

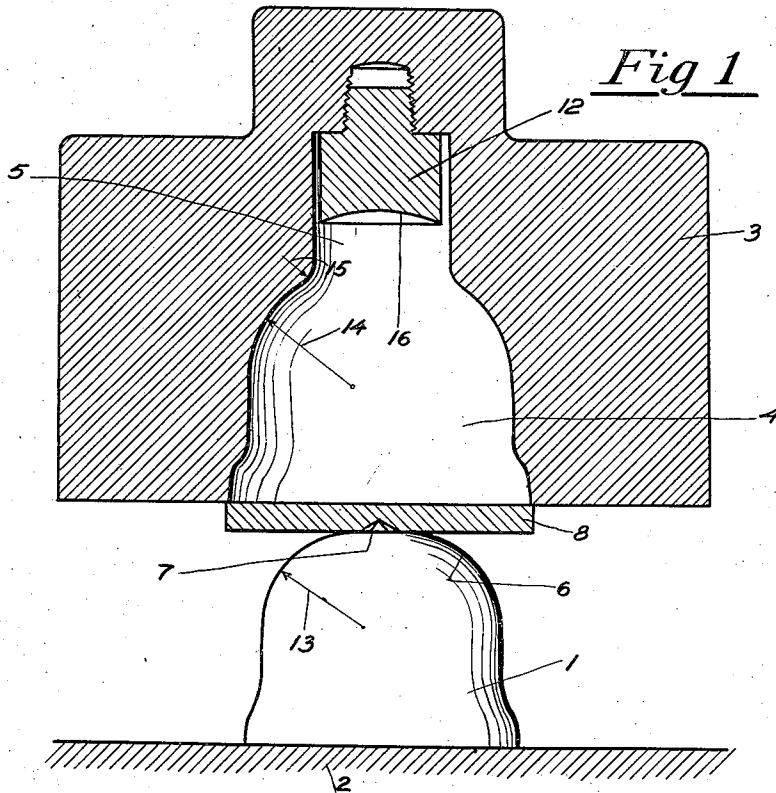
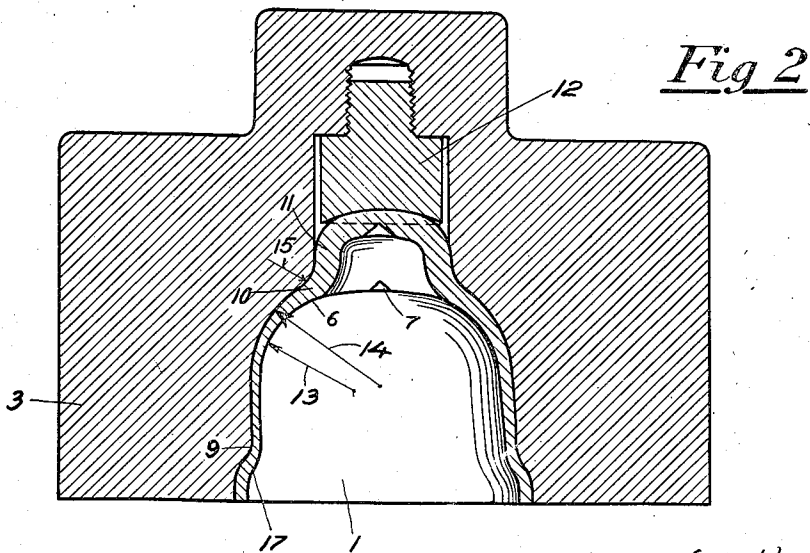
Jan. 25, 1938.

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2,106,647

PROCESS FOR THE MANUFACTURE OF INSULATOR HEADS

Filed March 12, 1936



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2,106,647

PROCESS FOR THE MANUFACTURE OF INSULATOR HEADS

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Application March 12, 1936, Serial No. 68,537
In Sweden May 10, 1935

1 Claim. (Cl. 207—10)

This invention relates to such insulators for electric high tension mains which consist of a porcelain cup mounted within a cup shaped metal head which is to be suspended on the pole by means of a hook attached to a dome like hollow projection on the top of the steel head. The invention has for its main object to provide an improved process of and apparatus for manufacturing such metal heads of malleable steel.

A further object of the invention is to enable the manufacture of metal heads from flat plates of uniform thickness by a forging process in which the portions of the head adapted to sustain a substantial load are given a greater thickness than the remaining portions.

Hitherto it has been customary to manufacture such insulator heads from tempered cast iron, but such members are likely to crack and wear especially in the top dome where the suspension hook is attached. To make the heads of malleable steel in the usual way presents the difficulty of applying the top dome otherwise than by welding which, however, will increase considerably the manufacturing costs.

In the accompanying drawing an insulator head of the class to be manufactured by the improved process is illustrated diagrammatically in the way of example so as to facilitate the understanding of the invention, wherein

Figure 1 illustrates the first stage of the improved process of manufacture, and

Figure 2 the process when completed before the finishing operations are undertaken.

In the drawing 1 designates a mandrel, the outer configuration of which corresponds to the shape of the cavity of the cup head when completed. The mandrel 1 is supported by a table 2 of a forging press, the constructive details of which are not shown, because they may be of any well known design such as easily understood by everybody skilled in the art. Above the mandrel 1 there is shown in Figure 1 a die 3, the cavity of which corresponds substantially with the outer shape of the insulator head to be forged out in the press. To produce the outer form of the top dome 11 of the insulator head (Figure 2), the cavity of the die 3 consists in a wider lower space 4 provided for the cup shaped main body 9 of the insulator head, and in a constricted upper space 5 provided for the top dome 11. The mandrel 1 has such a low height in relation to the depth of the cavity 4 of the die that when the die comes to rest within the mandrel at the end of the forging process, the rounded upper end 6 of the mandrel lies below the entrance to the con-

stricted upper space of the cavity in the die 3 as visible in Figure 2. The upper end of the mandrel has an upwardly projecting central point 7.

The bottom of the upper constricted space 5 of the cavity in the die 3 consists, in the embodiment illustrated, of a removable plug 12 which is screwed into a threaded central hole in the body of the die, and which has a slight cup shaped operative lower end surface 16 corresponding to the desired rounded upper end of the top dome of the finished insulator head. Of course, it is not necessary that the bottom of the space 5 comprise a removable plug 12, but it is preferable for the manufacture of the die.

As will be understood from the following description of the process it is necessary that the body portion of the mandrel 1 should have a slightly conical shape and that the radius 13 of curvature at the top of the mandrel be less than the radius 14 of curvature of the corresponding surface of the cavity in the die. It is also necessary that the radius 15 of curvature of the die surface between the upper and the lower spaces 5 and 4 of the cavity in the die be rather large.

I will now describe the improved process of manufacture. I take a flat steel plate 8, preferably circular in configuration, and of a thickness of some two and a half times the thickness wanted in the lower relatively thin portion of the cup-shaped body 9 of the finished insulator head. This plate I heat to a high forging temperature and place it on the top of the mandrel as shown in Figure 1, a small cavity in the lower surface of the plate 8 cooperating with the point 7 on the mandrel to center the blank. Now I make the die 3 descend, compressing the blank 8 between the walls of the wider cavity space 4 and the mandrel 1. Owing to the conical form of the mandrel 1 the interspace between the mandrel and the walls of the cavity space 4 will diminish downwards as the die 3 descends, thus more firmly compressing the blank near the lower end than farther above and causing a firm clamping of the material of the lower end of the blank and forcing the overflow material upwards towards the upper part of mandrel 1 and cavity space 4 and further upwards into the constricted space 5. On account of the reduced height of the mandrel, it does not enter the space 5 and the surplus material of the blank which has been pushed into space 5 is therefore free from internal pressure. Consequently the thickness of the walls 11 is increased as visible in Figure 2 which increase is augmented by influence of the lower end 16 of plug 12 forming the bottom of space 5. The result

will be a cup shaped member the shell 9 of which increases in thickness from the lower end towards the dome portion 11 the walls of which latter have still a greater thickness than the main body of the cup.

5 It will be understood that the undermost edge portions 17 of the cup are to be removed when the forging is finished, and the die elevated, and the cup removed from the mandrel.

10 Notwithstanding I have spoken of the manufacture of insulator heads this invention is not limited to such specialties, but can be favourably used in the manufacture of other objects of similar character.

15 What I claim is:

A process for the manufacture of a malleable cup-shaped member having a dome like hollow top

projection by forging a heated blank of malleable material over a mandrel by means of a die, consisting in compressing the edge portions of the blank between said die and the root of said mandrel to prevent the material from flowing 5 outwardly, and forcing the surplus of material of the blank upwardly beyond the end of the mandrel, where it is subjected radially as well as axially to external pressure only, without counteracting internal forces, thus forming a cup-shaped projection opening into the cavity of the 10 main body of the cup-shaped member and provided with walls and bottom of greater thickness than the initial thickness of the blank as well as of the main body of the cup-shaped member. 15

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