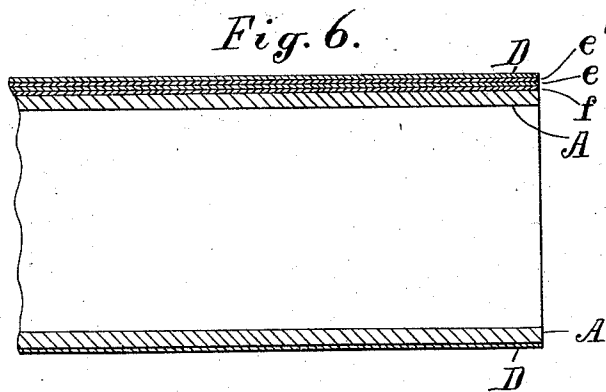
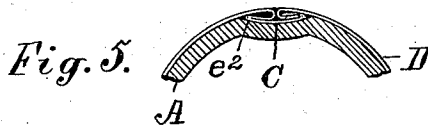
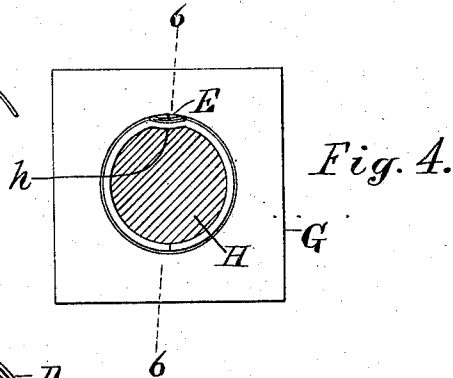
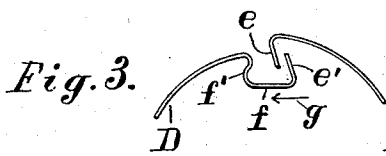
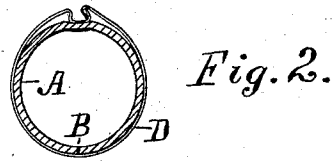
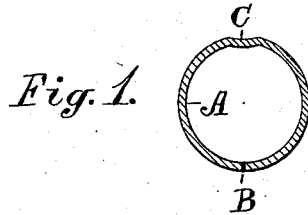


(Model.)

W. T. MERSEREAU.
DOUBLE SHELL TUBE.

No. 558,651.

Patented Apr. 21, 1896.



Attest:
L. Lee,
Edw. F. Kinsey.

Inventor.
William T. Mersereau,
per Thos. S. Crane, Atty.

UNITED STATES PATENT OFFICE.

WILLIAM T. MERSEREAU, OF SOUTH ORANGE, NEW JERSEY, ASSIGNOR OF
ONE-HALF TO WILLIAM DURST, OF BROOKLYN, NEW YORK.

DOUBLE-SHELL TUBE.

SPECIFICATION forming part of Letters Patent No. 558,651, dated April 21, 1896.

Application filed January 11, 1896. Serial No. 575,145. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM T. MERSE-
REAU, a citizen of the United States, residing
at South Orange, Essex county, New Jersey,
have invented certain new and useful Im-
provements in Double-Shell Tubes, fully de-
scribed and represented in the following
specification and the accompanying drawings,
forming a part of the same.

10 The object of this invention is to furnish
an improved joint for the casings of double
tubes, the joint being so constructed as to
draw the lips of the seam into especially close
contact when they are closed upon the inner
15 tube. Heretofore it has been common to
make single or double lock seams by engag-
ing suitable lips upon the edges of a cylin-
drical blank; but the present construction
furnishes an additional element to such joints,
20 by which one of the lips is drawn laterally in
the operation of closing the joint, and the
lips are thus drawn into close contact, and
any stretching of the metal which occurs in
the closing of the same is fully compensated.

25 The invention will be understood by refer-
ence to the annexed drawings, in which—

Figure 1 is a cross-section of the inner pipe.
Fig. 2 is a cross-section of the inner pipe with
the shell applied thereto in readiness to close
30 the seam. Fig. 3 shows an enlarged view of
the edges of the shell adjacent to the seam.
Fig. 4 represents the die with a cross-section
of the completed tube as it is drawn through
the same. Fig. 5 is a cross-section of the
35 completed seam and a portion of the inner
tube enlarged to show the construction of the
joint; and Fig. 6 is a longitudinal section of
the tube, taken on line 6 6 in Figs. 4 and 5.

A represents the inner pipe, having a lon-
40 gitudinal butt-joint B at one side and a con-
cave longitudinal groove C upon the opposite
side. The casing is formed with a cylindrical
exterior, and the seam located in the groove C.

D designates the shell, and E the completed
45 seam shown in Fig. 4.

Fig. 3 shows the adjacent edges of the shell,
one edge being provided with an inwardly-
turned longitudinal lip *e*, and the opposite
edge being formed with an inwardly-project-
50 ing trough *f*, having an outwardly-projecting
lip *e'* upon one side and a reverse bend *f'* at

the opposite side where the trough is con-
nected to the shell. The lips *e* and *e'* are in-
clined at an acute angle to the shell D, so
that when pressed upon one another they will
55 interlock and form a seam of four thicknesses
to fill one side of the concave groove C, and
the body of the reverse bend *f'* is inclined re-
versely to the lip *e'*, so that when the seam is
closed and the reverse bend is crushed it may
60 draw the lips closely together. The shell
thus prepared is placed upon the inner tube,
as shown in Fig. 2, and the whole is drawn
through a suitably-tapered hole in a die G,
as shown in Fig. 4, the die being constructed
65 with a circular aperture to gradually close
the seam and to force the same wholly upon
the interior of the shell. The reverse bend
f', formed at one side of the trough *f*, oper-
ates, when drawn through the die, to draw
70 the trough laterally in the direction of the
arrow *g* in Fig. 3, which tightly closes the
joint and brings the parts of the seam into
close contact laterally, the draft of such re-
verse bend operating gradually as the seam
75 is closed, and thus serving to take up any
stretch in the folds which is produced by
crushing the lips closely together.

The formation of the reverse bend at one
side of the trough produces a fold of the shell,
80 which is extended longitudinally within the
casing, at one side of the exterior joint, and
thus balances in a great degree the thicken-
ing of the casing by the lips *e e'* at the oppo-
site side of the joint. The entire seam is
85 thus made more symmetrical, and is thereby
better adapted to fill a symmetrical groove
like the groove C, and the construction also
avoids the excessive crushing of the folded
lips at one edge of the same, which would be
90 required if they lay over one edge of a con-
cave groove instead of lying in the middle of
such groove, as shown in Fig. 5 herein.

A mandrel or core H is preferably support-
ed within the tube during the drawing opera-
95 tion, one side of the mandrel being formed
with concave groove *h*, into which the material
of the pipe A and seam E are forcibly pressed,
thus crowding the different folds and flanges
of the seam into the closest possible contact
100 with one another. With such a grooved man-
drel it is immaterial whether or not the groove

C be formed upon the inner pipe A prior to the application of the shell D and the drawing of both together through the die, as the pressure of the die will commonly press the seam upon the pipe A with sufficient force to drive one side of the pipe into the mandrel-groove *h*. Where the inner pipe is made of very considerable thickness, the groove C is formed upon such pipe before the shell is applied thereto.

In practice the die would be formed with suitable guides for the lips *ee'* and trough *f*, to suitably close the seam; but I have not shown or claimed such features as they are already well known in the art.

I am aware that it is old to secure a casing upon a rod or tube by a plain lock-joint, and I therefore disclaim such method of construction broadly.

In my construction the casing-blank is formed in cylindrical shape and provided with the lips to make a lock-joint, and is then applied to the tube and drawn through the dies, and any variation in the diameter of the casing or tube would, unless means for compensating for such variation were provided, sometimes result in fitting the casing loosely to the tube. I therefore provide one edge of the casing with an additional element or member adapted, when bent in closing the seam, to draw the lips positively toward one another, and to continue such draft during the act of locking and closing the seam until the seam is wholly finished. Such member is supplemental to the ordinary lips, and performs a novel function in tightening the seam as the joint is closed and in taking up the slack or expansion of the metal, which is liable to exist or to be produced by pressing the same.

My invention is especially designed for applying a steel casing to a butt-joint tube of the same material, and as such material is very rigid I find it preferable to use, in the process of closing the seam, a mandrel H, pro-

vided with the groove *h*, which fits and supports the groove C upon the side of the inner pipe, and secures the effective closing of the seam by holding the same in firm contact with the wall of the die. I have therefore claimed a casing-blank provided not only with the lips *e* and *e'*, but with a supplemental member to maintain the tightening of the joint during the closing of the seam, as well as the specific form of the completed article in which the fold *e²*, which is formed by the bend *f'*, projects at one side of the exterior joint, while the folded lips project at the opposite side.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A blank for a tube-casing, consisting of the cylindrical shell D having one edge provided with the inwardly-turned inclined lip *e*, and the other edge provided with the outwardly-turned inclined lip to engage the same, and with a member adapted, when bent in closing the seam, to draw the lips positively toward one another and to continue such draft during the act of locking and closing the seam until the seam is wholly finished, substantially as herein set forth.

2. The double tube, consisting of the inner pipe A having butt-joint B upon one side and concave groove C upon the opposite side, and the casing formed of the shell D having the lock-joint seam with the engaging lips *e*, *e'*, upon one side of the joint, and the fold *e²* projected within the opposite side of the joint, the shell being cylindrical upon the outer side and the lips and the fold *e²* projecting upon the inner side of the shell, substantially as herein set forth.

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

WILLIAM T. MERSEREAU.

Witnesses:

WILLIAM F. DURST,
THOMAS S. CRANE.