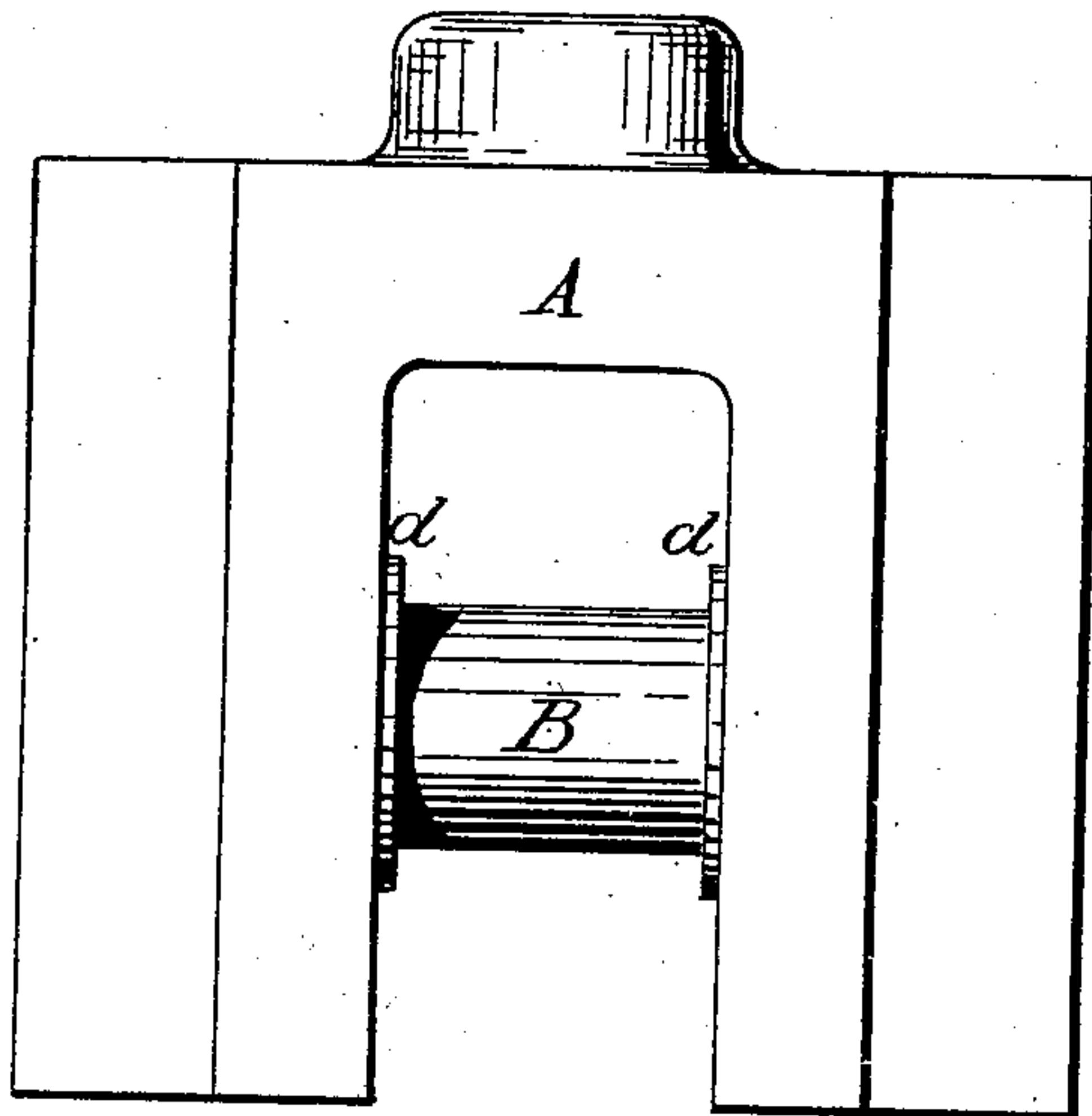


C. M. FARRAR.  
CROSS-HEADS.

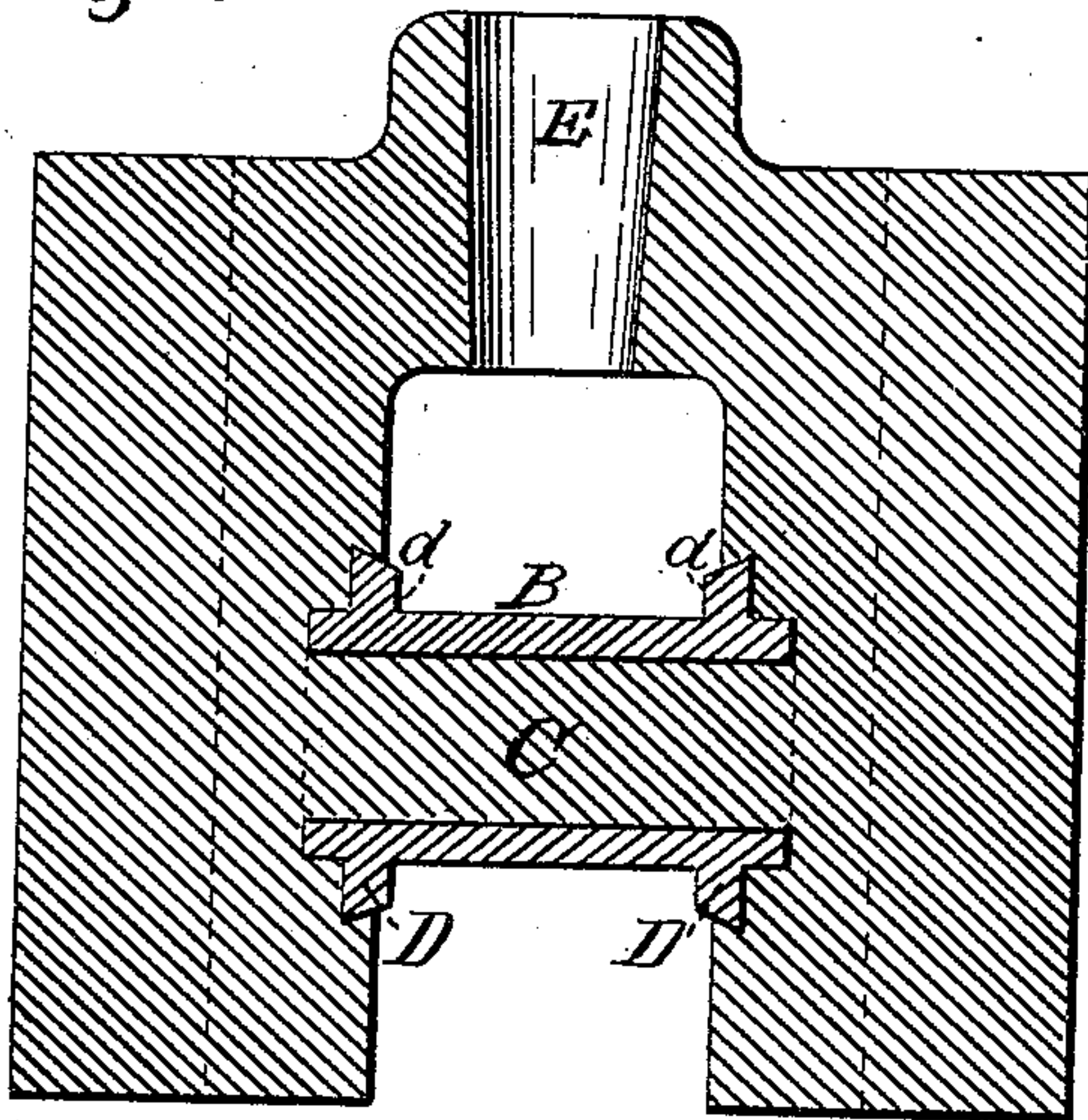
No. 181,525.

Patented Aug. 29, 1876.

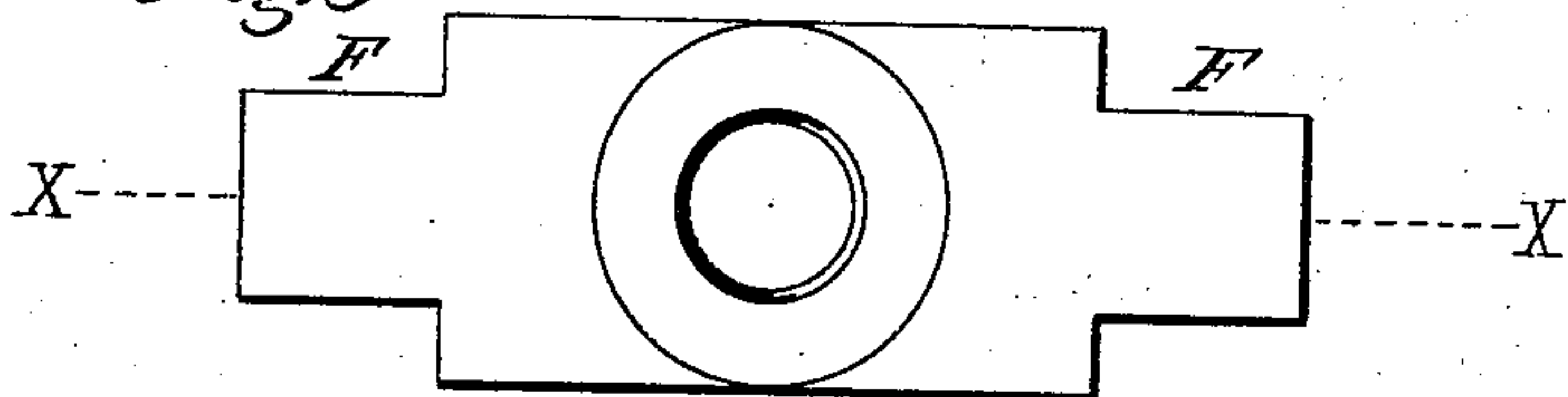
*Fig. 1*



*Fig. 2*



*Fig. 3*



Witnesses,  
*H. P. L. Key,*  
*Wm. Sangster*

Inventor  
*Chilion M. Farrar*  
*By James Sangster*  
*Atty.*

# UNITED STATES PATENT OFFICE.

CHILION M. FARRAR, OF BUFFALO, NEW YORK.

## IMPROVEMENT IN CROSS-HEADS.

Specification forming part of Letters Patent No. **181,525**, dated August 29, 1876; application filed July 5, 1876.

*To all whom it may concern:*

Be it known that I, CHILION M. FARRAR, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Cross-Heads for Steam-Engines or other machinery, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to provide a cast-metal cross-head, with a turned and finished wrist-pin that is perfectly true, sufficiently strong, and not liable to get loose; and it consists of a turned sleeve or tube of wrought or other metal, in combination with the cross-head, the said sleeve being rigidly connected with the cross-head by being properly placed in the mold previous to casting, its form being such that the metal, when poured therein, will pass through and fill the said tube, and pass around the ends thereof, thereby holding it firmly in place, as will be more clearly hereinafter shown.

In said drawings, Figure 1 is a side elevation of a cross-head for a steam-engine, made according to my invention. Fig. 2 represents a vertical section through the center of the same, or through line X X of the plan or top view, Fig. 3.

A is the cross-head. B represents the tubular portion of the pin, connected thereto. It is made in the form substantially as shown by the section in Fig. 2, C being the core or inner portion, which is a part of and is cast at the same time and in one piece with the cross-head.

D D represent projecting rings on the tube B, which are formed, as will be readily seen by the section, so as to hold the ends of the tube or sleeve firmly in place, and also to provide the shoulders *d d*, all of which are turned true and finished in the lathe before being put in proper position in the mold to receive the cast metal through it and around the ends, as shown in said section, and as hereinbefore mentioned.

E represents the usual taper hole for receiving the end of the piston-rod, and F F the parts for fitting into the slideways.

I claim as my invention—

A cross-head provided with a wrist-pin composed of the turned or finished sleeve B and the core C, formed substantially in the manner and for the purposes described.

C. M. FARRAR.

Witnesses:

WM. S. GROSVENOR,  
JAMES SANGSTER.