

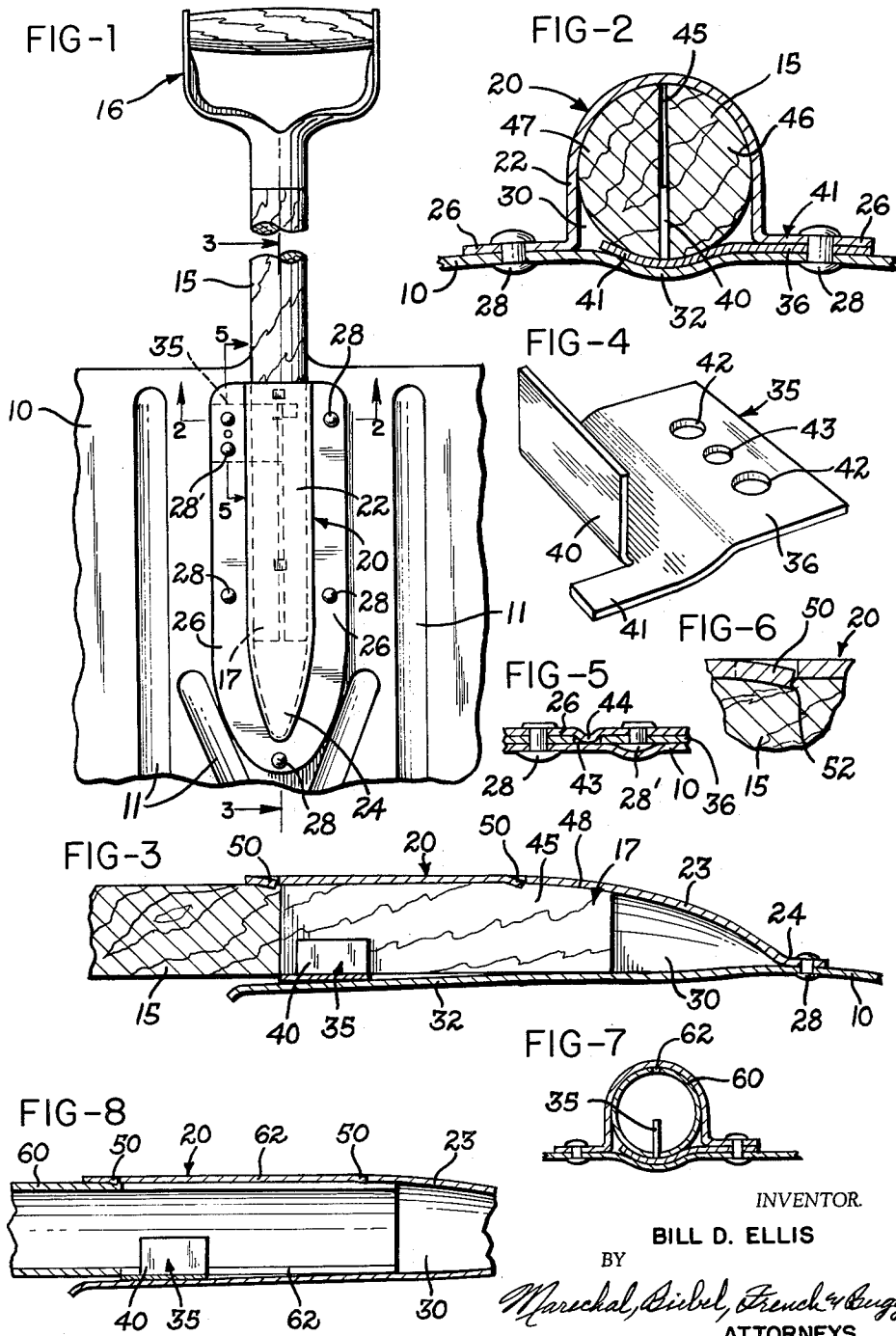
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SHOVELS

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1

3,198,565  
SHOVELS

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This application relates to shovels and more particularly to a handle and socket construction for snow shovels and the like.

The handles and the blades of snow shovels and similar tools are customarily shipped from the factory unassembled in order to provide a more efficient package for shipment. When the shovel is to be placed on display for sale or when it is to be used by the consumer, the handle is then inserted into the blade socket.

It is important to the satisfactory use of the shovel that the handle and socket arrangement be such that the handle may be readily and easily inserted and retained in the blade socket without the necessity for using any hand tools. Once inserted, it is important that the blade socket provide a grip or fit with the handle which is free of play in which the handle may not easily be removed or tend to loosen with use. It is also important that the handle grip be aligned properly with the blade at the time of insertion, otherwise the socket connection with the handle must be loosened by force in order to rotate the handle to align the grip.

An important object of this invention is the provision of a socket and handle arrangement which assures the proper alignment of the handle grip in relation to the blade at the time of insertion. For this purpose, the socket is provided with a spline member for reception within a suitable kerf or other cut formed in the handle.

Another object of this invention is the provision of a handle and socket arrangement for snow shovels and the like wherein the insertion of the handle causes a displacement of parts of the handle resulting in a gripping action of the handle parts with the socket, thereby eliminating free play and distributing the load over a substantial portion of the end of the handle.

A further object of this invention is the provision of a socket assembly for a sheet metal shovel blade having integral lock tabs positioned for interferring engagement with the handle in combination with a spline resisting the withdrawal of the handle and providing an arrangement by which the handle and socket may be retightened in case of shrinkage of a wood handle, or other such loosening due to wear of a wood or metal handle.

A still further object of this invention is the provision of a blade and socket arrangement for snow shovels and the like which may be interchangeably used with either metal or wood handles.

These and other objects and advantages of the invention will be apparent from the following description, the accompanying drawings and the appended claims.

In the drawings—

FIG. 1 is a partially broken away rear elevational view of a snow shovel constructed according to this invention;

FIG. 2 is a transverse section through the assembled handle and socket taken generally along the line 2—2 of FIG. 1;

FIG. 3 is a longitudinal section through the blade and socket taken generally along the line 3—3 of FIG. 1;

FIG. 4 is a perspective view of the spline member;

FIG. 5 is a fragmentary section showing the attachments of the spline member to the socket taken generally along the line 5—5 of FIG. 1;

FIG. 6 is an enlarged fragmentary section of one of the lock tabs;

2

FIG. 7 is a transverse section similar to FIG. 2, showing the use of the invention with a metal tube type handle; and

FIG. 8 is a longitudinal section similar to FIG. 3, showing the assembled tube handle and socket.

Referring to the figures of the drawings, which illustrate a preferred embodiment of the invention, a snow shovel constructed according to this invention is shown in FIG. 1 as having a sheet metal blade 10 which may be ribbed or corrugated as indicated at 11 for providing the blade with the necessary strength to resist bending. A wood shovel handle 15 is shown as including a grip 16 and a lower connecting end 17.

The blade 10 is provided with a handle socket indicated generally at 20 in FIG. 1 defined by a generally channel-shaped sheet metal retainer 22 and the adjacent surface of the back of the blade 10. The major portion of the retainer 22 is generally U-shaped or channel-shaped in section, as shown in FIG. 2, with the channel or cup portion 23 thereof tapering to a closed end 24, as indicated in FIGS. 1 and 3.

The retainer 22 therefore has an open side thereof facing the back of the blade 10, and is further provided with an outwardly turned rim or mounting flange 26 extending continuously along each side of the channel-shaped portion 23 and the end 24. The flange 26 provides the means by which the retainer 22 is secured to the back of blade 10 by rivets 28, defining a socket opening 30 with the blade 10 for receiving the end 17 of the handle 15. The position of the retainer 22 on the blade 10 is such that the socket opening 30 is adjacent the upper edge of the blade back. Preferably, the blade 10 is formed with a reverse curve 32 at the socket opening generally conforming with the curvature of the handle for receiving a peripheral part of the handle. The curve 32 also serves to reduce the total height of the retainer 22 above the blade 10 and provides additional strength to the blade.

Means in the socket 20 for aligning the grip 16 includes a spline member 35 (FIG. 4). The spline member 35 is a sheet metal stamping with a body portion 36 which may be curved to conform with the adjacent surface of the blade 10 immediately within the socket opening 30. The spline member 35 is formed with an inwardly turned tab or spline portion 40 forming a major portion of the length of the member 35 and extending partially into the socket opening, and forming a transverse finger 41. The length of the member 35 at the spline portion 40 forms a minor part of the total depth of the socket 20. The finger 41 with the body portion 36 provides symmetrical support for the handle 15 when it is inserted within the socket 20.

The body portion 36 is formed with rivet openings 42 and a locating opening 43, and is mounted to the socket flange 26 by a short rivet 28' which extends through one of the openings 42. A locating dimple 44 on the flange 26 is received within the opening 43 and maintains the alignment of the spline member 35 until the retainer 22 is assembled onto the blade 10.

The end 17 of the handle 15 is provided with a suitable slot or kerf 45 which may extend either partially or wholly through the handle, and is formed to a depth substantially equal to the length of the end 17 within the socket 20. Although the kerf 45 may extend only partially through the handle, it preferably extends diametrically through the handle 15 to form bifurcated handle portions 46 and 47, as shown in FIG. 2. The outer bottom end of the handle portions may be slightly beveled as indicated at 48 in FIG. 3 for the purpose of assembling within the retainer 22.

The width of the kerf 45 is proportioned to form a relatively close fit on the spline portion 36. Also, the dimensions of the socket formed by the retainer 22 are

3  
slightly less than those of the handle to effect a squeezing or forcing together of the bifurcated handle portions 46 and 47 when the end 17 is forced home into the socket opening 30, so that the portions 46 and 47 are caused to grip the spline portion 36.

The socket 20 further includes means in the retainer 22 forming integral lock tabs 50 (FIG. 6) on a side of the socket generally opposite from the spline member 32. Preferably, at least two of the lock tabs 50 are provided, although a fewer or greater number of these tabs may be employed. The tabs are preferably punched out of the material of the retainer 22 and are inclined forwardly and inwardly into interfering engagement with the handle 15. Upon the insertion of the handle, the tabs 50 are deflected outwardly permitting the inward movement of the handle with a minimum of effort. Since the tabs 50 are punched from the retainer, they present relatively sharp forward lower edges 52 which tend to dig into the wood and resist the withdrawal of the handle from the socket. The tabs 50 also provide the means by which the handle may be tightened in case of loosening due to wear or due to shrinkage of the wood. In such instances, it is only necessary to strike the tabs 50 with a center punch and hammer to re-set them into the wood.

The socket and blade arrangement of this invention is equally applicable to the metal tubular handle 60, as shown in FIGS. 7 and 8, without the necessity of any modification. The tubular steel handle 60 is preferably formed with a slot 62 which may extend either through the bottom wall or diametrically through both walls, as shown. Again, the socket retainer 22 is dimensioned with respect to the handle and to deflect and force the handle portions together to effect a gripping action on the spline member 35 when the handle is inserted. The sharp edges 52 of lock tabs effectively resist the withdrawal of the handle 60 from the socket 20 once it has been inserted, while the spline member 35 and cut 62 assure the proper alignment of the grip 16 with respect to the blade 10.

It is therefore seen that this invention provides a blade and socket arrangement which is easy to assemble and which assures the proper alignment of the parts during assembly. Once assembly has been made, the handle is securely fastened to the blade by the combined gripping action of the handle parts on the spline member and the gripping and retaining action of the lock tabs 50.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention as defined in the following claims.

What is claimed is:

1. A shovel comprising a handle, a metal blade, an elongated retainer of generally channel-shaped section secured adjacent the back surface of the shovel blade with the open side thereof facing said blade defining a socket opening with said blade for receiving an end of said handle therein between said retainer and said blade, a separate spline member having a body portion secured

4  
directly to said shovel blade and terminating in an inwardly turned spline extending partially transversely into said socket opening, the axial length of said member at said spline forming a minor part of the total depth of said opening defined by said retainer and blade, means in said handle defining a kerf at one end thereof dividing said end into a pair of bifurcated portions positioned and proportioned to receive said spline therebetween upon the insertion thereof into said socket opening, the dimensions of said socket opening being slightly less than the outside dimensions of said bifurcated handle end to effect a squeezing together of said portions into gripping engagement with said spline when said handle end is inserted in said socket opening for eliminating play and distributing the load over a substantial portion of said handle end.

2. In a snow shovel including a handle and a sheet metal blade with a socket for receiving an end of said handle, the improvement in socket and handle construction comprising a sheet metal retainer of generally channel-shaped section secured to the back surface of the shovel blade and defining with said blade a handle socket of a depth sufficient to support said blade on an end of said handle free of additional supporting members, means in said socket defining a spline extending generally transversely of said socket adjacent the open end thereof, the axial length of said spline in said socket forming a minor part of the total available depth of said socket as occupied by said handle, means in said handle at one end thereof defining a kerf dividing said handle end into a pair of bifurcated portions which are proportioned to be received within said socket with said spline therebetween, and the dimensions of said retainer and said shovel blade defining a handle-receiving socket opening which is somewhat less than the outside dimensions of said handle at said bifurcated portions effecting a squeezing together of said bifurcated handle portions at said kerf into gripping engagement with said spline.

3. The snow shovel of claim 2 further comprising at least one integral lock tab formed in said retainer and inclined inwardly into interfering engagement with said handle for resisting the withdrawal of said handle from said socket.

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