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METHOD OF MAKING JACKETS FOR ENGINE CYLINDERS.
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1,293,562.

Patented Feb. 4, 1919.

Fig. 1.

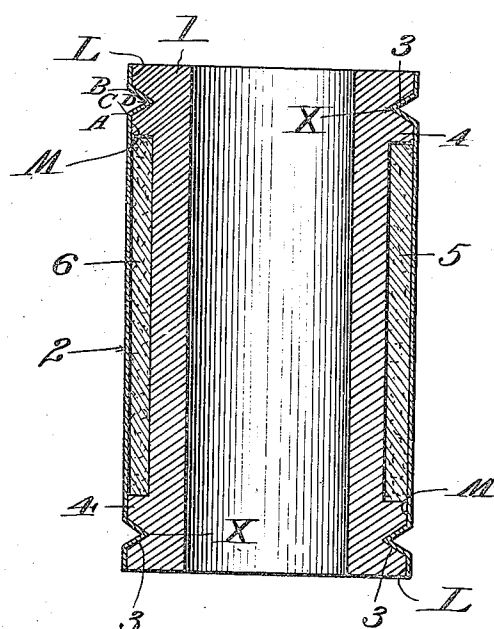
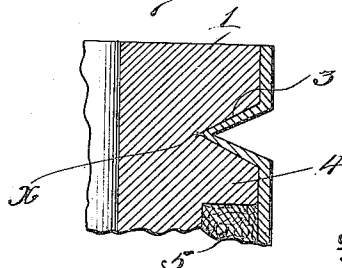


Fig. 2.



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METHOD OF MAKING JACKETS FOR ENGINE-CYLINDERS.

1,293,562.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK SIEGEL, citizen of the United States of America, residing at Irvington, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Methods of Making Jackets for Engine-Cylinders, of which the following is a specification.

This invention relates to the manufacture of jackets for engine cylinders such as the jackets which are used for retaining the cooling medium for keeping cool the cylinders of explosion engines.

The invention consists broadly in depositing such jackets directly on the cylinders.

Heretofore great difficulty has been experienced in forming a bond between the metal of the cylinder and the jacket due to the fact that while a light deposition of copper will adhere to the cylinder with great tenacity, the jacket has a tendency to break away from the cylinder upon reaching the required thickness. Consequently various methods of mechanically securing the jacket to the cylinder have been attempted such as wire and other fastening means. I have found by lengthy and careful experiments that by causing a relatively light deposit of copper to form at certain points on the cylinder the necessity of employing mechanical securing means is obviated.

In the accompanying drawings Figure 1 shows a cylinder provided with a water jacket made in accordance with the present invention and Fig. 2 is an enlarged fragmentary sectional view showing the varying thickness of the deposit.

In the embodiment of the invention illustrated the cylinder 1 is provided at those parts to which the jacket 2 is to be fixed, with annular V-shaped grooves 3, the said grooves being preferably, cut into collars 4, or the like cast on the cylinder body.

The surface of the cylinder 1 is treated with an alkali solution so that the iron or steel will not be attacked by the copper during the electrolytic process of forming the jacket. This is preferably effected by dipping the entire cylinder into the alkali solution.

The space 5 which is to represent the interior capacity of the jacket, that is to say

the space through which the water is to circulate, is occupied by a layer of what is known in the trade as B metal (antimony and lead) 6 placed on the surface of the cylinder. Heretofore, stearin, gutta-percha and like materials have been used in lieu of B metal but great difficulty has been experienced due to the use of these materials in securing a non porous deposition. The use of B metal obviates these difficulties. The cylinder is now immersed in an electrolytic bath and copper is slowly deposited on the surfaces of the grooves 3, on the adjacent surfaces 7 of the collars 4 and upon the face of the material 6 within the water space 5.

It has been found that, owing to the shape of the grooves 3 that the deposition of copper will be thinner at the bottom X of the acute angle of the groove than at the top thereof or at points L and M on the cylinder collar 4 and around the rest of the cylinder. The copper will hold to the cast iron very tightly at point X and will thus overcome the natural tendency of the thicker portions of the jacket to break away from the cylinder.

I have found by careful experiments that best results can be obtained where the walls of the grooves 3 form something less than a right angle, that is where the angle is such that the distance from A to B is approximately the same or slightly less than the distance from C to D. However I do not desire to be limited to these specific dimensions.

The material 6 may be removed in any suitable manner such as by melting.

While my invention is particularly adapted for use in providing water jackets for gasoline engines, it will be readily seen that the invention can be used for providing metallic bodies of various kinds with jackets or casings.

Having thus described my invention, what I claim is:

1. The method for the electrolytic manufacture of jackets for metallic bodies, consisting in providing the body to be jacketed with substantially V-shaped grooves formed in the parts to which the jacket is to be fixed and causing an electrolytic deposit to form on the grooved portions of said jacket.

2. The herein described method of provid-

ing metallic bodies with jackets, consisting in providing the body to be jacketed with grooves having their walls converging from top to bottom of the groove and causing an electrolytic deposit of different thickness to form at the bottom of the groove than upon the sides thereof and upon the surface of the body adjacent said grooves.

3. The herein described method of providing metallic bodies with jackets consisting in providing the body to be jacketed with substantially V shaped grooves; and causing an electrolytic deposit of varying thickness to be formed upon said grooves and that portion of the body adjacent said grooves.

4. The method for the electrolytic manufacture of jackets for metallic bodies, consisting in providing the body to be jacketed with angularly shaped grooves and causing an electrolytic deposit of less thicknesses to

form in the grooves than upon the surface of the body adjacent said grooves.

5. The herein described method of providing metallic bodies with jackets by electrolytic deposition, consisting in forming the jackets at their point of union with said bodies of less thickness than the free intermediate portions thereof.

6. The herein described method of providing metallic bodies with jackets consisting in providing the body to be jacketed with grooves the walls of which form something less than a right angle, and causing an electrolytic deposit to be formed upon said bodies and said grooves.

In testimony whereof I have affixed my signature in presence of two witnesses.

FREDERICK SIEGEL.

Witnesses:

R. H. HART,
B. G. HOVEY.