

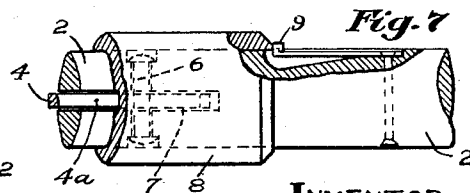
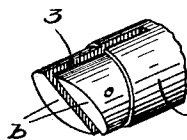
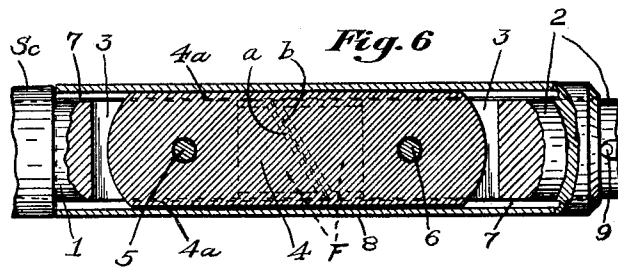
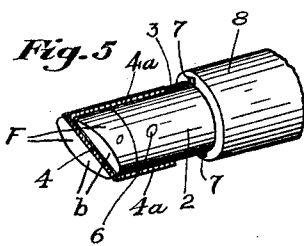
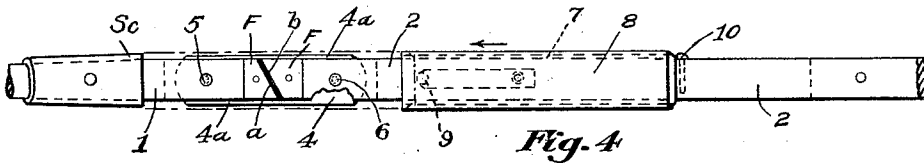
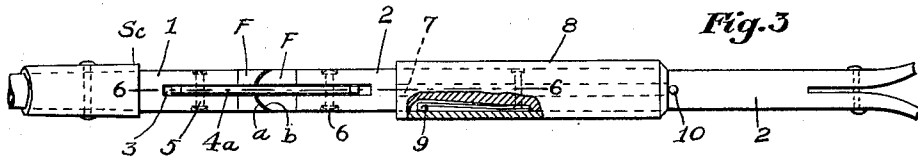
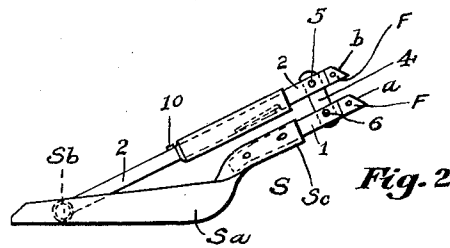
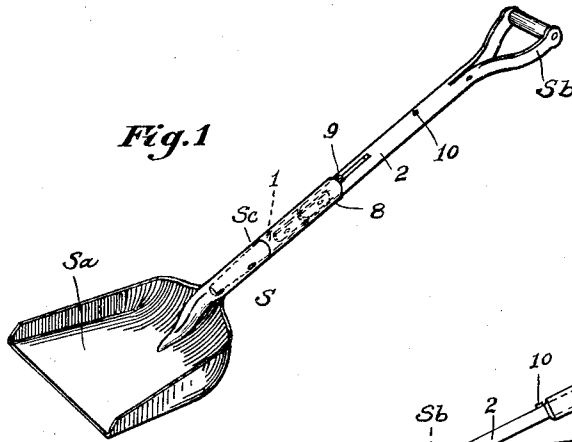
April 25, 1933.

C. E. PATCHELL

1,906,218

JOINT CONSTRUCTION FOR SHOVEL HANDLES AND THE LIKE

Filed May 26, 1931



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JOINT CONSTRUCTION FOR SHOVEL HANDLES AND THE LIKE

Application filed May 26, 1931. Serial No. 540,100.

The invention hereinafter to be described relates in general terms to articulated shafts, rods or tubular elements having interconnecting joints which permit of one portion being folded upon the other, so that when the article or device, of which the joined elements form a part, is not in active service it may be condensed and stored away in a more compact form than would otherwise be the case.

The scope of application of my invention is broad, and for this reason an attempt will be made to illustrate its fundamental characteristics in only one concrete instance, and for this purpose I have elected to disclose it as it would be employed on the wooden handle of an ordinary shovel, although it is obvious that the invention is susceptible of embodiment in a wide range of other devices,—such as fishing rods, automobile jack handles, tent standards etc.

I am aware that foldable or knock-down handles or shafts have been employed in various types of mechanical structure where contraction of the parts has been the chief consideration, but in many instances the strength and rigidity of the jointed portion has been so completely ignored or lost sight of that the device as a whole has not given the service required of it and has accordingly been discarded as an impractical proposition.

In the present invention I have sought, first of all, to provide a joint structure characterized by its substantiality. Without this quality a jointed handle is useless. A shovel at times is used roughly and its handle is then subjected to severe bending and twisting strains, but if equipped with folding mechanism made to withstand such treatment it is a very handy and convenient utensil in many situations.

The bifurcated ends of the two handle elements in my device are obliquely cut and when extended are arranged to closely abut

on their flat faces. This provides an overlapping joint which is calculated to greatly augment the capacity of the joint to retain alignment of the two handle elements.

Ordinary shovel handles are constructed of wood, and with a jointed handle more or less cutting is required to be done adjacent the pivoting points. This weakens them somewhat so that there is a liability of splitting the ends from the pivot holes; in order to obviate this difficulty I protect the ends where the bifurcation is made by mounting thereon metal reinforcements.

The connecting element between the two handle parts is a metal link serving also as a double key which operates in diametrically opposed keyways in a relatively long sleeve which covers the whole jointed structure when the parts are extended. This method of keying the individual parts of the handle to the sleeve stiffens the assembled elements and holds them in correct alignment; it also prevents rotation of the sleeve while in the users hand while operating the shovel.

A spring-stop member is provided for locking the sleeve against upward movement on the handle when the parts are in extended positions, and further functions, when the parts are folded, to frictionally hold the sleeve on the outer handle member.

The character of the invention may best be understood by reference to the description found in the following specification when taken in connection with the accompanying drawing depicting an embodiment which, at the present time, I consider preferable to other possible forms in which the invention might be carried out.

In the drawing,—

Fig. 1 is a perspective view of a wood-handle shovel equipped with my invention;

Fig. 2 is a side elevation thereof, the parts being shown in folded position;

Fig. 3 is a top view of the jointed portion

of the handle with the sleeve withdrawn, exposing the jointed parts;

Fig. 4 is a side view of the parts shown in Fig. 3;

5 Fig. 5 is a fragmentary detail showing the bifurcated end of one of the handle parts, the link and the metal reinforcements;

Fig. 6 is an enlarged view showing a section taken on line 6—6, Fig. 3;

10 Fig. 7 is a view particularly showing the spring-stop;

Fig. 8 shows the bifurcated end of one of the handles, and

15 Fig. 9 is a perspective of the metal reinforcement ferrules used on the bifurcated ends.

Similar reference characters are employed to identify like parts in all views of the drawing.

20 Referring to the drawing, S represents a wooden-handle shovel in its entirety, Sa being the blade and Sb the hand-grip. The handle, or intermediate portion, is of the articulated or jointed type and comprises
25 two independent elements 1 and 2, being respectively its lower and upper portions.

The handle is round and the mutually abutting ends of its two parts are cut obliquely with respect to their axes, so that
30 when the handle parts are in alignment, as seen in Figs. 1 and 4, these ends overlap and the longer sides of the handles extend a greater distance from their pivotal points than would be the case were they cut square.

35 Extending from the oblique faces *a* and *b* of the handle parts 1 and 2, respectively, are scarfs or slots 3, and operating in these scarfs is a link 4 pivotally connected to the parts 1 and 2 by pivot pins 5 and 6, respectively.
40

By reference to Fig. 4 it will be observed that the link 4 extends outwardly from opposite sides of the periphery of the handles to form two keys 4a which latter engage,
45 respectively, the two keyways 7 in the long slidably mounted sleeve 8 when it is advanced to cover the jointed portions of the handle.

The parts are thus quite effectively held
50 in alignment and the sleeve prevented from turning on the handle while gripped by the operator or user of the shovel, a construction which avoids more or less wear on the wooden parts where the sleeve is mounted
55 on the handle so that it can revolve thereon.

In the operation of folding or extending the parts of the handle there is always present the possibility of abnormally straining the pivotal connections and causing injury
60 to the abutting ends of the handle parts unless due care is exercised in swinging the sections into or out of position. The portion 2 and the link 4 should be kept in line and swung from the pivot pin 5 until they
65 assume a position substantially normal to

the portion 1 of the handle. The part 2 may then be swung on its pivot 6 toward the blade of the shovel without interference taking place between the two portions of the handle. 70

To anticipate and eliminate the chance of injuring the parts I protect the bifurcated ends of the handle by metal reinforcements in the form of ferrules F, shown in detail in Figs. 5 and 9, the branches of the
75 bifurcated parts being reduced in size so that when the ferrules are in place a uniform diameter for the full length of the jointed portion of the handle is had. Fig. 8 shows the reduced portion of the abutting
80 ends of the handles.

When the sleeve 8 is advanced to the shank Sc of the blade Sa a spring-stop 9 acts to prevent recession of the sleeve until
85 such time as it is desired to fold the handle when, by depressing the spring-stop, the sleeve may be withdrawn on to the handle portion 2, exposing the jointed portion, as shown in Fig. 3, in which position of the sleeve the spring-stop operates to frictionally
90 hold it in place.

A fixed stop 10 restricts the withdrawal movement of the sleeve on the portion 2 of the handle.

Reverting briefly to a consideration of the
95 matter of strength and rigidity of the structure embodied in my jointed handle, attention is called to several features the importance of which it is particularly desired to stress. 100

In the obliquely formed joint made by the impingement of the surfaces *a* and *b* on one another, there is provided a greater length of handle bearing, taking the same length
105 of sleeve in each case, than would obtain with a square cut end. Furthermore, one end acts to support the other against both lateral and torsional strains and thereby assists in maintaining alignment of the parts. 110

And the feature of keying opposite sides
115 of the bifurcated portions of the two sections of the handle to the sleeve with a single key unit amply provides for all demands in the matter of preserving rigidity and unification of the parts under all conditions of service.

And with respect to its use there would appear to be no more appropriate field for
120 the folding handle shovel than on a motor vehicle, particularly those devoted to pleasure, on which, while not always convenient to carry a full length handle shovel, a space sufficient to store a jointed one is usually available.

Having thus described my invention, 125 what I claim and desire to secure by Letters Patent is:

1. A device of the character described comprising in combination two end-abutting,
130 axially aligning handle elements having

their ends obliquely cut, and overlapping, a scarf cut in each of said elements, mutually aligning and connected, a link disposed in said scarfs, pins pivotally connecting each of said elements with said link, a key portion on the faces of said link extending outwardly from opposite sides of the periphery of said handle elements, a sleeve disposed on and slidable over said elements, keyways in said sleeve adapted, respectively, to engage the key portions on said link, a spring-stop to prevent receding of said sleeve after completing its full advancing movement, and a fixed stop to limit the backward movement of said sleeve.

2. A device of the character described comprising two round handle elements having bifurcated ends, the branches thereof abutting with flat, obliquely cut faces mutually overlapping, and the space between said branches in both elements being continuous, a link disposed within said continuous space, a key portion on the two edges, respectively, of said link extending outwardly from the periphery of said elements, a pin pivotally connecting each of said elements with said link, a sleeve slidably mounted on said elements, two keyways in said sleeve adaptable of engagement, respectively, with said key portions, a spring stop adapted to hold said sleeve against receding movement on said elements only when fully covering said pivotal connections, and a reinforcing ferrule on the end of each branch of the bifurcated portions of said handle elements.

In testimony whereof I affix my signature.

CHARLES E. PATCHELL.