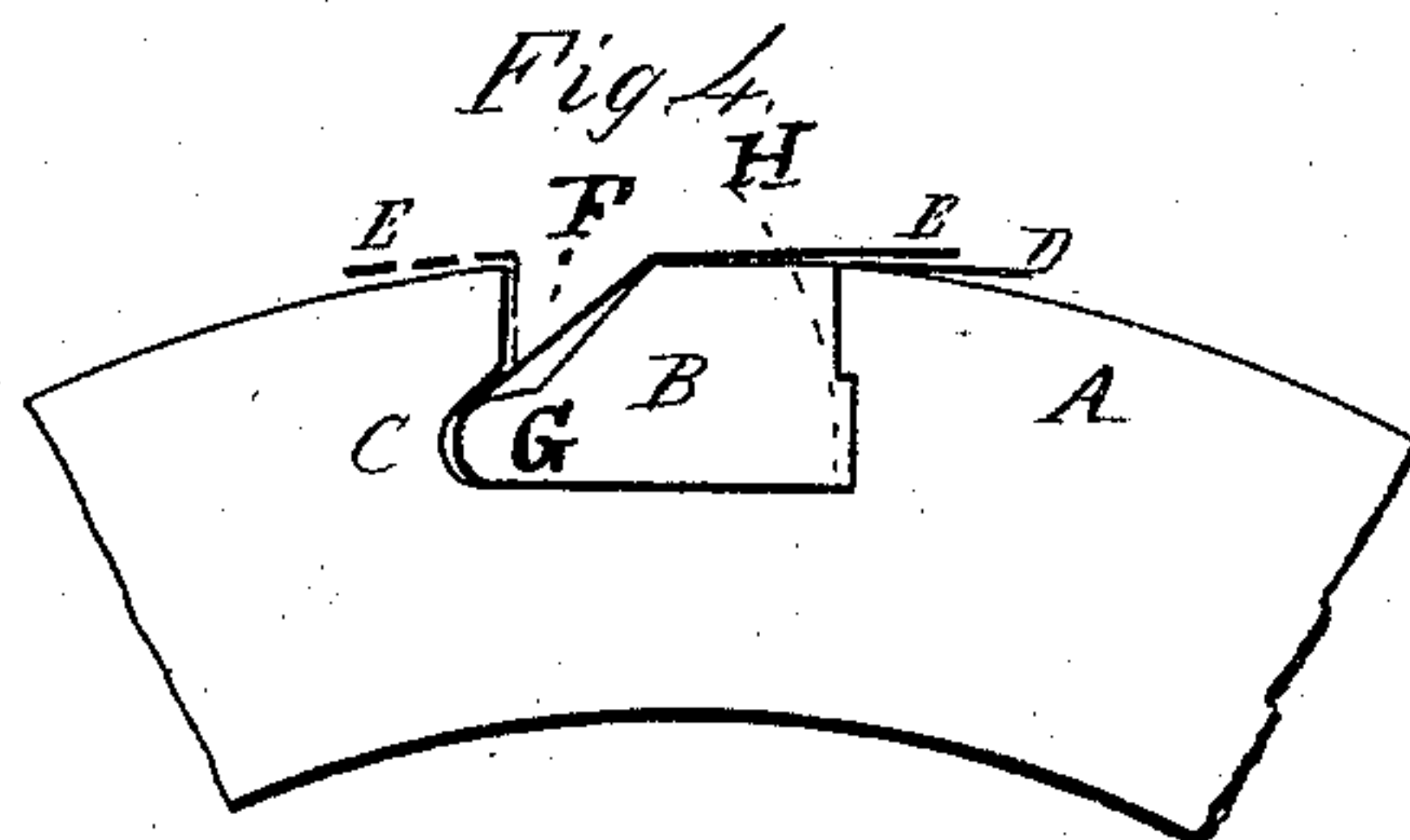
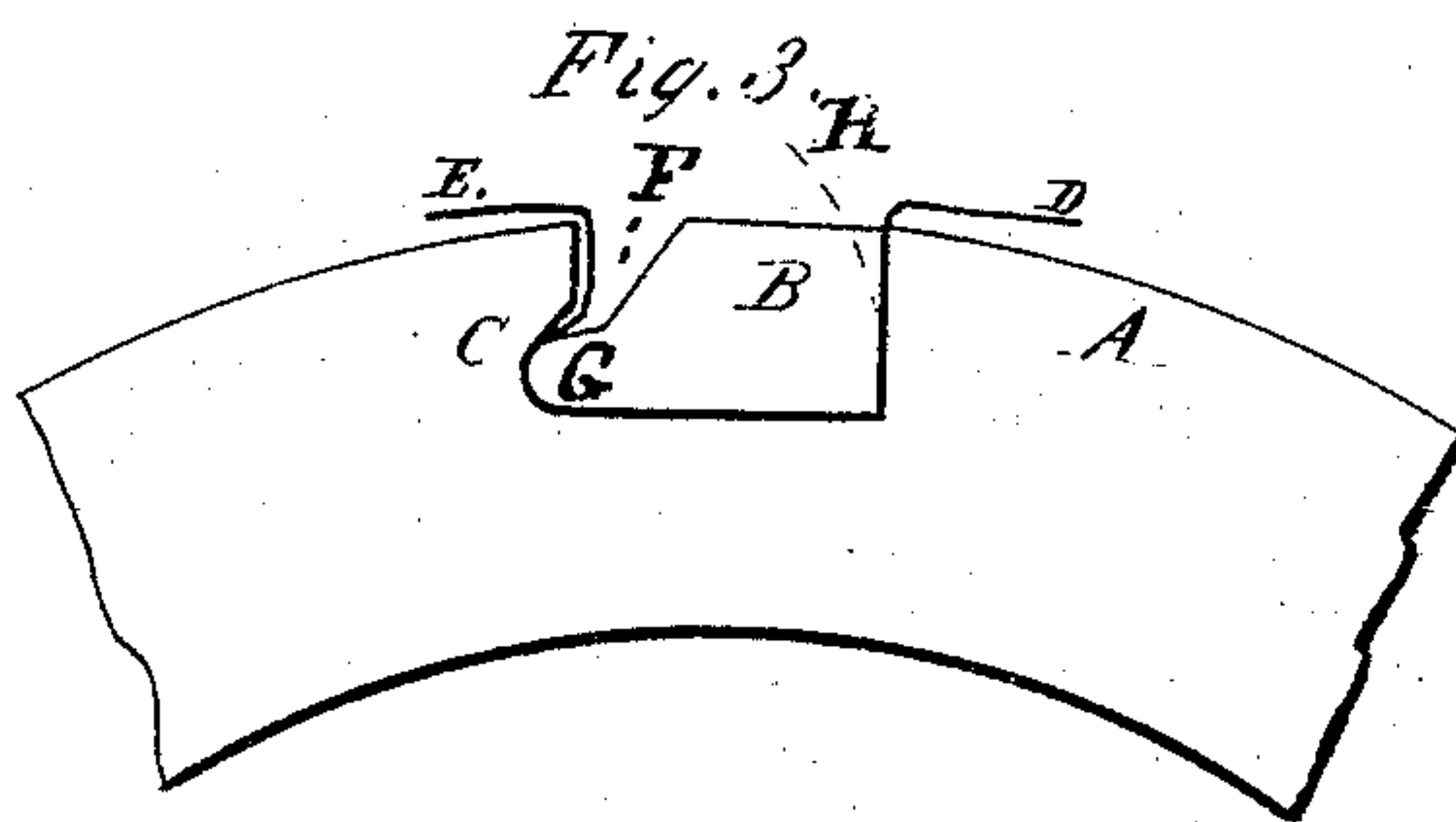
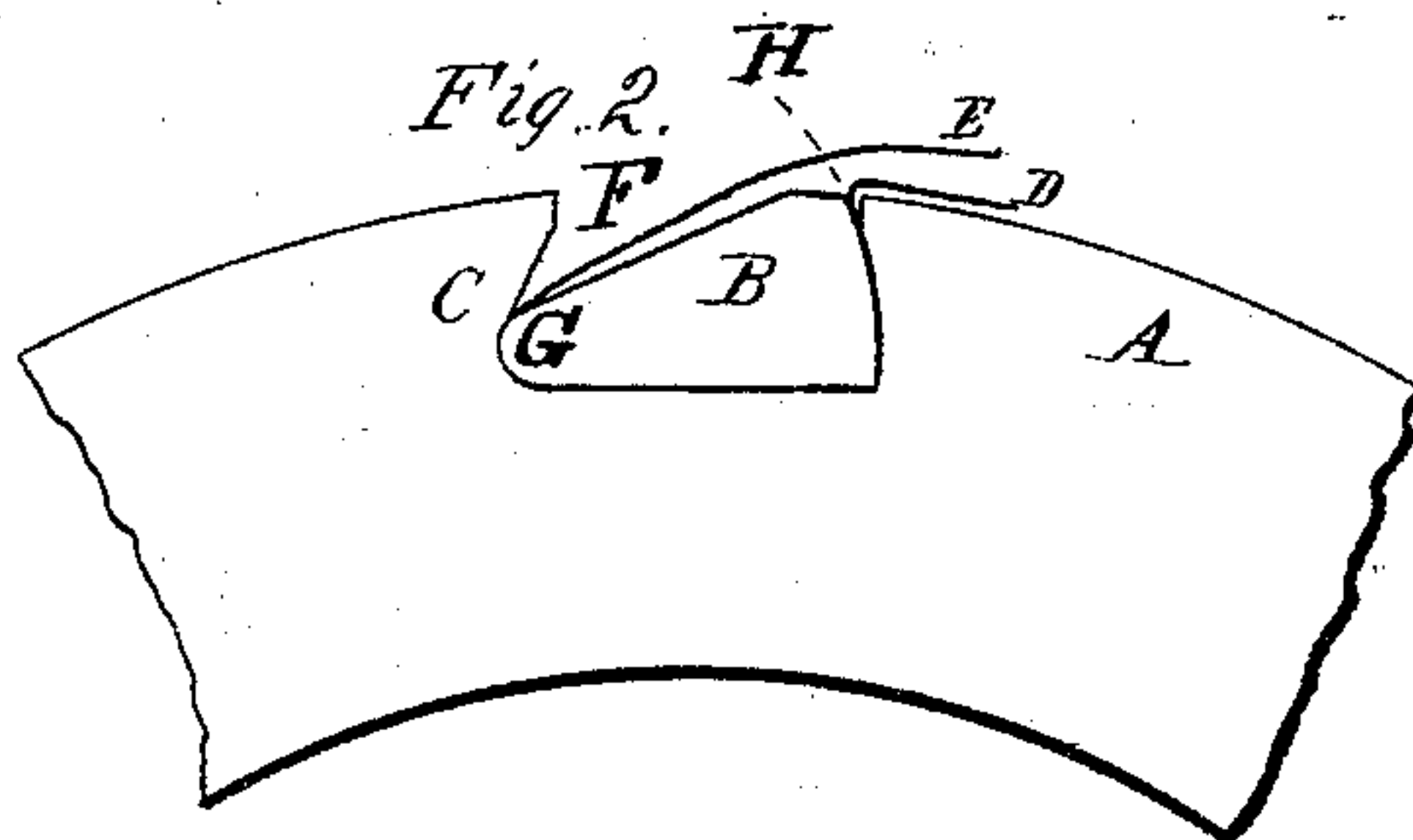
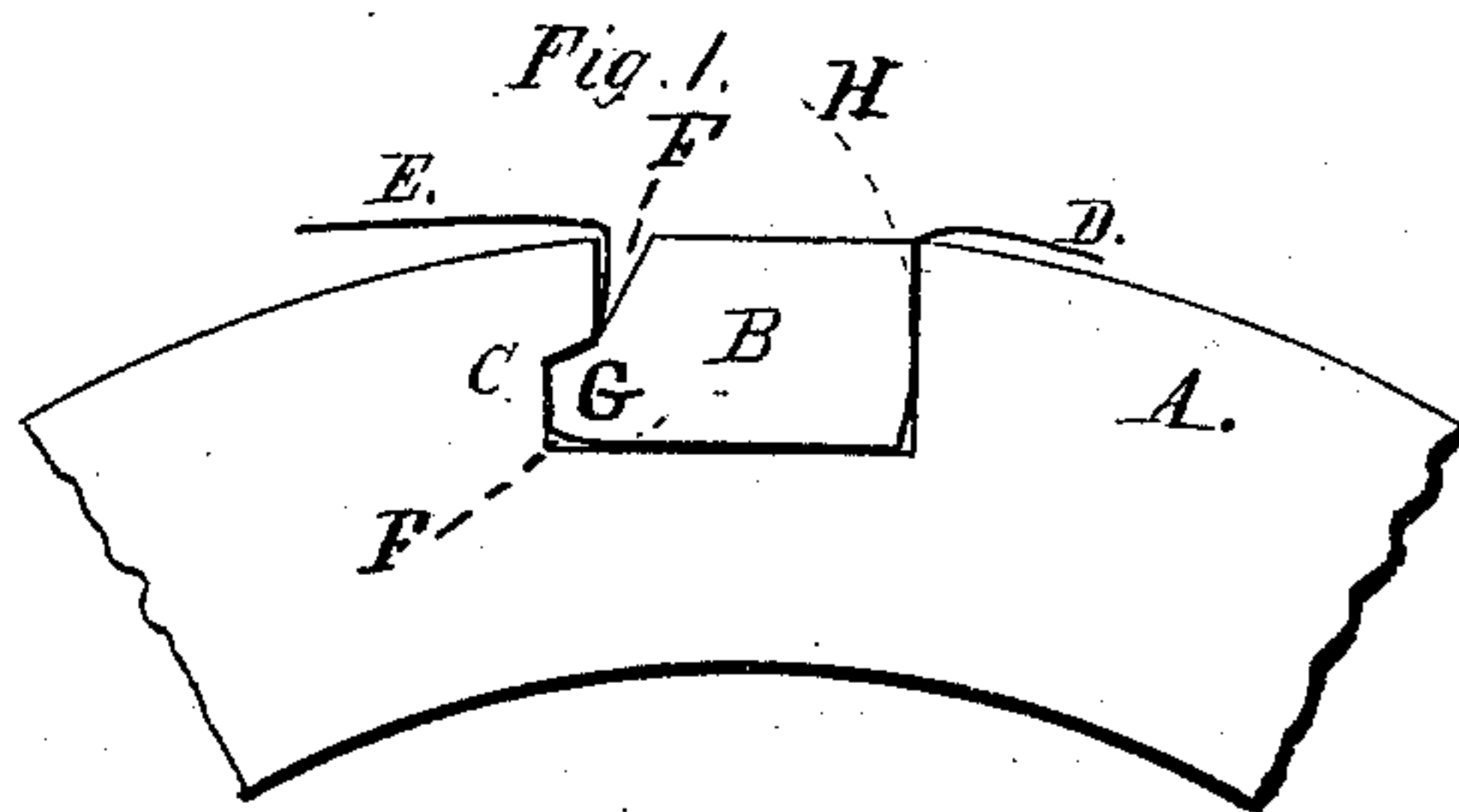


N. HILL.  
WARP-HOLDER.

No. 182,071.

Patented Sept. 12. 1876.



Witnesses  
H. F. Victor  
G. B. Cowan

Inventor.  
Nathaniel Hill

# UNITED STATES PATENT OFFICE.

NATHANIEL HILL, OF LOWELL, MASSACHUSETTS.

## IMPROVEMENT IN WARP-HOLDERS.

Specification forming part of Letters Patent No. **182,071**, dated September 12, 1876; application filed December 16, 1875.

*To all whom it may concern:*

Be it known that I, NATHANIEL HILL, of Lowell, State of Massachusetts, have invented a Warp-Holder, of which the following is a specification:

The object of my invention is to provide a convenient means of holding the warp ends securely in position, as required in the various operations during its manufacture into cloth; and consists of a bar or beam having a slot, F, with a gain or undercut on one side, in combination with the rolling-bar B, as shown in Figures 1, 2, 3, and 4, and cross-section in accompanying drawing.

The figures of drawing all show the same device in slightly varied forms.

Figs. 1 and 3 show forms adapted to more ready application in warp-beams in present use provided with rectangular slots. F in each figure is the slot, the lines defining it coinciding, in a portion of their extent, with those of the rolling-bar B. C is the gain or undercut. G is an edge of the rolling-bar B,

adapted to be placed in the undercut, when the bar may be rolled, as indicated by the dotted lines, into the groove F. E D is the warp end, D being the free end and E the end which is drawn. The warp ends are placed on the bar or beam extending slightly over the slot F. The edge G is placed in the undercut, and over the warp ends, and the bar rolled into the slot, as indicated by the dotted line H, when the warp will be secured. The warp may then be drawn in the direction as shown in Fig. 1, or that shown in Fig. 2, without loosening the bar. A in each figure is a portion of the bar or beam.

I claim—

A bar or beam, A, provided with a slot, F, having an undercut, C, in combination with the rolling-bar B, substantially as and for the purpose described.

NATHANIEL HILL.

Witnesses:

WM. E. WESTALL,  
A. L. KITTREDGE.