

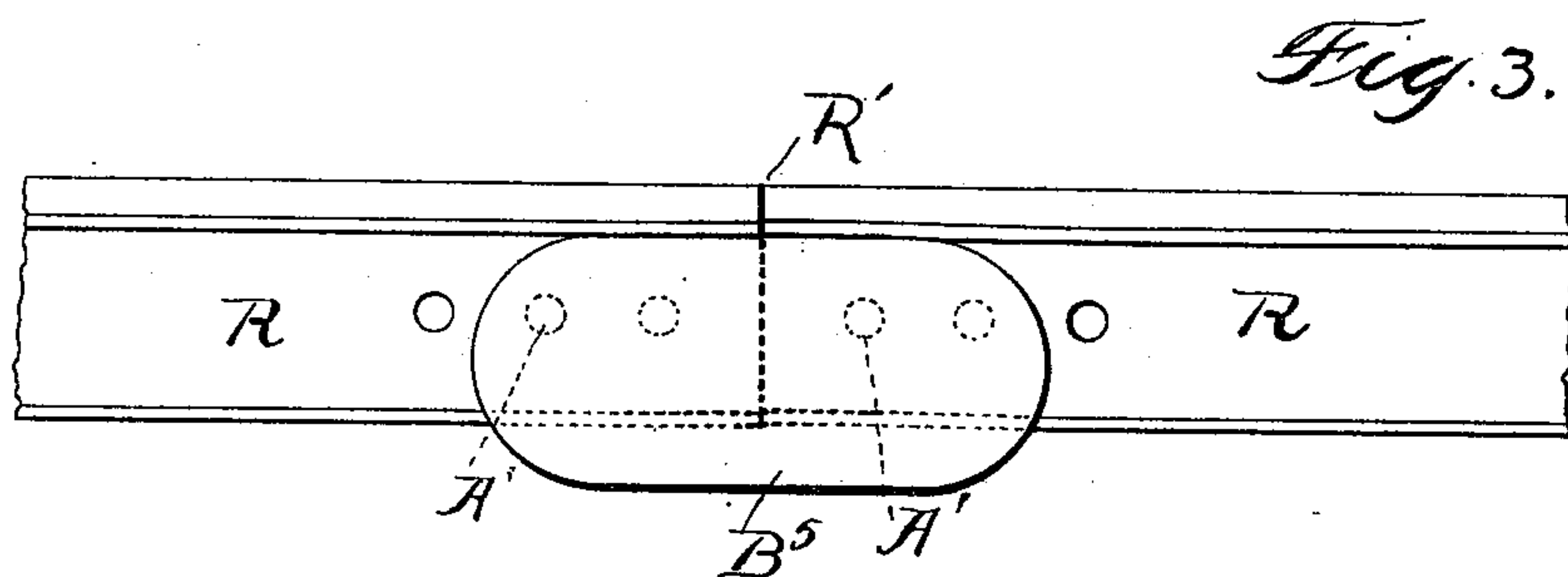
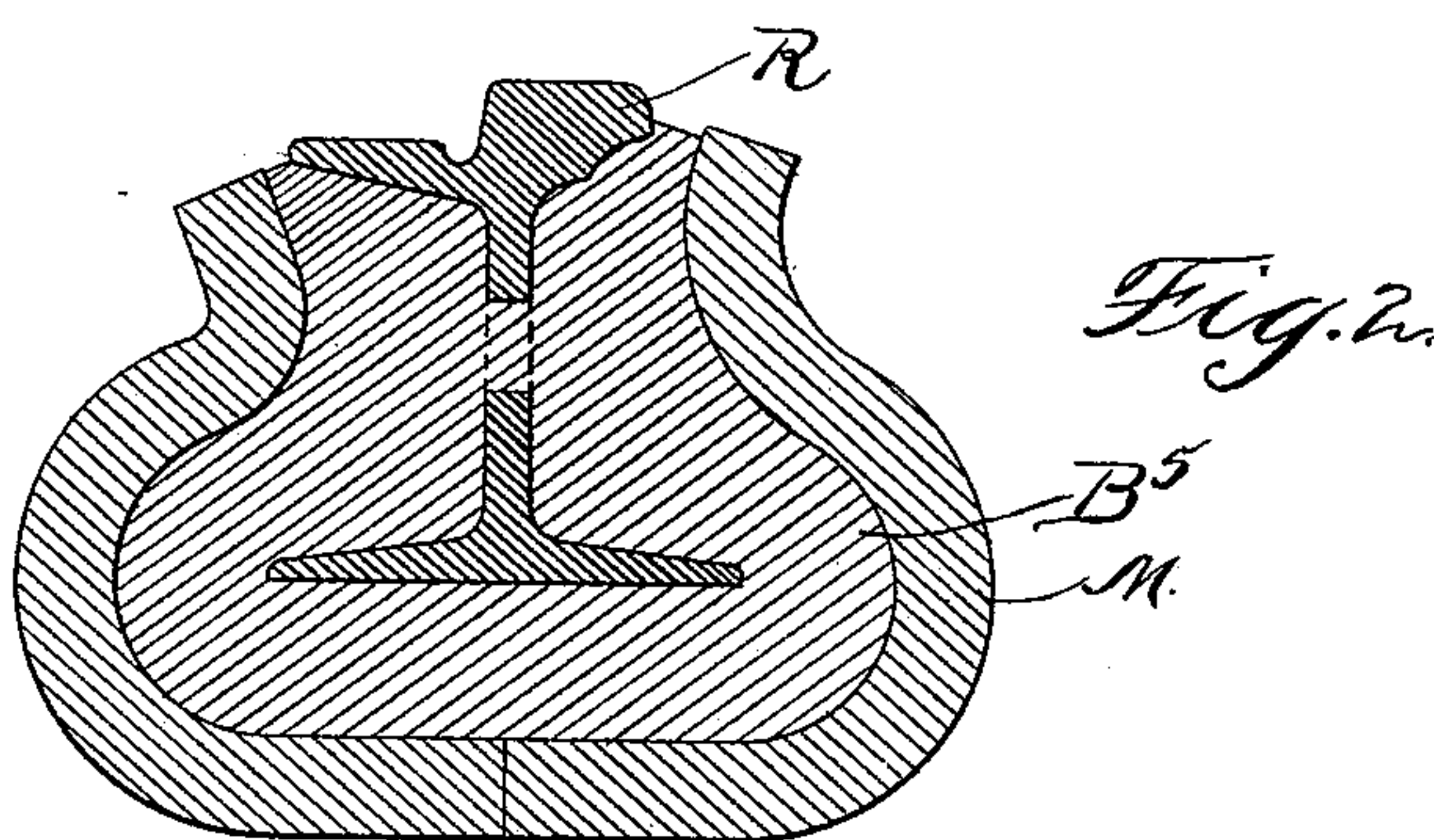
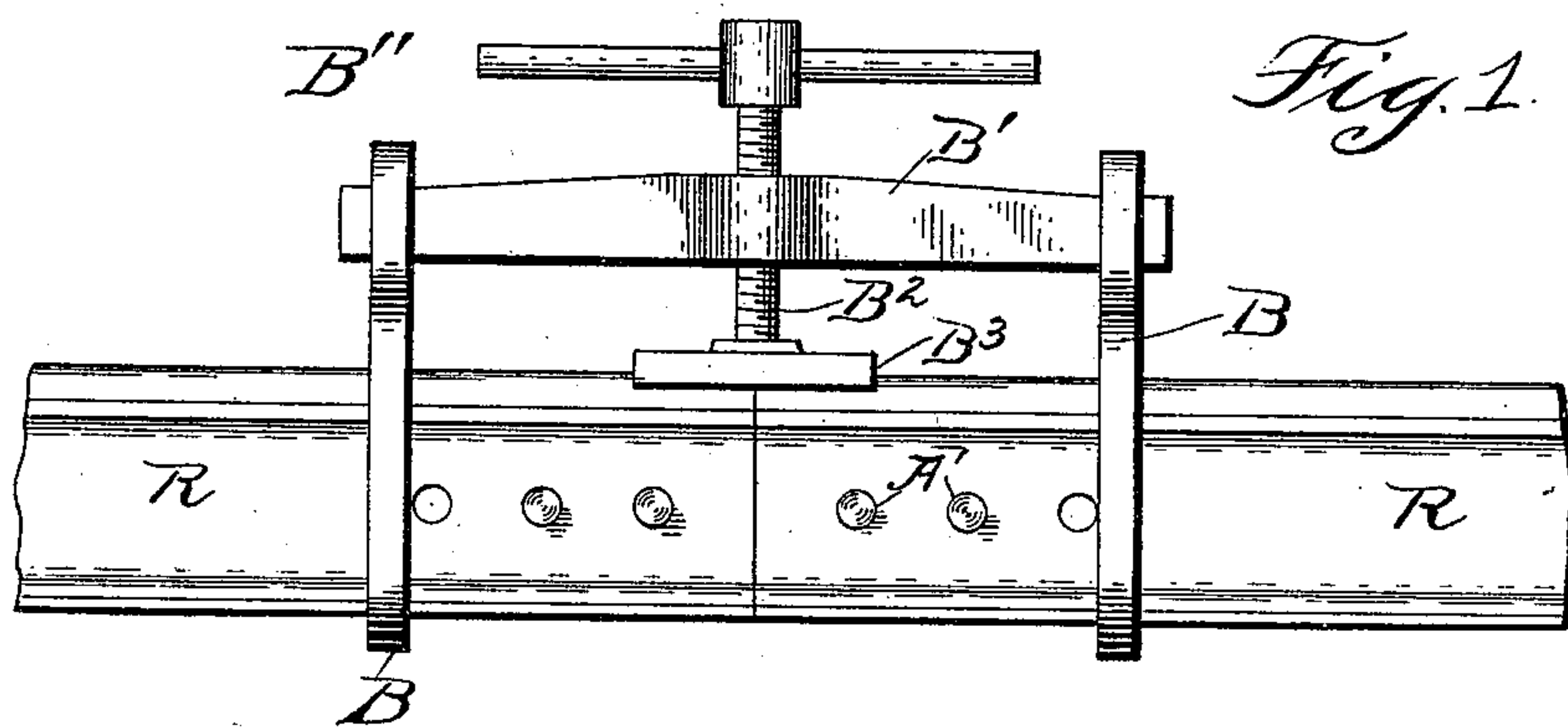
No. 620,072.

Patented Feb. 21, 1899.

A. C. HEIDELBERG.  
PROCESS OF FORMING RAIL JOINTS.

(Application filed Apr. 23, 1898.)

(No Model.)



Witnesses.

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# UNITED STATES PATENT OFFICE.

AUGUSTUS C. HEIDELBERG, OF CHICAGO, ILLINOIS.

## PROCESS OF FORMING RAIL-JOINTS.

SPECIFICATION forming part of Letters Patent No. 620,072, dated February 21, 1899.

Original application filed March 31, 1897, Serial No. 630,189. Divided and this application filed April 23, 1898. Serial No. 678,656. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUSTUS C. HEIDELBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes of Forming Rail-Joints, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same.

My invention relates to an improved process of forming rail-joints, the object thereof being to secure the union or connection of rails more readily and efficiently than the same has previously been accomplished, the same constituting a division of my application Serial No. 630,189, filed March 31, 1897.

In uniting rails in continuous lengths by means of metallic castings embracing the ends of the individual rails it has been found in practice that the alinement of the said rails is likely to be disturbed during the processes of placing the molds upon the rail ends, heating the same, and the subsequent casting and cooling of the union or bond. I have accordingly devised means for forming rails in substantially continuous lengths, while obviating entirely or to a large extent the defect above adverted to.

The process of my invention may be briefly described as consisting in placing the abutting ends of the individual rails to be united in alinement, securing them in this position by means of a removable clamping device, and thereafter casting or forming upon said rail ends a mass of metal, serving to unite said rails in a continuous length and maintain them in their relative relation.

My said invention will be more readily understood by reference to the accompanying drawings, wherein—

Figure 1 is a side view in elevation illustrating two rail ends held in position by means of a removable clamping device. Fig. 2 is a cross-sectional view through one of the rails and the mold wherein I preferably cast the mass of metal upon the abutting rail ends, and Fig. 3 is a view of the rail ends with their completed cast-metal joint.

The same letters of reference are used to designate like parts in each of the figures of the drawings.

The process of uniting rails in accordance with my invention is practiced in the following manner: The abutting ends of rails R R are placed in alinement, and a mold M and removable clamping device B'' are placed thereon. This clamp is adapted to hold the rails in position while the joint is being formed and preferably engages the tops of the rails, or the portions opposite to or removed from those upon which is applied the mass or body of metal forming the joint. Any suitable form of clamping device may be employed. That illustrated in Fig. 1 for practicing my invention consists of hooks B B, adapted to engage the base-flanges of the rail ends, said hooks having uprights extending above the rail-heads, which are connected by a cross-piece B'. In a tapped hole provided in said cross-piece the threaded rod B<sup>2</sup> is inserted, being provided with an operating-handle at its upper end and carrying a foot or shoe B<sup>3</sup>, of suitable description, at its lower end, adapted to engage the heads of both rail ends and hold the rails in position. The ends of the rails to be united preferably are heated in any desired manner before casting the metallic bond or union thereon in order to secure a surface fusion of the several parts and form a solid joint. A fusing agent, such as borax, may also be used to assist in obtaining this result. I may also employ one or more pins A', which are inserted in the webs of the rails at their ends and project upon either side thereof, so that the casting will surround the said pins when the joint is complete. These pins prevent the connection or union between the rails from being injured by any normal strain which may be placed upon the joint, and it is not necessary to secure the entire or partial fusion of the rail ends and cast-metal connection when the pins are thus used. Moreover, in forming rail-joints it frequently is desirable or necessary to interpose between the rail ends a wedge or shim R', which is forced between the abutting ends and dressed down to the surface of the rail-head. I have made claim to rail-joints formed in the above-described manner in my original application and a contemporary divisional application for patent, Serial No. 678,655. Molten metal is poured within the mold and the same is



permitted to cool, thus uniting the rails by means of a casting or mass of metal B<sup>5</sup> in a continuous length. I have found in forming this class of rail-joints that the rail ends are likely to be forced upward when the mass of metal B<sup>5</sup> is cooling, thereby distorting the joint or connection, unless adequate pressure or constraint is applied to the rail ends during the formation of the joint, as above described. The clamp and mold are then removed when the parts have had opportunity to cool, and the joint will present the appearance of Fig. 3. If desirable or necessary, the parts of the joint as thus formed may be trimmed or dressed down, thus insuring a perfectly even rail-head. Rails formed in continuous lengths in accordance with the method above described are satisfactory conductors of electricity, and the use of the ordinary electric bond is obviated.

It will be understood that the processes as herein described preferably contemplate the formation of rail-joints after the rails have been laid in position and spiked down to the ties.

I have illustrated in the drawings particular means for carrying out my invention; but other means than those herein shown and described obviously may be employed without departing from the spirit of my invention, and accordingly I do not wish to be limited to the specific means herein adverted to.

I therefore claim, and desire to secure by these Letters Patent, the following:

1. The process of joining the ends of rails consisting in placing the ends of the rails in alinement and in proximity to each other, applying a removable clamp to the extremities of the rails so as to hold them in place and prevent them from buckling, applying molten metal to the ends of said rails, such metal being confined so that when cooled it surrounds a portion of each rail and firmly binds them together, and then removing said clamp, substantially as described.

2. The process of forming a rail-joint consisting in placing the ends of the rails in proximity to each other, inserting a pin or the like through the web of each rail near the end thereof, then applying a removable clamp to the extremities of the rails to prevent them from warping or buckling, heating the ends of the rails and surrounding a portion of the ends of said rails and said pins with molten metal, said metal being confined so that it adheres to the ends of the rails and firmly connects them together, and then removing said clamp, substantially as described.

3. The process of forming rail-joints consisting in placing the ends of the rails in proximity to each other, applying a removable holding-clamp to the rails to maintain them rigidly in their relative positions, surrounding a portion of the ends of said rails with molten metal, said metal being confined so that it adheres to the rails and connects them

together, and then removing said clamp, substantially as described.

4. The herein-described method of forming rail-joints which consists in placing the rails in alinement and holding them rigidly in this position against relative movement or buckling by applying a removable clamping device and thereafter casting a body or mass of metal upon the lower portions of the abutting rail ends, whereby said rails are formed in continuous lengths.

5. The herein-described process for uniting rails substantially in continuous lengths consisting in placing the rails with their ends abutting in position to be joined, maintaining the rails rigidly in their relative relation by applying pressure to the heads thereof at their extremities, casting a mass or body of metal upon said ends, whereby the rails are united and thereafter removing the pressure upon the rail-heads.

6. The process of uniting rails substantially in continuous lengths, consisting in placing the rails in alinement and with their ends abutting, applying a removable clamp to the heads of said rails at their extremities, casting upon the rail ends a body or mass of metal serving to join the same and thereafter removing the removable clamp, substantially as described.

7. The process of uniting rails in continuous lengths, consisting in placing the abutting rail ends in alinement, applying pressure to the heads thereof at their extremities, whereby the rails are held firmly in their relative positions against warping or movement during the process of joining the same and casting upon the rail ends a mass of metal whereby the rails are united, substantially as described.

8. The herein-described process of uniting rails in substantially continuous lengths consisting in disposing the rail ends in position for joining the same, applying a constraining vertical pressure to the rail ends adapted to maintain their relative relation while the same are being joined, casting a body or mass of metal thereon adapted to unite the rails in a continuous length and dressing or trimming down the head of the continuous rail at the joint.

9. The process of uniting rails, substantially in continuous lengths, consisting in placing the rails with their ends abutting in position for uniting the same, applying a removable clamping device to the rail ends whereby the same are held firmly in their relative positions, casting or fusing upon the rail ends a mass of metal, whereby the rails are united, and dressing or trimming down the head of the continuous rail at the joint, substantially as described.

10. The process of forming rail-joints for uniting rails substantially in continuous lengths, consisting in placing the rails with their ends abutting in position to be joined, applying a removable clamping device adapted



to maintain the rail ends rigidly in this position during the process, casting or fusing a body of metal upon the lower portions of said rail ends and then removing the clamping device, substantially as described.

11. The process of uniting rails substantially in continuous lengths, consisting in placing the rails in alinement and with their ends abutting, clamping the extremities of said rails firmly in position, and casting upon the rail ends a body or mass of metal serving to form the rails in a continuous length, substantially as described.

12. The process of uniting rails in continu-

ous lengths, consisting in placing the rail ends in position to be united, securing the rails in this position against warping and movement thereof, and casting upon the extremities of the rails a body or mass of metal adapted to unite the same in continuous lengths, substantially as described.

In testimony whereof I have subscribed my name in the presence of two witnesses.

AUGUSTUS C. HEIDELBERG.

Witnesses:

MINA L. SWARTWOUT,  
WINFIELD W. LEACH.