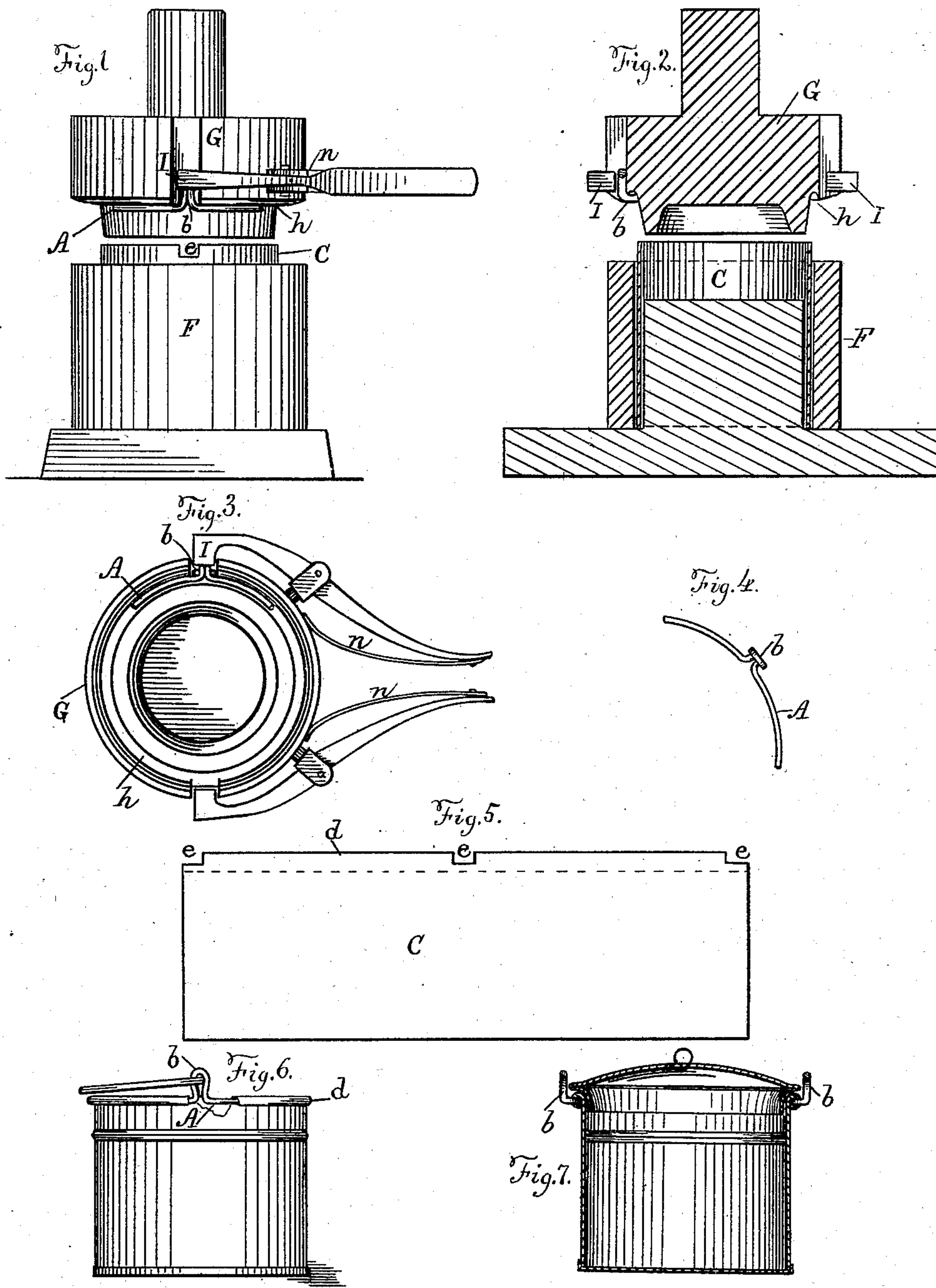


G. W. KNAPP.  
Means for Attaching Bail-Ear to Sheet-Metal Vessel.

No. 219,275.

Patented Sept. 2, 1879.



Witnesses:

Chas. E. Lewis.  
A. C. Eader

Inventor:

Geo. W. Knapp  
By his Atty  
Chas B. Mann



# UNITED STATES PATENT OFFICE.

GEORGE W. KNAPP, OF BALTIMORE, MARYLAND, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO JOHN C. MATTHAI AND JAMES E. INGRAM, OF SAME PLACE.

## IMPROVEMENT IN MEANS FOR ATTACHING BAIL-EARS TO SHEET-METAL VESSELS.

Specification forming part of Letters Patent No. **219,275**, dated September 2, 1879; application filed July 24, 1879.

### *To all whom it may concern:*

Be it known that I, GEORGE W. KNAPP, of the city of Baltimore and State of Maryland, have invented a new and useful Improvement in Attaching Ears to Sheet-Metal Vessels, of which the following is a specification.

My invention relates to an improvement in means for attaching bail-ears to and inclosing them within the beaded or turned-over rim of sheet-metal vessels.

The primary object of my invention is to provide means for wiring, by machinery, the rim of sheet-metal vessels, so that the stiffening-wire may have formed on it bail-ears; and incidentally the object is to adapt the said devices to attach stamped-up sheet-metal bail-ears by inclosing a part of the ear in the beaded rim.

In the accompanying drawings, Figure 1 is a side view of the dies and combined devices for attaching the ears to the cylinder of a sheet-metal vessel. Fig. 2 is a vertical section of same in a transverse direction. Fig. 3 is an inverted plan of the upper die with its attachments. Fig. 4 is a view of a wire bail-ear. Fig. 5 is a view of the blank from which the vessel is formed. Fig. 6 is a side view of a vessel broken away at the rim to show the wire ears as attached by the apparatus. Fig. 7 is a vertical transverse section of same.

In order that others may fully understand the nature of my improvement and in what it consists, I will first describe a vessel to which bail-ears are attached by my improved apparatus.

The letter A represents the stiffening-wire; b, the bail-ears formed by bending the wire. C is the blank from which the body of the vessel is made.

D is the edge to be turned over, and e are notches cut in this edge, through which the ears project.

The notch at each end of the blank coincides when the ends are lapped after the cylinder is formed.

In order to accommodate the cover, the wire

ears stand off laterally, as shown, and the flange of the cover will fit closely, as the turned-over rim of the cylinder is entirely outside of the plane of its inner wall.

F represents a female die, which receives the cylinder previous to its being soldered. G is the male die, whereon is an annular or circumferential groove, h, by which the edge of the cylinder is turned over outward. This die is provided on each of two opposite sides with a clamp, I, made to press, by means of the springs n, against the die just above the groove h, and thus to hold the bail-ears in proper position.

In the operation of these devices the cylinder of the sheet-metal vessel is placed in the female die, with the edge to be turned projecting above, and a wire ear or a sheet-metal ear, as the case may be, placed under each clamp on the male die, so that the end of the bail-ear may be inclosed in the rim when the edge is turned. The two dies are then brought together, turning the edge of the cylinder, and at the same time inclosing the proper part of the ears.

By means of the spring-clamps the insertion of the bail-ears in the turned-over edge is insured.

When the male die is raised the cylinder with the bail-ears attached is left in the female die, and upon removal is ready for soldering.

Having described my invention, I claim and desire to secure by United States Letters Patent—

1. For attaching bail-ears to cylindrical sheet-metal vessels, a die by which the sheet-metal cylinder may be sustained, substantially as described, in combination with a die whereon is formed an annular or circumferential groove adapted to turn over outward the edge of the cylinder, and which is provided with clamps adapted to hold the bail-ears in proper position during the operation of turning the edge, as set forth.

2. The combination, substantially as set forth, of a die adapted to sustain a sheet-

metal cylinder with its edge projecting beyond the die, and a die to operate in connection with the die first mentioned, and adapted, when the two dies are brought together, to turn the projecting edge of the cylinder, and provided with a clamp to hold each bail-ear, whereby the edge of the sheet-metal cylin-

der is turned and the proper part of the bail-ear is secured in the turned edge at one operation.

GEORGE W. KNAPP.

Witnesses:

JNO. T. MADDOX,

CHARLES E. LEWIS.