Oct. 7, 1930. M. P. WILSON 1,777,595

ANNEALING BOX

Filed July 14, 1928

Fig. 1.

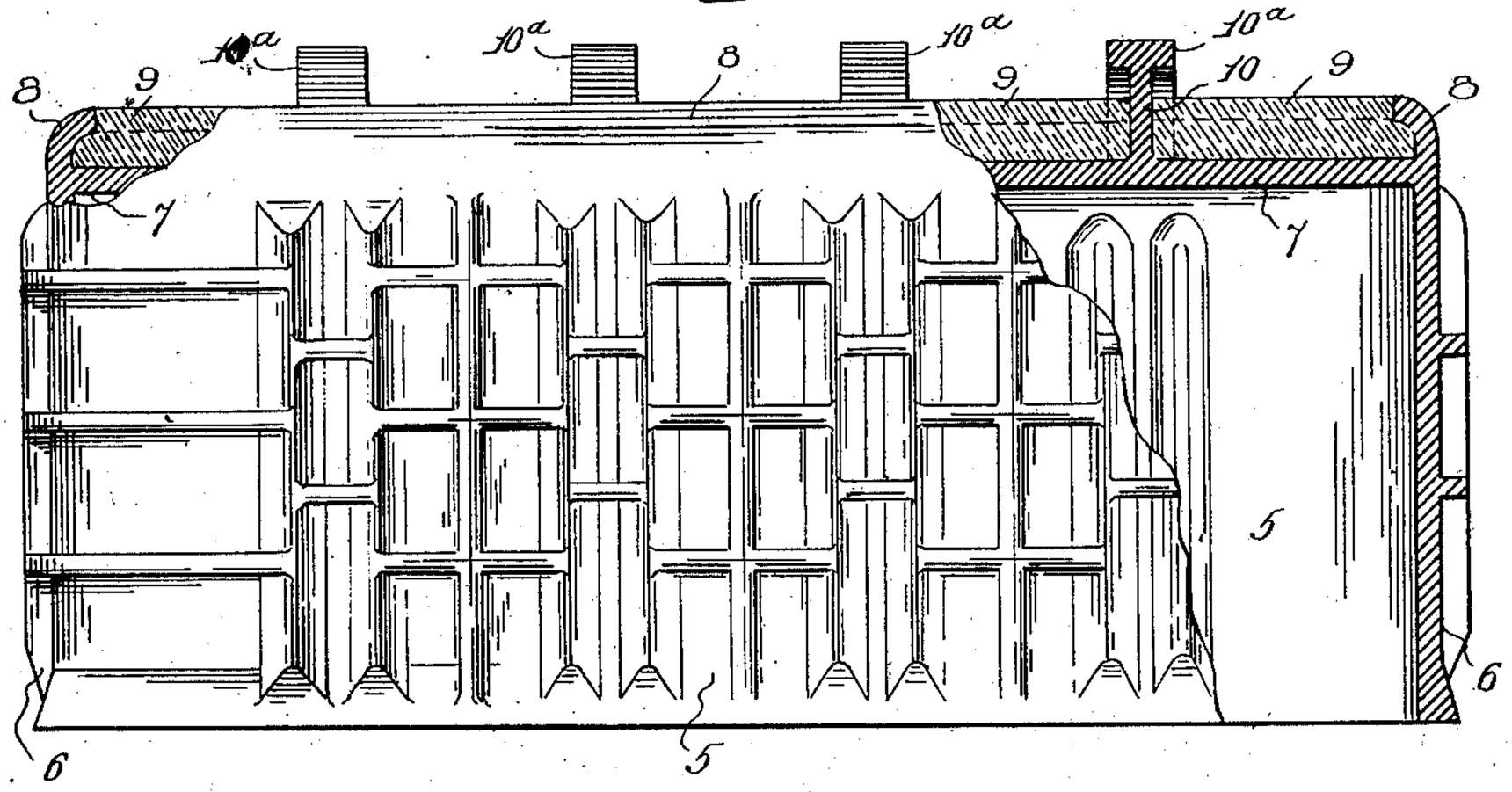


Fig. 2.

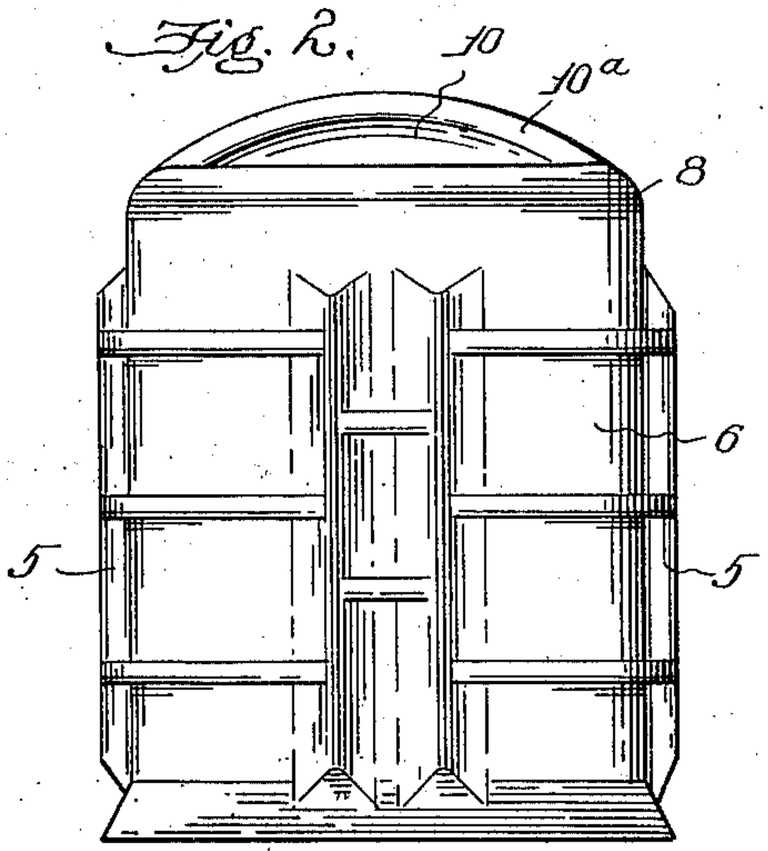
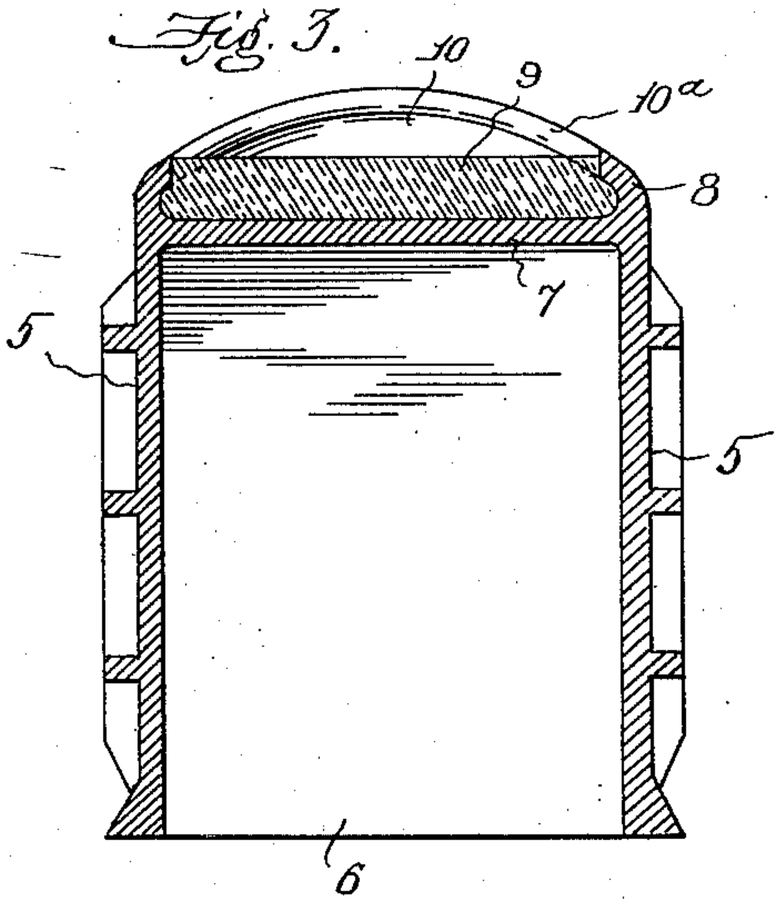


Fig. 3.



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UNITED STATES PATENT OFFICE

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ANNEALING BOX

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My invention is an improvement in boxes employed for the purpose of annealing sheets or plates of metal and in which the latter are stacked and confined so that they will be subjected to a high temperature in the annealing process by heat applied to the outside of the box as generally understood in the practice of this art.

Annealing boxes of this general character are usually cast in a single unit and the life of the box is greatly affected by overheating of the top which soon becomes destroyed or damaged to such an extent as to require repairing, incurring an important item of expense in the practice of the process; and furthermore, the excessive heat of the top of the box results in an uneven annealing of the plates in the stack inasmuch as those at the top are subjected to a greater amount of heat than those at the bottom portion of said stack. For the purpose of producing an annealing box which will overcome these faults, I provide a particular form of top construction in connection with a thick layer of comparatively light insulating material whereby said top is not only protected against overheating to increase the life of the box, but will also conduct the required amount of heat to the upper part of the stack of plates within the box so that an even annealing of all the plates will be effected.

With this particular object in view my invention consists in the particular construction of the top of an annealing box in which the sides and ends may be of any approved formation or design, all as hereinafter fully described and specifically set forth in the appended claims.

In the drawings:

Figure 1 is a side elevation of an annealing box with the top constructed in accordance with my invention, the end portions of said box being broken away.

Fig. 2 is an end view of the box, and

Fig. 3 is a transverse sectional view through the same.

The sides 5 5 and ends 6 6 of the annealing box may be of any conventional and approved formation for reinforcing the body of the box, that shown being a well-known construction but not essential in the carrying out of my invention inasmuch as said sides and ends may be provided with any other design of reinforcing ribs, but in order to cooperate with the top construction of my improved annealing box said sides and ends at their upper ends are curved inwardly for a slight distance above the ceiling 7 of the box, as at 8, to provide a space above said ceiling in which insulating material 9 is placed, and in order to reinforce the ceiling and more especially conduct a certain amount of heat thereto below the insulating material I provide outwardly projecting transverse ribs 10 having lateral flanges 10^a 10^a at their upper edges providing an increased thickness of material for certain purposes as well as flat external surfaces over which the flame will pass when the box is subjected to heat in carrying out the annealing process. These ribs are preferably arcuate in form and are suitably spaced apart from one end of the top to the other providing in association with the curved upper portions of the sides and ends of the box several shallow receptacles in the top to receive the insulating material, the depth of said receptacles being determined according to the size of the box and amount of heat applied.

With an annealing box having the top construction hereinbefore described, in accordance with my invention, I have so far found that best results are obtained by using a comparatively light insulating material, such as the insulation under the well-known name of sil-o-cel, for it is a suitable non-conductor of heat, and being light as compared with sand which is commonly used, will serve to better protect the ceiling of the box and also prevent overheating of the upper plates of metal within the box, and in using an insulating material of this general character the arched ribs, hereinbefore referred to, perform an important service in conducting a sufficient amount of heat directed against the flat surface thereof to the ceiling 7 of the box, it being noted that the enlarged upper portions of the arched ribs project above the insulating material so that the flame not only passes

over the surface thereof but also between said ribs.

The annealing box constructed in accordance with my invention is used in the usual manner, being placed over the stack of plates with the lower end of said box embedded in sand to seal the chamber formed thereby and in which the plates are annealed, said box being subjected to heat by fire at one side thereof from which the flames sweep over the box. In the present instance the flames in sweeping over the insulated top and arched ribs enlarged at their upper edges, as heretofore described, are prevented from overheating the ceiling of the box for the reason that the insulation is effective as a non-conductor while the arched ribs being of a particular formation conduct the required amount of heat to the ceiling along its length whereby the upper part of the chamber in which the plates are stacked is supplied with the required amount of heat without being overheated as with the ordinary form of box, consequently the entire stack of plates will be properly annealed. It will be understood also that the construction of the top when supplied with a comparatively light insulating material will not be overheated or heavy as when thick tops are made or sand used as the insulating material, in the latter instance the sand being a conductor of heat is not as effective as desired. Therefore by providing an annealing box of my invention possessing the advantages stated decided results are obtained by increasing the life of the box as well as providing an even annealing of all the plates in the stack.

I claim:

1. An annealing box having a top with side and end walls projecting above the same, a plurality of spaced apart arched ribs extending upwardly from the top between the side walls with the upper edges of said arched ribs above the plane of said side and end walls and of increased thickness for conducting heat to the ceiling of the annealing box by way of the ribs, and a non-conductor of heat of light material confined in the recesses between the ribs and aforesaid side and end walls.

2. An annealing box having side and end walls extended above the ceiling and curved inwardly a short distance to form a receptacle on top of the box, arched ribs extending upwardly from the ceiling and across the top of the box from the extended walls at opposite sides thereof, said ribs being thickened at their upper or outer edges, and insulating material in the receptacles so formed on top of the box.

MATTHEW P. WILSON.