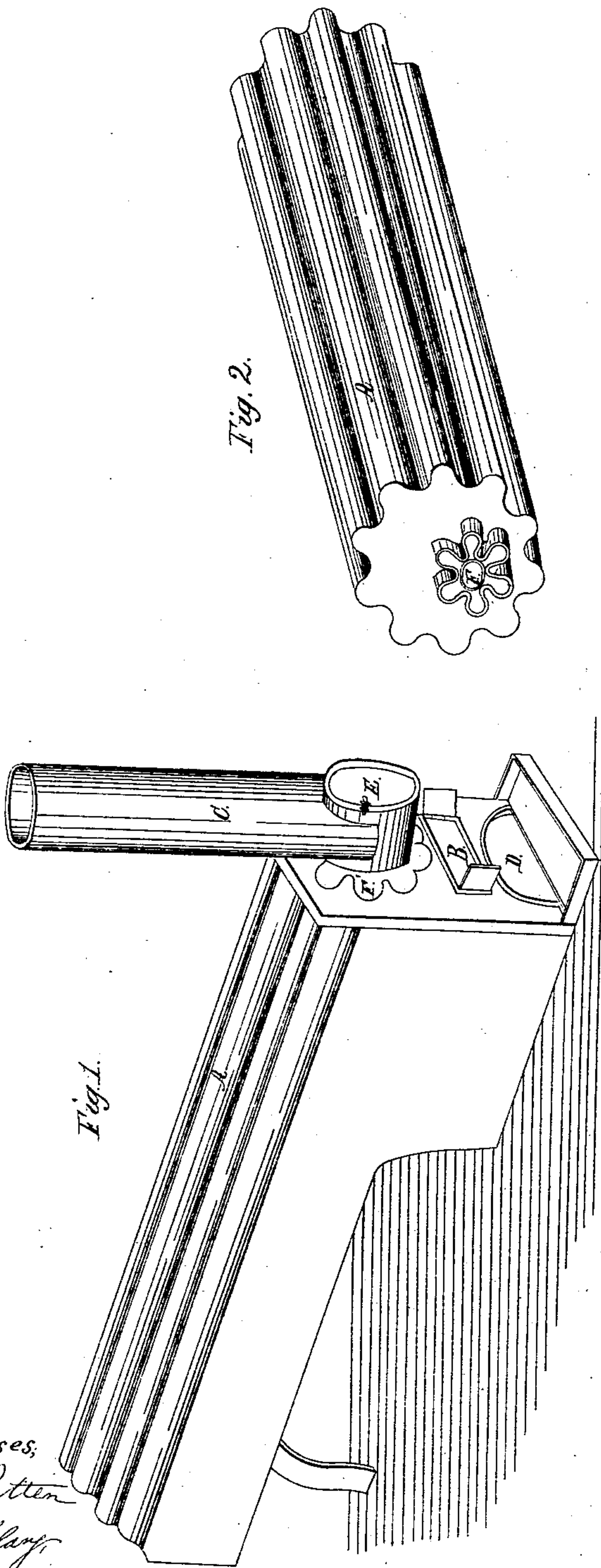
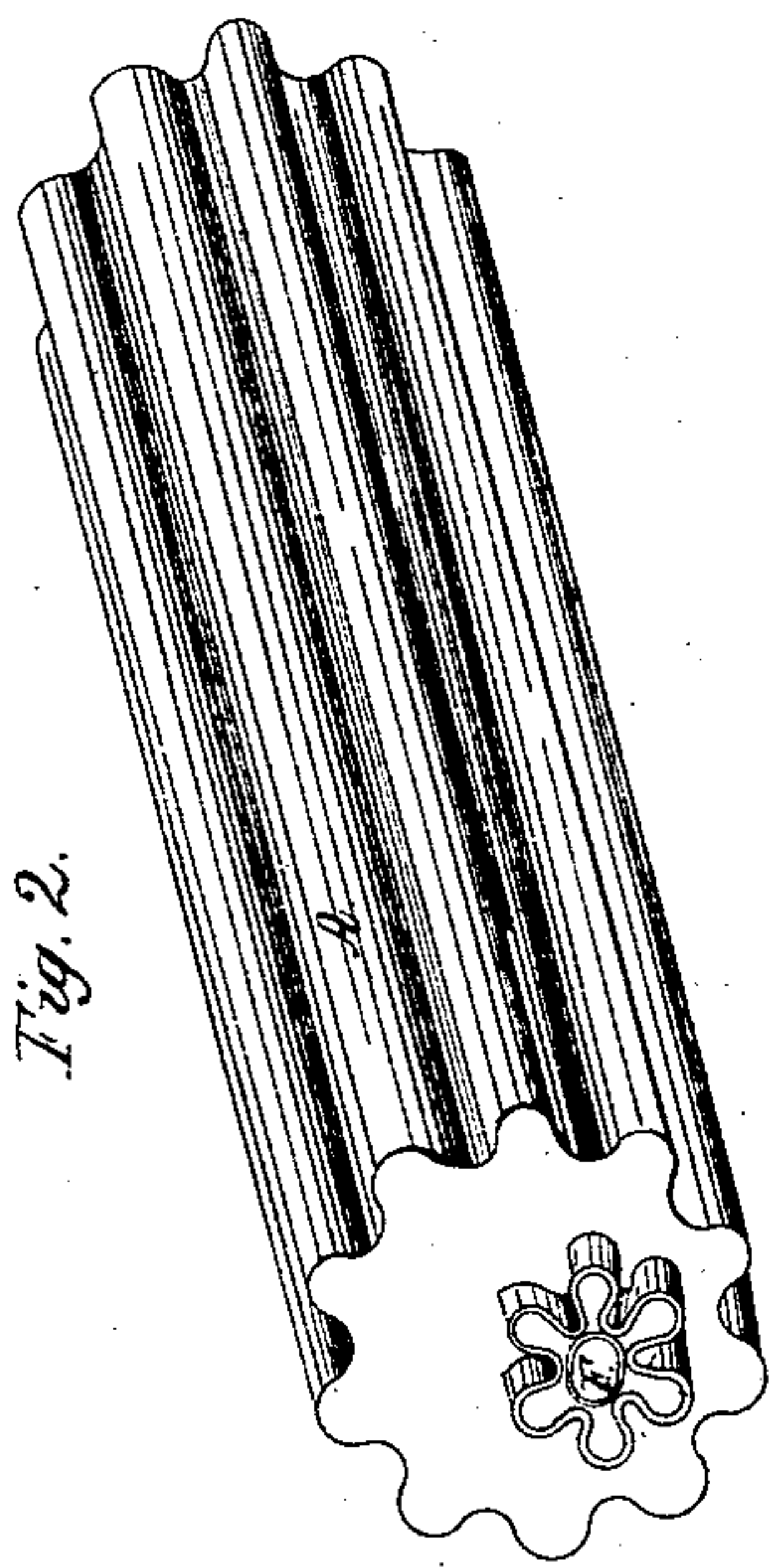


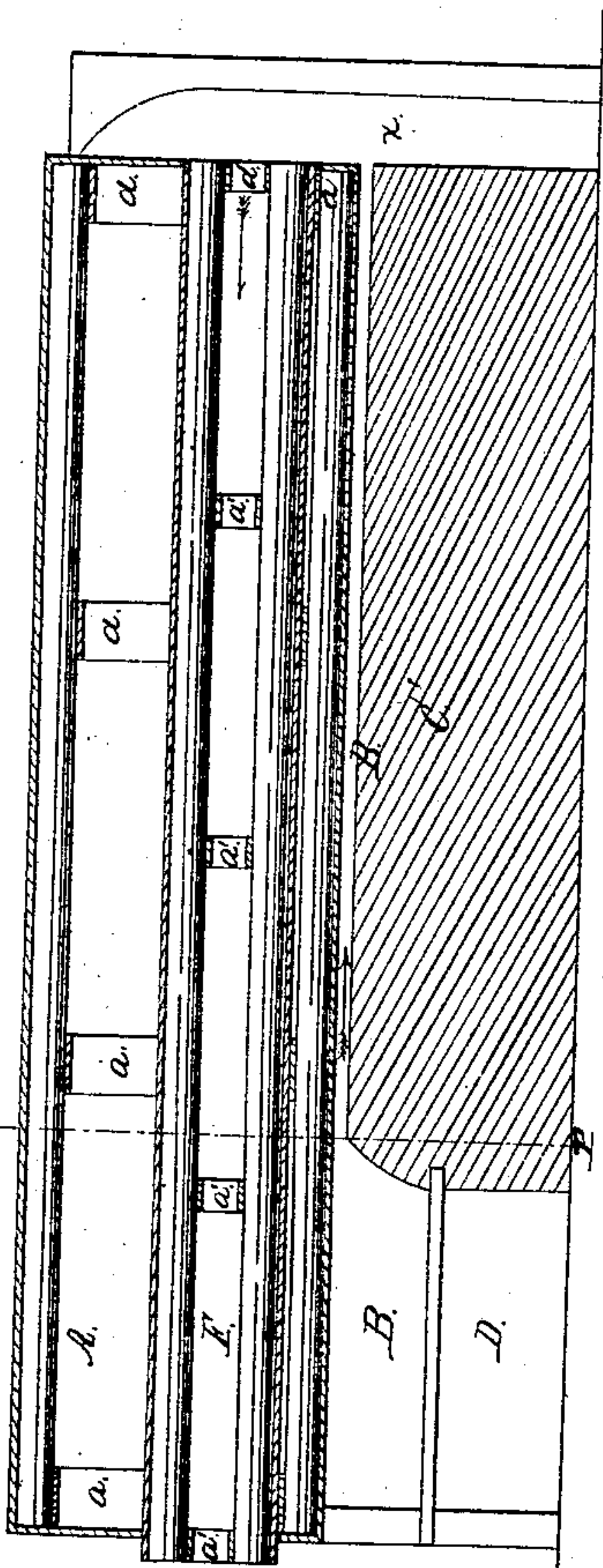
*L. Lefebvre,*  
*Steam-Boiler Fire-Tube.*  
*N<sup>o</sup> 23,848.* *Patented May 3, 1859.*



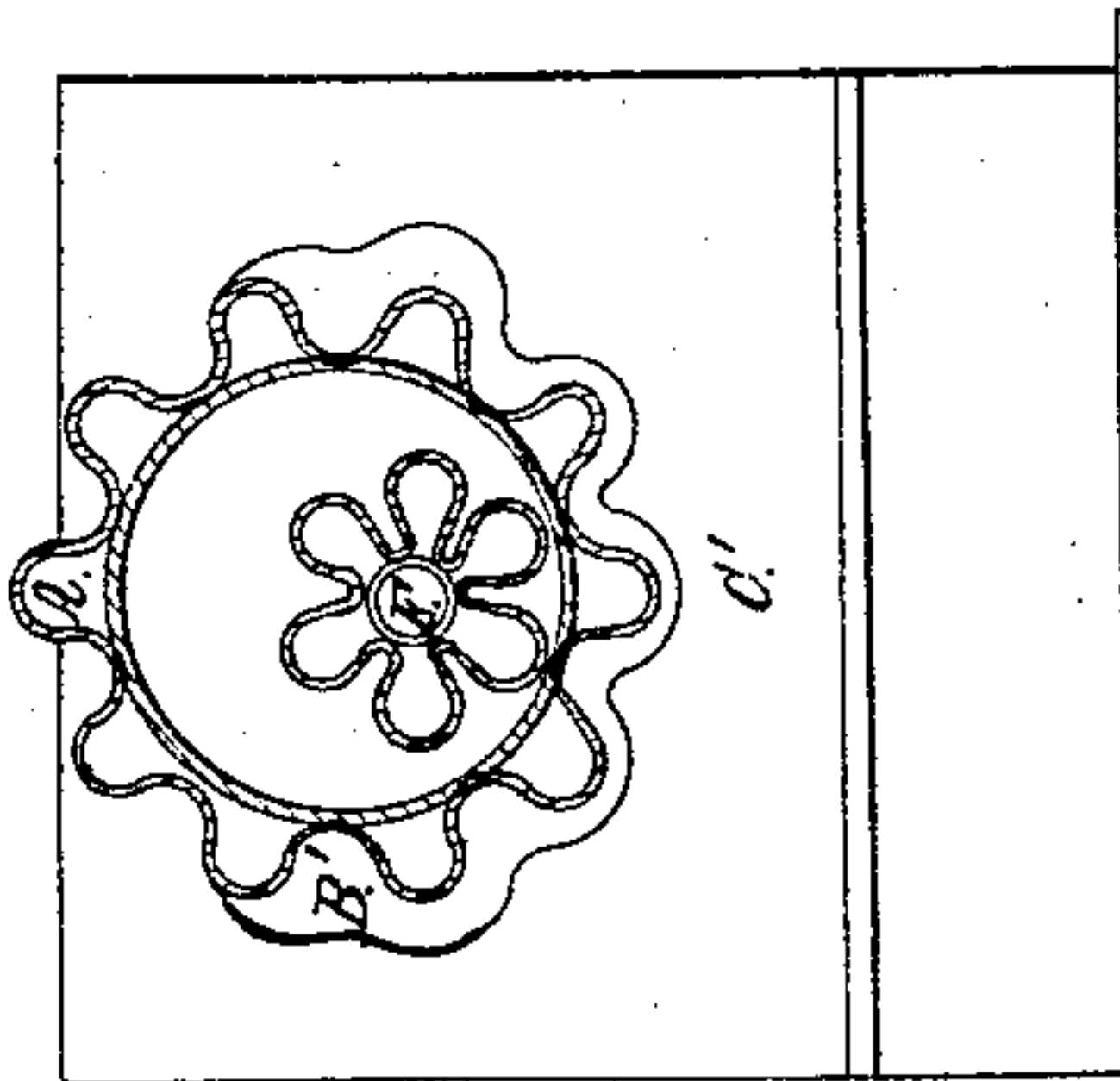
*Fig. 1.*



*Fig. 2.*



*Fig. 4.*



*Fig. 3.*

*Witnesses,*  
*H. Patten*  
*Jas. M. Clary*

*Inventor,*  
*Lefebvre & Co.*

# UNITED STATES PATENT OFFICE.

L. LEFEBVRE, OF DONALDSONVILLE, LOUISIANA.

## IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. 23,848, dated May 3, 1859.

*To all whom it may concern:*

Be it known that I, L. LEFEBVRE, of Donaldsonville, in the parish of Ascension and State of Louisiana, have invented a new and useful Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, forming part of this specification, in the several figures of which similar characters of reference denote the same part.

Figure 1 is a perspective view of boiler and furnace. Fig. 2 is a perspective view of boiler, showing projecting flue F. Fig. 3 is a cross-section of boiler and furnace, showing exterior flue, B, section taken on line O P, Fig. 4. Fig. 4 is a longitudinal section of boiler and furnace.

The several parts of boiler and furnace are represented as follows:

A represents the boiler, fluted longitudinally; B, furnace; B', flue running under and around lower portion of boiler and made to conform to the fluting of the boiler; C, chimney; C', brick-work; D, ash-pit; E, door giving access to flue; F', front of boiler; F, flue running through boiler and fluted longitudinally; *a a*, braces placed at intervals in boiler for strengthening same; *a' a'*, braces in flue F for giving strength.

The nature of my invention consists in the construction of boilers by fluting both boiler and flue longitudinally and strengthening the same with hoop-braces placed at intervals, and in combining this construction of boiler with a corrugated or fluted surface of exterior flue, whereby the products of combustion are brought into intimate connection with all parts of the fire-surface.

The fluting of boiler and flue gives an increased fire-surface, kept in form and sustained by the bands *a a'*. The undulating surface of the bottom of flue B', conforming, as it does, with the flutes of the boiler, causes the hollow portions of the fire-surface to be heated as much as the projections.

I do not claim the corrugation of boiler-plates broadly considered; but

I claim—

The longitudinally-fluted boiler braced as described, in combination with the conformable under surface of the exterior flue, B', substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name before two subscribing witnesses.

L. LEFEBVRE.

Witnesses:

GEO. PATTEN,  
JOHN S. HOLLINGSHEAD.