April 6, 1965 A. W. COWAN 3,177,026

SNOW SHOVELS

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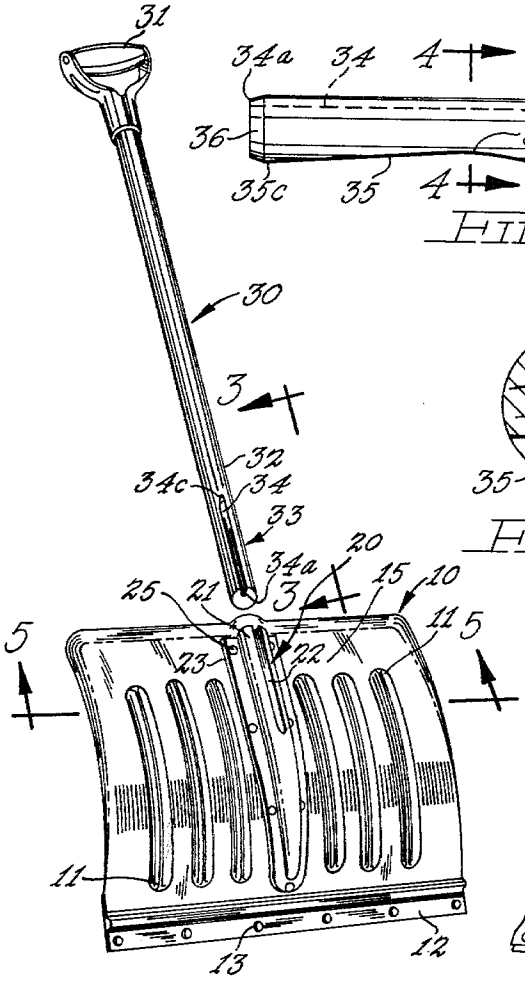


FIG. 1

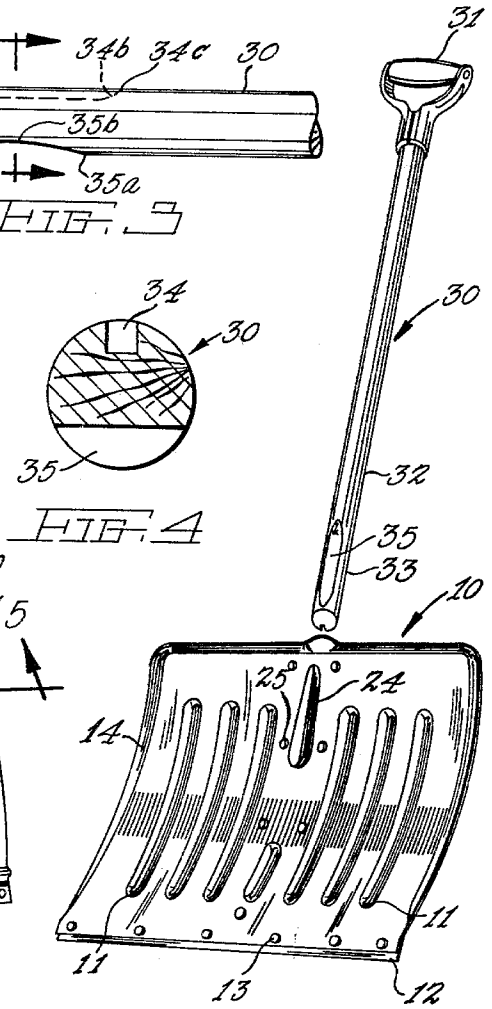


FIG. 2

FIG. 3

FIG. 4

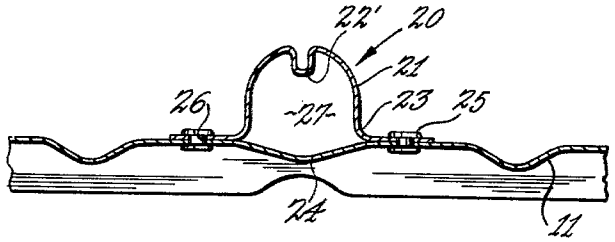


FIG. 5

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SNOW SHOVELS

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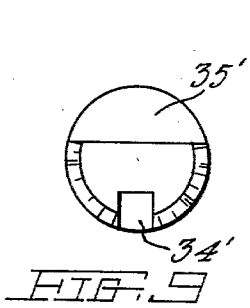


FIG. 9

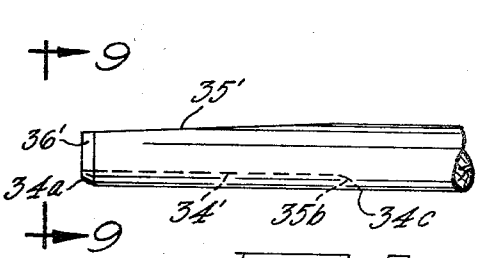


FIG. 8

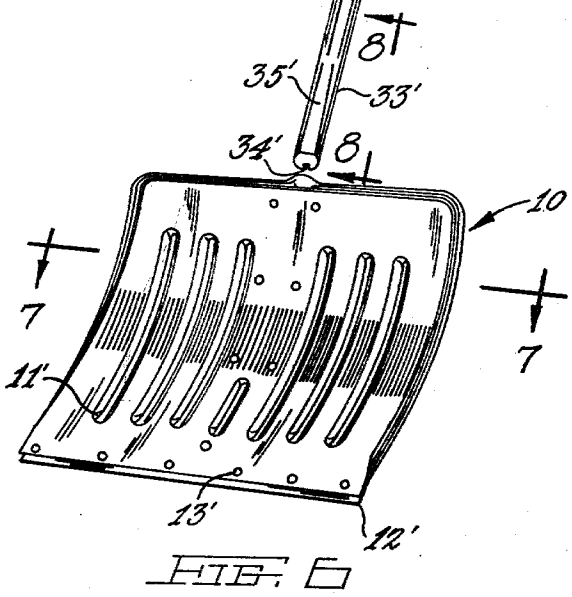


FIG. 6

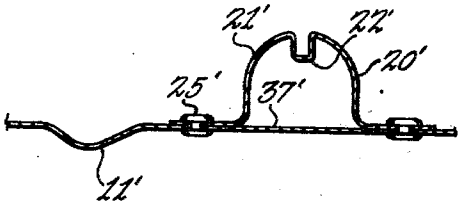


FIG. 7

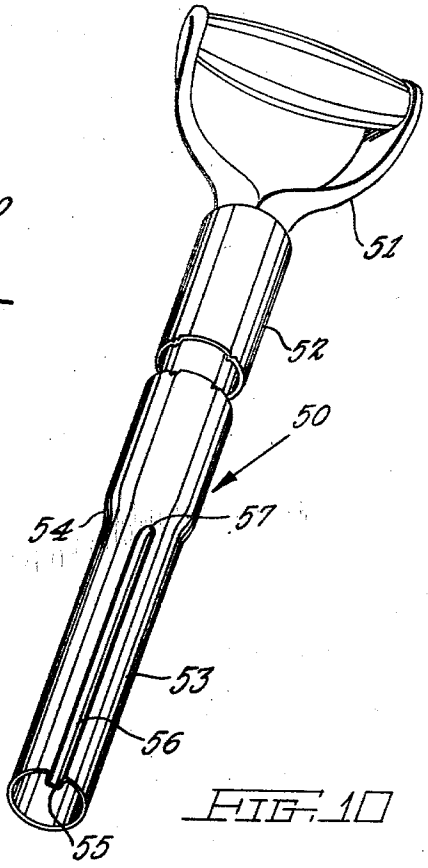


FIG. 10

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3,177,026

Patented Apr. 6, 1965

3,177,026

SNOW SHOVELS

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Filed June 5, 1961, Ser. No. 114,805

3 Claims. (Cl. 294—54)

This invention relates in general to handled work tools of all kinds and in particular to snow shovels of the type comprising a blade portion and a handle associated therewith for manipulating the blade portion.

Heretofore, a significant item in the sale price of snow shovels at the retail level has been the relatively high cost of shipment of the assembled shovel. The assembly of the blade portion of the shovel and the handle portion has generally been at the place of manufacture, thus resulting in the subsequent shipping of the bulky, assembled shovel. This practice is generally followed due to the manner in which the blade portion of the shovel is secured to the handle portion. Oftentimes securing means are employed, e.g., large rivets and the required rivet setting machinery, which are not customarily at the disposal of the retailers and, for that reason, assembling at the manufacturing site has been prevalent practice.

The present invention obviates this last mentioned practice by providing a blade and handle assembly that is maintained in operable relationship solely by means of a friction engagement between the blade portion of the shovel and the handle portion. Thus, the blade and handle portions of the shovel are capable of, and preferably are, shipped in a disassembled manner to be assembled at the retail outlet. As will be more clearly seen hereinbelow, the assembling of the snow shovel is an extremely simple matter and readily accomplished by either the retailer or the ultimate consumer.

Furthermore, the use of pins, rivets, or other fastening means has resulted in breakage of the handle, and proper tools for reassembly of the broken shovel are not readily available at the retail level.

It is an object of my invention to significantly decrease handling costs by providing a shovel, the handle and tool of which are easily disconnected, and adapted to be shipped in disassembled form.

It is a further object of my invention to simplify manufacturing and thus reduce manufacturing costs by providing a snow shovel adapted to be assembled without the presence of the heretofore required means for fixedly securing the shovel handle to the blade portion of the shovel.

A still further object is to significantly lessen assembly problems by providing a shovel wherein the handle frictionally engages the blade portion of the shovel in a very simple manner yet when so engaged the assembly is held in a rigid, frictionally locked relationship.

A further object of my invention is to achieve a superior tool and a more secure handle through the provision of a novel tongue and groove frictional lock assembly that is not easily dislodged and wherein the friction increases with normal and proper usage of the tool.

These and other objects will become more readily apparent from the ensuing specification and accompanying drawings, in which:

FIG. 1 is a rear elevational view showing the rear face of the blade and handle in a disassembled position;

FIG. 2 is a front elevational view similar to FIG. 1 showing the front face of the blade and handle in disassembled form;

FIG. 3 is a side view of the handle taken on line 3—3 of FIG. 1 and showing more clearly the shape of the handle;

FIG. 4 is a cross sectional view taken along line 4—4 of FIG. 3;

FIG. 5 is a sectional view taken along line 5—5 of FIG. 1 and shows more clearly the blade and socket member structure;

FIG. 6 is a front elevational view of a modified form of my invention and shows the blade and handle in disassembled position;

FIG. 7 is a sectional view taken along line 7—7 of FIG. 6 and shows more specifically the structure of the socket member of the modified form;

FIG. 8 is a side view of the handle of the modified form and is taken on line 8—8 of FIG. 6; and

FIG. 9 is an end view of the handle of my modified form and is taken on line 9—9 of FIG. 8.

FIG. 10 is a front elevational view of a modified handle of my invention.

Referring now to the drawings, in which all like parts are designed by like reference characters, and particularly to the embodiment of FIGS. 1 through 5, in the form of my invention illustrated herein, the assembled tool is preferably a snow shovel. It will be noted, however, that the invention may be applicable to other handled tools, as, e.g., other shovels, spades, hoes, etc. I have indicated at 10 the blade portion of a snow shovel. In the form shown the blade 10 is preferably concave in structure and comprises a plurality of preferably evenly spaced longitudinally extending reinforcing ribs 11 which, as will be readily seen in FIG. 2, project outwardly from the forwardly disposed face of the blade. These stiffening ribs 11 are provided in a manner well known in the art to strengthen the blade and, in addition, assist in retaining snow shovelled thereon upon the forward surface of the blade. Fixedly secured to the bottom work edge of the blade 10 is a straight front cutting edge 12 which is preferably secured to the bottom work edge of the blade 10 by means of rivets 13, or like fastening means. Front edge 12 is preferably formed of steel in order to provide a hard, straight cutting surface. As shown, the blade 10 is preferably provided with top and side surfaces 14 which extend outwardly and upwardly from the face of the blade and further assist in holding the snow on the face of the shovel.

Socket member 20, which forms an important part of my novel friction lock shovel, is shown in FIGS. 1 and 5, and, as illustrated, is mounted on the back side 15 of the blade 10. The socket member 20 is preferably elongated and relatively narrow and extends substantially from the upper surface of rear face 15 of the blade to the lowermost edge thereof and is disposed centrally thereof. It comprises a generally arcuate bridging portion 21 and a continuous flange portion 23 surrounding the same extending outwardly from the arcuate portion 21. Said socket member 20, preferably arcuately conformed to the generally arcuate shape of the blade, is preferably secured to the blade 10 by means of rivets 25 or the like which project through aligned apertures 26 in the blade 10 and the flange 23. The arcuate or semicylindrical portion 21 of the socket member 20, as will be noted, tapers downwardly from the upper portion thereof and gradually decreases in radial extent as it approaches its end adjacent the bottom of the shovel. As shown, the portion 21 preferably also tapers in lateral extent as it approaches its end portion and terminates in a rounded end portion 21'.

In order to provide the novel friction lock of this invention, the socket member 20 is provided with a groove portion 22 in the upper portion of the arcuate member 21, thus forming a tongue 22' which is projected into

the socket recess **27**, said tongue frictionally coacting with the handle in a manner specifically described hereinbelow. The tongue **22'** preferably extends approximately halfway down the socket member **20** and gradually merges into the outer surfaces of arcuate portion **21** at a point generally intermediate the ends of the socket member **20**.

In the form of FIGS. 2 and 5, projecting from the forward face of the blade **10**, is a preferably teardrop shaped projection **24**, which, with the socket member **20**, frictionally receives the handle **30** in a manner to be more specifically stated hereinbelow. The projection **24**, as shown, tapers laterally outwardly and upwardly as it approaches its lower end and terminates at a point on the blade **10** which is approximately opposite the lower end of the tongue **22'** of the socket member **20**. The teardrop shaped rib or projection **24** functions further to provide reinforcing in the area of the socket member in much the same manner as the reinforcing ribs **11**.

The handle **30** is, in this invention, particularly formed to slidably engage the opening formed by the socket **20**, projection **24**, and blade **10**, thus producing the novel friction lock. Handle **30** comprises a conventional grip portion **31**, a cylindrical portion **32**, and an end portion **33**. It will be understood that the cylindrical portion **32** can be inserted into the grip portion **31** and remain fixed thereto in any suitable manner, such as, e.g., by bolt or rivet means (not illustrated).

The handle is essentially provided with a groove **34** in the end portion **33** of said handle **30** on the rear face thereof and, a flat portion **35** is preferably formed on the forward face of the handle **30** opposite the groove **34**. The groove **34** extends from a point **34***a* at the lower end of the handle **30** preferably a distance substantially equal to the length of the tongue **22**. Said groove **34** gradually curves upwardly as shown at **34***b*, FIG. 3 merging into the cylindrical portion **32** at **34***c*, as shown, thus forming a ramp portion.

Noting FIG. 3, it will be seen that the generally flattened surface **35** is concavely shaped, tapering from a point **35***a* on the periphery of the handle to a point **35***b* and from point **35***b* the flat surface preferably tapers outwardly to a point **35***c*, which closely approaches the circumference of the handle. The flattened surface **35** is concavely shaped to correspond with the concaved wall of the blade socket formed by the teardrop projection **24**. The handle **30** is preferably chamfered on the bottom end thereof as shown at **36** to facilitate entry of the handle into the socket member.

It should now be readily apparent that manual force caused, for example, by grasping the handle at a point immediately below the grip portion and lining up the handle and socket portions, and rapping the shovel sharply downwardly on a hard surface, will cause the lower portion of the handle to readily enter the recess formed by the socket member **20**, blade **10** and projection **24**. Further downward movement of the handle **30** will be arrested when the inclined ramp portion **34***b* of groove **34** adjacent the upward end **34***c* of groove **34** is in tight frictional engagement with the upper end of the tongue **22'** of socket member **20**. The upper end of the tongue **22'** will engage this inclined surface **34***b* and will at all times create a tight frictional engagement therewith. The shape of the teardrop projection **24** and the socket **20** are such that when the handle **30** is moved downwardly into socket member **20**, as above described, the flattened portion **35** of the handle **30** will be aligned and in frictional engagement with the teardrop projection **24** and the tongue **22'** will frictionally engage the groove **34**. The dimensions of the handle, it will be noted, are such that there is thus achieved a tight rigid seating of the same within the entire socket assembly. It will further be apparent that when the handle **30** is so seated, as aforesaid, rotation of the handle **30** relative to the blade **10** will be positively precluded through the engagement of the downwardly projecting tongue **22** of the socket member **20** with the groove **34** of handle **30**, thus providing the frictional lock relationship desired.

It should be noted that during normal operation of the snow shovel, pressure is applied in a downward direction from the upper grip portion **31** and that, because of such use, the frictional engagement of the handle **30** with the socket member **20** and the blade **10** is increased during use and there is no tendency of the members to become disassembled after assembly and during use. However, after the shovel has been used and it is desired to store the handle **30** and the blade **10** separately, all that is required is to apply a requisite amount of force as, for instance, at the juncture of the handle **30** and the blade **10**, in order to separate the former from the latter.

Referring now to FIGS. 6 through 9, there is illustrated therein a modified form of my invention. FIG. 6 is a view similar to FIG. 2 and shows the modified form in disassembled manner. Elements in my modified form which are similar to elements in the preferred form are indicated by the same reference numeral with an attached prime reference character.

It will be noted that in the modified form of these figures, the teardrop shaped projection projecting outwardly from the forward base of the shovel has been eliminated. The groove **34** and socket member **20'**, however, are shaped identically with groove **34** and socket member **20**, respectively, of the preferred embodiment. The frictional engagement between handle **30'** and socket member **20'** is accomplished, in the modified form, by generally constantly tapering the flat portion **35'** of handle member **30'** to correspond to the tapered opening formed by the tapered socket **20'** and the substantially flat rear face **37'** of the blade **10'**. The socket member **20'** is provided with a tongue portion **22'**, similar to the tongue **22** of the preferred embodiment, which similarly frictionally engages groove **34'** formed in handle **30'**.

Thus, when the handle portion **30'** is moved downwardly, the lower portion **33'** thereof will be frictionally received in the socket member **20'**, and downward movement will be arrested when the inclined merging ramp surface **34***b'*, adjacent the upper end of the groove **34'** frictionally engages the upper end of the tongue portion **22'**. When in its arrested downward position, the flattened portion **31'** of handle **30'** frictionally engages the substantially flat surface **37'** on the back side of blade **10'**, more clearly shown in FIG. 7. The handle member **30'** is chamfered, similarly to the handle in the preferred embodiment, at **36'**, to facilitate downward movement of the handle **30'** into frictional engagement with the socket **20'**. It will thus be apparent, similarly to the preferred embodiment, that when the handle **30'** is frictionally received in the opening formed by blade **10'** and socket **20'**, the former will be precluded from rotating relative to the latter by the frictional engagement of the tongue portion **22'** of the socket **20'** with the groove **34'** of handle **30'**. Further, longitudinal movement between the handle **30'** and the socket member **20'** is prevented by the tight frictional contact therebetween at the area adjacent the upper end of tongue **22'**, the frictional contact being increased by normal usage of the shovel, as aforesaid mentioned. After use, if disassembly is desired, all that is required is to apply, as indicated above, at the juncture of the handle **30'** with the blade **10'** a force sufficient to disengage the frictional contact between the blade **10'** and the handle **30'**.

In FIG. 10 there is illustrated a metallic handle, generally indicated at **50**, which is adapted to be used with the blade and socket of the FIGS. 1–5 embodiment. The handle **50** is preferably made of generally thin-walled steel tubing and comprises, similarly to the handles of the other embodiments a grip portion **51**, a cylindrical portion **52** and, in the form shown, has a reduced diameter cylindrical end portion **53**. Intermediate the cylindrical portion **52** and the end portion **53** is a shoulder portion **54**, which affords a connection between the body portion

52 and the smaller diameter portion 53, as shown in FIG. 10. The lower portion 53 is provided with a groove portion 56 which supplies a tongue or internal rib 55. The groove 56 is dimensioned similar to grooves 34 and 34' of handles 30 and 30' and functions in a similar manner to interlock the handle with the shovel of FIGS. 1 to 5.

It will be noted that the tubular handle 50, as shown, is not provided with any flattened surfaces which characterized the handles 30 and 30' in the other two embodiments of my invention illustrated herein. In handle 50, the frictional engagement between the socket member, namely socket member 20 of the FIGS. 1–5 embodiment, and handle 50, is accomplished through the reduced diameter lower portion 53. Specifically, the reduced diameter portion 53 is dimensioned to frictionally engage and be complementary to the opening formed by socket member 20, blade 10, and teardrop projection 24.

It will thus be apparent that when manual force is applied in a manner as explained above, the lower portion 53 of the handle 50 will enter the opening formed by the socket member 20, blade 10, and teardrop projection 24 and the outer surface of the lower portion 53 will frictionally engage the complementary surfaces of the socket member 20, blade 10, and projection 24. Downward movement is arrested, similar to the other embodiments, when the outer end of the tongue 22 of socket member 20 engages inclined portion 57 of groove 56, the inclined portion 57 serving to gradually merge the groove 56 into the outer cylindrical surface of the handle.

It will be noted that the relatively thin-walled tubular handle 50 is adapted to be slightly compressed at the lower portion 53 thereof when the latter is inserted into the socket opening. This, as will be apparent, tends to increase the frictional engagement between the handle 50 and the socket opening.

The tubular handle, when employed as the interlocking element with the socket may be variously formed, as for example, provided with flattened portions in the socket enclosed end portion thereof, be of constant diameter throughout, be of stepped form, etc.

It will thus be seen that applicant has accomplished the objects of the invention. There has been provided a shovel which is easily manufactured and which can be shipped in disassembled manner, thus significantly reducing shipping costs. Further, the shovel is assembled in a simple manner merely by inserting the handle portion into a socket member fixed to the blade portion, an operation which provides a highly rigid frictional lock relation that continues during usage and which can be readily accomplished by either the retailer or the consumer. Further, since no securing means is employed to fixedly secure the handle to the blade, the handle can be disassembled from the blade at any time, thus easing storage problems, or facilitating subsequent shipping thereof.

Having thus fully described the invention, what is claimed as new and for which is desired Letters Patent is:

1. In a snow shovel of the type referred to comprising a relatively wide blade portion, said blade portion having elongated arcuately formed means secured to the rear face of said blade and longitudinally of the depth of said blade, said rear face of said blade being flattened in the portion enclosed by the arcuately formed means and forming therewith a socket having an arcuate portion and a relatively flattened portion, said arcuate portion of said socket having integrally formed locking means disposed therein, a handle, said handle having locking means extending longitudinally thereof in a peripheral portion and adapted to engage said locking means in said arcuate portion of said socket, said handle having an oppositely disposed peripheral end portion adapted to wedgingly contact the relatively flattened portion of said socket, said socket thus frictionally receiving said handle and said handle being secured against twisting within the socket.

2. In a snow shovel of the type claimed in claim 1, characterized by the locking means of said socket consisting a tongue portion extending inwardly from the outer periphery of said arcuate portion thereof, and the locking means of said handle consisting in a peripheral groove therein, said groove being adapted to receive said tonque.

3. In a snow shovel as claimed in claim 1, characterized by a socket member being tapered throughout its longitudinal extent, said handle having a flattened portion adapted to contact the rear face of the blade enclosed by said socket means.

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