

(No Model.)

2 Sheets—Sheet 1.

F. W. JUDD.

SHEET METAL TEA KETTLE OR SIMILAR VESSEL.

No. 469,742.

Patented Mar. 1, 1892.

Fig 1.

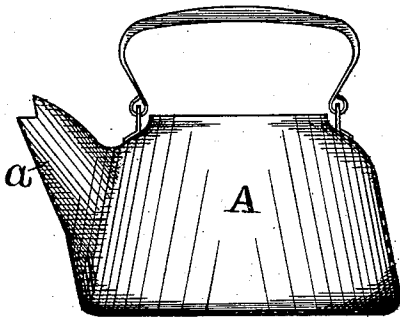


Fig 2.

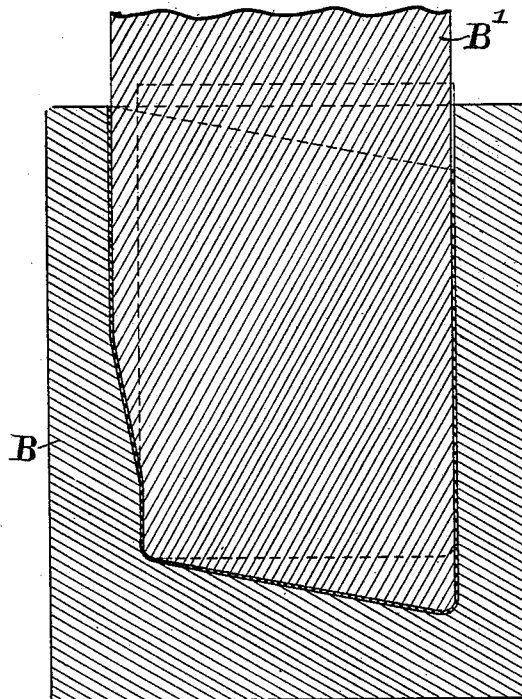


Fig 3.

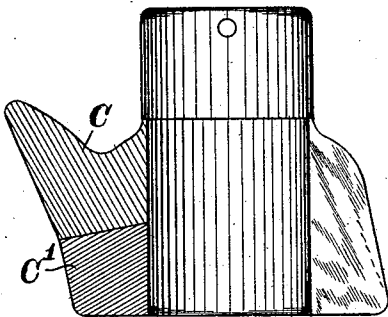


Fig 6.

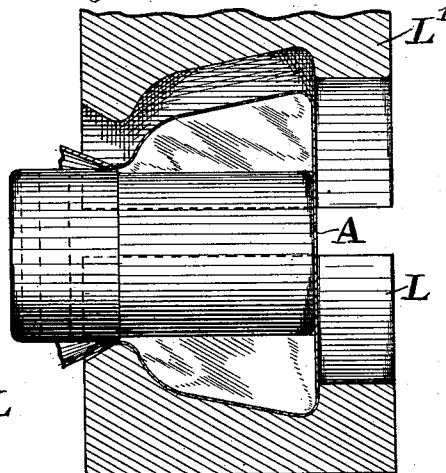
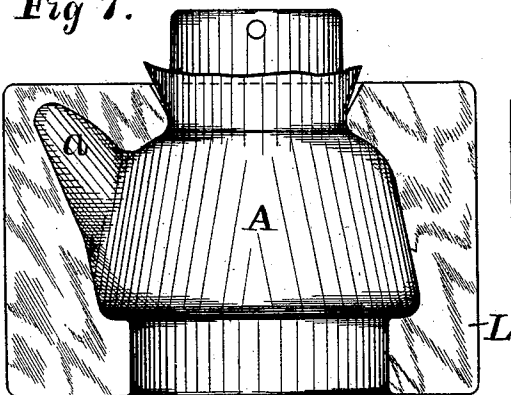


Fig 7.



WITNESSES.

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Albert H. Baker.

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Fred W. Judd

By his attorney

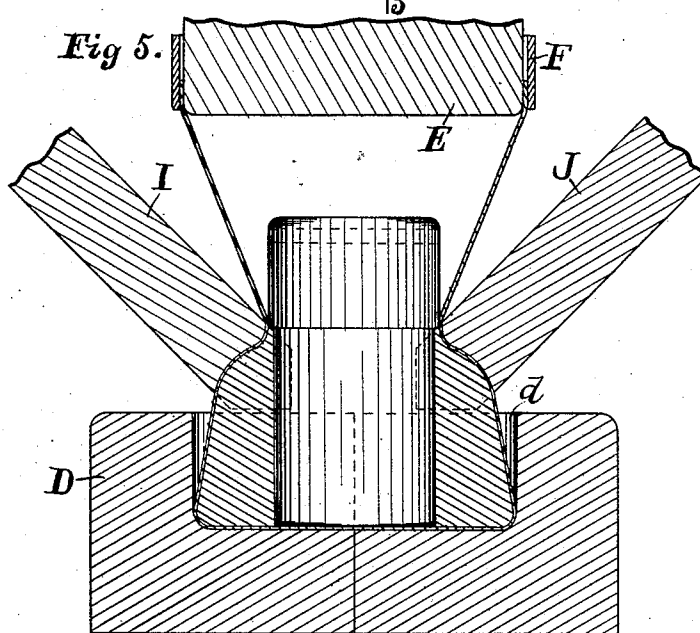
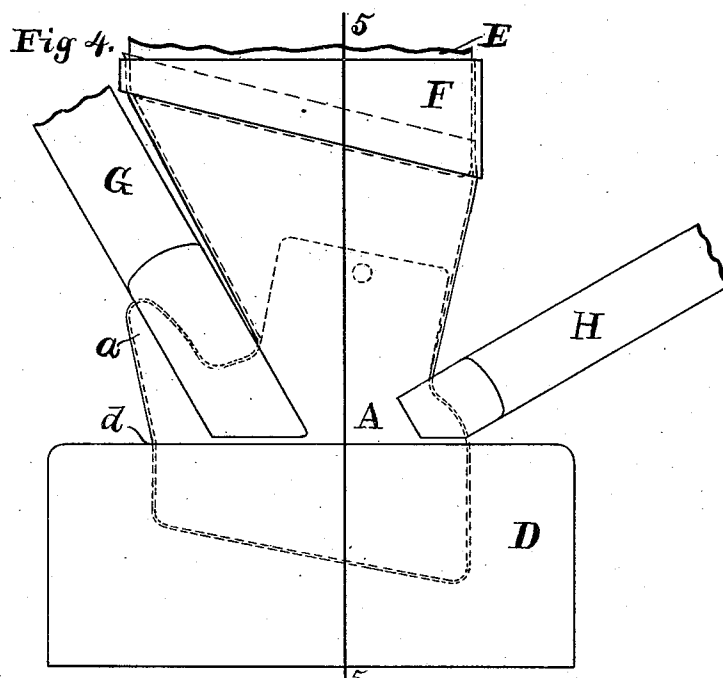
E. L. Thurston

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UNITED STATES PATENT OFFICE.

FRED W. JUDD, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO THE
AVERY STAMPING COMPANY, OF SAME PLACE.

SHEET-METAL TEA-KETTLE OR SIMILAR VESSEL.

SPECIFICATION forming part of Letters Patent No. 469,742, dated March 1, 1892.

Application filed April 24, 1891. Serial No. 390,232. (No model.)

To all whom it may concern:

Be it known that I, FRED W. JUDD, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga, State of Ohio, have
5 invented certain new and useful Improvements in Sheet-Metal Tea-Kettles or other Similar Vessels, of which the following is a specification.

Prior to my invention and manufacture of
10 the sheet-metal tea-kettles described and claimed in an application filed concurrently with this application sheet-metal tea-kettles and like vessels having tubular spouts have been made from not less than two pieces of
15 metal. The seam formed by joining the pieces together has been the weak part of such tea-kettle. It is easily parted by various causes, and as a necessary result of such parting the tea-kettle leaks. In my other application above mentioned I have described and
20 shown a sheet-metal tea kettle having a body and a tubular spout, both of which are made integrally of one piece of metal; but in the tea-kettle specifically described in said application there is one seam formed by joining
25 together the metal which extends from the upper side of the spout and from the part of the body adjacent to and above the spout. The tea-kettle hereinafter described and
30 claimed marks a further improvement in sheet-metal tea-kettles, in that it is entirely seamless—that is to say, that my invention herein described is a sheet-metal vessel, consisting of a body and a tubular spout, made
35 integrally from one piece of sheet metal without seam or joint of any kind.

I will now proceed to describe my improved tea-kettle and a mechanical process by which the same may be manufactured, although I
40 do not wish my claim to the article itself to be limited to the particular process of making it hereinafter described. The process is however, my invention, and I desire to claim it as such.

Referring now to the drawings, Figure 1 is a side elevation of my improved tea-kettle. Fig. 2 is a central sectional view of the dies with which a straight-sided bowl is first acted upon as the first step in the hereinafter-described process of forming the tea-kettle
50 shown in Fig. 1. Fig. 3 is a vertical sectional

view of a sectional form of core about which the kettle is formed. Fig. 4 is an elevation, with one plunger removed, of the mechanism with which the sides of the blank may be
55 drawn into contact with said core. Fig. 5 is a sectional view of said mechanism on line 5 5 of Fig. 4. Fig. 6 is a central sectional view of two dies between which the tea-kettle may be finally formed. Fig. 7 is a top view of the
60 lower die.

In the drawings, A represents the seamless body, and *a* the seamless tubular spout, which springs from the side of the body, said body and spout being made integrally of the same
65 piece of sheet metal.

In the manufacture of the seamless tea-kettle I take as the blank a straight-sided bowl, which may be struck up between suitable dies in the well-known manner. This
70 blank (shown in the dotted lines in Fig. 2) is then placed in a die B, and by means of the plunger-die B' the bottom is drawn down at one side, thus setting the bottom oblique to the sides. At the same time the part of the
75 metal which is to form the outer part of the spout is forced outward into contact with the die B, whereby the outer and lower part of said spout is pressed into substantially the desired form. A sectional core exteriorly of
80 the form of the kettle to be formed is then inserted in the blank after it has been removed from the die B. This core has generally the characteristics of the core described in my application, Serial No. 386,141,
85 filed March 23, 1891—that is to say, it consists of a central arbor around which are grouped a number of sections of such size that they may be removed from the neck of the finished kettle. A part of the sections
90 are wedge-shaped and are placed with the thickest end of the wedge in contact with the arbor, whereby when the arbor is withdrawn these wedge-shaped pieces may be drawn inward into the space which was occupied by
95 the arbor and then out through the top. When some or all of these indrawing sections are removed, the other core-sections may one by one be withdrawn through the neck of the kettle. In the core shown in Fig. 3
100 the core-section adjacent to the spout is divided into an upper and lower part C C'.

The spout-core is formed on the upper part. In removing these two parts the lower part is first withdrawn, which is possible because of its inclined upper surface being thickest at its inner part.

After a sectional core has been placed, as described the blank is placed in a cylindrical cavity *d* of the die D, within which it fits snugly. The die D may be made of one piece, although it is preferably made in two pieces, so that the kettle may be more easily inserted and removed. The top edge of this die comes to the point (marked *d*) where the spout begins to curve outward from the body, as shown. The die D being held in a fixed position, a mandrel E is inserted into the top of the blank, and the top edges of the blank are clamped firmly against this mandrel by means of the clamping-ring F. By thus holding the top edges of the blank there will be no "buckling" of the metal when it is drawn into contact with the core, as hereinafter described.

G represents a plunger-die, which is moved obliquely downward in a path substantially parallel to the axis of the spout. The end of this die is shaped so that it crowds the metal inward into close contact with the part of the core which forms the upper part of the spout and the body adjacent thereto.

H represents a plunger-die acting on a part of the metal diametrically opposite to the spout for the purpose of forcing said metal into contact with the core.

I and J are obliquely-moving plunger-dies, which are arranged at points diametrically-opposite to each other between the dies G and H and which force inward into contact with the core the metal at the sides of the kettle. These plungers may be operated by any suitable mechanism, but preferably by hydraulic power. When the plungers I and J are receding, the plungers G and H should be descending. The plungers I J will force the metal inward toward the core a short distance and should then be withdrawn. Then the plungers G H will similarly descend and recede, and this alternate action of the plungers will gradually draw the metal inward without serious wrinkling into contact with the core, as shown in Figs. 4 and 5.

In forming the tea-kettles by the means above described it is evident that there is a large amount of waste of material, and for this reason, principally, I do not wish simply to claim the seamless tea-kettle when

made by this process, since it is highly probable that I or others may in the future discover means for making the same article more cheaply and with less waste. After the metal has been drawn into contact with the sectional core by the plungers above described the blank is withdrawn from the dies shown in Figs. 4 and 5. A part of the waste metal at the top of the blank may be cut off. Some of the waste material should for the time being remain attached to the kettle, where it will offer sufficient resistance to any considerable change in the shape of the kettle to prevent buckling during the action of the dies next mentioned. Then the tea-kettle, with the core still inclosed therein, may be placed on a die L, having a cavity within which one-half of the kettle and spout will lie, and the kettle is smoothly finished and finally shaped between this die and another similarly-shaped die L', as shown in Fig. 7. When the kettle is removed from these dies, the sectional core is removed, the end of the spout is cut or ground off into any desired shape, the rest of the surplus metal around the top of the kettle is cut off, and the top edge of the kettle is finished by any suitable mechanism. The result of the different steps above described will be a tea-kettle made from sheet metal having the characteristics described in my first claim.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, a tea-kettle having a seamless body and a tubular seamless spout springing from the side of said body, made integrally of a single piece of sheet metal without seam or joint of any kind.

2. The herein-described method of making seamless sheet-metal tea-kettles and similar vessels having a seamless body and seamless spout, which consists in drawing the lower part of the body and lower and outer part of the spout into substantially the desired shape, then holding these parts in shape, clamping the upper edge of the metal, drawing downward and inward the part thereof which is an upward continuation of the spout portion, shaping the upper of the body, and opening the end of the spout, substantially as set forth.

FRED W. JUDD.

Witnesses:

ALBERT H. BATES,
E. L. THURSTON.