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POLO MALLET HEAD

Original Filed Dec. 26, 1922

Fig. 1.

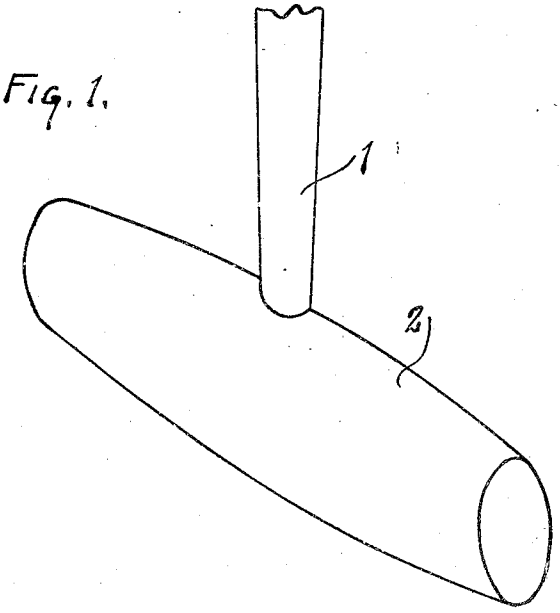
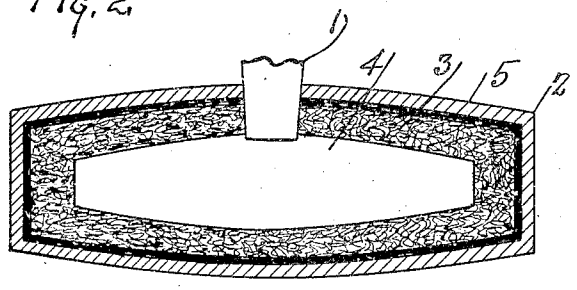


Fig. 2.



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UNITED STATES PATENT OFFICE.

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POLO-MALLET HEAD.

Original application filed December 26, 1922, Serial No. 608,979. Divided and this application filed April 23, 1924. Serial No. 708,541.

This invention relates to polo mallets and particularly to the heads of such mallets, and is a division of our application filed Dec. 26, 1922, Ser. No. 608,979.

It is an object of our invention to provide an improved polo mallet head which will withstand the severe blows and intense usage to which such mallet heads are subjected.

It is a further object of our invention to provide a polo mallet head made of a compound that has uniform strength, and is homogeneous or of successive densities, as desired, in order to produce the requisite effects.

It is a further object of our invention to provide a polo mallet head of such compound that it will be economical to produce and have the physical characteristics and dielectric properties especially adaptable for the purpose.

Referring to the drawings, Fig. 1 is a perspective view of a polo mallet; and Fig. 2 is a sectional view of a polo mallet showing the head composed of our improved compound.

In the accompanying drawings we have shown a polo mallet consisting of a shaft 1 and a head 2 which may be composed of a compound consisting of the following ingredients:

Smoke sheets of rubber, rosin oil, sulphur, ammonium bicarbonate, dehydrated lime, and ethyl-ideneaniline, and gas black.

It is preferred to mix these several ingredients in fifty to one hundred pound lots. The following is a description of the method of mixing and preparing this compound on the basis of a one hundred pound lot.

We take the smoke sheets of rubber and masticate them for fifty minutes according to the usual practice. In the place of the smoke sheets we may substitute fine para having the characteristic of great strength. We select 61 pounds and 12 oz. of such rubber.

It is essential that this rubber when finally made up be used before it is twenty-four hours old because after that time it begins to recover its resiliency.

When these smoke sheets are worked on the mill until plastic at which time they have achieved a temperature of approximately 130° to 180° Fahrenheit, the latter temperature being approximately the safety temperature, we add rosin oil to the extent of 1 pound and 13 oz. This is a softening and volatilizing agent. We then add sulphur by sifting it in slowly as the rubber is being worked on the mill. We use for this purpose 18 pounds and 6 oz. of the sulphur which is of the fineness to pass through a 300 mesh screen. The sulphur is used for the usual purpose in compounds for promoting the vulcanization. Thereafter while the mixing is taking place the dehydrated lime which has been ground as fine as it is possible to secure it is incorporated in the mass to the extent of 3 pounds and 1 oz. The lime is used to toughen the compound and accelerates the reaction between the rubber and the sulphur. We then add 1 pound and 8 oz. of gas black for the purpose of giving color and some body to the mixture, but this may be omitted.

In the meanwhile, the ethyl-idene-aniline has been heated in a steam jacketed kettle to about the temperature of boiling water, that is to about 212° Fahrenheit. We then dip this out of the kettle and incorporate 1 pound and 4 oz. thereof in the mixture in the mill. This acts as an accelerator to the reaction and adds tenacity to the resulting compound.

The last ingredient added is the ammonium bicarbonate to the extent of 4 pounds and 12 oz. This is added to give the spongy or aerated character to the compound. It is added last because the heat of mixing in the mill would volatilize it if added earlier in the process.

It is essential that this compound be molded and vulcanized or blown within twelve hours after it has been mixed. The preferred practice is to mix fresh batches each day.

The temperature of the room in which it is kept and in which it has been mixed should be approximately 70° Fahrenheit.

When it is desired to mold this compound into finished articles it is placed in a metal mold which is jacketed for receiving steam under pressure and cold water. The compound is put in the mold and a core is inserted about which the compound is to be molded as also the handle for the head.

The term "blown" is used because, when the heat is applied to the mold, the compound expands and very great pressure is set up in the mold during this molding process. This results in the compound having a porous appearance as shown at 3.

In some cases where it is desired to have a soft rubber coating on the resulting article the mold is lined with a soft rubber sheet. It is preferable to cement this sheet to the inside of the mold. The sheet itself is about one-sixty-fourth of an inch in thickness.

When the mold is closed the steam is turned on and the mold is kept under heat for one hundred thirty-five minutes approximately. About one-third of this time in the beginning of the molding process the pressure of the steam is being gradually increased until it reaches a maximum of eighty pounds. The remainder of the time the steam is held at an eighty pound pressure. At the end of the period the steam is cut off and cold water is circulated through the mold to chill it and when it has been cooled the mold is opened, the core is extracted and the finished article is thus completed.

These times are approximate depending upon the exact character of the resulting material desired. The time may be varied from fifty minutes to one hundred thirty-five minutes by varying the quantity of lime and ethyl-idene-aniline. The larger the quantity of such agents the less time needed.

It will be understood that these quantities are approximate and some variation is possible.

The handle or shaft 1 of the mallet, which may be made of steel or any other suitable material, is molded into the head 2 during the forming of the head, as will be seen in Fig. 2. The head 2 has a hollow portion as indicated at 4. The outer cover 5, of soft rubber, will prevent the balls from being damaged and reduce the noise.

The compound of which the head is composed may be homogeneous or may be of successive densities, the latter sometimes being of great value.

Thus it will be seen that we have produced a polo mallet which will be light in weight and at the same time be of sufficient strength; which will have the requisite resiliency; which will not damage the balls; and which will not be affected by weather conditions.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. A polo mallet, comprising a shaft and a head composed of a rubber compound and having a hollow interior, and a covering for said head.

2. A polo mallet, comprising a shaft, and a head composed of vulcanized rubber, having a covering and a hollow interior.

3. A polo mallet comprising a shaft and a head consisting of portions of varying degrees of porosity and density, the inner portion of said head being relatively porous and the next outer portion homogeneous therewith being relatively dense, both of said portions constituting a structure highly resistant to shock and resistant to deformation and breakage.

In testimony whereof, we affix our signature.

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