

June 25, 1940.

E. J. SWEETLAND

2,205,769

IMPLEMENT HANDLE

Filed June 28, 1937

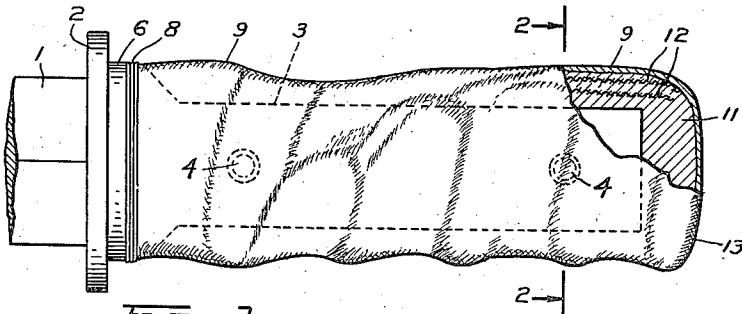


Fig. 1.

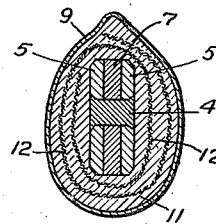


Fig. 2.

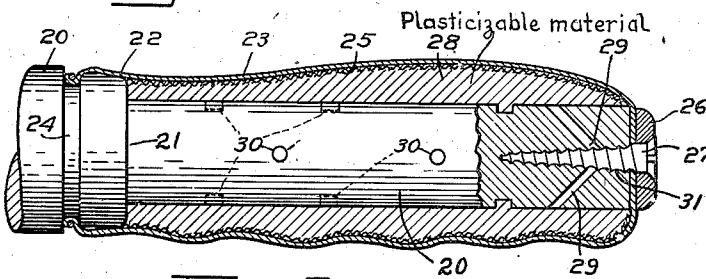


Fig. 3.

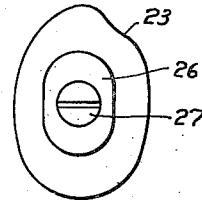


Fig. 4.

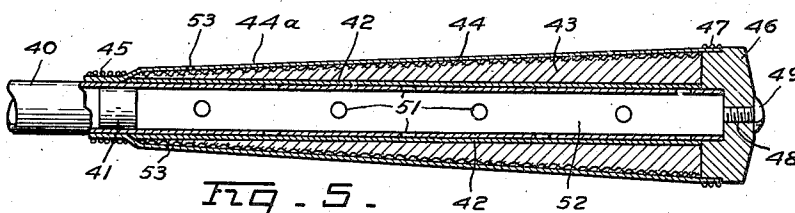


Fig. 5.

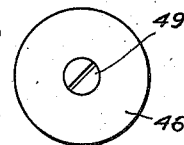


Fig. 6.

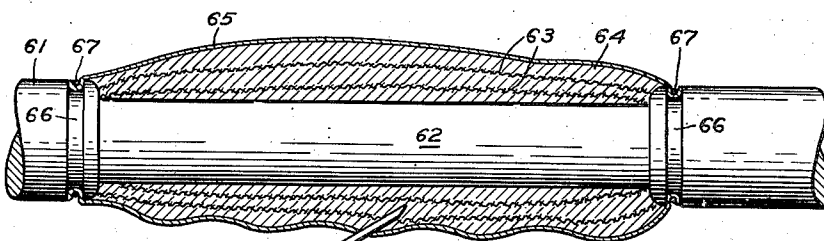
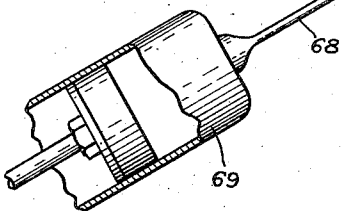


Fig. 7.



INVENTOR.

E. J. Sweetland.

UNITED STATES PATENT OFFICE

2,205,769

IMPLEMENT HANDLE

Ernest J. Sweetland, Piedmont, Calif.

Application June 28, 1937, Serial No. 150,304

4 Claims. (Cl. 145—61)

This invention relates to grips or handles for implements of various kinds and may be used upon any tool, implement or appliance requiring a hand grip. It is applicable for golf clubs, fencing foils, tennis rackets, oars, paddles, fishing rods, etc., and various other types of sporting implements, and for grips on pistols and so-called pistol grips on the stocks of guns, as well as for various tools such as hammers, chisels, trowels, etc., and for crutch grips and the like. It may also be used for bicycle or motorcycle grips, lever handles of various kinds and the like. This application is a continuation in part of my application for United States Patent Serial No. 728,816 filed June 4, 1934 for Golf club and implement handle, now Patent No. 2,121,718.

An object of my invention is to provide an implement handle or grip (these terms are interchangeably used herein) which can be manufactured on a production basis and offered through the usual trade channels in the form of a standardized grip for various types of implements. After the purchaser obtains the type of grip suited to his particular needs, it is a simple operation for him to mold the grip to fit his hand perfectly, and after this simple operation is completed and the grip allowed to set, it permanently retains its shape. With my invention it is possible not only for the individual user to mold the grip to fit his hand perfectly, but he may, if desired, shape the grip to a round, oval or rectangular cross-section to suit his particular requirement.

I am aware that certain patents of record illustrate means for making implement grips that are designed to fit the hands of the user. Certain of these inventions of record describe highly technical methods, the carrying out of which would require too much inconvenience or too much technical skill for the average user, and consequently they have never come into popular use. Another type to be found in patent records relates to grips which are permanently molded in the factory to approximate the shape of the user's hands; but since these inventions are produced from factory molds of standardized forms, it is impossible to design them to exactly fit any particular user's hand because of the great variation in the size and form of hands of different individuals. The present invention is not to be confused with either of these classes of inventions, as no skill is required in forming the grip, and each grip when formed is as individual as a plaster cast of a person's hand.

My invention possesses other advantageous

features, some of which with the foregoing, will be set forth in the following description where the forms of the invention which have been selected for illustration in the drawing accompanying and forming a part of the present specification are outlined in full. However, I do not confine my invention to the specific forms set forth in the drawing and specification nor to the specific uses of the invention herein set forth, as it is capable of many modifications and uses which are limited only by the scope of the appended claims.

The method of carrying out my invention will be understood by reference to the accompanying drawing wherein:

Figure 1 represents a side elevation partially in section of a handle for a knife or similar implement made in accordance with my invention.

Figure 2 is a cross section on the lines 2—2 of Fig. 1.

Figure 3 is a longitudinal section of a handle for a hammer or similar implement showing a metallic end piece whereby the end of the handle is protected against injury during use or while the handle is being driven into an implement, such as a hammer head.

Figure 4 is an end view of the grip shown in Figure 3.

Figure 5 is a longitudinal section showing one method of adapting my invention for use as a golf club grip.

Figure 6 is an end view of the golf club grip shown in Figure 5.

Figure 7 shows in longitudinal section a type of grip that may be used for fishing rods or similar implements. This view shows a method of injecting a fluid into the interior of the grip for the purpose of plasticizing same.

Referring to the drawing in detail and particularly to Figure 1, 1 is the blade of an implement such as a hunting knife which is provided with the guard 2. The tang of the knife extends most of the way through the interior of the handle as indicated by the dotted lines 3. In manufacturing the knife, the tang of the blade is first provided with a handle made of wood, Bakelite or other material very much as an ordinary knife handle is made except that the handle is somewhat smaller. In Figures 1 and 2 this handle 5 is riveted to the tang 7 by means of the rivets 4. The forward part of the handle 6 abuts the guard 2, to which it is secured by any convenient means, and the groove in the handle receives the winding of cord or wire 8, and this secures the leather or other covering material 9 securely in place at the

front end of the handle. Inside of the handle is a plasticizeable filling material 11, such as plaster of Paris, and within this body of material may be placed as many layers as desired of a reinforcing material as shown at 12. This material may be any textile fabric such as cotton gauze, cheese-cloth, or crinoline, or it may be made of a flexible wire cloth such for instance as ordinary bronze flyscreen. If a textile fabric is used it may be sized with glue or other sizing, if desired, and I prefer a fabric of open mesh construction that permits the plaster of Paris or other cement-like material used to penetrate the reinforcement. In making the grip shown in Figures 1 and 2 various procedures may be used within the spirit of my invention. The following is one method of producing the desired result: The cover 9 may be made of chamois or some other porous type of leather. This is cut to the proper size and stitched in such manner that it is made in the form of a bag with only one end open. This bag is preferably turned inside out after stitching so that the seam is then on the inside. (The seams in the covering are omitted from the drawing.) If a fabric such as crinoline or cheese-cloth is used for reinforcing this may be cut to shape and then well loaded with dry powdered plaster of Paris or similar material. This is then rolled about a form and placed inside of the chamois bag. In this manner a layer of dry powdered plaster of Paris or similar material lies between the fabric and the wall of the bag and the layers of fabric are also separated by a layer of the powder. The tang which has already been equipped with the handle 5 is now inserted into the bag and any remaining space in the bag completely filled with plaster of Paris. The end of the bag is drawn into the groove around the handle 6 by means of the wire or string 8 and trimmed, and the handle is complete except for the plasticizing operation which will be described later.

Obviously various different techniques may be employed to carry out the objects just described. For instance the leather or chamois bag may be left open at both ends and the handle inserted and the string or wire 8 tightened into place while the casing is still empty. After this is done, the plasticizeable powder and reinforcing fabric may be inserted in any desirable manner, after which the end 13 of the grip may be closed by sewing or by the use of suitable cement. While the reinforcing material is desirable from a standpoint of strength and durability, I do not limit my invention to the use of this reinforcing material, nor the particular method in which it is applied, as the plaster or cement alone with its cover of leather will provide a satisfactory grip for certain purposes.

In the form above described the grip shown in Figures 1 and 2 is ready for sale and distribution. In this form the handle is approximately the size and shape of an ordinary knife handle although ordinarily it would be slightly larger due to the fact that the material compacts somewhat after plasticizing.

After the knife or other implement is purchased by the ultimate user, he dips the handle in water which immediately penetrates the porous chamois or other porous material that forms the outer layer of the handle. While it is still submerged he kneads the handle so as to cause the water to penetrate the entire body of plaster and he continues this kneading operation until it is completely and uniformly plasticized. The

wet leather is soft and flexible and yields readily to whatever form is desired. Chamois in particular is capable of stretching considerably and it is therefore readily amenable to formation into any desired shape. If it is desired to make the grip fit the hand of an individual user, that person firmly squeezes the handle after it has been thoroughly wetted and plasticized as explained, and upon so doing, he squeezes the surplus water out of the grip and at the same time leaves the exact impression of his hands upon the surface of the grip. In this condition the grip is laid aside and the plaster is allowed to set and the surplus moisture to dry out. This leaves the grip firm and rigid and in a form that exactly fits the individual's hand. Obviously, if he prefers the grip to be in round or oval form, he molds the handle accordingly. It should be noted that while the chamois or similar porous leather permits moisture to enter the interior of the grip freely to moisten the plaster, it forms an ideal filter medium and entirely prevents the escape of any plaster during the operation.

Many variations in the shape of the grip may be made to suit the individual's taste as for instance the end of the handle may be formed into a knob or it may be drawn out to a rounded point.

If desired, to meet special requirements, cotton or other textile fabric such as muslin may be substituted for the chamois but I prefer chamois on account of its extreme softness and flexibility when wet.

Referring to Figure 3 which represents a handle for a hammer or similar implement, the numeral 20 designates a wooden handle the outer extremity of which has been reduced in size from the shoulder 21 to the extreme end of the handle in order to provide space for the plastic material. 30 represents holes in the handle to form secure anchorage for the plaster filling. Any method of scoring or roughening the surface may be used. The handle is rounded off at the edge 22 to avoid any sharp edges bearing against the outer covering of leather or other material 23. A groove 24 is formed in the handle to facilitate tying the cover 23 in place. 25 represents a fabric for reinforcing the plasticizeable material and in this instance this fabric is shown immediately adjacent the leather covering. It may or may not be cemented to the outer cover at the option of the manufacturer. If it is desired to make the grip somewhat soft to the touch, felt may be used as reinforcing at 25, and in this event it is preferable to cement the lining, or reinforcing layer, to the outer cover. At the end of the grip is a metal guard 26 which is held in place by the screw 27.

As is well known, the customary manner of securing the head of a hammer upon the handle is by driving the handle into the hammer head by striking the end of the handle. If the leather or other covering of the handle were unprotected, this would lead to injury, hence the element 26 which affords suitable protection. In this grip the numeral 28 indicates the body of plaster of Paris or other plasticizeable material which forms the filler of the handle. While I have shown but a single layer 25 of reinforcing material in this figure, a plurality of layers either uniformly spaced or at random may be used, if desired.

This grip is plasticized in the manner described with reference to Figures 1 and 2 if the covering 23 is of porous material. If it is desired to make

the cover of a more durable type of leather, such as calfskin, it may be plasticized in accordance with the method described with reference to Figure 7, or it may be plasticized by removal of the screw 27 and injection of water or other fluid through the screw hole 31 and the lateral perforations 29.

Referring to the golf club grip illustrated in Figures 5 and 6 the numeral 40 represents a steel shaft into which is inserted a rubber or wooden plug 41 to prevent fluid from entering the lower part of the shaft. Surrounding the shaft 40 may be a layer of felt 42 which I prefer to attach to the shaft by means of shellac or other cement. The object of this layer is to act as a shock absorber and prevent the jar that occurs when a ball is struck from being communicated through the grip to the hands of the user. The plasticizeable material naturally adheres to the felt layer and prevents the grip from moving on the shaft. 43 represents a body of plasticizeable material such as plaster of Paris. 44 is a layer of reinforcing fabric which may be such material as cheese-cloth, crinoline or the like and 44a is the leather outer covering which is secured to the shaft by the winding 45 and to the cap 46 by the winding 47. The cap 46 may be of fibre, Bakelite or other suitable material and this is provided with a threaded opening 48 which is normally closed by the screw 49. At intervals along the steel shaft are apertures 51 to permit a fluid which enters through the threaded opening 48 to reach the plasticizeable material. The layer of felt 42 acts as a filter septum between the interior of the grip which is filled with plasticizeable material 43 and the hole through the shaft of the club. Thus the water or other fluid necessary to plasticize the material 43 may pass into the annular space that is filled with plasticizeable material but the latter cannot escape through the felt, due to its filtering action.

This golf club grip may be constructed in various ways, a convenient method being as follows: The grip portion of the shaft is coated with shellac and spirally wound with the layer of felt 42 and the shellac allowed to dry. The reinforcing fabric 44 and the leather covering 44a are formed together on a conical mandrel. This may be done by first placing the layer of fabric on the mandrel and sewing or cementing the edges together; then the leather cover which has previously been cut to size is formed to shape on the conical mandrel on top of the fabric. The leather cover may be made with a longitudinally stitched seam or the edges of the leather may be skived and cemented together upon the conical mandrel on top of the fabric reinforcement. The fabric reinforcement and leather are removed from the mandrel together and slipped over the small end of the shaft before the head has been attached. The leather is then tied to the shaft as shown at 45 leaving the upper end of the conical leather cover open. The plasticizeable powder such as plaster of Paris is not packed into the cover to fill the annular space between the felt 42 and the reinforcing fabric 44. When this has been done the cap 46 which is a close fit on the end of the shaft is forced into place and the leather is tied as shown at 47. The grip is now complete except as to the plasticizing and forming operations. This is done by the ultimate user of the club in the following manner. The screw 49 is removed and a source of water under pressure is

connected with the threaded aperture 48. Water is forced into the space 52 through perforations 51 and through the layer of felt 42 to moisten the body of plasticizeable material (plaster of Paris) 43. A few pin holes 53 may be placed in the leather cover 44a to permit the escape of air, if necessary. After the necessary amount of water has entered, the entire grip is kneaded and worked in the hands preferably while the aperture 48 is still connected with the source of water supply. In this manner the plaster is uniformly plasticized and at the same time the leather is naturally softened by the effect of the water. The handle is now disconnected from the source of water supply and the owner of the club impresses his grip into the handle which squeezes out the surplus water through felt 40, holes 51 and 48 after which it is allowed to dry and the screw 49 is replaced. The finished club now bears the impression of the owner's hands and enables him to hold it securely, and always to grip it in the same manner.

An alternate method of making golf club grips which gives highly satisfactory results is by using chamois or other porous leather for the cover 44a in which event the perforations 51, the threaded aperture 48 and the screw 49 may be omitted. Under this procedure the grip is plasticized by penetration of the water through the porous cover and the procedure is similar to that described in connection with Figure 1. In Figure 5 the sectional view illustrates the golf club grip as it is constructed prior to impressing the form of the user's hand. It should be understood that while the body of material 43 is in plastic or semi-fluid condition it is quite mobile and the operator can cause it to flow in any manner desired within the confines of the cover 44a. This cover possesses a certain degree of elasticity and it is therefore possible for the operator to form bulges or depressions to satisfy his taste. For instance if he puts a considerable pressure with his hands on the upper end of the grip, the plastic material tends to flow toward the other end and to enlarge that portion and the reverse operation may be performed with equal convenience, but in any event the plastic or semi-fluid material is always confined by the permanent cover 44a which forms the wearing surface of the completed handle and which is at all times during the plasticizing operation held firmly in place by the windings 45 and 47. Even though the cover 44a is sufficiently porous (such as chamois) to allow the escape of moisture while the grip is being formed, it positively confines the plastic material to the interior of the grip; thus it not only prevents the loss of material but it makes the operation a neat and cleanly one.

The grip illustrated in Figure 7 may be used for various purposes. It comprises a shaft 61 which has a shank 62 turned to a reduced diameter, and surrounding this shaft are a plurality of layers of reinforcing fabric 63 between the layers of which is the body of plaster of Paris or other similar material 64. The cover of leather or other material 65 is tied in the grooves 66 as shown at 67. In this case it is assumed that the cover 65 is made of a non-porous type of leather or it may be made of rubber or any flexible sheet material. In this modification the plaster within the grip is wetted by means of a hypodermic needle 68 which penetrates the cover and any suitable form of "gun" or syringe as indicated at 69 may be used for injecting the

fluid. This modification is designed for grips where it is not practical to use a porous material for the cover 65 and where for any reason it is not convenient to provide passageways for fluid as was illustrated in connection with Figures 3 and 5.

Any of the grips above described may be treated with lacquer or any suitable coating or dressing after the grip has been impressed.

While I have repeatedly referred to plaster of Paris as the plasticizeable filling material within the grip and while this material furnishes highly satisfactory results, I do not limit myself to this material. Other forms of cement that plasticize when brought in contact with a liquid and afterwards "set" or harden may be used. Included among these are various types of so-called artificial stone used in dental laboratories, cements with a magnesium base, Portland cement, etc., and these and similar materials may be used alone or in conjunction with other materials that tend to affect the hardness of the finished product, the length of time required to set, etc. However, plaster of Paris gives entirely satisfactory results and I may use in conjunction with it any chemical or other material known in the arts that has to do with the duration of setting, the hardness or gravity of the finished product, etc.

An example of another type of filling material that may be used in the grip is a mixture of ground wood with cellulose nitrate or acetate, "Pyroxilin", "Vinylite" or any of the various plastics that are used in the arts and which when in powdered or granular form become plastic when brought in contact with a solvent such as acetone. Such a mixture as ground wood or kieselguhr when mixed with a pulverized plastic such as cellulose acetate or "Vinylite" may be used to advantage where extreme lightness of the grip is desired. If such a composition as this is used in the golf club grip as illustrated in Fig. 5, then 43 would represent the mixture of ground wood with the plastic, and when desired to mold the grip into form the screw 49 would be removed and acetone or other softening agent would be injected through the holes 48 and 51 into the interior of the grip which would be kneaded until uniformly plasticized, after which the impression of the hands would be made and the solvent allowed to evaporate. If such a compound were used in the grip illustrated in Figure 7 this material would be represented by the numeral 64 and the acetone or other softening material would be injected through the needle 68. The reinforcing material 63, if desired, could be omitted when this procedure is used.

My invention is not based upon the precise nature of the plasticizeable material used as a filler. Any suitable cement or plastic known in the arts which is softened or plasticized by contact with a suitable fluid and which afterwards hardens or "sets" due to the action of the fluid upon the plasticizeable material, comes within the scope of my invention when used in substantially the manner set forth in the foregoing specification and in the following claims, although I prefer a water-hardened cement, such as plaster

of Paris, due to the greater simplicity and ease of manipulation.

Throughout the following claims the term "plasticizeable" is intended to mean capable of being plasticized.

Where the term "fluid-hardening cement" is used in the following claims it is intended to mean a cement material that is caused to solidify and harden when subjected to the action of a fluid. Typical examples of materials coming within the scope of this definition are plaster of Paris and Portland cement which are acted upon by water; or cellulose acetate in comminuted form which is caused to agglomerate and harden by the action of acetone.

I claim:

1. An implement handle comprising a core member; a body of fluid-hardening cement surrounding said core member; an envelope of flexible material surrounding said core member and cement; means for securing said envelope to said implement handle to retain said cement within said envelope; an aperture leading from the exterior of said implement handle to said body of cement.

2. An implement handle comprising a core member; a body of fluid-hardening cement surrounding said core member; an envelope of flexible material surrounding said core member and cement; reinforcing material interposed between said core member and said envelope; means for securing said envelope to said implement handle to retain said cement and reinforcing material within said envelope; aperture means forming communication between the exterior of said handle and said body of cement and reinforcing material for admitting a fluid into said body of cement.

3. An implement handle comprising a hollow core member; a body of fluid-hardening cement surrounding said core member; an envelope of flexible material surrounding said core member and cement; means for securing said envelope to said implement handle to retain said cement within said envelope; a layer of porous material surrounding said hollow core member and separating same from said body of cement; apertures forming communication between the interior of said core member and said layer of porous material; an aperture leading from the exterior of said handle by way of the interior of said core member whereby a fluid may be caused to enter said core member and pass through its surrounding layer of porous material to cause said cement to harden.

4. An implement grip comprising a rigid handle having a core member; an envelope of flexible material surrounding said core member and having the approximate size and shape of said grip; an open end in said envelope to receive a portion of said handle; means to secure said open end to said handle to form a substantially flush joint at the union between said envelope and said handle; a body of dry comminuted fluid-hardening cement surrounding said core member and enclosed within said envelope; means for admitting a fluid to the interior of said envelope to plasticize and then harden said cement.

ERNEST J. SWEETLAND.