

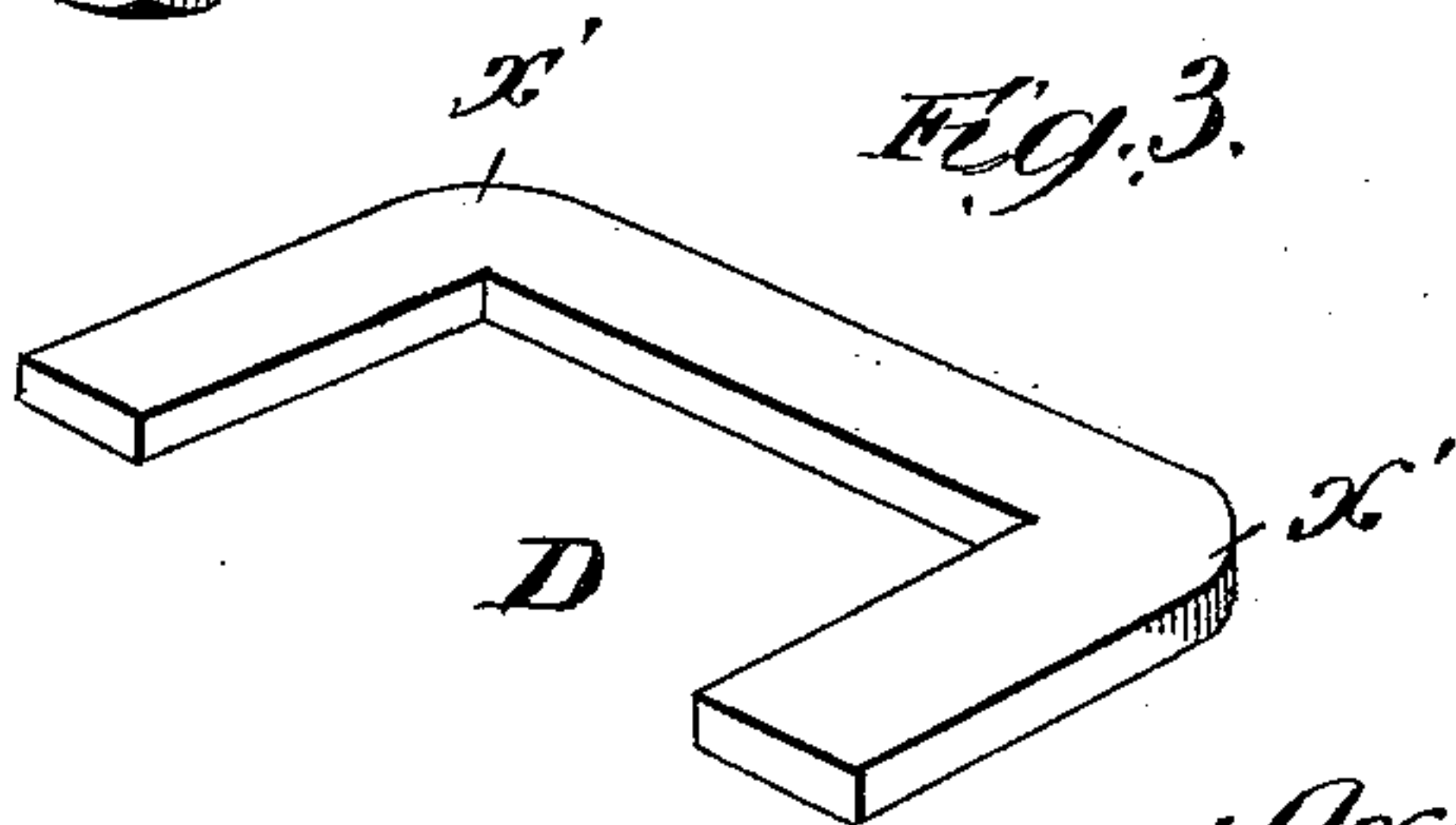
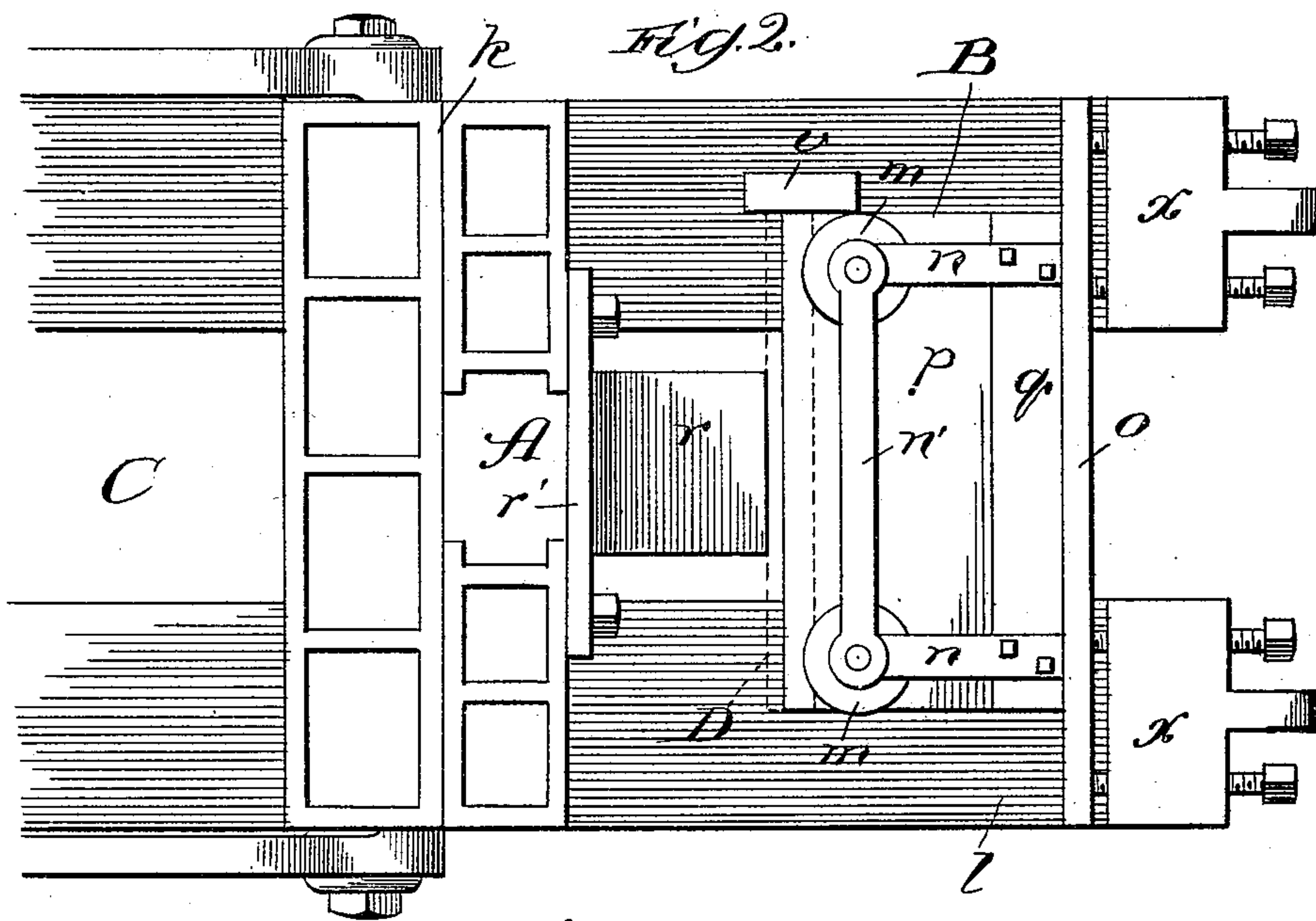
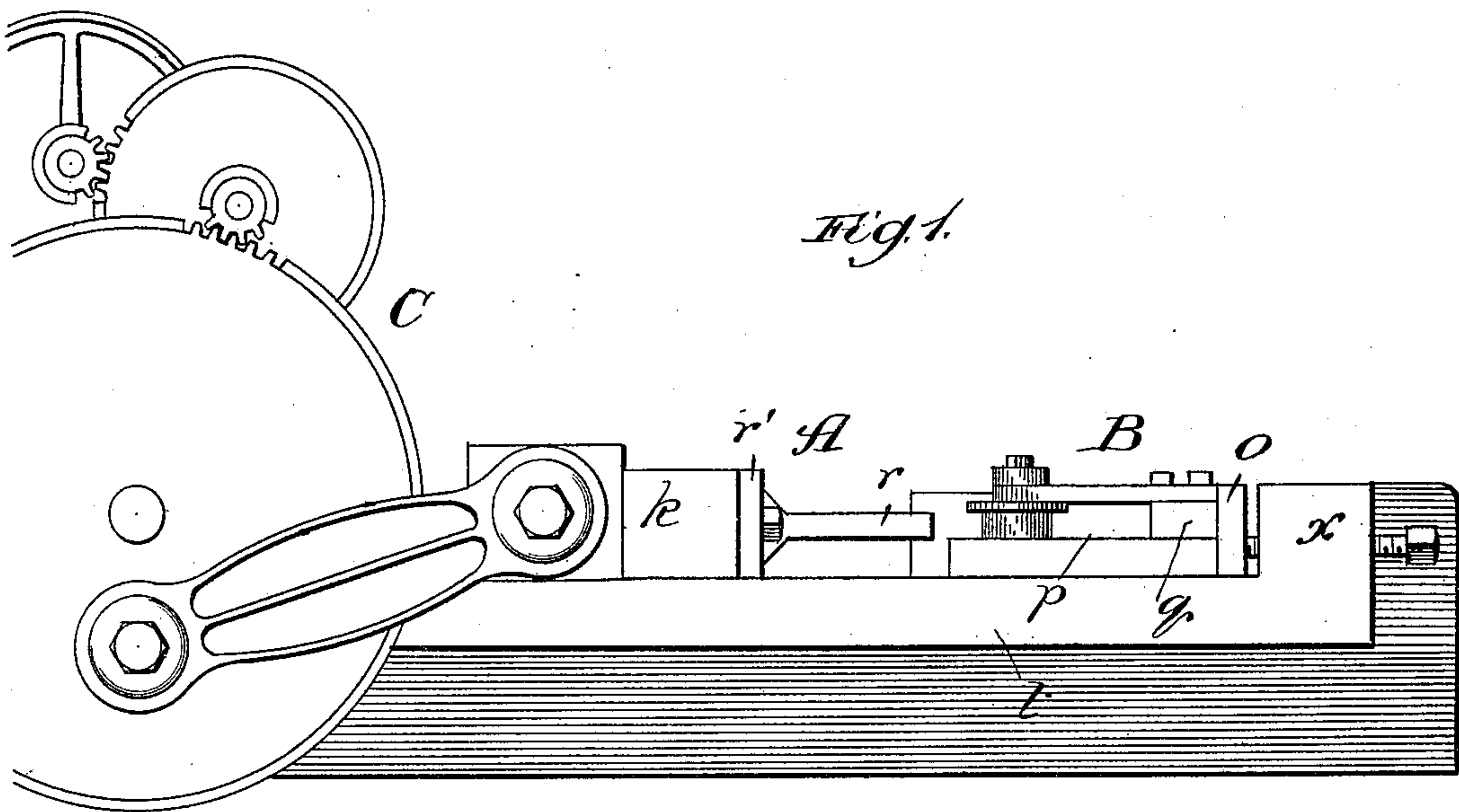
(No Model.)

2 Sheets—Sheet 1.

A. A. STROM.
MANUFACTURE OF CLAMPS.

No. 459,859.

Patented Sept. 22, 1891.



Witnesses:
Wm. C. Hayward,
Clifford G. White.

Inventor:
Axel A. Strom,
By Dyrenforth & Dyrenforth
Attys

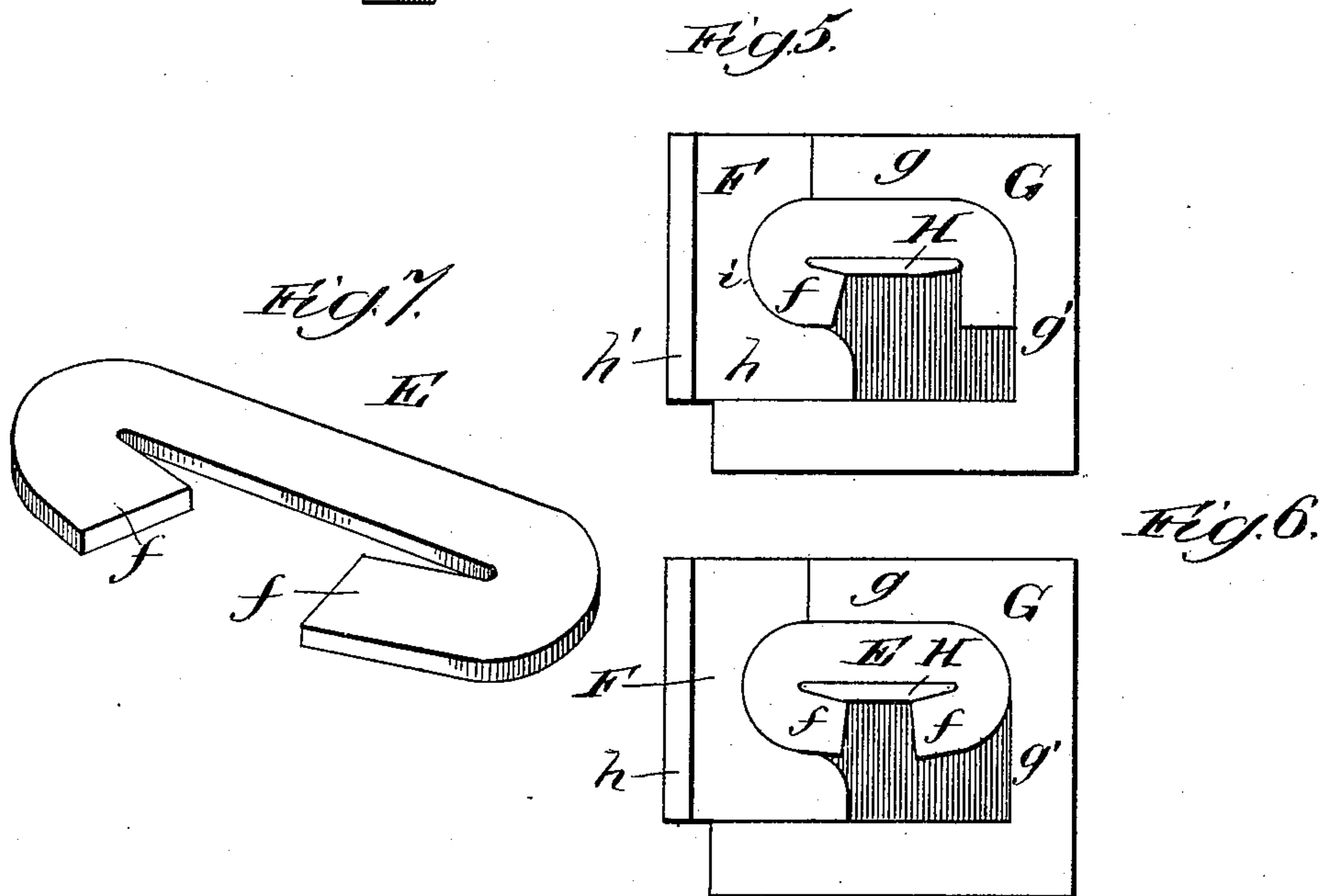
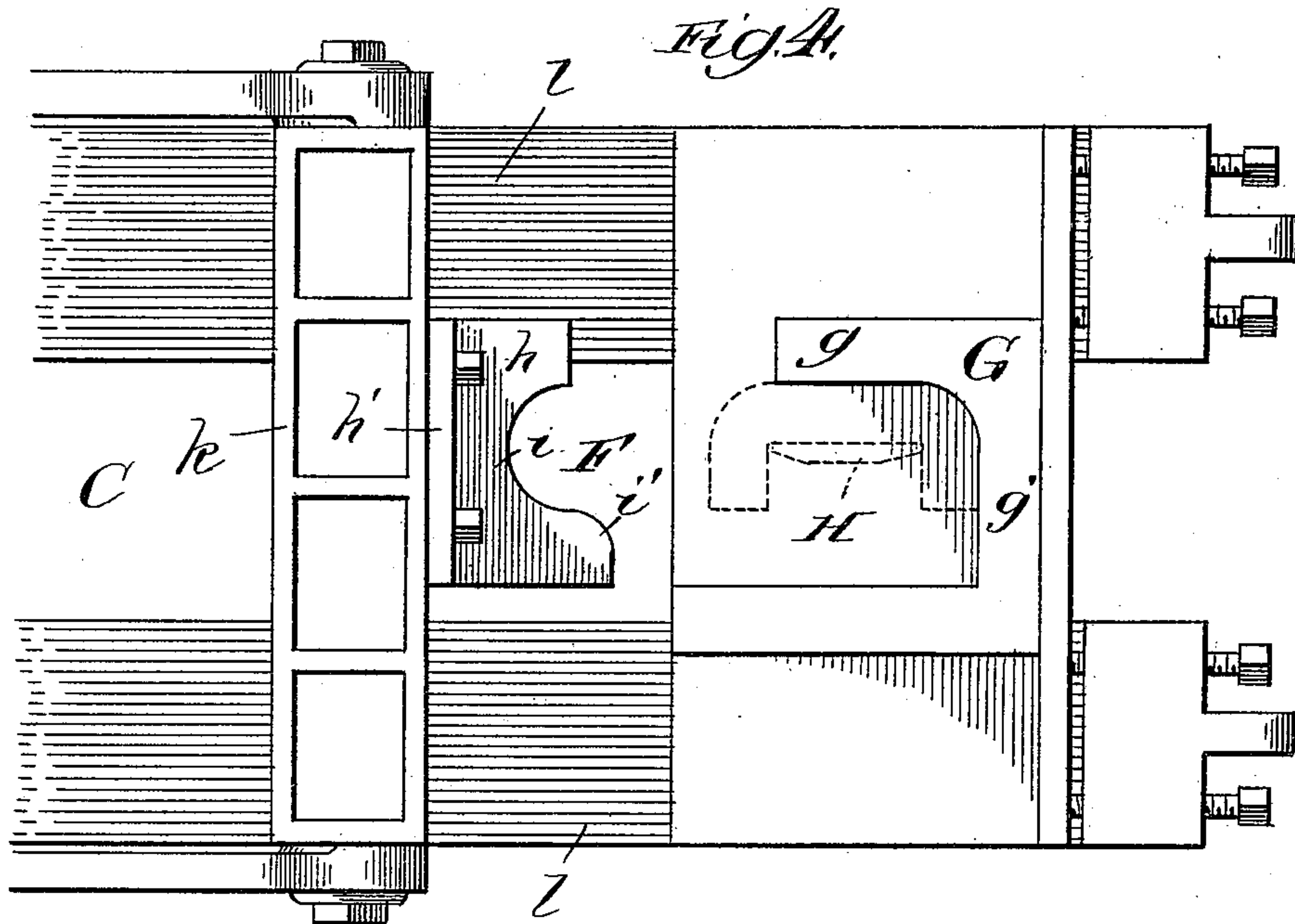
(No Model.)

2 Sheets—Sheet 2.

A. A. STROM.
MANUFACTURE OF CLAMPS.

No. 459,859.

Patented Sept. 22, 1891.



Witnesses:
Charles C. Dayland,
Clifford H. White.

Inventor:
Axel A. Strom,
By *Dyremforth & Dyremforth,*
Attys.

UNITED STATES PATENT OFFICE.

AXEL A. STROM, OF AUSTIN, ASSIGNOR TO THE STROM MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

MANUFACTURE OF CLAMPS.

SPECIFICATION forming part of Letters Patent No. 459,859, dated September 22, 1891.

Application filed June 16, 1891. Serial No. 396,513. (No model.)

To all whom it may concern:

Be it known that I, AXEL A. STROM, a citizen of the United States, residing at Austin, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Manufacture of Clamps, of which the following is a specification.

My invention relates to an improved method of and improved means for manufacturing clamps such as those illustrated and described in Letters Patent of the United States, No. 374,505, granted me on the 6th day of December, 1887, and employed for clamping together the rails and other parts of a railway-frog.

To practice my improved method I proceed, generally stated, as follows: I bend a heated metal bar forming the blank toward its opposite ends to or approximately to right angles, thereby producing three sides of a square or approximate square, and then I bend the bent ends over an interposed form toward each other, thereby forming the inclined jaws.

The means I employ for practicing my improved method are illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a portion of a horizontally-reciprocating bending-machine supporting on its bed the dies of peculiar construction for producing the first bend in the blank. Fig. 2 is a broken plan view of the same. Fig. 3 is a perspective view showing the blank after having been acted on by the dies shown in Figs. 1 and 2. Fig. 4 is a broken plan view of the bending-machine like that presented in Fig. 2, but showing the dies for bending the bent ends of the partly-finished blank over an interposed form, as indicated by dotted lines, to produce the jaws and finish the formation of the clamp. Fig. 5 is a plan view showing the dies brought together and as having thereby formed the jaw at one end of the clamp. Fig. 6 is a similar view of the dies after having formed the jaw at each end of the clamp. Fig. 7 is a perspective view of the finished clamp enlarged over the scale thereof represented in preceding figures.

For the first part of the operation, in which the bent blank illustrated in Fig. 3 is produced, I employ a male die A and a female die B.

The die A comprises a rectangular tongue r on a head r' . The die B comprises a base-plate p , provided with a cross-bar q on its upper side near one edge, at which it is provided with a bearing-plate o . From near the opposite ends of the cross-bar q extend parallel arms n , joined at their free ends by a bar n' and forming with the latter a rectangular frame, in the corners of which and the base-plate p are journaled the rollers m . I operate the dies on a suitable horizontally-reciprocating bending-machine C, preferably of the well-known "bulldozer" class, as illustrated. To that end I fasten the die B stationarily in horizontal position on the bed l of the machine and adjust it with relation to the stroke of the horizontally-reciprocating head k by means of set-screws in bearings x near the forward end of the bed and engaging at their inner ends the bearing-plate o . Near one roller m on the bed l is a stop or gage v for setting the blank D, (represented in position by dotted lines in Fig. 2,) which is adjusted to extend across both rollers m . The die A is fastened at its head r' to the reciprocating head k of the machine C in a manner to cause its plate r to extend horizontally in the plane between the rollers m . With the parts in the relative positions described and shown in Fig. 2, by advancing the die A against the blank D (which has been previously heated) it is bent by being forced between the rollers to the rectangular shape illustrated in Fig. 3, the outer corners being thereby curved, as shown at x' . To produce from that form by a second operation the finished clamp E presented in Fig. 7, I employ a bending-die F and a holder G. The die F is like the male die A, inasmuch as it has a head h' , at which it is bolted to the reciprocating head k of the machine C, and a horizontally-extending plate h , which, however, is provided in its forward end with a semicircular recess i , terminating at one end in an outwardly and laterally curved tongue i' . The holder G comprises a three-sided metal frame conforming along the two inner surfaces of the sides g and g' to the lines of two adjacent sides of the blank when bent to the form illustrated in Fig. 3 and at the junction of its sides g and g' to the curva-

ture x' at an outer corner of the blank so bent. The latter is adjusted in the holder G, as represented by dotted lines in Fig. 4, with a form H, comprising a flat metal bar beveled on one side toward the opposite edges interposed between the bent ends of the partly-finished blank. Thus one of the bent ends of the blank D is presented to the die F, which is then advanced and bends the bent end of the blank over the form H from a different point than that of the bend x' and regularly continuing the curve of the latter, producing a jaw f . When one jaw has been so formed, the partly-finished clamp is reversed in the holder G to present its other end x' to the die F, which acts similarly on that end to produce a jaw f . If the stroke of the head k be sufficiently long, instead of a mere holder G, the latter may be supplanted by a stationary die the counterpart of the die F, when by a single advance movement of the latter both bent ends x' of the blank will be formed into jaws f simultaneously.

What I claim as new, and desire to secure by Letters Patent, is—

1. The method of forming a clamp E, which consists in first bending a suitable metal blank toward its opposite ends to or approximately to right angles and then bending the said bent

ends over a form into jaws f , substantially as described. 30

2. The method of forming a clamp E, which consists in first bending a suitable metal blank toward its opposite ends to or approximately to right angles and curving the outer corners, as at x' , and then bending the said bent ends into jaws f from points beyond the angles of the previous bends, and thereby continuing the curves described by the corners x' , substantially as described. 35 40

3. In combination, dies A and B for use in forming clamps E, the die A comprising a plate r , having a head r' adapted to be secured to a reciprocating head k , and the die B comprising a plate p , carrying a rectangular frame, and rollers m , journaled at opposite corners of the frame, substantially as described. 45

4. A forming-die F for use in manufacturing clamps E, comprising a head h' and a plate h , having a recess i in its forward end, and an outwardly-curved extension i' at one end of the recess, substantially as described. 50

AXEL A. STROM.

In presence of—

J. W. DYRENFORTH,
M. J. FROST.