

(No Model.)

A. A. STROM.

MANUFACTURE OF TIE BARS AND CONNECTING RODS FOR RAILROADS.

No. 459,860.

Patented Sept. 22, 1891.

Fig. 1.

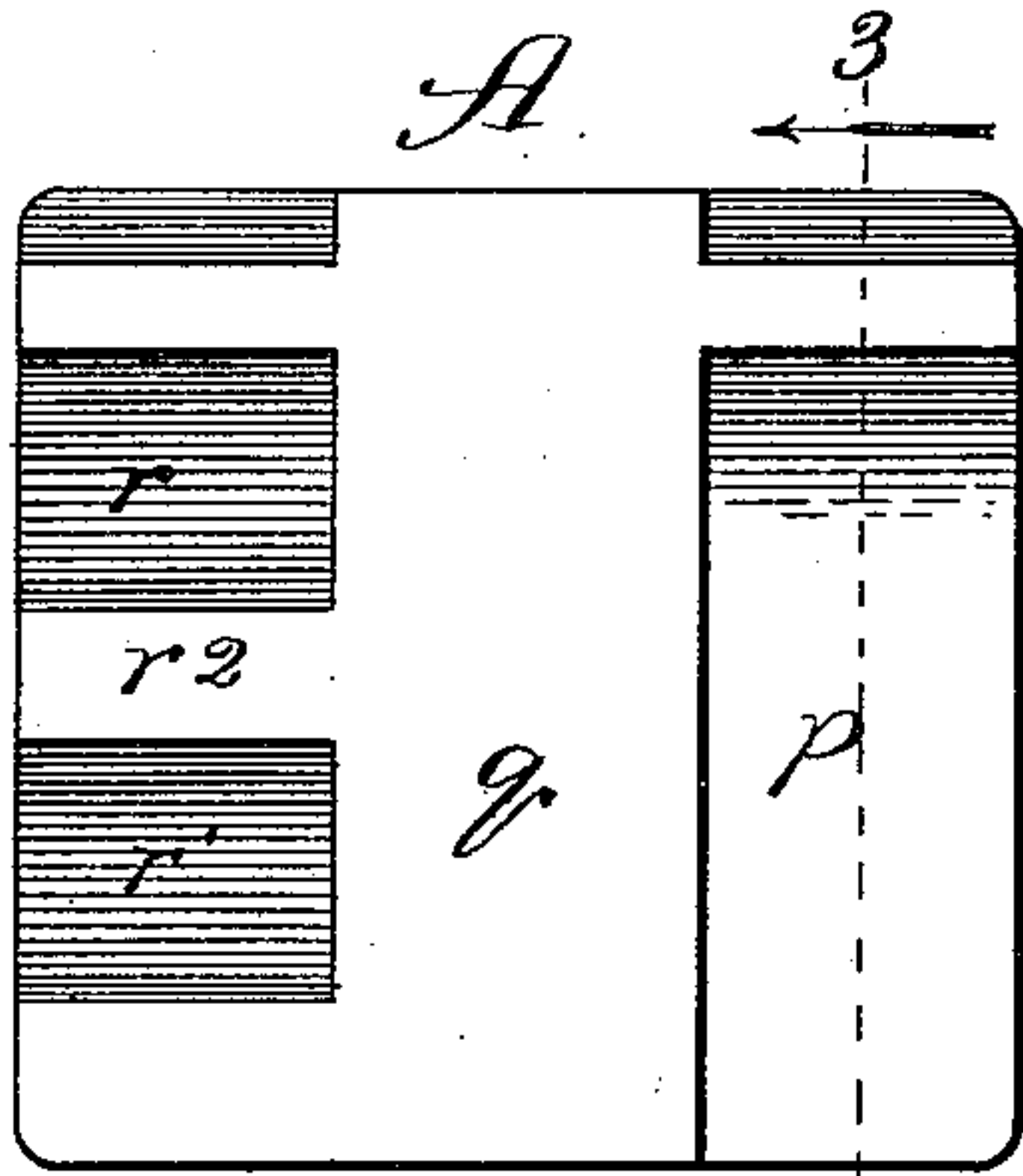


Fig. 2.

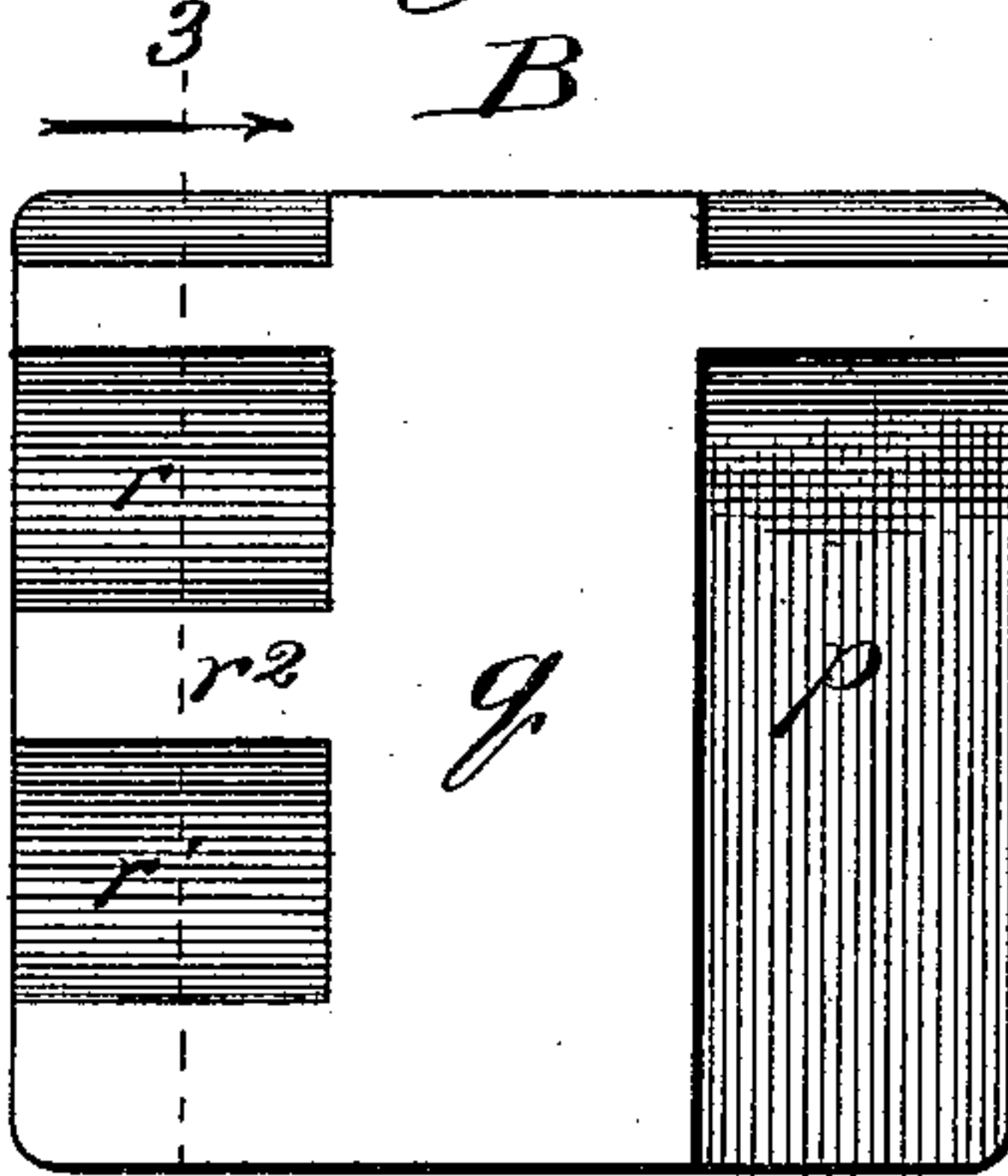


Fig. 3.

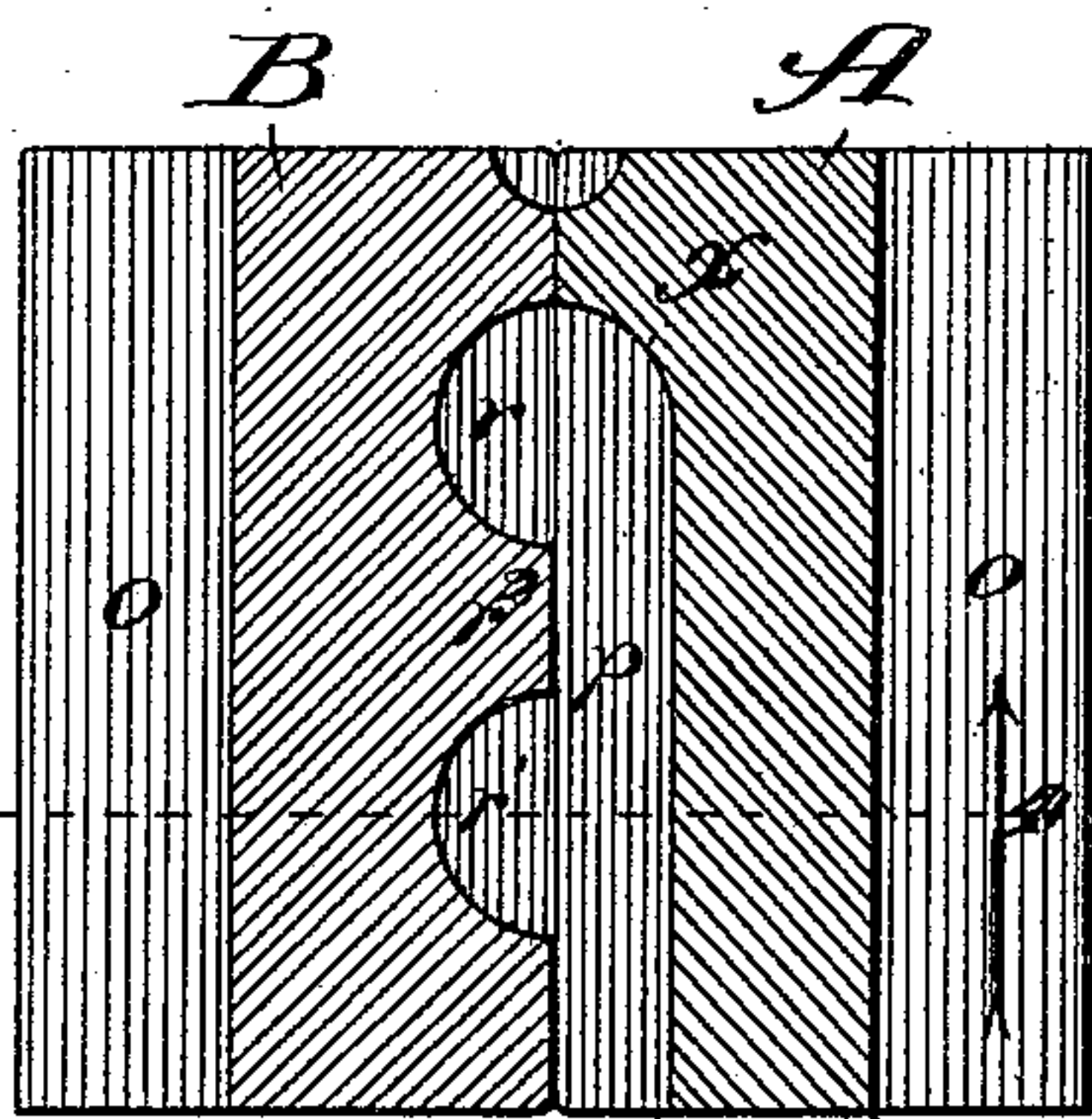


Fig. 4.

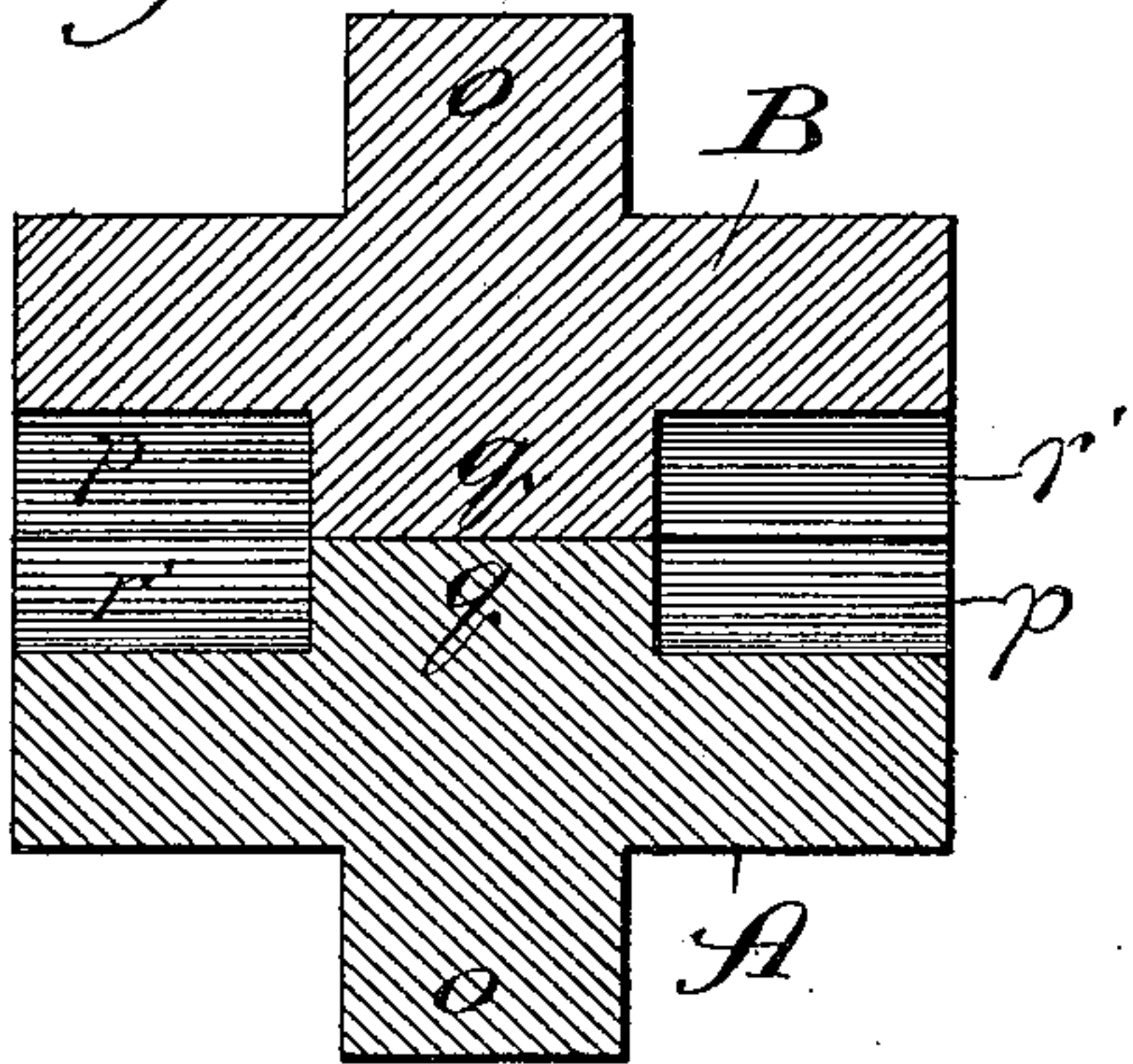


Fig. 5.

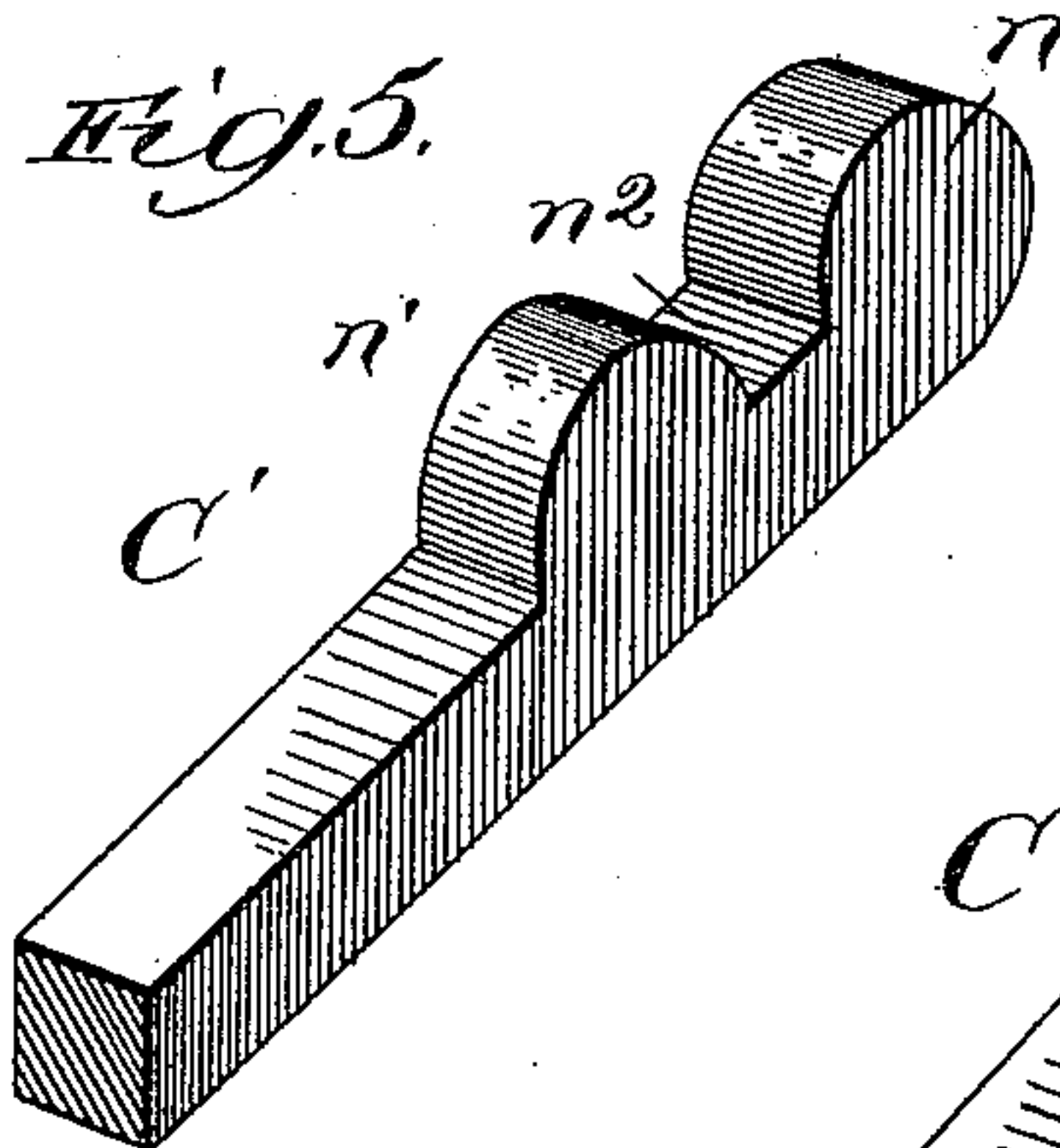


Fig. 6.

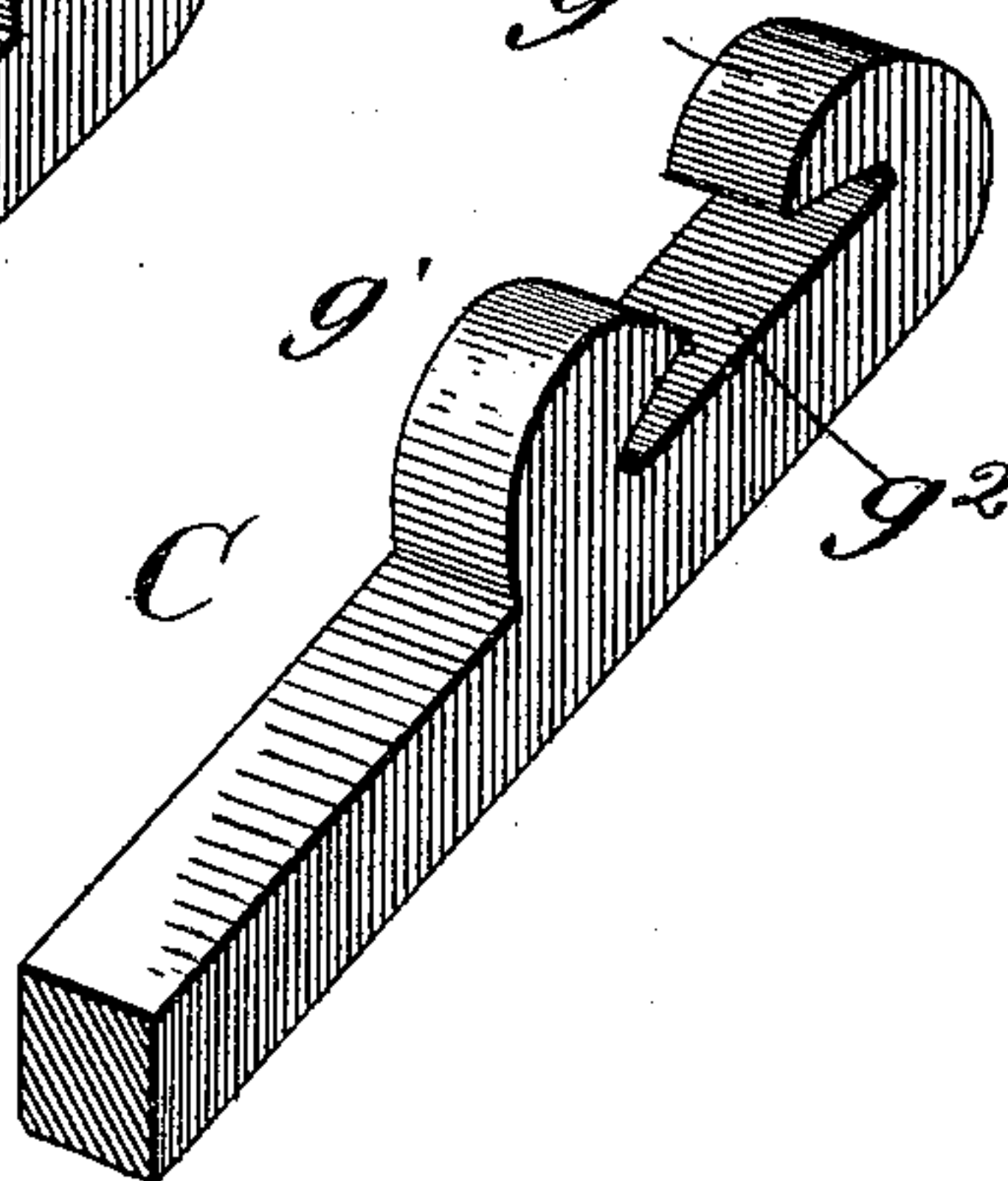


Fig. 7.

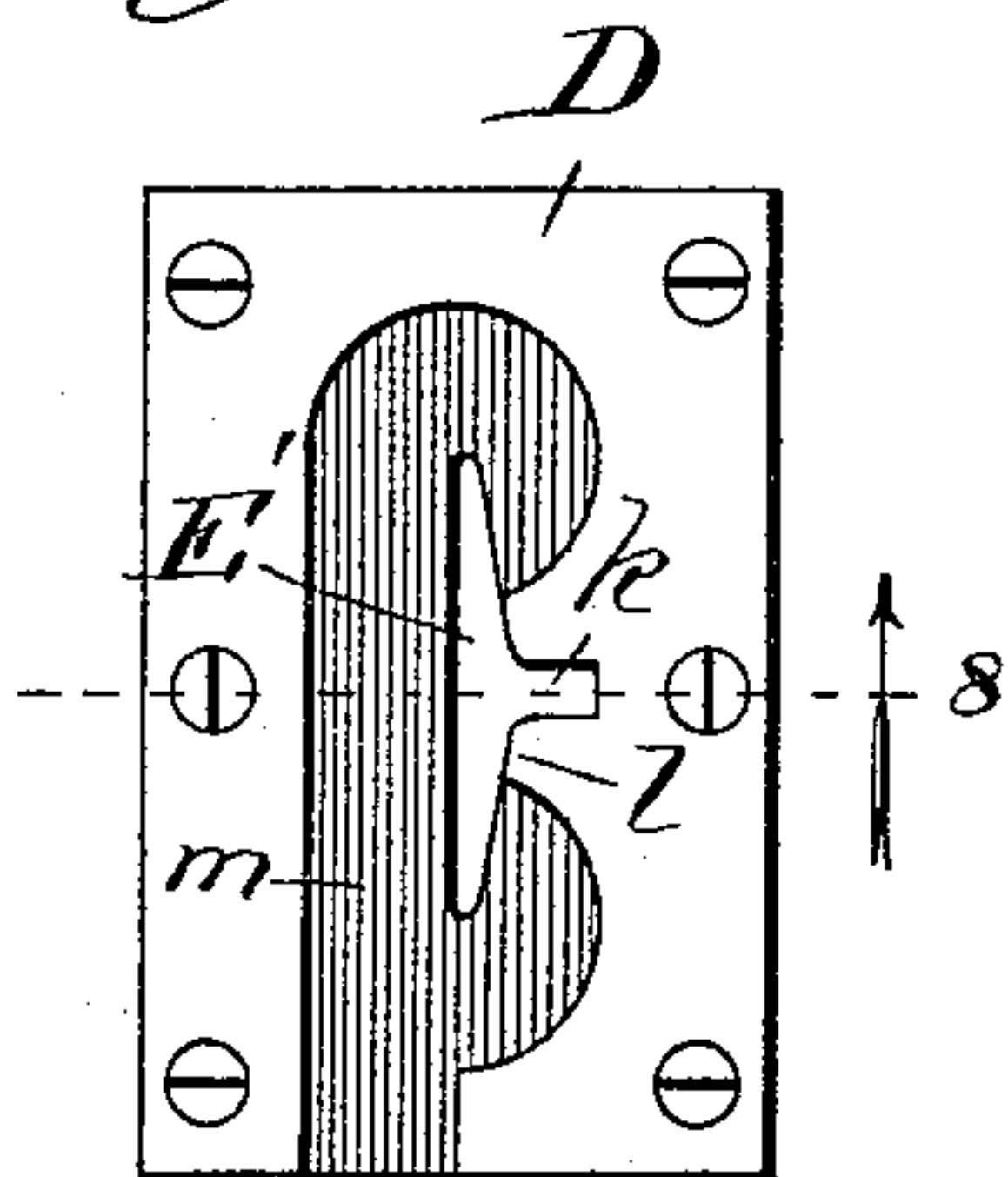


Fig. 8.

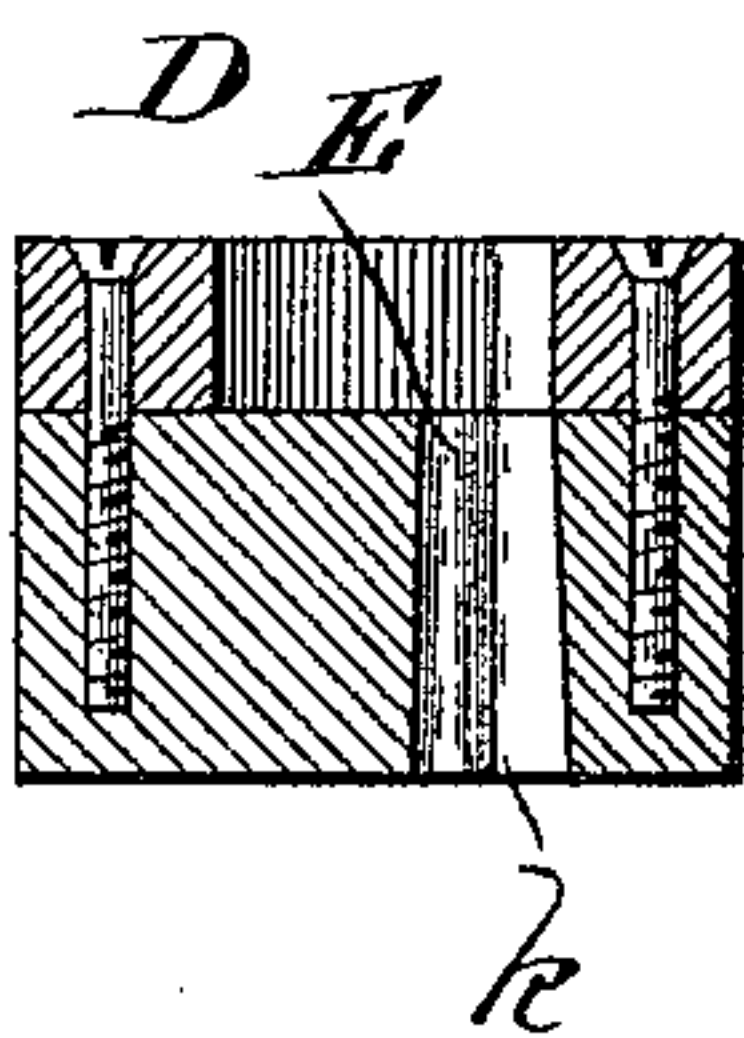
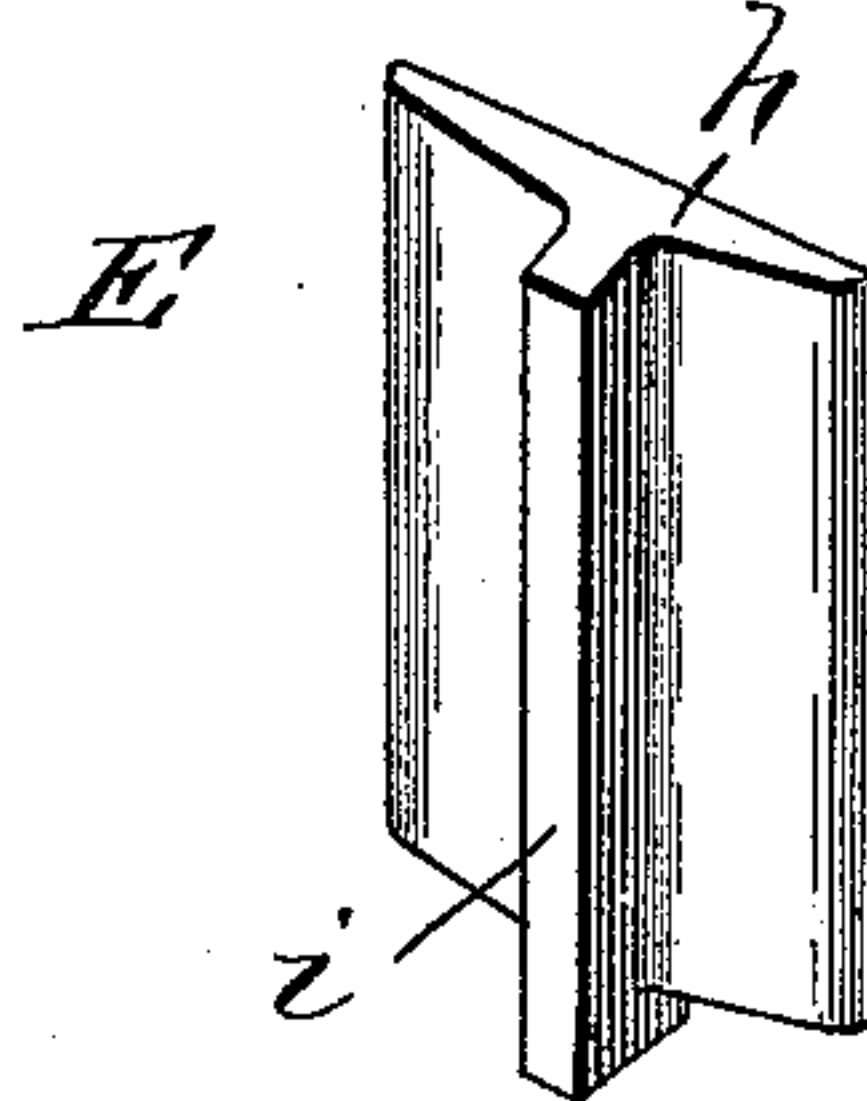


Fig. 9.



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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF TIE-BARS AND CONNECTING-RODS FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 459,860, dated September 22, 1891.

Application filed June 16, 1891. Serial No. 396,514. (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 Tie-Bars and Connecting-Rods for Railroads, of which the following is a specification.

My invention relates to an improved manner of and improved means for forming by forging the tie-bars used for connecting together railway-rails, as those of switches, and for so forming, generally, the bars or rods of the kind, and for purposes requiring them to terminate in sockets affording seats for the rail-flanges to which they conform, by having flat bases from the opposite ends of each of which jaws project toward each other and conform at their under sides to the upper surface of the rail-flange, at opposite sides of the web to or nearly to which the jaws are adapted to extend.

The object of my improvement is to enable a metal blank to be forged with a single heating into a seat or socket of the construction and for the purpose described, and, generally, to facilitate the work of manufacturing the socket or seat portions of the devices.

It may here be stated that by the term "tie-bar" I mean a bar having a seat at each end to receive the bases or flanges of the rails of a switch to tie them together, while a connecting-rod is intended more particularly to signify a bar having the rail-seat at only one end, the other being for connection with some extraneous object, such as a switch-stand. The foregoing definition is given not with the intention of limiting my improvement to the devices as particularly therein defined, but to preface the explanation that, whatever the seat portions are to be used for, for the sake of convenience they are formed separately and subsequently welded to the ends of the bars with which they are required to operate.

In the accompanying drawings, Figure 1 is a top plan view of the lower die. Fig. 2 is a bottom plan view of the upper die. Fig. 3 is a sectional view through both dies when the upper or vertically-reciprocating die is imposed upon the lower or stationary one, the section being taken at the lines 3 on Figs. 1

and 2 and viewed as indicated by the arrows. Fig. 4 is a section taken at the line 4 on Figs. 1, 2, and 3 and viewed in the direction of the arrows. Fig. 5 is a broken perspective view of the blank for the rail-seat after it has been subjected to the operation of the dies shown in Figs. 1 and 2. Fig. 6 is a similar view of the same completed. Fig. 7 is a plan view of the form in which the jaws of the seat are finished. Fig. 8 is a section taken on the line 8 of Fig. 7 and viewed in the direction of the arrow. Fig. 9 is a perspective view of the jaw-finishing punch.

Generally stated, to produce the seat portion of a connecting-rod or tie-bar I first heat the blank, comprising a bar of metal, (iron or steel,) preferably of rectangular form and uniform throughout, though it may be reduced by the dies to that form from any other, as the preliminary step. I then forge the blank to produce thereon two protuberances, each describing a portion of a circle or approximate circle. I then punch out a portion from the inner side of each protuberance to form them into jaws conforming on their under sides to the upper surface of a rail-flange at opposite sides of the web of the rail.

A and B are the dies I employ, each being a counterpart of the other and involving a substantially rectangular block of metal having the semicircular or approximately semicircular recesses r and r' extending inward from one edge and separated from each other by a web r^2 to a central table portion q , and a recess p extending inward from the opposite edge of the block, preferably corresponding in width with that of the recesses r and r' and reaching lengthwise from the end of the plane of the recess r , where it is curved, as shown at x , to the end of the block to which the recess r' is adjacent. Along the outer side or back of each die A and B it is provided with a tongue o , extending parallel with the table portion q thereof.

I operate the dies with a steam-hammer (though they may be operated by other means) by using the die A as the under one and fixing it stationarily at its tongue o on the base of the hammer and using the die B as the upper vertically-reciprocating one by fastening it at its tongue o to the reciprocating

ing part of the hammer. The dies are relatively so disposed that the parts r , r' , and r^2 and the part p of the lower will coincide, respectively, with the part p and the parts r , r' , and r^2 of the upper one, the table portions q of the two dies also coinciding.

With the dies adjusted as described the metal blank referred to may be forged to produce the protuberances n and n' upon it. (Shown in Fig. 5.) This is done by applying the blank to the lower die A to extend across both recesses r and r' therein and actuating the steam-hammer to reciprocate the upper die B. This hammers the metal of the blank and gradually causes it to conform on its under side more or less accurately to the recesses r and r' and web r^2 , while the recess p in the upper die keeps the upper side of the blank flat and straight and curves it at the end x .

The pounding by the die B with its recess p against the upper side of the blank is not allowed to be continued till the protuberances n and n' are completed; but when they have been partly finished to avoid confining the pounding on the one side only of the blank, which is not desirable, it is removed from the recesses r r' in the under die and reversed to cause its straight side to lie in the recess p of that die, whereby the partly-formed protuberances on the then upper side of the blank are caused to coincide and be further forged by the recesses r and r' in the upper die. Thus the blank is frequently transferred and reversed from one side of the lower die to the other, and in each transfer I turn it on its sides on the table portion q to assist in shaping it and maintaining the desired flatness of the sides.

When the blank has been reduced to the shape of the device C', (illustrated in Fig. 5,) with the completely-formed protuberances n and n' and the intermediate space n^2 , it is ready to be reduced to the finished rail-seat end C, Fig. 6, of a tie-bar or connecting-rod. To this end I employ the form D (shown in Fig. 7) and the punch E, (illustrated in Fig. 9,) and which conforms in cross-section approximately to the base or flange and web of a railway-rail. The form D comprises a metal block provided in one side with a recess m , conforming to the outline of the blank reduced to the form illustrated in Fig. 5 and containing in the part l , which enters the space n^2 between the two protuberances on the blank, a recess k to receive and guide the tongue i on the tool E.

The form is imposed upon the table portion q of the lower die A with the partly-finished rail-seat C' adjusted in it and the tongue i of the tool E inserted at its lower projecting end into the recess k , thereby causing the

lower end of the punch h of the tool to rest on the uppermost sides of the protuberances n and n' , the flat side of the tool thereby extending into coincidence with the surface n^2 . Then by actuating the die B its table portion will force the tool to punch out a portion in the inner side of each protuberance, the parts punched out dropping through the opening E in the form D, into which the tool is forced and to which its part h conforms. Thus from the protuberances n and n' the jaws g and g' are produced to conform on their under sides to a rail-flange, and the form of the tool E also produces the flat base g^2 of the rail-seat.

As hereinbefore stated, the connecting-rod or tie-bar for which the rail-seat end C is intended is produced by welding one such seat on the end or on each end of a suitable bar; or, if desired, the extension of each seat C, if intended for a tie-bar, may be sufficiently long to permit the tie-bar to be produced by welding two such extensions together.

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

1. The method of manufacturing a rail-seat end C of a tie-bar or connecting-rod, which consists in forging protuberances n and n' on a suitable blank and punching out a portion of the metal from the opposing sides of the protuberances, thereby forming the jaws g and g' , substantially as described.

2. The method of manufacturing a rail-seat end C of a tie-bar or connecting-rod, which consists in forging protuberances n and n' at opposite sides of an intervening space n^2 on a suitable blank and punching out a portion of the metal from the opposing sides of the protuberances, thereby forming a base g^2 and jaws g and g' , extending over it toward each other and inclined on their under sides, substantially as described.

3. In combination, dies A and B for forging protuberances n and n' on a suitable metal blank, each said die comprising a metal block having a central table portion q , recesses r and r' , and an intermediate web r^2 at one side of the table portion, and a recess p at the opposite side thereof, the dies being adapted for use substantially as described.

4. In combination, a form D, having a recess m , conforming to the outline of a device C', having protuberances n and n' at opposite sides of an intervening space n^2 , and a recess k , and a punch E, comprising the parts h and i , conforming in cross-section to the flange and web of a railway-rail, substantially as and for the purpose set forth.

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In presence of—

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M. J. FROST.