective shield body portion being sufficiently extensive to its edges to block passage therepast of any debris from the tool to the person of the operator.

2. A protective shield device according to claim 1, and wherein said inwardly projecting annular third flange carried by said hub socket bushing means is substantially thinner than the hub socket bushing body and deformable for ready and easy insertion of the tool shank and the like therethrough and the withdrawal thereof when not in use, and wherein said shield body portion is formed with its outer edges conformable to overlies the dispersion pattern of the chips, debris and the like from the operation of the tool so as to intercept and deflect the same from contact with the operator, and also conformable to the angular, rounded or other shape of area into which the tool is to work, so that debris interception is optimum, and wherein said opening for reception of said bushing

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body is located, constructed and arranged at any selected location within the edges of said shield body portion for such debris interception and interfitting with said areas for work.

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