F. G. & W. F. NIEDRINGHAUS.

MODES OF ATTACHING SPOUTS AND STRAINERS.

No. 186,432. Patented Jan. 23, 1877.

Fig. 1.

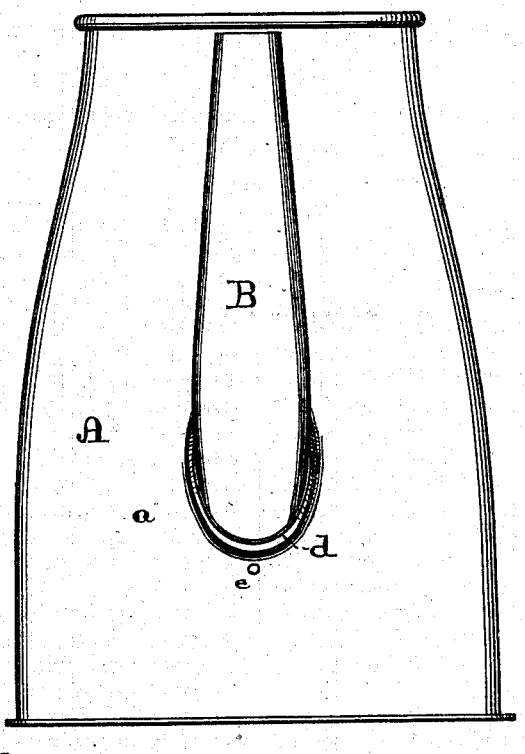


Fig. 2.

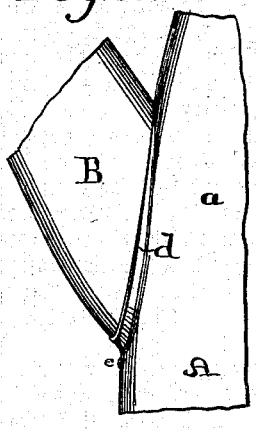


Fig. 4.

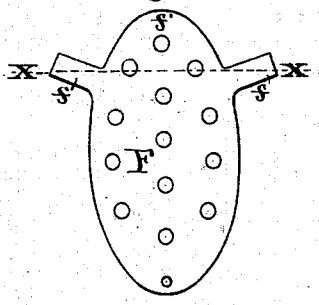


Fig. 3.

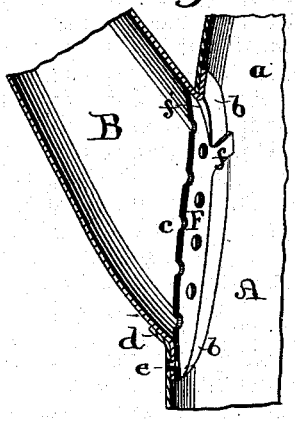
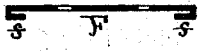


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK G. NIEDRINGHAUS AND WILLIAM F. NIEDRINGHAUS, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN MODES OF ATTACHING SPOUTS AND STRAINERS.

Specification forming part of Letters Patent No. **186,432**, dated January 23, 1877; application filed December 12, 1876.

To all whom it may concern:

Be it known that we, FREDERICK G. NIEDRINGHAUS and WILLIAM F. NIEDRINGHAUS, residents of St. Louis, Missouri, have invented a new and useful Improvement in the Mode of Attaching Spouts and Strainers to Vessels made of Sheet Metal, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 represents a vessel, in elevation, with the spout attached; Fig. 2, a detail, showing the spout in side elevation; Fig. 3, a detail, showing the parts composing the joint in sectional elevation, and also the strainer in section; Fig. 4, a development of the strainer; and Fig. 5, a section through the line *x x* of Fig. 4, showing the strainer-lugs folded, as when under the spout-flange.

Similar letters refer to similar parts.

In attaching spouts to vessels composed of sheet metal it has been customary either to solder the spout to the body of the vessel or to fasten it thereto by means of a double lock-seam formed from a flange on the inner end of the spout, and a flange upon the body of the vessel projecting inwardly into the vessel around the opening for the spout.

To the first-named plan lies the objection that the solder is easily melted. On the other hand, a double lock-seam in the position referred to is difficult and expensive to form, and when formed contains so much metal as to render a vessel having such a joint unfit for enameling. For, owing to the double thickness of the metal occasioned by this kind of seam, that part of the vessel heats and cools unevenly with the surrounding part, and in consequence the enamel is liable to crack.

To obviate these difficulties, and to obtain a strong, neat joint, and adaptable to enameling, is our present aim.

Referring to the annexed drawing, A represents a vessel embodying our improvement, and B the spout. The latter in its general outline may be of any desired shape or proportions. We preferably make it of the form shown, and we arrange the spout, or at least that part of it that is nearest the body of the vessel, so that it enters the body *a* of the vessel at an inclination, and preferably at an angle of about fifty degrees with the base of the vessel, as shown. The spout projects through the side of the vessel, and at its inner end is provided with a flange, *b*, that is turned up against the inside of the body *a* and around the opening *c* for the spout. The side of the vessel along the sides and bottom of the opening *c* is pressed outward, forming a flange, *d*, that bears against and supports the spout underneath, and at its sides nearly or quite up to its top, for the flange *d* is preferably made to gradually run out at the extreme upper end of the spout-opening *c*. A rivet, *e*, just below the lower end of the opening *c*, passes through the body *a* and the flange *b*, fastening these parts securely together, and, in connection with the bearing at the upper end of the opening *c*, serving to hold the spout against any strains in a vertical direction. The flange *d* upon the body of the vessel, in connection with the flange *b* of the spout, supports the spout against lateral strains. Thus the spout is firmly locked and braced in all directions. At the same time the body of metal that surrounds the opening *c* and forms the joint is not materially increased, so that when the vessel is coated with an enamel the latter is not endangered by any unevenness in the heating and cooling. The joint also from the outside presents a neat appearance, as the flange *d* is preferably inclined inward toward the spout, so as to avoid leaving a sharp corner at its base.

F represents our improved strainer. It is provided toward its upper end, and at either side, with lugs *f f*, which, when the strainer is in position, are folded under the flange *b* of the spout. The rivet *e*, when the strainer is used, passes through it as shown, and the strainer is thus held firmly at three points. Its extreme upper end *f'* is also preferably pressed outward into the spout, where it is out of the way, and so that a tool can be inserted at that point to upset the spout against the top of the opening *c*.

This mode of attaching a spout and strainer is useful in a great variety of vessels. It is especially valuable in vessels that are finally finished by coating them with a frangible sub-

stance, like an enamel. In such case the vessel is not only necessarily exposed to a high degree of heat in the formation of the enamel, where solder would not answer to attach the spout, but when the enamel is formed it soon cracks if every part is not thoroughly rigid.

If desired, the strainer F can have additional lugs, similar to the lugs *f f*, and they can be arranged toward or at the lower part of the strainer, and can be used in place of the rivet *e* in securing the lower end of the strainer. A further modification of the strainer would be a continuous flange in place of a series of lugs, *f f*, &c., and similarly folded under the spout-flange *b*.

We claim—

1. The combination of the vessel A, having the flange *d*, the spout B, having the flange *b*, and the rivet *e*, substantially as described.

2. The combination of the vessel A, spout B, flanges *b d*, rivet *e*, and the strainer F, having the lugs *f f*, substantially as described.

3. The combination of the vessel A, spout B, flange *b*, rivet *e*, strainer F, and lugs *f f*, substantially as described.

4. The combination of the vessel A, having the flange *d*, and the spout B, having the flange *b*, to resist lateral strains, substantially as described.

5. The combination of the rivet *e*, vessel A, and spout B, the latter being inclined, as described, and bearing against the upper end of the opening *c*, and provided with the flange *b*, to resist vertical strains, substantially as described.

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