G. W. KETCHAM.
Sheet-Metal Pipe.

No. 207,606. Patented Sept. 3, 1878.

Fig. 1.

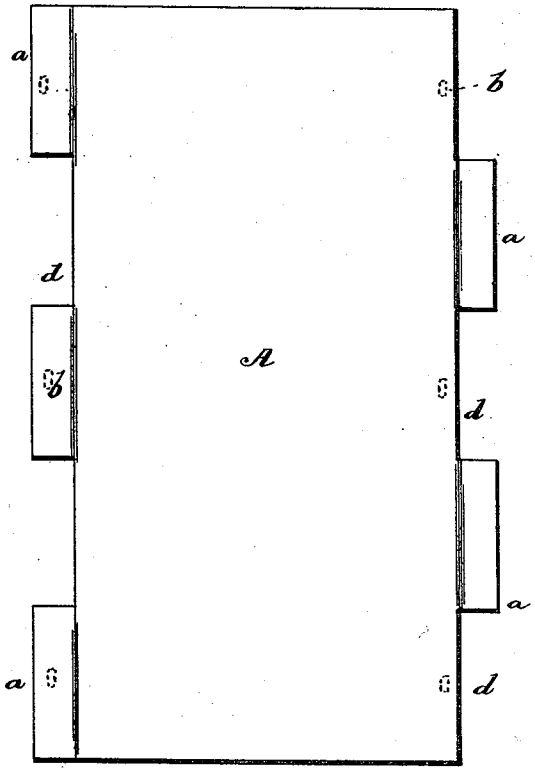


Fig. 2.

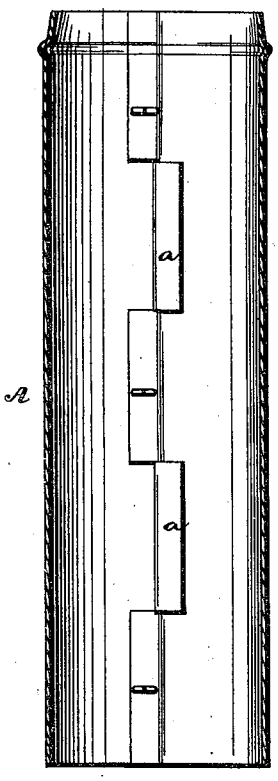
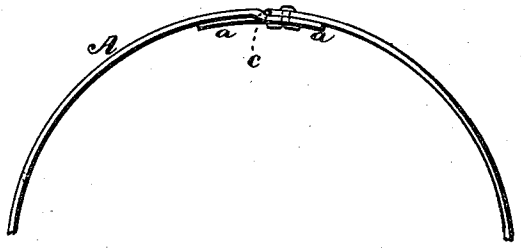


Fig. 3.



WITNESSES
Robt Everett
Wm. C. Whittemore

INVENTOR
George W. Ketcham
by
Wm H Babcock
ATTORNEY.

UNITED STATES PATENT OFFICE.

GEORGE W. KETCHAM, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN SHEET-METAL PIPES.

Specification forming part of Letters Patent No. **207,606**, dated September 3, 1878; application filed May 15, 1878.

To all whom it may concern:

Be it known that I, GEORGE W. KETCHAM, of the city of Newark, Essex county, and the State of New Jersey, have invented certain new and useful Improvements in the Manufacture of Stove and other similar Pipes or cylindrical bodies; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, which form a part thereof, is a full, clear, and exact description of the same.

My invention consists of an improvement in the manufacture of what is termed a "stove-pipe," although equally applicable to other cylindrical hollow bodies made of sheet metal in which seams are necessary to be formed by the uniting of the edges of such sheets.

The said improvement consists in constructing the edges of the sheet or sheets of metal of which the pipe is to be formed with alternating recesses and projecting lips or plates, so that said plates or lips and recesses on the opposite edges may interlock, said projecting plates or lips being bent at their junction with the body of the pipe, substantially as herein set forth.

Heretofore such pipes have been for the most part formed by making a narrow fold in each edge of the sheet to be united, then hooking the same together, then flattening the seam thus made by hammering, and finally securing the overlapping parts by rivets. This method usually leaves the pipe with the same rigid or non-yielding seam at the ends as at the middle, which is very undesirable, for the reason that in connecting two or more lengths together by telescoping it is necessary that one of them shall expand while the end to connect should be compressed; consequently the hammer or mallet is brought into requisition for that purpose, without which it is a very difficult matter to join such in a proper manner. Again, by the multiplying of thicknesses of the metal at the seam, an abrupt projection is formed upon the exterior and interior of the pipe, so that when they are telescoped an opening is formed on each side of such seam sufficiently large to allow smoke to escape freely until the same becomes closed by ashes or other sediment. Again, in forming the seams in the manner last referred to a fine quality of metal is required in order to avoid breakage at the fold or bend; and, furthermore, a heavy or cheap metal cannot be profitably used, for the reason that it is difficult or nearly impossible to form the short folds or bends required without breakage.

The object of my invention is to avoid the objections enumerated, which I claim to have accomplished by so constructing and uniting the parts that a pipe with a more perfect surface is presented, a more perfect joint is secured, and a cheaper and a heavier grade of iron may be employed. There is a greater degree of uniformity of size, leaving the ends free for expansion and compression.

The preparation or formation of the blanks is such that the sheet already prepared may be packed in large quantities in a small space, like tin or other sheet metal, in complete readiness to be joined together for use by an inexperienced person as readily and perfectly as by the skilled mechanic.

Referring to the drawings, Figure 1 represents a blank prepared of which the pipe is to be formed. Fig. 2 represents a vertical section of the pipe joined together in accordance with my improvement. Fig. 3 represents a horizontal section of Fig. 2, enlarged, showing the line of depression formed at the seam.

I prepare the sheets of the form shown in Fig. 1 of the drawings by the use of a machine which is provided with suitable cutters or punches, arranged in suitable relations to each other in a manner to give the desired number of projecting plates or lips and recesses, suitable gages being provided to regulate the depth of the recesses, which also insures great precision in widths, and thereby perfect sizes. I would remark, however, that the lips and recesses may be formed by shears or otherwise, yet not so cheaply or conveniently as by the means first described. The depression on the line of the seam can be formed at the time the dovetails are formed, or by a bending-machine by a second operation. The holes for the reception of the rivets are preferably punched at the time of the first operation named to insure the greatest amount of precision, although they may be made separately and subsequently, the manner of securing the seams being so similar to

that generally adopted that a detailed explanation would seem superfluous at this time.

I do not wish to be understood as claiming, broadly, uniting the edges of two or more sheets of metal irrespective of form and the manner of uniting them, as I am aware that the edges of similar sheets have been joined by the formation of a narrow fold upon each edge thereof in a manner to be secured or seamed together by the application of a separate sliding strip with corresponding folds grasping the two folds of the former.

I am aware, also, that double folds have been formed upon one edge of a sheet in such a manner as to form a mouth, into which the other edge is inserted, and the whole compressed together and then riveted. The objections to the narrow folds apply to the methods last referred to. These I do not claim.

I am aware that the plates for sheet-metal pipes have been constructed with alternating projections and recesses on their opposite edges, and therefore do not broadly claim such construction; but

What I do claim, and desire to secure by Letters Patent, is—

A pipe of sheet metal having alternate projections and recesses, said projections being bent at their junction with the body of the pipe, substantially as shown.

GEORGE W. KETCHAM.

Witnesses:

JOHN DANE, Jr.,

JOSEPH M. CRANE.