

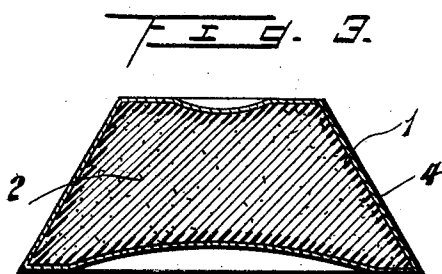
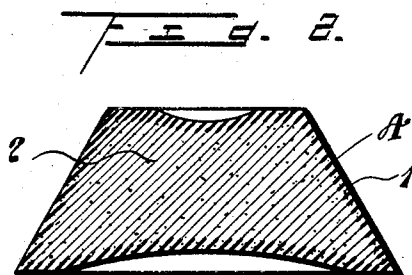
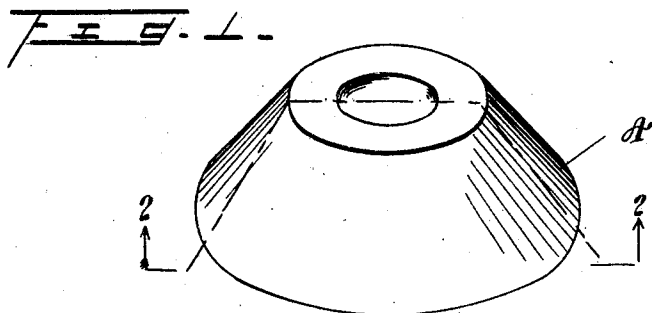
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W. H. McLEOD

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GOLF TEE AND METHOD OF MANUFACTURING THE SAME

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Inventor
Warren H. McLeod.

384 James P. Burns.

Attorney

UNITED STATES PATENT OFFICE

WARREN H. McLEOD, OF BOULDER, COLORADO

GOLF TEE AND METHOD OF MANUFACTURING THE SAME

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This invention relates to an improved golf tee and a process for manufacturing the same.

It is fully appreciated that the art is replete with disclosures of fabricated golf tees and that it is not new to the art to provide so-called "disintegrable golf tees."

This invention, therefore, while it relates to the production and manufacture of disintegrable golf tees, is predicated upon the discovery that it is possible to produce normally weight-sustaining disintegrable golf tees from homogeneous plastic earths and clays as they occur in nature without the employment of any extraneous constituents or the employment of a binder of any character as has been heretofore suggested in the United States patents to Stockder No. 702,078 and Hodges No. 1,645,001.

The advantages of disintegrable golf tees are manifold. When composed of plastic soil or clay, as contemplated by this invention, they readily become a part of the earth of the golf course, filling up depressions and improving the course. They eliminate the necessity for providing sand and water supplies at each teeing ground and completely avoid the unsightly litter now prevalent on golf courses as a result of the use of the many paper and composition tees at present in vogue.

It is moreover a specific object and advantage of the present invention to provide disintegrable golf tees at an extremely low cost, so low in fact that they may be supplied to players by golf courses more economically than can sand and water supplies be maintained.

Tees constructed in accordance with the present invention are composed of plastic soil or earth only and when disintegrated upon a golf course add no extraneous, objectionable substances thereto. The tees contain no viscous or sticky binder which must go into solution before disintegration is complete. While it has been suggested to incorporate fertilizer in disintegrable golf tees, this practice is particularly unsatisfactory when such mineral fertilizers as sodium nitrate and potassium salts are incorporated in the tees,

since these soluble mineral salts are thus irregularly and unevenly supplied to the golf course in localized spots and preclude the possibility of effecting a systematic stimulation of the growth of the grass on the course.

While, as above set forth, golf tees may be constructed in accordance with the present invention from various plastic soils and clays, they are preferably constructed by employing a plastic clay of relatively high colloidal content.

Soil colloids possess many and various valuable characteristics and lend greatly to the fertility of soil. This is in a large part due to the enormous specific surface supplied to soil by the colloidal content thereof. The addition of colloidal matter to soil, therefore, effects a substantial improvement thereof. This is one advantage derived from the use of colloidal clays in manufacturing golf tees. It has been further demonstrated that a colloidal clay lends itself admirably to the manufacture of golf tees in accordance with the present invention since such a clay responds to compression upon sudden impact in a manner which yields a molded tee having a dense slightly water-absorbing outer surface of fine shell-like structure while the interior core of the tee is relatively porous, of coarser structure and capable of readily absorbing water.

Golf tees constructed in accordance with this invention are characterized in that they are formed solely of a homogenous plastic earthy material in the absence of any extraneous binder whatever. Each tee has a shell-like outer surface which is exceedingly dense, of fine structure and relatively non-water absorbing while the interior structure of the tee which is protected and sustained in form by the shell-like surfaces, is relatively porous and of coarse structure. This core is in fact retained under some stress when confined by the outer dense surface shell. Due to this fact, the core disintegrates readily when the dense surface shell is disrupted by being struck with a golf club in play. The density and hardness of the shell-like surface of the tee may render the same substantially water-proof and wear-

resisting during shipment, handling and the like.

Since tees constructed in accordance with the present invention may be fired and rendered relatively waterproof, they may be employed without exterior coatings. It is, however, within the province of the invention to beautify the tees and further improve their water-proof characteristics by a suitable coating with coloring enamel or the like.

Coming to a consideration of the method of constructing the golf tees, it has been found that in molding the tees to give them the desired dense shell-like outer surface and porous core, a more or less definite relation should exist between the moisture content of the clay hereinafter termed "water of plasticity" and the impact pressure employed to mold the tees. It is known that the bonding power of soil or clay decreases with a decrease in the content of the water of plasticity. To effect sufficient cohesion between the particles of soil or clay to bind the same into a self-sustaining form, the clay or soil must contain adequate water of plasticity to effect a binding of the particles when compressed. For example, it has been found that when the water of plasticity content of the clay or soil is reduced to 5%, a pressure of 1,000 pounds per square inch is required to effect bonding and that such pressure is unnecessary for the satisfactory formation of golf tees. Satisfactory results are obtained by employing a soil or clay having a water of plasticity content ranging from around 20 to 28% and molding the tees by subjecting the soil or clay to pressure through the medium of a sharp impact rather than to slow compression. For a clay having a water of plasticity content of from 20 to 25% it has been found that satisfactory results are obtained by effecting the molding of the tees through the medium of an impact having an energy equivalent ranging between $4\frac{1}{2}$ foot pounds and $12\frac{1}{2}$ foot pounds.

The molded tees are preferably air or heat dried at temperatures between the range of 20° C. and 400° C., for the reason that the carbonaceous and colloidal content of soils is permanently destroyed when subjected to extremely high temperatures of the order of say 750° C. It will be appreciated that should it not be desired to retain certain beneficial soil characteristics in the golf tees, they may be dried by firing at higher temperatures. Tees fired at a temperature of around 500° C. possess greater strength than air dried tees. In fact they have a modulus of rupture many times greater than that of air dried tees. It is, therefore, apparent that air dried tees are more readily disintegrated than fired tees.

To illustrate the general characteristics of the invention, drawings disclosing a conven-

tional golf tee accompanies this specification and forms a part thereof, in which

Figure 1 is a perspective view of a conventional golf tee;

Fig. 2 is a sectional view taken on the line 2—2 of Figure 1;

Fig. 3 shows the tee provided with a suitable coating material.

In the drawings the tee is indicated generally at A, the hard dense outer structure is indicated at 1, while the relatively porous core is indicated at 2. In Figure 3 there is shown a coating 4 of suitable coloring enamel for decorating the tee and increasing its water-resisting properties.

It is to be understood that the form of the tee is immaterial and constitutes no part of this invention. Golf tees embodying the characteristic features of the invention may be constructed in any desired form or shape.

Due to the fact that in the manufacture of tees in accordance with the invention no binder or other foreign matter is employed and that only clays and soils are utilized as they occur in nature, regulating only their content of water of plasticity, golf tees can be produced at a fraction of their prior cost and can be supplied by golf courses to players at less cost than now incurred by the maintenance of the conventional sand boxes at each teeing ground.

While I have described my invention as relating to the formation of golf tees solely from a homogeneous plastic earthy material it will be understood that the invention in its broader aspect includes within its scope the inclusion of some extraneous material for purposes other than performing the function of a binder so long as the inclusion of such extraneous material does not deleteriously affect the maintenance of the form of the tee or its disintegration.

The foregoing description is to be construed only as illustrative of the invention and not in a limiting sense.

Having thus described my invention, what I claim is:

A preformed transportable golf tee disintegrable by impact of a golf club in play formed from a homogeneous, relatively insoluble non-viscous plastic earth containing no extraneous binder and having a dense relatively non-water absorbing surface.

WARREN H. McLEOD.