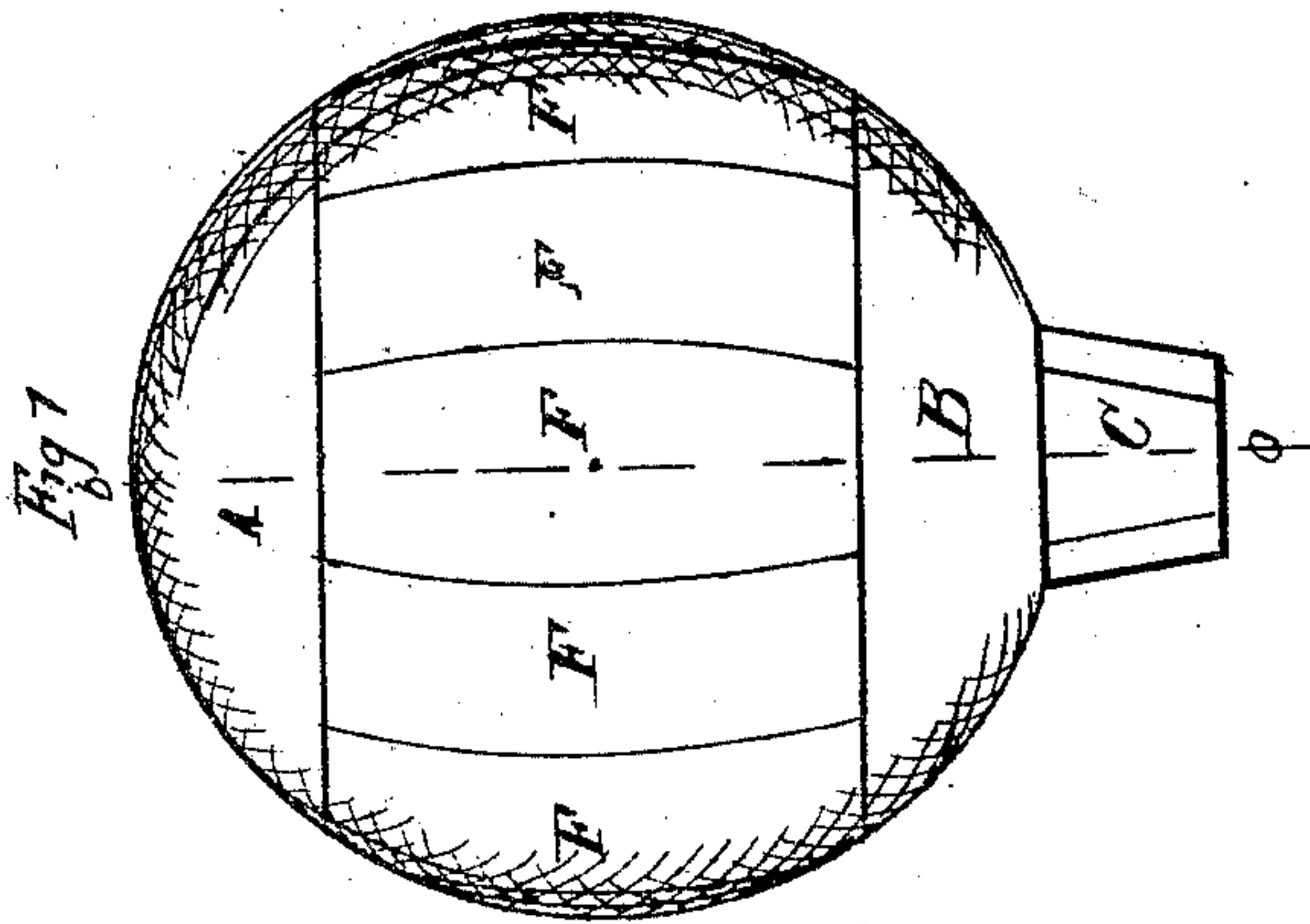
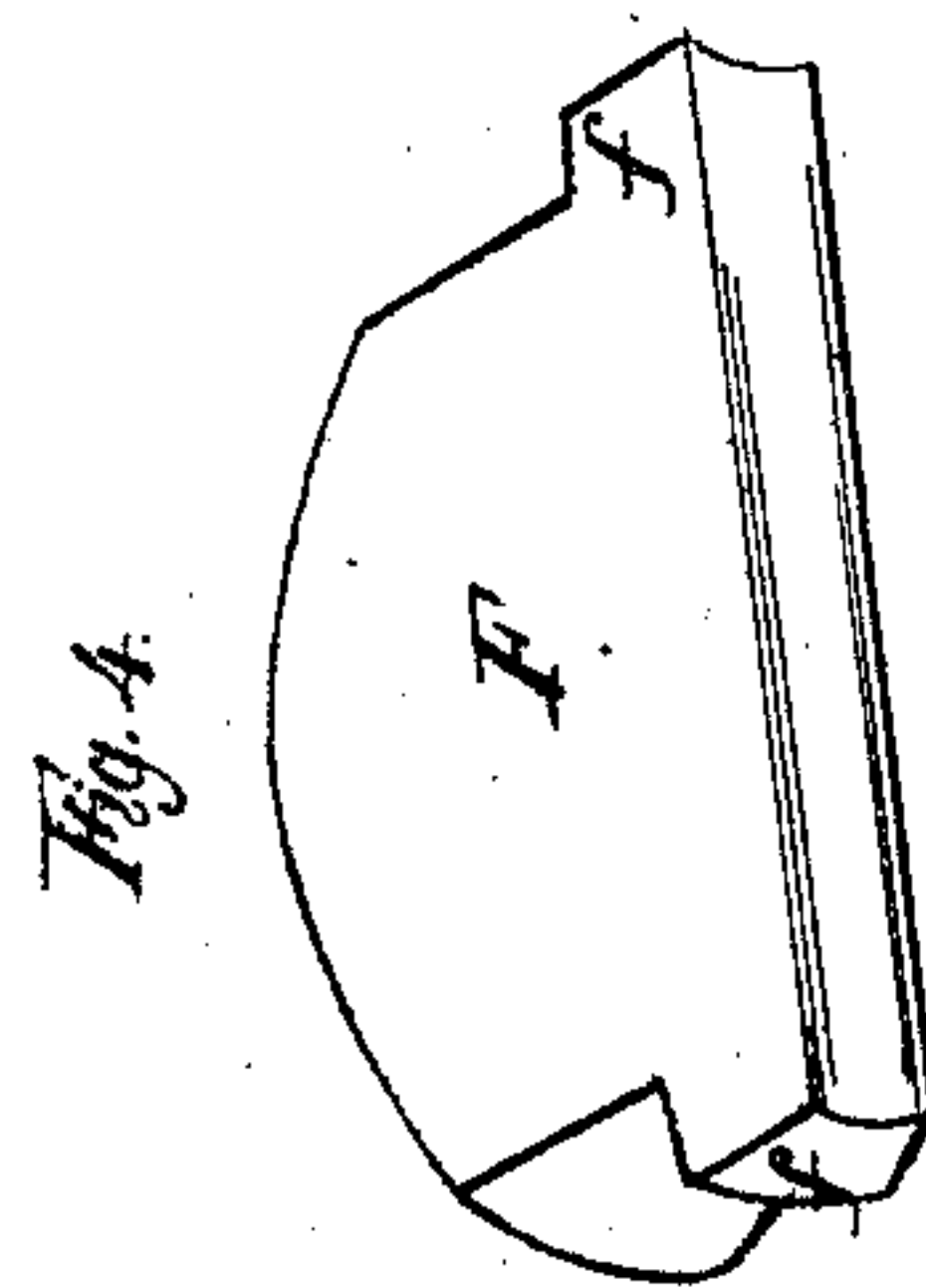
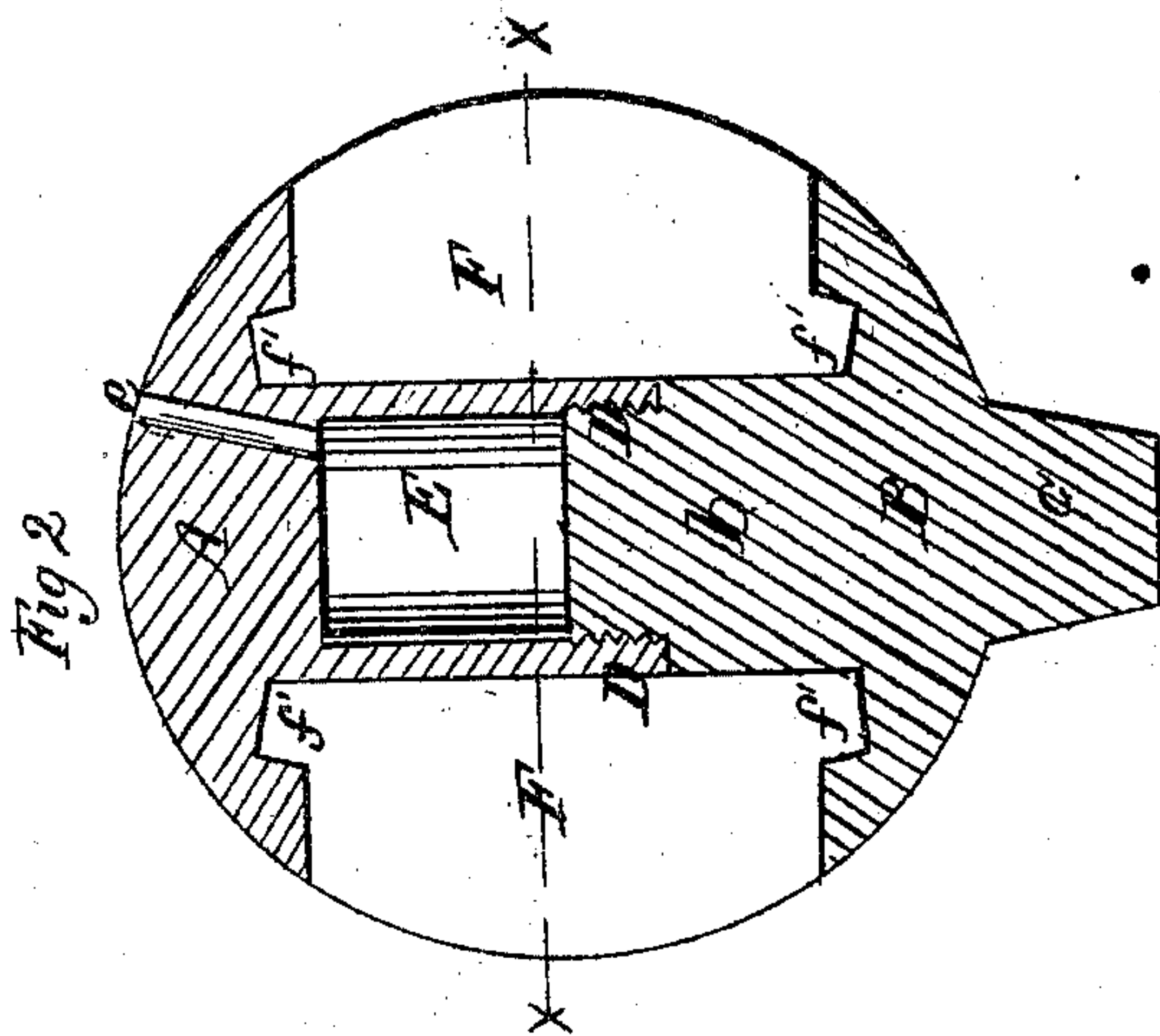
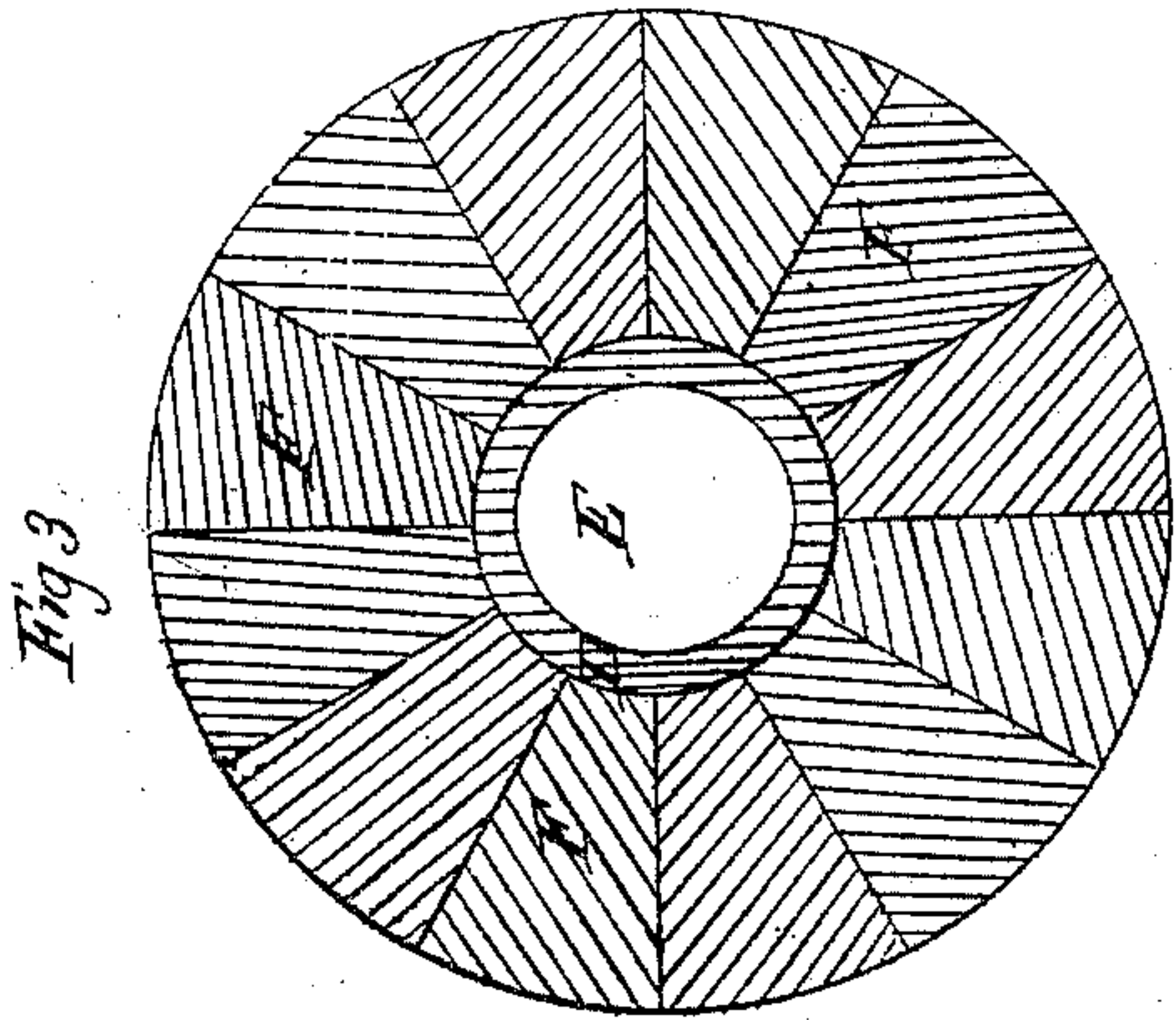


T. HARDING.

Shell.

No. 39,254.

Patented July 14, 1863.



Witnesses
 Jno Johnson
 J A Gaudin & Co

Thomas Harding
 by his Attorney
 J. B. Baldwin

UNITED STATES PATENT OFFICE.

THOMAS HARDING, OF SPRINGFIELD, OHIO, ASSIGNOR TO THOMPSON D. HART, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN EXPLOSIVE SHELLS FOR ORDNANCE.

Specification forming part of Letters Patent No. 39,254, dated July 14, 1863.

To all whom it may concern:

Be it known that I, THOMAS HARDING, of Springfield, in the county of Clarke and State of Ohio, have invented a new and useful Improvement in Projectiles for Fire-Arms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1 represents a view in perspective of a projectile embracing my improvement. Fig. 2 represents an axial section through the same at the line *o o* of Fig. 1. Fig. 3 represents a transverse section through the same at the line *x x* of Fig. 2, and Fig. 4 represents a view in perspective of one of the segments or sections which form the body of the projectile.

My invention relates to that class of compound projectiles in which the several parts are held together until the moment of explosion or concussion, when they separate in various directions, thus increasing its destructive effect; and it has for its object the production of a cheap, simple, and effective instrument of destruction.

To carry out the object of my invention I construct a projectile with two heads, (one of which has a knob or projection upon it,) the distance between which can be varied at pleasure, (within certain limits,) and unite them by a central stalk or stem, which also forms the chamber for the bursting-charge, the space between the heads and around the stem being filled by a series of segments or sections of such shape as to complete the form of the projectile, the segments themselves forming the exterior surface of the projectile.

In the accompanying drawings the projectile is represented as composed of two heads, A B, united by a central stem, D. A tail or projection, C, upon the head B serves to secure the fitting of the shell in its sabot and to steady it in its flight through the air. The stem D is formed in two sections, one of which is secured to the head A and the other to the head B. The rear or lower section, *b*, is in this instance shown as cast solid, but may be hollow, and has a male screw on its end, while the upper section is hollow and has a female screw fitting the screw of the other section.

The upper section forms a chamber, E, to contain the bursting-charge. A fuse-hole, *e*, is formed in the head A, and may be fitted with a fuse of any construction desired.

The details of construction of the shell are clearly shown in Fig. 2 of the drawings.

The body of the projectile is composed of a series of sector-shaped segments, F, of the form shown in Figs. 3 and 4 of the drawings. These segments are cast of such form that their inner edges set close to the stem, while their outer sides are curved to the proper form to complete the sphere of the projectile. Each segment has a flange or rib, *f*, on its ends, which fits into corresponding annular grooves, *f'*, cut on the inner faces of the heads A B, by which means the segments are securely held in place. The several parts can readily be cast of the shape desired.

To unite the various parts, the head A is set upon end and the segments F placed around it. The other head, B, is then put on, and the whole firmly united by screwing the two parts of the stem together.

If used as a shell, the projectile may be loaded in any suitable manner.

When fired from a gun, the parts of the projectile remain inseparable until the bursting-charge explodes or the projectile strikes an object, when it would be ruptured and its fragments scattered in all directions.

I am aware that shells have heretofore been made in sections, and therefore do not claim, broadly, such device; but,

Having thus fully described the construction and operation of my improved projectile, what I do claim therein as new, and desire to secure by Letters Patent, is—

The combination of the grooved heads A and B, tail-piece C, stem D, chamber E, and flanged segments F, when the whole are constructed and arranged as herein described, for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

THOMAS HARDING.

Witnesses:

WM. D. BALDWIN,
EDM. F. BROWN.