(No Model.)

P. FITZGIBBONS.

TUBE EXPANDER.

No. 343,020. Patented June 1, 1886.

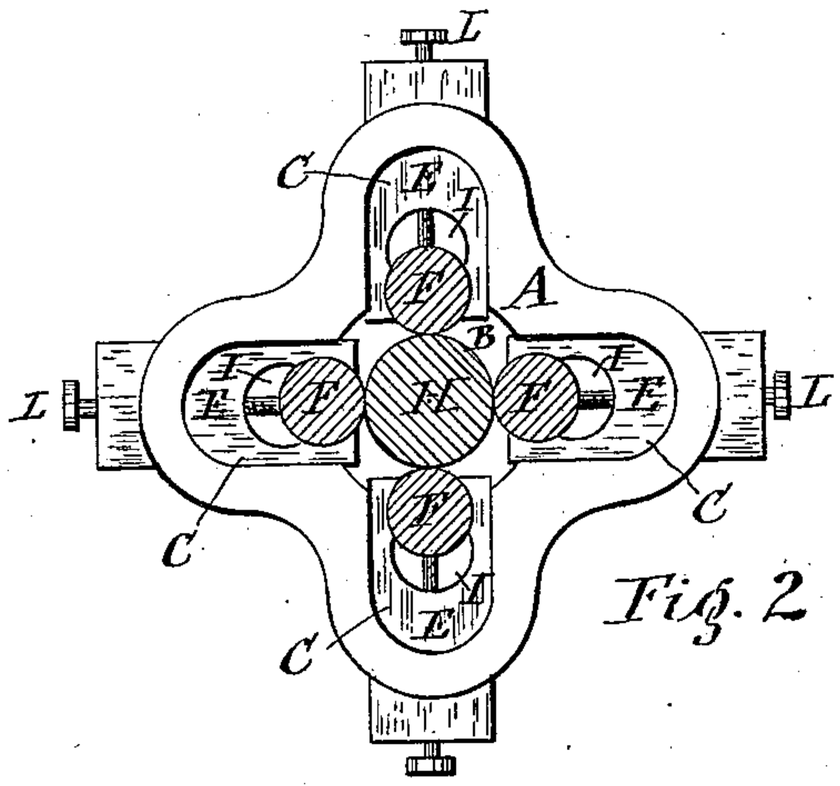

Fig. 2

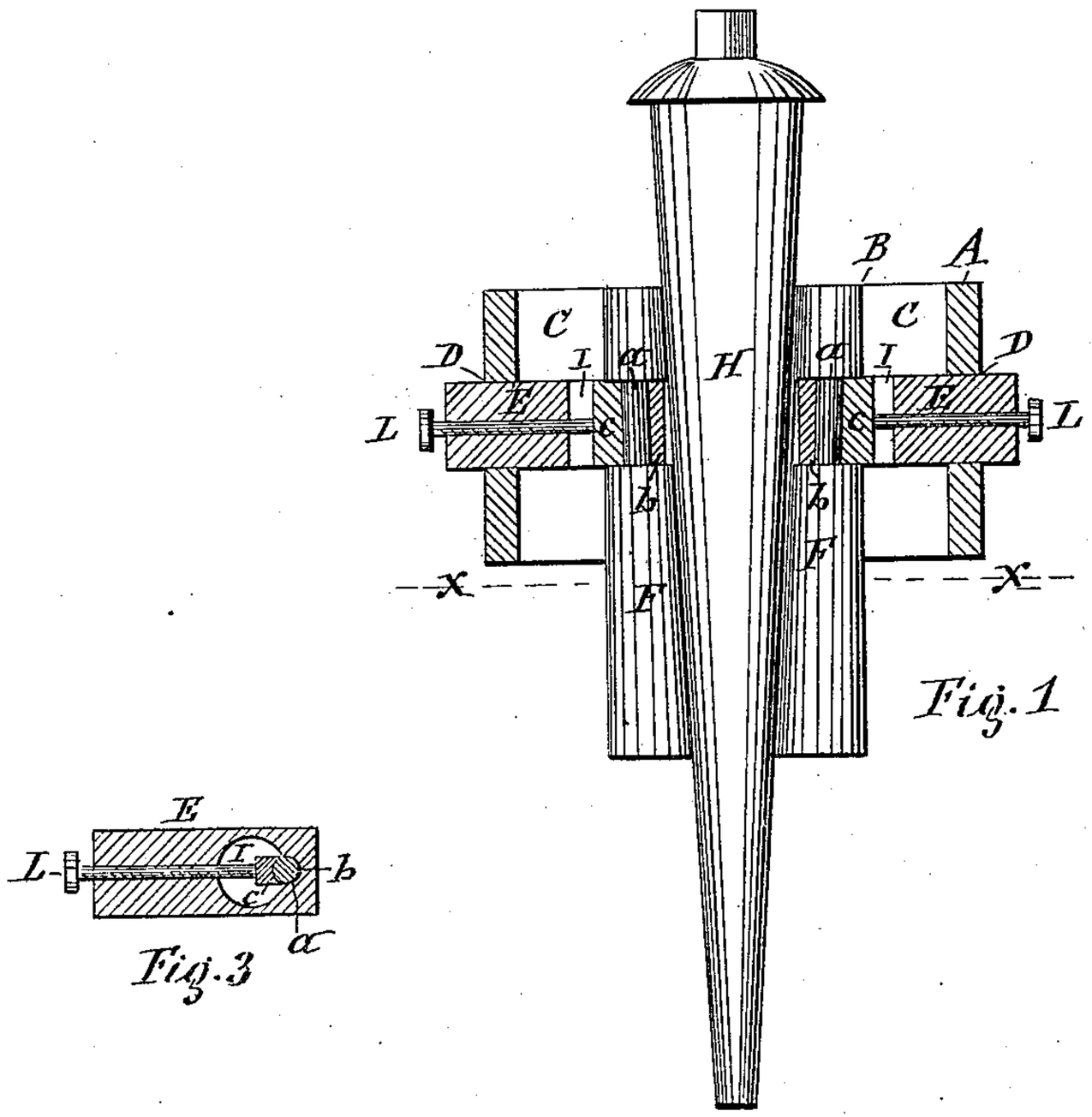

Fig. 1

Fig. 3

WITNESSES:

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INVENTOR:

Patrick Fitzgibbons

per Church, Laass & Hey

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UNITED STATES PATENT OFFICE.

PATRICK FITZGIBBONS, OF OSWEGO, NEW YORK.

TUBE-EXPANDER.

SPECIFICATION forming part of Letters Patent No. 343,020, dated June 1, 1886.

Application filed April 19, 1886. Serial No. 199,356. (No model.)

To all whom it may concern:

Be it known that I, PATRICK FITZGIBBONS, of Oswego, in the county of Oswego and State of New York, have invented new and useful Improvements in Tube-Expanders, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention consists in an improved construction and combination of the component parts of a tube-expander which possesses superior stability and is capable of sustaining the expanding-rollers more accurately in their operative positions.

In the annexed drawings, Figure 1 is a longitudinal section of my improved tube-expander. Fig. 2 is a transverse section on line X X, Fig. 1; and Fig. 3 is a detached sectional view of one of the boxes which carry the rollers.

Similar letters of reference indicate corresponding parts.

A represents the body or holder of the tube-expander, which body I form of a rigid piece of metal shaped either cylindrical or of the form of a spider, as shown in Fig. 2 of the drawings. Through this rigid body is an axial opening, B, and a series of radial recesses, C C C C, which intersect the opening B, and at the outer ends of said recesses the body A is provided with radial ports D D D D. In the aforesaid recesses and their respective ports are radially-sliding boxes E E E E, each of which is provided at its inner end with an eye, I, and with a journal-bearing, *b*, at the side of the eye nearest the inner end of the box, as illustrated in Fig. 3 of the drawings. In these boxes are journaled the usual tapering rollers, F F F F, which are formed with circumferentially-reduced journals *a* intermediate their lengths, by which journals they are pivoted in the bearings *b* of the aforesaid boxes. The rollers are connected to the boxes by passing the smaller end of said rollers through the eyes I until the journals *a* are opposite the bearings *b*. Then by moving the rollers toward the inner ends of the boxes the aforesaid journals become seated in the bearings, and the rollers are sustained in the boxes by the shoulders at opposite ends of the journals abutting against opposite sides of the boxes. The journal *a* is retained on the bearings *b* by a journal-box, *c*, held against the said journal by a set-screw, L, which is extended through a screw-threaded longitudinal channel in the outer end portion of the box E, and bears with its inner end on said journal-box, and has its outer end provided with a suitable head, by which to manipulate it. H denotes the usual tapering mandrel or spindle, which is inserted in the axial opening B, and enters with its small end between the rollers F F F F from the small ends thereof. The large ends of the rollers project beyond the face of its body A.

In operating the described tube-expander the mandrel H is to be withdrawn, so as to allow the rollers F F F F to be moved toward the center of the body A sufficiently to allow the large ends of said rollers to be introduced into the end of the tube to be expanded. Then the mandrel H is inserted between the said rollers and forced forward, so as to wedge the rollers apart and cause them to press on the interior of the tube. Then, by rotating the mandrel the frictional hold thereof on the rollers transmits rotary motion to the latter, and thus causes said rollers to travel around the interior of the tube, and thereby expand the same.

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

1. A tube-expander composed of a rigid body provided with an axial opening through it, and with radial recesses intersecting the axial opening, boxes arranged radially and at right angles from the axis of the body and sliding radially in the aforesaid recesses, expanding rollers extending through the body and projecting from the end thereof and journaled on the inner ends of the aforesaid boxes, and the tapering mandrel entering the axial opening of the body, substantially as set forth.

2. The combination of the rigid body A, formed with the axial opening B, radial recesses C C C C, intersecting said openings, and ports D D D D at the outer ends of the recesses, the boxes E E E E, sliding radially in said recesses, the rollers F F F F, having intermediate their length the circumferentially-reduced journals *a*, pivoted on the inner ends of said boxes, and the tapering mandrel H, entering the axial opening B, substantially as described and shown.

3. The combination of the rigid body A,

formed with the axial opening B, radial recesses C C C C, intersecting said opening, and ports D D D D at the outer ends of the recesses, the boxes E E E E, sliding radially in said recesses and provided with eyes I I I I and journal-bearings *b*, the rollers F F F F, having intermediate their lengths the circumferentially-reduced journals *a*, journal-boxes *c*, and set-screws L, confining the journals of the rollers in the bearings *b*, and the tapering mandrel H, entering the axial opening of the body, substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 2d day of April, 1886.

PATRICK FITZGIBBONS. [L. S.]

Witnesses:
C. BENDIXON,
FREDERICK H. GIBBS.