

(No Model.)

2 Sheets—Sheet 1.

G. A. OHL.
MACHINE FOR PROFILING SHEET METAL.

No. 488,576.

Patented Dec. 27, 1892.

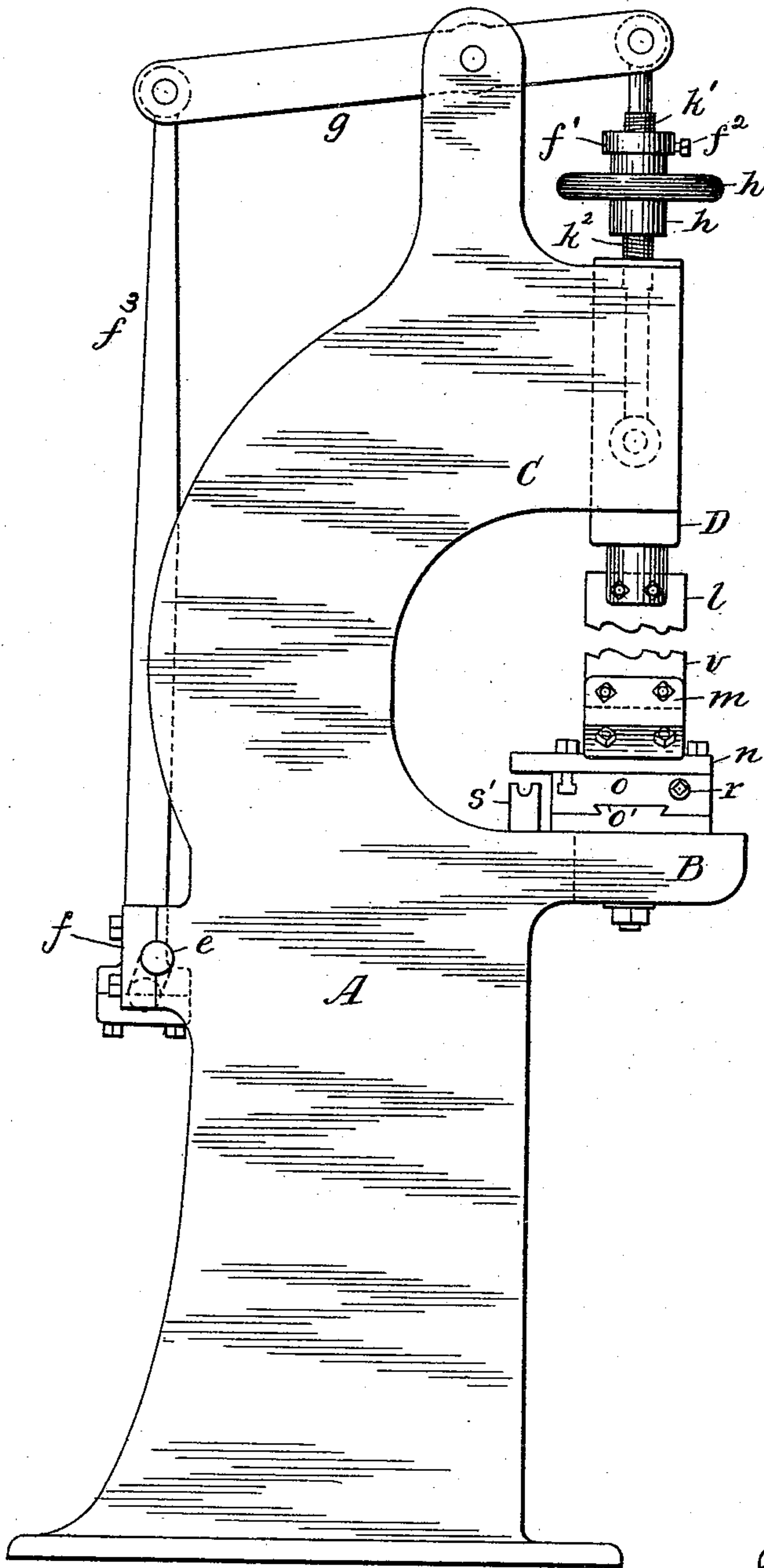


Fig. 1.

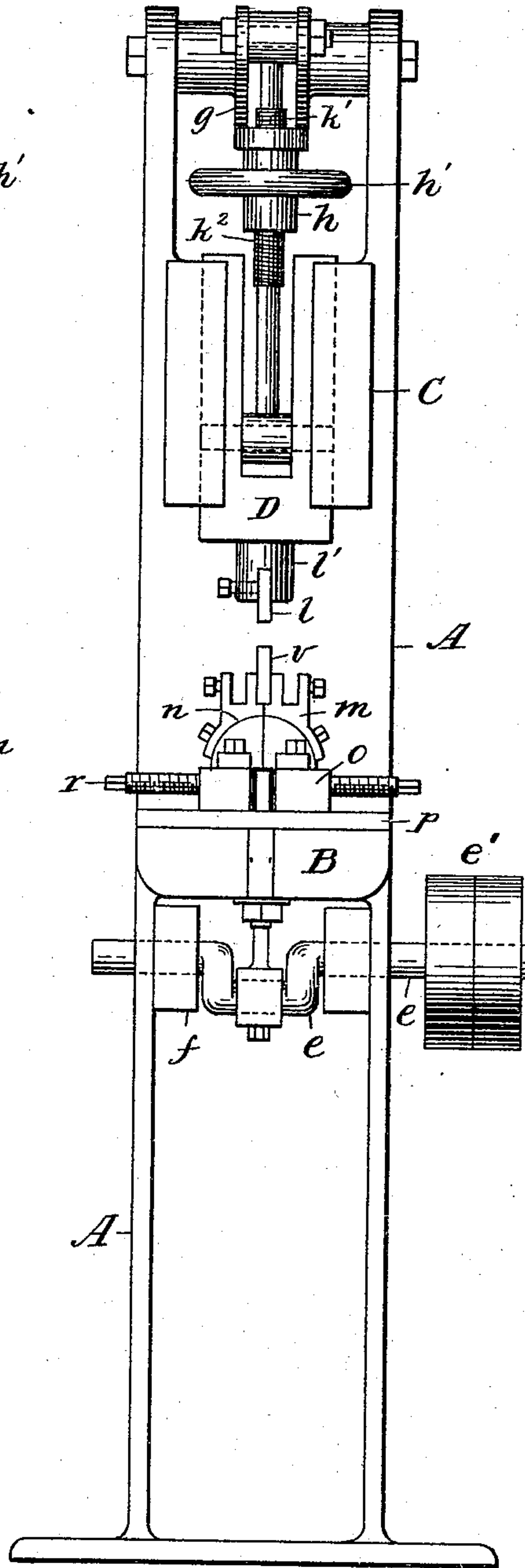


Fig. 2.

Attest:
L. Lee.
Edw. P. Kinsey.

Inventor.
George A. Ohl, per
Crane & Miller, Attys.

(No Model.)

2 Sheets—Sheet 2.

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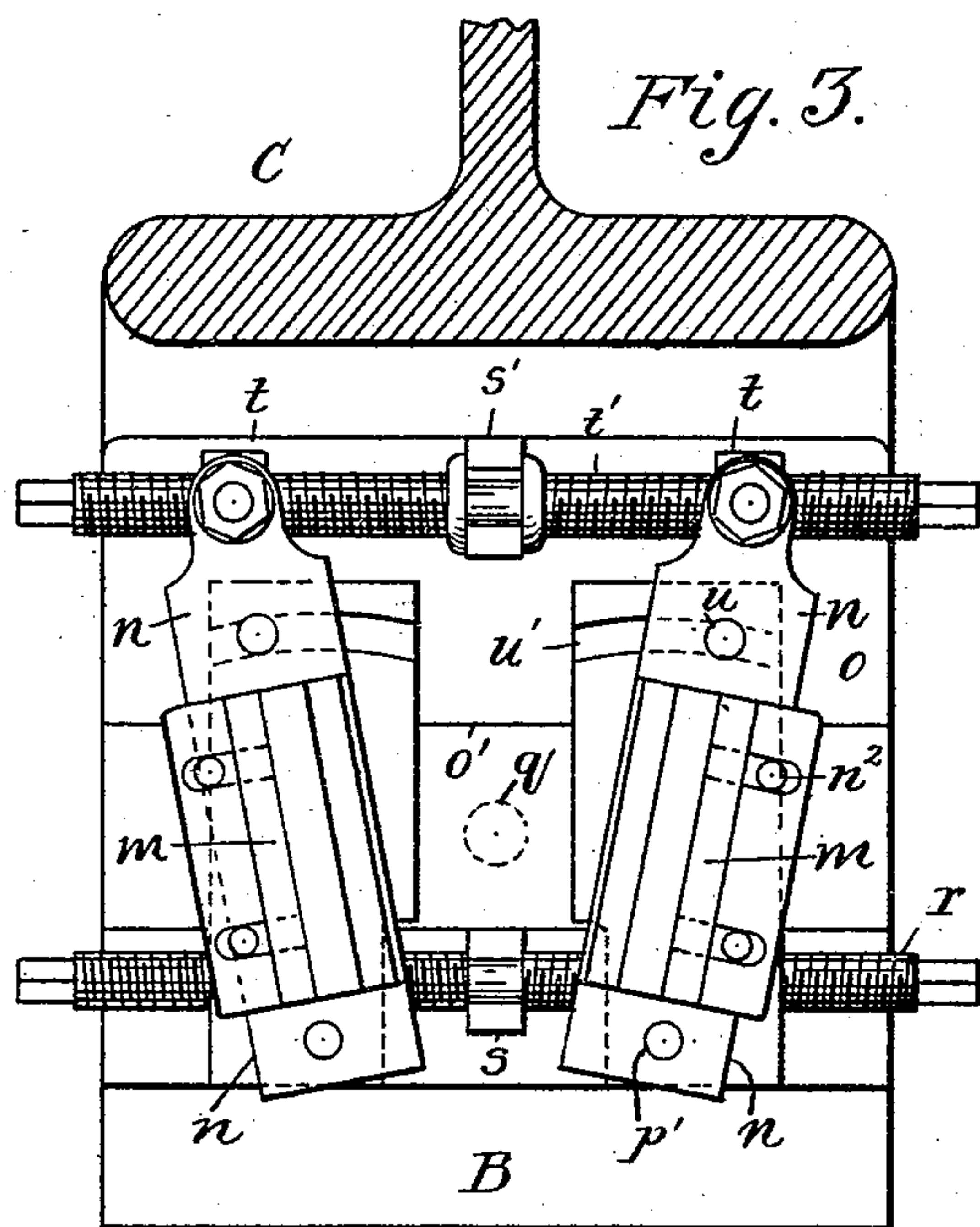


Fig. 3.

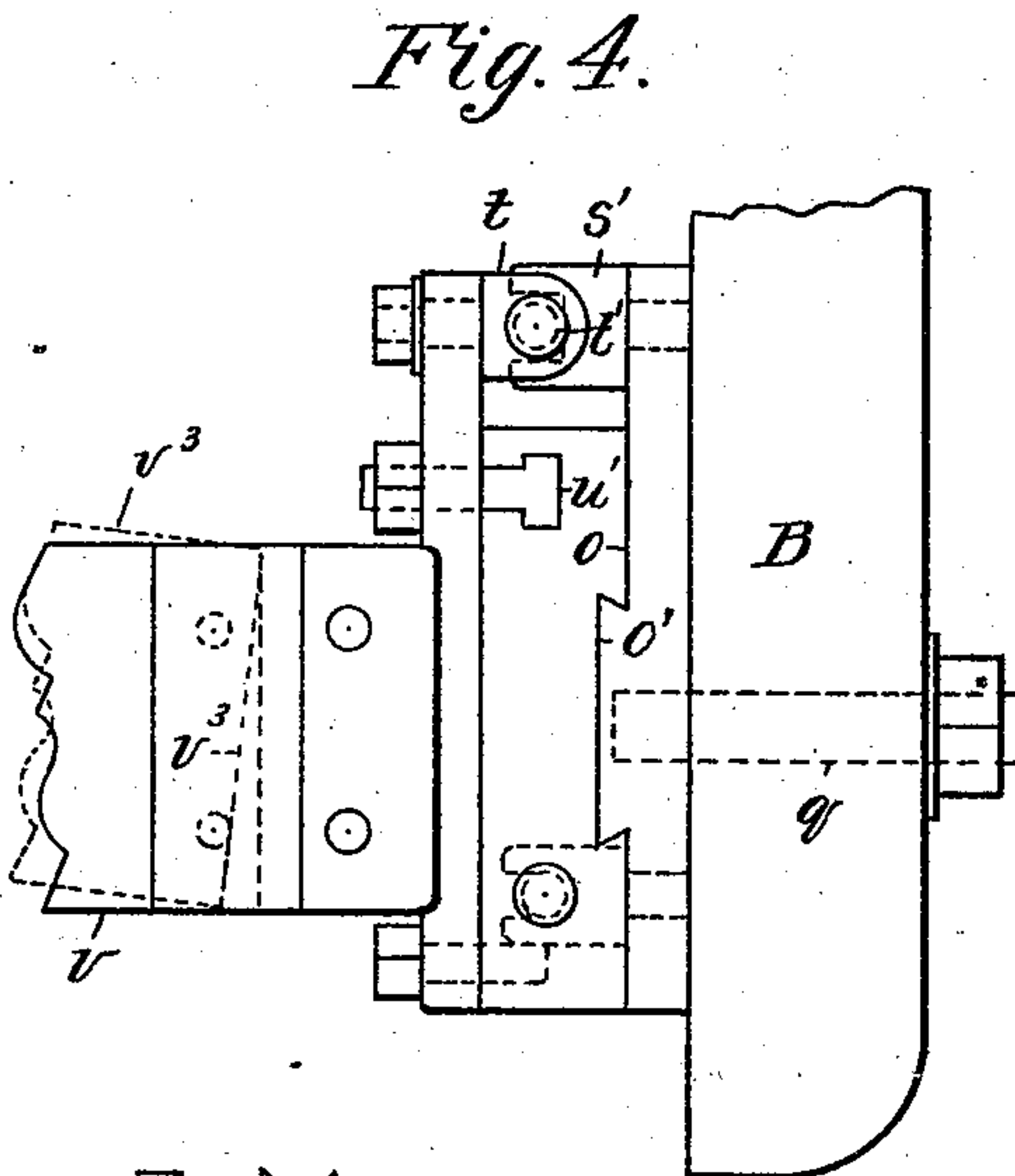


Fig. 4.

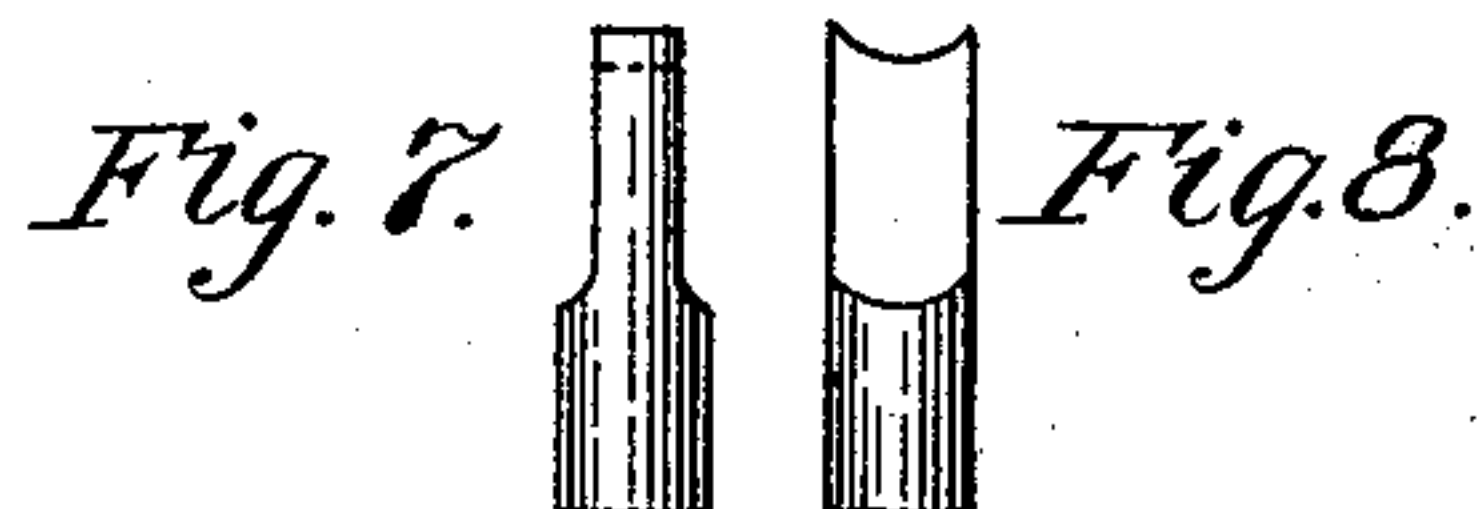


Fig. 7.

Fig. 8.

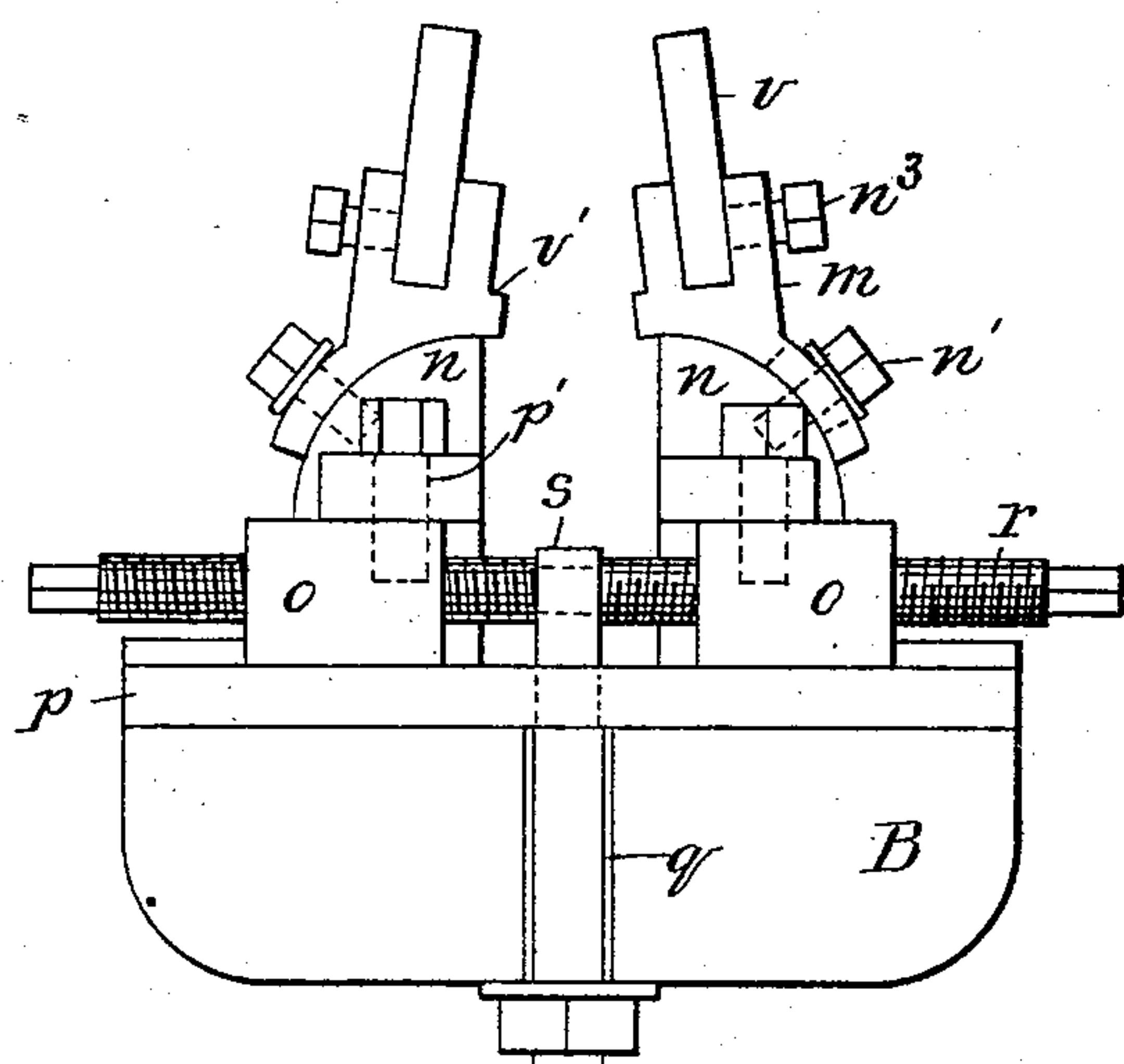


Fig. 5.

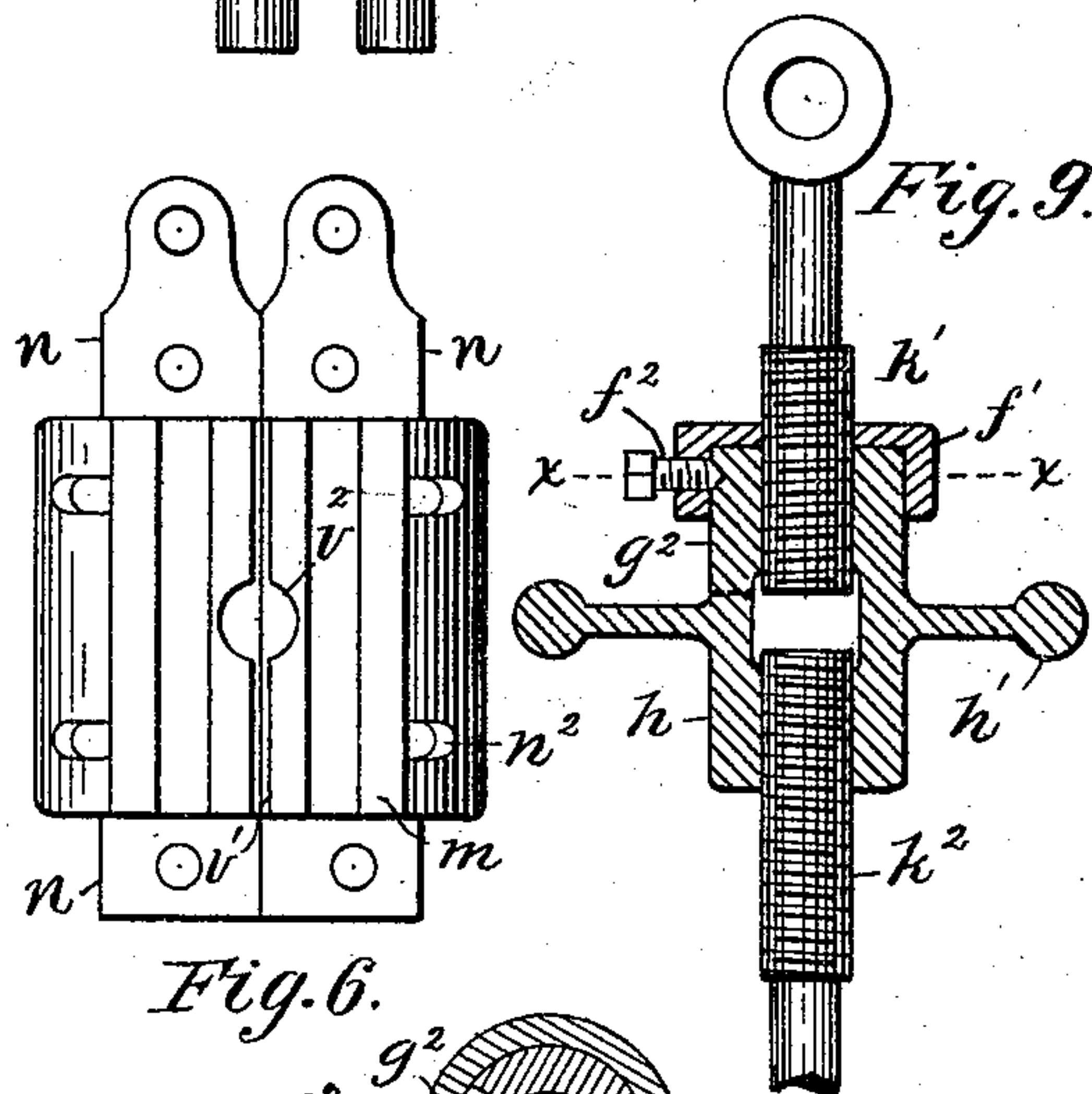


Fig. 6.

Fig. 9.

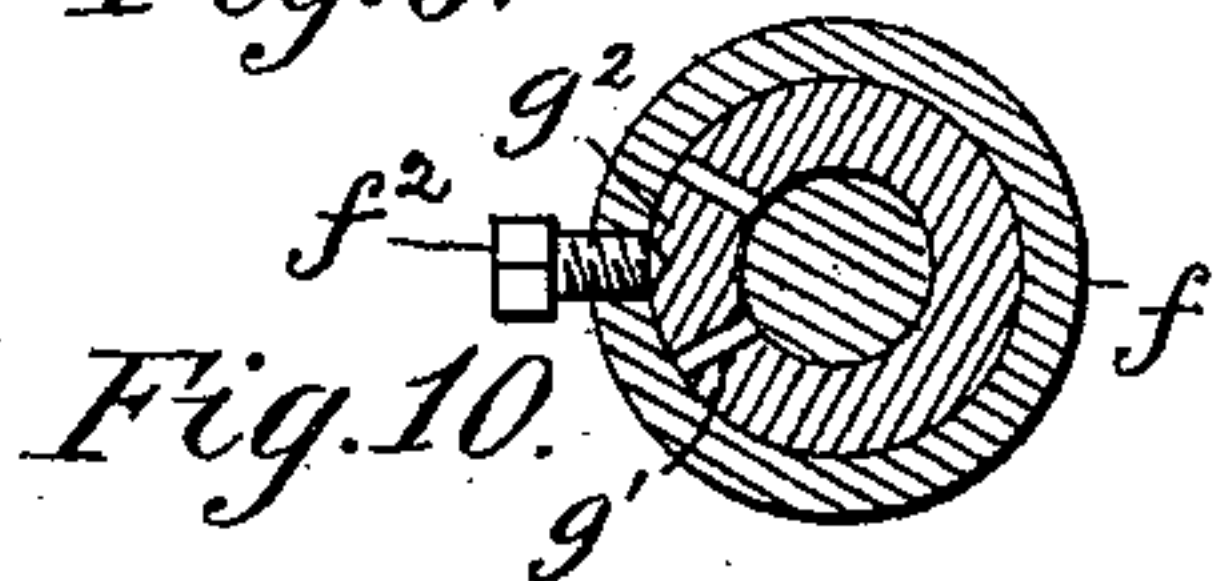


Fig. 10.

Attest:
L. Lee.
Edw. F. Kinsey.

Inventor.
George A. Ohl, per
Crane & Miller, Attys.

UNITED STATES PATENT OFFICE.

GEORGE A. OHL, OF NEWARK, NEW JERSEY.

MACHINE FOR PROFILING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 488,576, dated December 27, 1892.

Application filed June 11, 1892. Serial No. 436,337. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. OHL, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Machines for Profiling Sheet Metal, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to that class of machines in which sheet metal is inserted between two narrow profile dies and subjected to repeated blows by the upper die to alter the cross section of the metal, and the object
15 of the invention is to furnish a means of conveniently adjusting and securing the lower dies in the positions required to produce a variety of objects. In such machines the upper die may be reciprocated rapidly by any suitable means, that shown herein consisting in
20 a revolving crank shaft and suitable connections to a sliding crosshead.

The invention will be understood by reference to the annexed drawings, in which Figure 1 is a side elevation, and Fig. 2 a front
25 elevation of a machine provided with my improvements. Fig. 3 is a plan of the table and dies with the die beds inclined outwardly in the rear; Fig. 4 is a side elevation of the same parts with the die beds set parallel. Fig. 5 is a
30 front elevation of the same parts with the die beds set parallel, and the dies inclined inwardly at the top. Fig. 6 is a plan of the die beds and holders set in close contact; Fig. 7
35 is an edge view, and Fig. 8 a side view of a round shank die; Fig. 9 is a longitudinal section of the adjusting nut with a part of the connecting rod for the crosshead. Fig. 10 is a cross section on line x, x , in Fig. 9.

40 A is an upright frame or column having a bracket or table B projected from the front, and a goose neck C in which the crosshead D is fitted movably. A crank shaft e with pulleys e' , is journaled in bearings f in the rear
45 of the column and connected by a rod f^3 with a double lever g pivoted upon the top of the column. The lever is connected with the crosshead by a connecting rod formed in two parts k', k^2 , the inner ends of which are threaded
50 and coupled by a nut h having right and left hand threads formed in its opposite ends, as shown in Fig. 9. The upper end of the rod

is pivoted to the lever g , and the lower end to the crosshead D. The parts of the rod are threaded to fit such nut and are drawn together or forced apart when the nut is turned
55 by the hand wheel h' attached thereto. Two slots g' are shown cut lengthwise in the upper half of the nut, forming an elastic tongue g^2 which contains a portion of the screw
60 thread. A band f' is fitted over the end of the nut and provided with a set screw f^2 by which the tongue g^2 may be pressed toward the rod when required to take up lost motion. In such machines it is common to provide a
65 single die l attached to the crosshead by holder l' , and to support two die holders upon the table B with means for holding two dies in different relations to the upper die l .

In my construction the lower die holders m
70 are set upon segments or cylinders n , which form the die beds and which are pivoted upon carriers o to permit their adjustment at different angles thereon. The carriers are adjustable to and from one another upon a bed
75 plate p which is secured to the table by bolt q . The carriers are fitted to guides which are shown as a dovetail o' upon the plate p and are connected by a right and left screw r
80 which is journaled in a central bearing s so as to set the carriers equally from the center line of the upper die l . The guides on the bed plate hold the carriers parallel but movable to and from the central line of the upper die. The segmental cylindrical faces of
85 the die-beds n are presented outwardly and upwardly, and the feet of the die-holders m are formed of concave segments fitted to the cylindrical exterior of the die-beds and provided with slots n^2 through which bolts n' are
90 inserted in the beds. The heads of the bolts are thus presented outwardly at an angle, which affords the most convenient access to them, while it permits the die holders to be tipped somewhat in either direction from the
95 vertical line. The set screws n^3 are provided in the jaws of the holders to clamp the lower dies v .

In Fig. 4 the holders m are shown tipped inwardly with the dies v inclined toward the
100 center of the machine, as is required in curving a sheet metal molding in a vertical plane, and in Fig. 3 the die beds n are shown inclined outwardly at their rear ends, as is re-

quired in curving a sheet metal molding in a horizontal plane. The die beds are pivoted at the front end of the carriers by bolts p' , and are provided at their rear ends with swiveled nuts t which are connected by a right and left hand screw t' to set them simultaneously at the same angle. A bearing s' is fixed to the table to which the middle of the screw t' is fitted, with a lateral play in the bearing, to permit the outward movement of the screw as the die beds swing around the bolts p' . Bolts u are inserted through the rear ends of the beds into curved slots u' formed in the rear ends of the carriers; by which bolts the carriers may be clamped when adjusted, if desired. Such bolts are not however used when the die beds require frequent adjustment; but may be used when a large number of similar pieces are to be shaped upon the dies, and the latter may then be secured in a fixed position.

The carriers o are shown in Figs. 3 and 5 separated, as is common when two dies below are opposed to the upper die l ; but where it is desired to use a single bottom die, the die holders m may be set vertically as shown in Fig. 2, and the die v clamped between the carriers by operating the screw r . To sustain the pressure upon the die when thus clamped the shoulders v' are formed upon the inner sides of the die holders m , and the lower die is thus readily clamped in place or released without employing a special holder for the same. Where a die with a round shank is used, as is sometimes required, to turn the working faces into a convenient position for the operator, such shank may be clamped between the adjacent faces of the die holders m by forming semi-cylindrical sockets v^2 therein as shown in Fig. 6. In this figure, the die beds are shown pressed toward one another the same as in Fig. 2, in which position they would operate to clamp a round shank, such as is shown upon the tool in Figs. 7 and 8.

It will be seen from the above description that the construction provided for the holders m , the die beds n , and the carriers o , is adapted to set the dies in any required position excepting the raising of one end of the die, which is commonly done by tipping the die in the holder, as shown by the dotted lines v in Fig. 5.

By means of the screw r , the dies may be adjusted laterally in a symmetrical manner in reference to the die l , and by the screw t' the die beds may be inclined in a horizontal plane, while the cylindrical surfaces of the die beds n permit the die holders to be set at any desired angle in a vertical plane. The formation of the shoulders v' and of the segmental sockets v^2 , also permits the holding of a single die centrally beneath the upper die by the same holders as are adapted to carry the two lower dies.

By means of the elastic tongue g^2 in the nut connecting the two parts of the connecting rod, the nut may be prevented from turning voluntarily upon the rod although it does not

prevent the operator from turning the nut during the working of the machine to vary the operation of the dies, or to successively increase the pressure upon the sheet metal as it yields in the hammering operation.

Having thus set forth the nature of my invention what I claim herein is:

1. In a machine for profiling sheet metal, the combination, with the die l and mechanism for reciprocating the same, of the bed plate p , the carriers o fitted to guides thereon, the die-beds n secured upon the carriers and formed with segmental cylindrical faces presented outwardly, and the die-holders m having concave segmental feet fitted to such faces and provided with the slots n^2 and bolts n' , as and for the purpose set forth.

2. In a machine for profiling sheet metal, the combination, with the die l and mechanism for reciprocating the same, of the bed plate p , the carriers o fitted to guides thereon, the right and left hand screw r fitted to the carriers and to the bearing s upon the bed plate, die holders pivoted at one end to the carriers and at the opposite ends provided with swiveled nuts t and the right and left screw t' secured in the bearing s' , as and for the purpose set forth.

3. In a machine for profiling sheet metal, the combination, with the die l and mechanism for reciprocating the same, of the bed plate p , the carriers o fitted to guides thereon, the right and left hand screw r fitted to the carriers and to the bearing s upon the bed plate, die holders pivoted at one end to the carriers and at the opposite ends provided with swiveled nuts t , the right and left screw t' fitted to bearing s upon the bed plate, and the clamp bolts u fitted to slots u' in the carriers, as and for the purpose set forth.

4. In a machine for profiling sheet metal, the combination, with the die l and mechanism for reciprocating the same, of the bed plate p , the carriers o fitted to guides thereon, the die beds n with cylindrical faces and pivoted at one end upon the carriers o with their opposite ends connected by the right and left hand screw t' , and the holders m with feet fitted to the cylindrical faces and means for clamping them thereto, as and for the purpose set forth.

5. In a machine for profiling sheet metal, the combination, with the die l and mechanism for reciprocating the same, of the bed plate p , the carriers o fitted to guides thereon, the right and left hand screw r fitted to the carriers and to the bearings s upon the bed plate, die holders mounted upon such carriers and provided with the shoulders v' for supporting and clamping a die centrally between the die holders, as and for the purpose set forth.

6. In a machine for profiling sheet metal, the combination, with the die l and mechanism for reciprocating the same, of the bed plate p , the carriers o fitted to guides thereon, the right and left hand screw r fitted to the carriers and to the bearing s upon the bed

plate, dieholders mounted upon such carriers and provided with the shoulders v' , and the segmental sockets v^2 for supporting and clamping a die centrally between the die holders, as and for the purpose set forth.

7. In a machine for profiling sheet metal, the combination, with a crosshead and a lever for reciprocating the same, of a connecting rod formed in two parts with their adjacent ends threaded in opposite directions, the nut h applied to such threads and provided

with the slits g' forming the tongue g^2 , and the band f' with set screw f^2 for adjusting the tongue, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

GEORGE A. OHL.

Witnesses:

H. J. MILLER,
EDW. F. KINSEY.