My present invention relates to improvements in club heads for golf clubs or the like, and in particular to a head composed of molded and vulcanized rubber.

Clubs such as drivers, spoons and brassies are usually so large in size as to be too heavy when of solid material, for example wood or metal, and it is difficult to obtain a well balanced one when employing these materials, or to duplicate properly balanced ones when produced. For this reason attempts have been made to overcome the disadvantages by casting hollow metal bodies, or forming wooden heads with recesses to receive balancing weights.

It is the object of these improvements to produce a readily duplicatable head of homogeneous resilient material of just the right weight and balance desired, by the use of moldable rubber composition which is so vulcanized as to produce a relatively hard but non-frangible body having an interior of sponge rubber by means of which the durability and resiliency or elasticity of such heads is increased, while insuring against the defect of overweight.

The invention therefore resides in the production of a novel article of manufacture, and a method of producing the same from rubber.

In the accompanying drawing:
Figure 1 is an elevation of a golf club;
Figure 2 is a top plan view thereof partly broken away;
Figure 3 is a section on the line 3-3 of Figure 2; and
Figure 4 is a section on the line 4-4 of Figure 2.

Like reference characters designate corresponding parts throughout the several views.

Referring to the drawing, 1 designates the club head body and 2 the shaft-receiving bushing which is preferably made of tubular stock having its end at the neck of the head properly tapered interiorly to receive the correspondingly formed shaft end. The tube is bent intermediate its length and flattened preferably so as to prevent the composition from passing upwardly there-through into the shaft socket and to provide a more secure anchoring within the material. In the formation of the head I preferably proceed in the following manner:

A sheet of new crude rubber stock which has been properly worked in the conventional mill and rolled to suitable predetermined thickness is placed in one section of a two-part mold, the opposite or cooperating mold section being filled with a mass of corresponding rubber composition. A separate mass of this rubber material is now mixed with a suitable blowing agent such as carbonate of ammonia or the like, and then laid in the section of the mold containing the sheet lining. The complementary parts of the mold are now closed and the mold subjected to vulcanizing heat.

During the heating stage the gas produced by the volatilization of the blowing agent expands, causing the sponge-like formation of the inner mass of the rubber composition containing said agent and exerting sufficient pressure upon the surrounding layer of rubber to insure a dense outer wall for the hollow section of the body. The sponge core in this process becomes homogeneous with the outer wall and gives to the body a light weight and superior elasticity.

Owing to the spaces or vents within the core provided by the sponge rubber interior, the vulcanizing process can be materially facilitated by the increase in the percentage of sulphur and accelerators useable in the compound so that a decided reduction of time for vulcanization is possible. This is due to the fact that the gases from the solid portion of the body tend to vent themselves into the hollow portion or that portion occupied by the sponge rubber.

The vulcanizing process is continued to a point short of complete hardening either internally or externally. That is to say, the outer wall is relatively hard but is not brittle or frangible, and the interior core has the characteristics of sponge rubber.

In carrying out the process above described, the metallic bushing which is of
heat conductive material, assists materially in transmitting the vulcanizing heat to the interior of the rubber mass. The vulcanizing, therefore, may be said to be carried on simultaneously interiorly and exteriorly.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. As a new article of manufacture, a club head composed of molded vulcanized rubber composition having a dense outer wall and a porous center at one side of its median axis.

2. As a new article of manufacture, a club head composed of molded vulcanized rubber composition having a relatively hard outer wall and a homogeneous porous core having the characteristics of sponge rubber, said core being arranged remote from the striking face of the head.

3. As a new article of manufacture, a club head composed of molded vulcanized rubber composition having a dense outer wall and a porous center, and a shaft bushing fixed within the body by the vulcanization of the same, said bushing being arranged at one side of the head and the porous center at the other side.

4. As a new article of manufacture, a club head composed of molded vulcanized rubber composition having a dense outer wall and a porous center, and a metallic bushing of heat conducting material extending into the solid section of the body.

5. As a new article of manufacture, a club head composed of moldable vulcanized rubber composition, the body being solid at one side to substantially a median line and having a porous core in the other side of the body.

In testimony whereof I affix my signature.

FREDERICK H. SCHAVOIR.