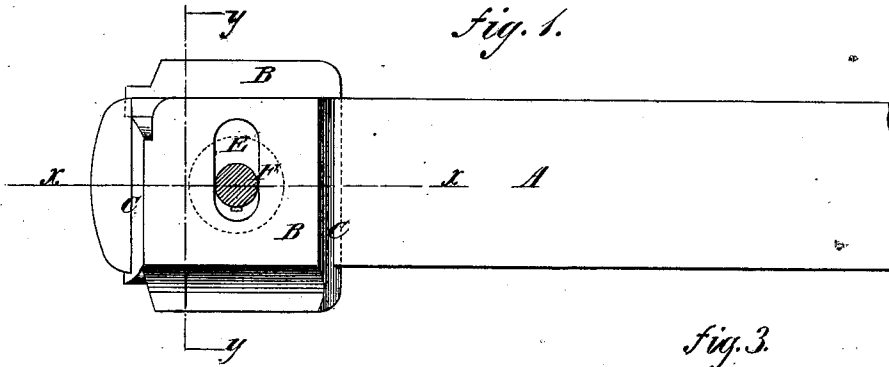
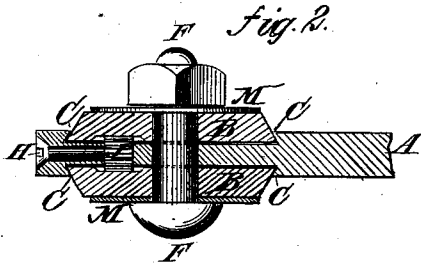
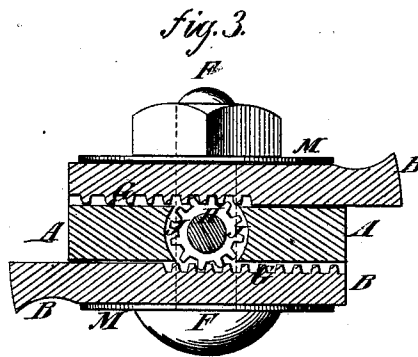


R. BLAIR.
EXPANDING REAMER.

No. 191,561.

Patented June 5, 1877.



WITNESSES:

Gustave Dietrich
John Goethals

INVENTOR:

R. Blair
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ROBERT BLAIR, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN EXPANDING REAMERS.

Specification forming part of Letters Patent No. **191,561**, dated June 5, 1877; application filed April 4, 1876.

To all whom it may concern :

Be it known that I, ROBERT BLAIR, of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Expanding Reamer, of which the following is a specification :

The invention will first be described in connection with the drawing, and then pointed out in the claim.

Figure 1 is a plan of my improved tool, the clamping-bolt by which the cutters are clamped fast after being adjusted being shown in section. Fig. 2 is a section of the tool, taken on the line *x x*. Fig. 3 is a section on the line *y y*.

Similar letters of reference indicate corresponding parts.

A is the stock, and B the cutters. The latter are arranged to slide directly across the stock in dovetail grooves C, and are slotted at E to

slide along the clamping-bolt F and washers M, by which they are clamped fast after they are adjusted to the position required by the toothed pinion J and racks G.

The pinion J is arranged in the stock between the cutters, and the shaft extends out of the end of the stock, with a nick in the end for a screw-driver to turn it.

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

The combination of the sliding cutters B, having rack-arms G and slots E, clamping-bolt F, pinion J, and shaft H, with the stock A, having dovetail grooves, as and for the purpose set forth.

ROBERT BLAIR.

Witnesses :

JAMES BLAIR,
JOHN ARGALL.