No. 811,196. PATENTED JAN. 30, 1906.

G. H. BENJAMIN.

CYLINDER FOR TREATING HEATED METAL.

APPLICATION FILED MAY 18, 1905.

FIG. 1.

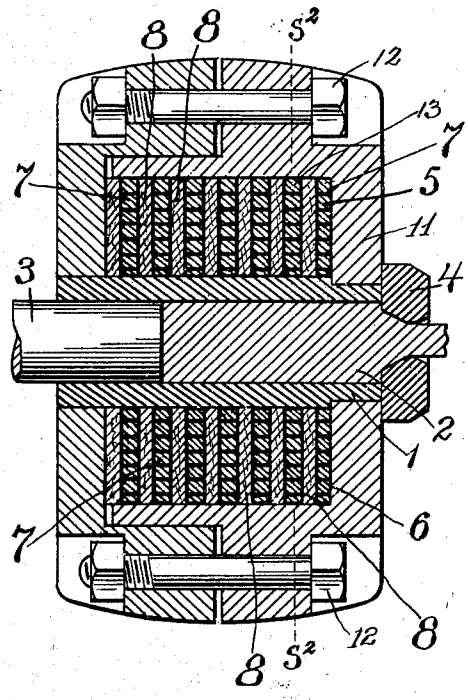


FIG. 2.

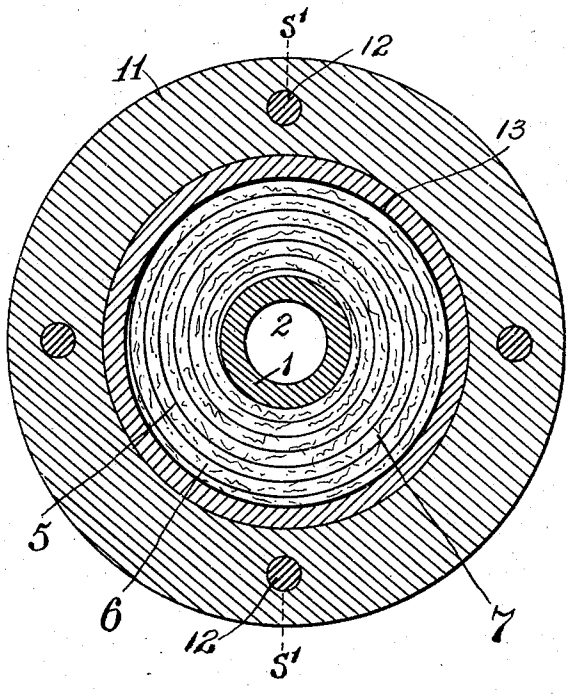


FIG. 3.

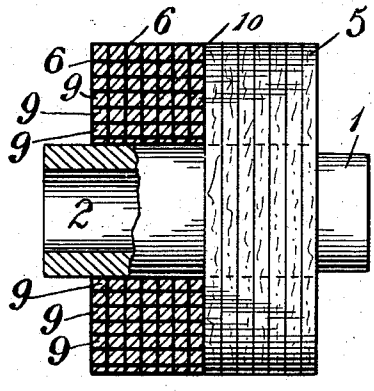


FIG. 4.

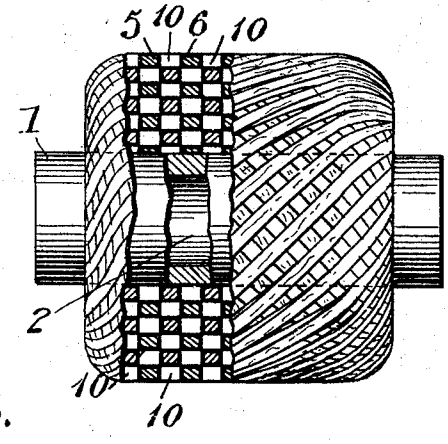
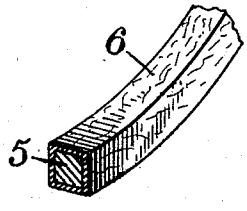


FIG. 5.



WITNESSES:

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CYLINDER FOR TREATING HEATED METAL.

No. 811,196. Specification of Letters Patent. Patented Jan. 30, 1906.

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To all whom it may concern:

Be it known that I, GEORGE H. BENJAMIN, a citizen of the United States, residing at New York, county of New York, State of New York, have invented a Cylinder for Treating Heated Metal, of which the following is a specification.

My invention relates generally to apparatus such as is ordinarily employed in the extrusion process of manufacturing solid or hollow wire, rods, bars, and the like. The invention has particular reference to the construction of the pressure chamber or container forming part of such apparatus, which serves to hold the body of heated metal while it is being acted upon by hydraulic or other pressure employed to force the same through a die.

The accompanying drawings illustrate a container suitable for carrying my invention into effect. I wish it understood, however, that I do not limit myself to the particular construction shown, as various changes may be made therein or other forms employed operating in substantially the same manner to produce practically the same result.

In the drawings, Figure 1 is a sectional view, taken on the line $s' s'$ of Fig. 2, showing a container constructed in accordance with my invention. Fig. 2 is a sectional view taken on the line $s^2 s^2$ of Fig. 1. Fig. 3 is a view, partly in section, illustrating a slightly-modified construction, the container being shown with outer jacket or housing removed. Fig. 4 is a similar view illustrating a further modification, and Fig. 5 is a detail view showing a piece of the covered wire with which the cylindrical container is wrapped.

Referring now to the drawings, the container shown is made up of a cylinder 1, open at the ends and of a diameter suitable for providing interiorly thereof a chamber 2 to receive the body of metal to be acted upon. Such metal is placed in the chamber 2 in a highly-heated state and in sufficient quantity to produce a rod, bar, or tube of desired dimensions when subjected to hydraulic or other pressure applied by means of a piston 3, acting to force the metal from the container through a die 4, as shown in Fig. 1. Owing to the high temperature and pressure to which the cylinder 1 is subjected in use, it is necessary to reinforce and strengthen the same in a manner to retain the heat in the body of metal being acted upon and at the same time prevent bulging or distortion of the containing-cylinder. For this purpose I wrap the cylinder to a suitable depth with wire 5, which is preferably flat and covered with asbestos or other non-heat-conducting material 6, as shown in Fig. 5. The wire may be wound upon the cylinder in any manner desired, but it is preferably arranged thereon as a series of equispaced coils 7 7, separated by rings 8 8, of asbestos or other suitable material, which are interposed between the coils and serve to hold the same in position. If desired, dead-air cells may be formed in the rings 8 8 by indenting, perforating, or loosely packing the material forming the same in order to render such rings more effective for heat insulating purposes. The employment of the interposed rings 8, while desirable when the coils 7 are separated, may be dispensed with when the wire is wound as shown, for example, in Figs. 3 and 4. In Fig. 3 the winding is continuous—that is to say, back and forth—upon the cylinder 1 in helical coils 9 9 until a suitable depth is obtained. In Fig. 4 the wire is wound spirally and crossed upon the cylinder and the turns thereof separated to leave intervening air-cells 10 throughout the winding. It will be understood that the invention is not limited to the use of the particular windings shown, as various other forms would obviously serve the same purpose. The employment of covered wire avoids metallic contact between the various turns thereof, and as a result the winding is rendered effective as a non-conducting covering and serves to retain the heat in the body of metal being acted upon, at the same time strengthening the containing-cylinder sufficiently to enable it to withstand the lateral pressure developed within the same in use. For the purpose of holding the winding in position and to further strengthen the cylinder I employ an outer jacket or housing 11, of cast steel or other metal, which is preferably made in telescoping sections secured together by bolts 12. The sections of the jacket are fitted upon the ends of the cylinder 1 and are hollowed out interiorly to form an annular chamber 13 to accommodate the winding. The construction or form of jacket is unimportant and may be changed in any manner desired. As a final step in the construction of the container it is desirable at

times to subject the inclosed winding to pressure in order to prevent subsequent displacement of the coils, &c., when the container is in use. This may be readily done after the parts are assembled, as shown in Fig. 1, by forcing the telescoping sections of the jacket or housing together by power or in any other suitable manner and securing the same by the bolts 12.

The advantages of my invention will be apparent from the foregoing description, as will also the use of the container which, as above stated, forms part of the usual apparatus employed in carrying out the well-known extrusion process of shaping metal.

Having thus described my invention, I claim—

1. A container for treating heated metal under pressure, comprising a cylinder, a winding of insulated wire thereon, and an inclosing jacket.

2. A container for treating heated metal under pressure, comprising a wire-wound cylinder, and a non-heat-conducting covering for the winding.

3. A container for treating heated metal under pressure, comprising a wire-wound cylinder, an inclosing jacket therefor, and a non-heat-conducting covering for the winding.

4. A container for treating heated metal under pressure, comprising a wire-wound cylinder, and a body of non-heat-conducting material interposed between the coils and the cylinder.

5. A container for treating heated metal under pressure, comprising a wire-wound cylinder, and a body of non-heat-conducting material interposed between the coils of the winding.

6. A container for treating heated metal under pressure, comprising a wire-wound cylinder, and a body of non-heat-conducting material dividing the winding into a series of equispaced coils.

7. A container for treating heated metal under pressure, comprising a wire-wound cylinder, and a body of non-heat-conducting material interposed between the turns of the winding.

8. A container for treating heated metal under pressure, comprising a cylinder, a series of spaced coils of insulated wire wound thereon, and an inclosing jacket.

9. A container for treating heated metal under pressure, comprising a wire-wound cylinder, and an inclosing jacket therefor formed of telescoping sections.

10. A container for treating heated metal under pressure, comprising a wire-wound cylinder, an inclosing jacket therefor formed of telescoping sections, and means for securing the sections together.

11. A container for treating heated metal under pressure, comprising a cylinder, a winding of asbestos-covered wire upon the cylinder, a sectional jacket inclosing the winding, and means for securing the sections of the jacket together.

12. A container for treating heated metal under pressure, comprising a cylinder, a winding of asbestos-covered wire upon the cylinder, the said wire being distributed as spaced coils, and an inclosing jacket.

In testimony whereof I affix my signature in the presence of two witnesses.

GEO. H. BENJAMIN.

Witnesses:
FRANK O'CONNOR,
W. H. PUMPHREY.