No. 607,033. Patented July 12, 1898.

J. E. GRESTY.

METAL TUBE.

(Application filed Dec. 14, 1897.)

(No Model.)

FIG. 1.

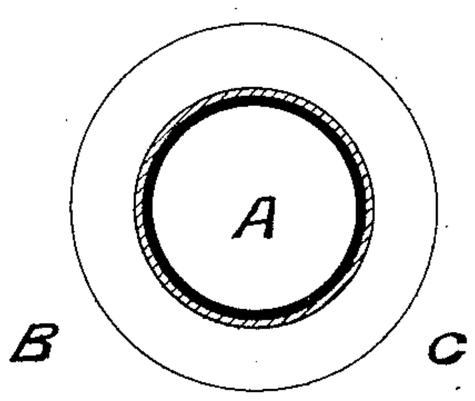


FIG. 2.

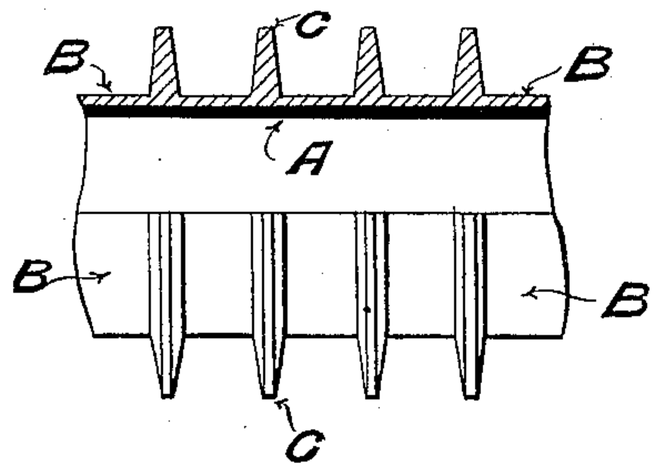


FIG. 3.

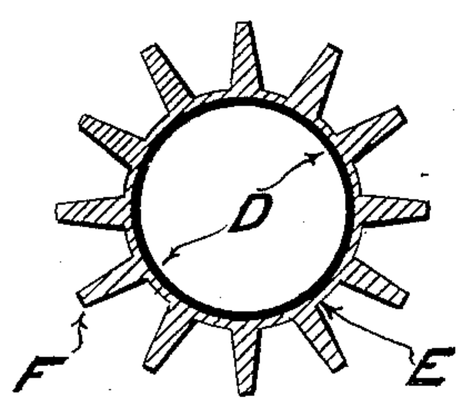


FIG. 4.

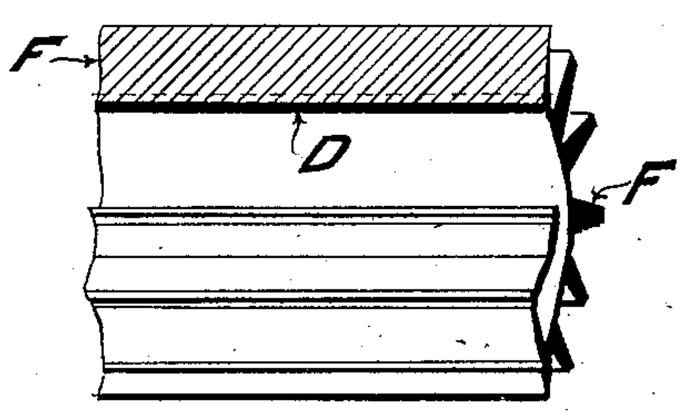


FIG. 5.

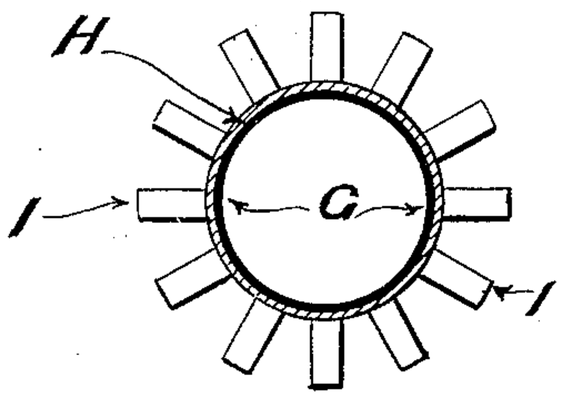
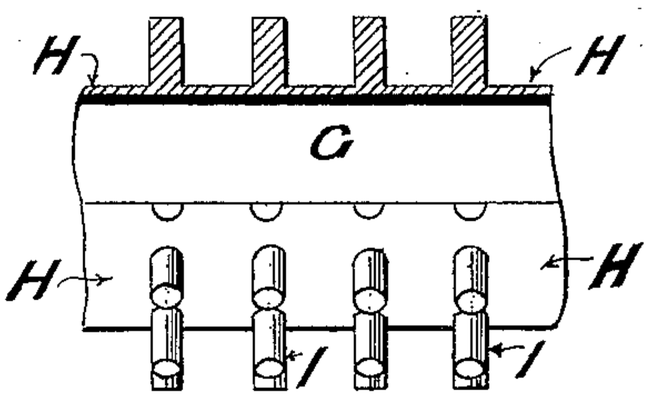


FIG. 6.



Witnesses —
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Otto Munn & Co

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By Munn & Co
his Attorneys

UNITED STATES PATENT OFFICE.

JOHN EDWARD GRESTY, OF HUDDERSFIELD, ENGLAND.

METAL TUBE.

SPECIFICATION forming part of Letters Patent No. 607,033, dated July 12, 1898.

Application filed December 14, 1897. Serial No. 661,853. (No model.) Patented in England December 4, 1895, No. 23,196.

To all whom it may concern:

Be it known that I, JOHN EDWARD GRESTY, a subject of the Queen of Great Britain and Ireland, and a resident of 27 Estate Buildings, Huddersfield, England, have invented certain new and useful Improvements in Metal Tubes, (for which I have obtained Letters Patent in Great Britain and Ireland, No. 23,196, being dated December 4, 1895,) of which the following is a specification.

This invention has reference to a cheap and expeditious mode of forming ribs, flanges, or projections upon wrought-metal tubes or of constructing metal tubes suitable for withstanding high pressures with ribs or projections upon their exterior surfaces to act as heat collectors or distributers. Such tubes and the manner of their manufacture will be clearly understood by reference to the annexed sheet of drawings, in which—

Figure 1 is a transverse section or end view, and Fig. 2 a part exterior and part sectional view, of a wrought-metal tube A, surrounded or incased by a cast-metal shell or tube B, formed in one piece with annular ribs or flanges C. Figs. 3 and 4 are similar views of a wrought-metal tube D with an outer cast-metal shell or tube E, formed in one piece with longitudinal ribs or flanges F. Figs. 5 and 6 represent the same views of a wrought-metal tube G with outer cast-metal shell H formed in one piece with radial studs or pins I.

The said shells B, E, and H and their flanges or studs are cast direct onto the tubes A, D, and G and in such way are permanently fixed thereon.

While I have shown only three forms of my improved composite tube, I wish it to be understood that the exterior projections may take any other form or arrangement and differ in size or number and may be continuous or interrupted, straight or tortuous, as desired, for the better diffusion or absorption of heat or for other like purposes and to suit the various adaptations or uses of the tubes. The flanges, for example, shown in Figs. 1 and 2 may be in separate rings.

While more especially intended for applying exterior projections to wrought-metal tubes, I may adapt my invention for applying projections upon the interior of the tube or upon both the exterior and the interior, with obvious advantages when absorption and radiation of heat are required or where the interior passage requires to be broken or the exterior surface requires to interrupt impinging gases or impede a heated current, as in furnace-flues or fire-boxes and like situations.

To those skilled in the art it will be obvious that using a plain inner wrought-metal tube and casting the flanges thereon affords an exceedingly simple and cheap mode of making a tube designed to resist high pressure and to act as a heat conductor and distributer.

Having thus particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim, and desire to secure by Letters Patent, is—

1. A tube of wrought metal having cast-metal projections combined therewith, substantially as described.

2. In combination, a wrought-metal tube and a cast-metal tube having projections, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOHN EDWARD GRESTY.

Witnesses:
ARTHUR GRESTY,
WALTER FENN.