

(No Model.)

G. H. EVERSON.

MODE OF MAKING COMPOUND METAL TUBES.

No. 438,072.

Patented Oct. 7, 1890.

Fig. 1.

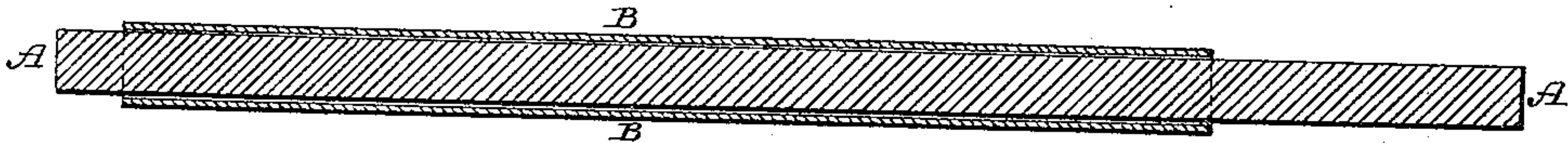


Fig. 2.

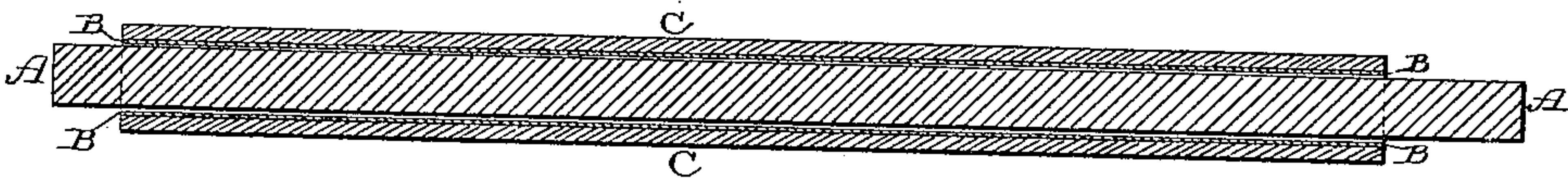


Fig. 3.

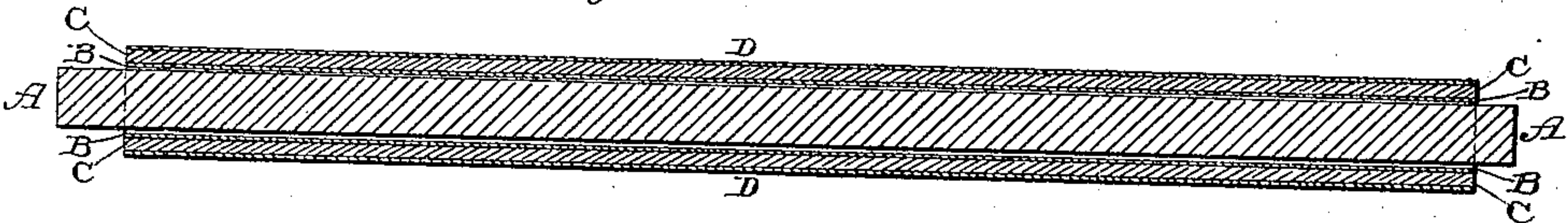
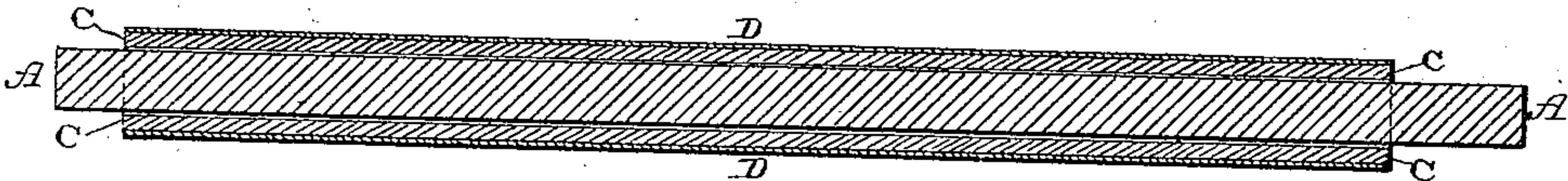


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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MODE OF MAKING COMPOUND METAL TUBES.

SPECIFICATION forming part of Letters Patent No. 438,072, dated October 7, 1890.

Application filed January 31, 1890. Serial No. 338,740. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE H. EVERSON, of
Pittsburg, in the county of Allegheny and
State of Pennsylvania, have invented certain
5 new and useful Improvements in the Process
for Lining and Covering Tubes and Pipes;
and I do hereby declare the following to be a
full, clear, and exact description of the inven-
tion, such as will enable others skilled in the
10 art to which it pertains to make and use it,
reference being had to the accompanying
drawings, which form part of this specifica-
tion.

My invention relates to an improved pro-
15 cess for lining and covering hard metallic
tubes or pipes with softer metals; and it con-
sists in, first, placing the lining upon a hard
mandrel which has been suitably lubricated,
and then rolling the lining upon the mandrel
20 until it has the desired size and thickness,
passing the tube which is to be lined over the
lining on the mandrel, and then rolling the
tube and the lining upon the mandrel until
the tube or pipe is rolled tightly upon the lin-
25 ing, and, second, placing the tube which is to be
covered upon a hard mandrel, covering it
with the material which is to be used as a cov-
ering, and then passing the tube and covering
while upon the mandrel through suitable rolls
30 until the covering is rolled tightly upon the
tube and the covering is reduced to the re-
quired thickness, as will be more fully de-
scribed hereinafter.

The object of my invention is to cover iron,
35 steel, or other hard metallic tubes or pipes,
either inside or out, or both, with softer met-
als—such as lead, copper, zinc, tin, &c.—and
thus produce highly-finished tubes or pipes
made of iron or steel, and which are so cov-
40 ered with other metals as to produce practi-
cally pipes of that metal or metals, and which
have not only a much greater strength and
resistance, but which can be produced at a
much lower price.

Figure 1 is a vertical section of a hard man-
drel having a lining or covering placed upon
it and ready to be rolled. Fig. 2 is a similar
view showing a pipe placed upon the lining
after the pipe and lining have been rolled. Fig.
50 3 is a similar view showing the covering applied
to a lined pipe. Fig. 4 is a similar view show-

ing the covering applied to the pipe without
a lining.

I first take a hard smooth mandrel A of the
exact diameter desired for the inside of the 55
lining of the tube and somewhat longer than
the tube that is to be lined and covered. This
mandrel is then thoroughly lubricated over
its entire surface with oil and graphite or
other suitable lubricant, and this mandrel is 60
placed inside of the tubular lining which is
to be placed inside of the tube or pipe. This
lining B must be thicker than it is intended
to be when finished, so as to allow for the roll-
ing which it is to receive. The mandrel A 65
and the lining B placed upon it are then
passed a suitable number of times through
suitable grooves in suitable rolls until the
lining material is rolled tightly upon the man-
drel A and the desired thickness of the lin- 70
ing material is obtained. The tube or pipe
C to be lined is then slipped over the lining
B into position. The tube, lining, and man-
drel are then passed through suitable grooves
in suitable rolls until the tube or pipe is rolled 75
tightly upon the lining and the two are made
practically one. If it is desired to cover the
tube or pipe either with the same or a differ-
ent material from the lining, the covering D
is then placed around the outside of the tube 80
or pipe and the whole is passed through suit-
able grooves in suitable rolls until the cover-
ing is rolled tightly upon the tube and the
covering is reduced to the required thickness.
Then by suitable appliances the hard man- 85
drel, which has been prevented from sticking
to the lining by the lubricating material, is
removed from the inside of the lining of the
tube, after which the ends of the lining, tube,
and covering are to be trimmed off evenly. 90
Where a lining alone is required the covering
is dispensed with, and if a covering alone is
required the pipe is placed directly upon the
lubricated mandrel, rolled to the required
thickness, and then the covering is applied, 95
as above described. Either the lining and
covering may be of the same material or of
different materials, as may be desired. By
this construction very superior tubes for
steam-boilers, underground-wire conduits, 100
and many other purposes can be produced.
Pipes lined and covered with brass or copper

are substantially the same as pipes made wholly of brass or copper, possess a much greater strength, and can be produced much more cheaply.

5 Having thus described my invention, I claim—

1. The process described of lining pipes, consisting in placing the metal which is to form the lining upon a hard mandrel, rolling
10 this lining until it has the desired thickness, then placing the pipe which is to be lined upon the lining, and rolling both the pipe and the lining upon the mandrel to any desired degree, substantially as shown.

15 2. The process of covering pipes or tubes, consisting in placing the pipe upon a lubricated mandrel, rolling the pipe to the desired thickness, placing the covering material around the pipe upon the mandrel, and then
20 rolling both the covering material and the

pipe to any desired degree, substantially as set forth.

3. The process herein described of both lining and covering pipes of hard material with other metals, consisting in placing the lining
25 upon a hard lubricated mandrel, rolling the lining until it fits tightly upon the mandrel and is reduced to the required thickness, placing the tube upon the lining and rolling both the tube and the lining, placing the covering
30 upon the tube thus rolled, and then rolling the covering, the tube, and the lining, substantially as specified.

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

GEORGE H. EVERSON.

Witnesses:

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T. E. ROOK.