

(No Model.)

2 Sheets—Sheet 1.

L. R. FAUGHT.  
CHILL FOR CAR WHEELS.

No. 365,589.

Patented June 28, 1887.

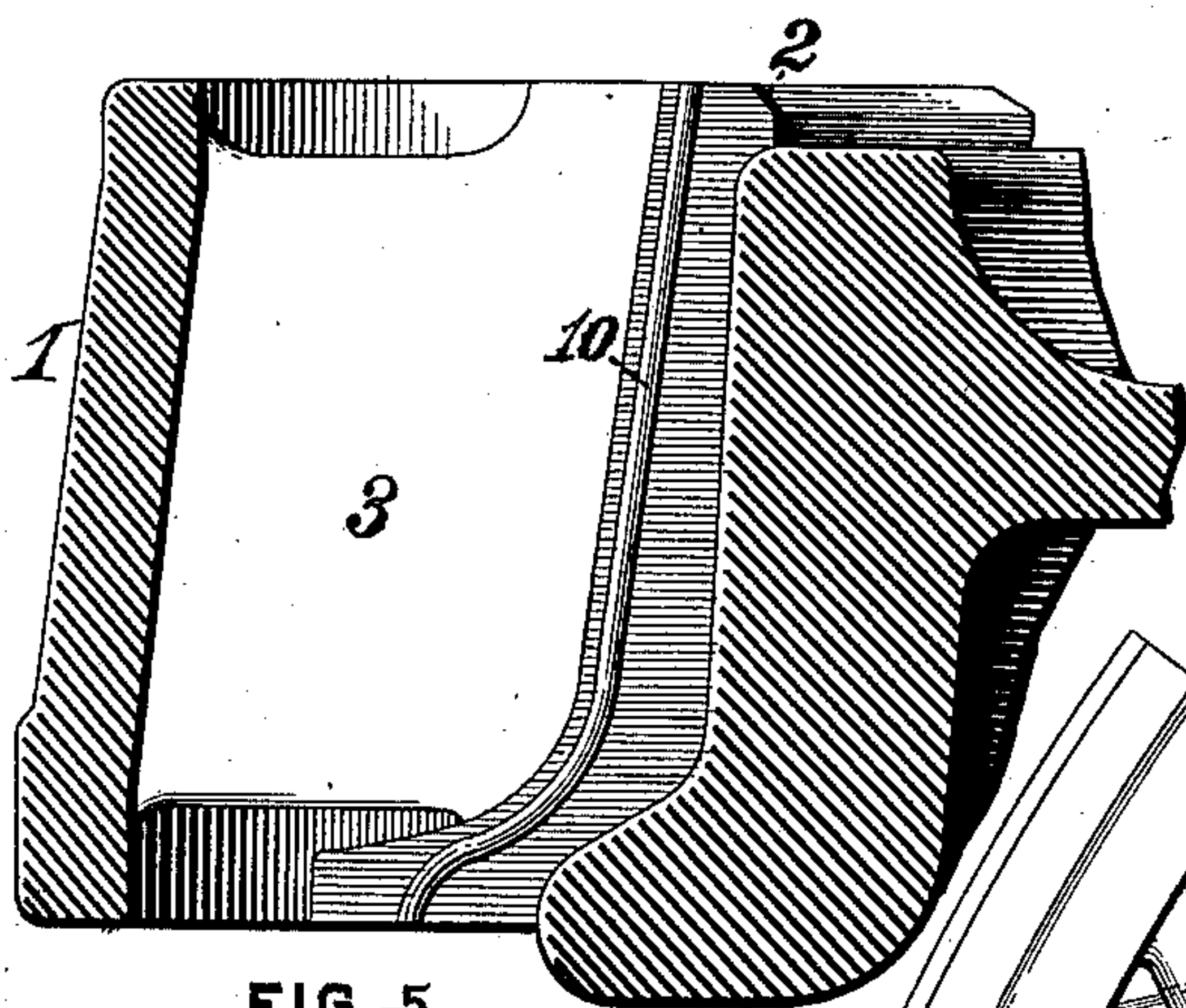


FIG. 5.

FIG. 4.

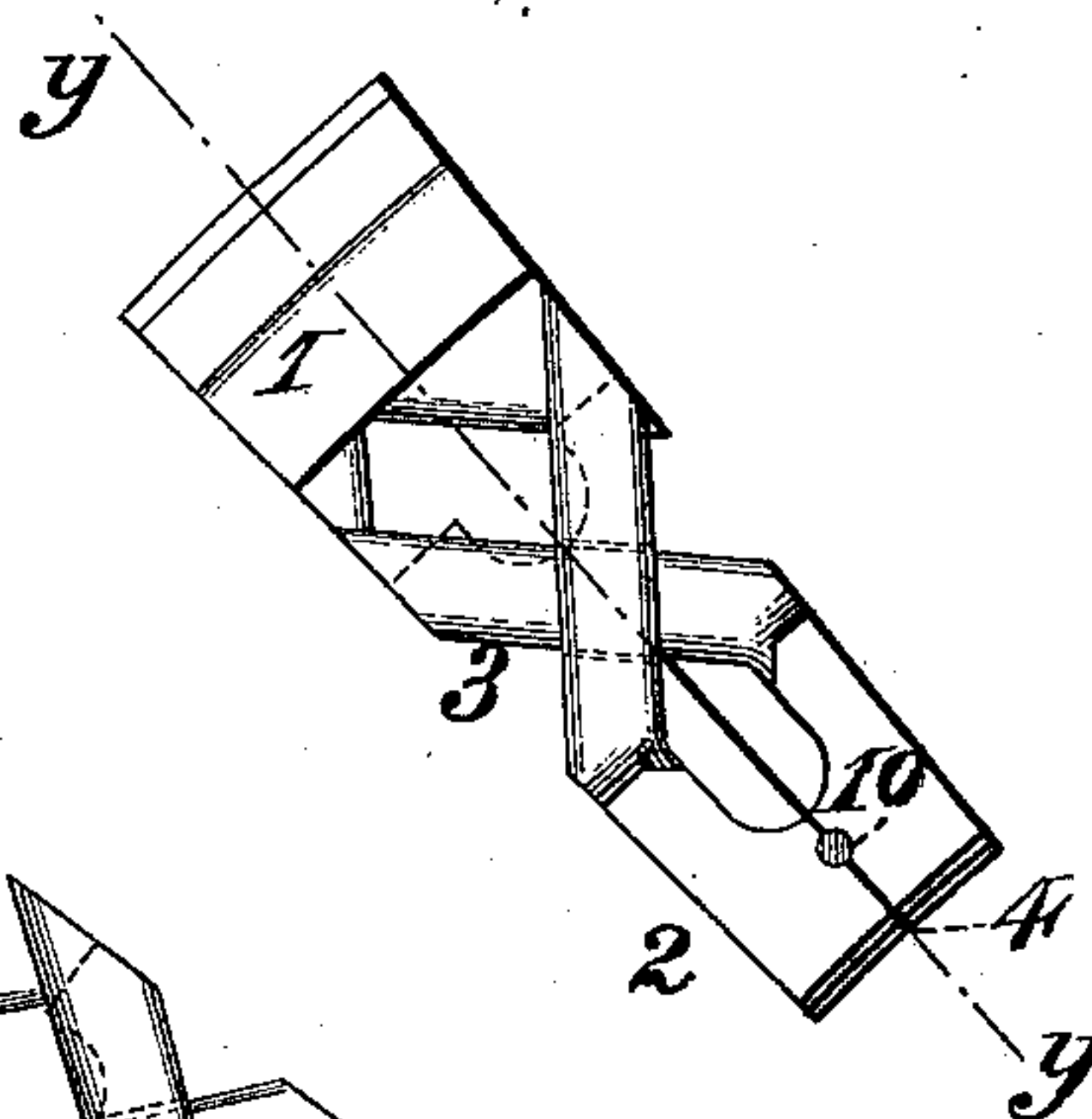


FIG. 3.

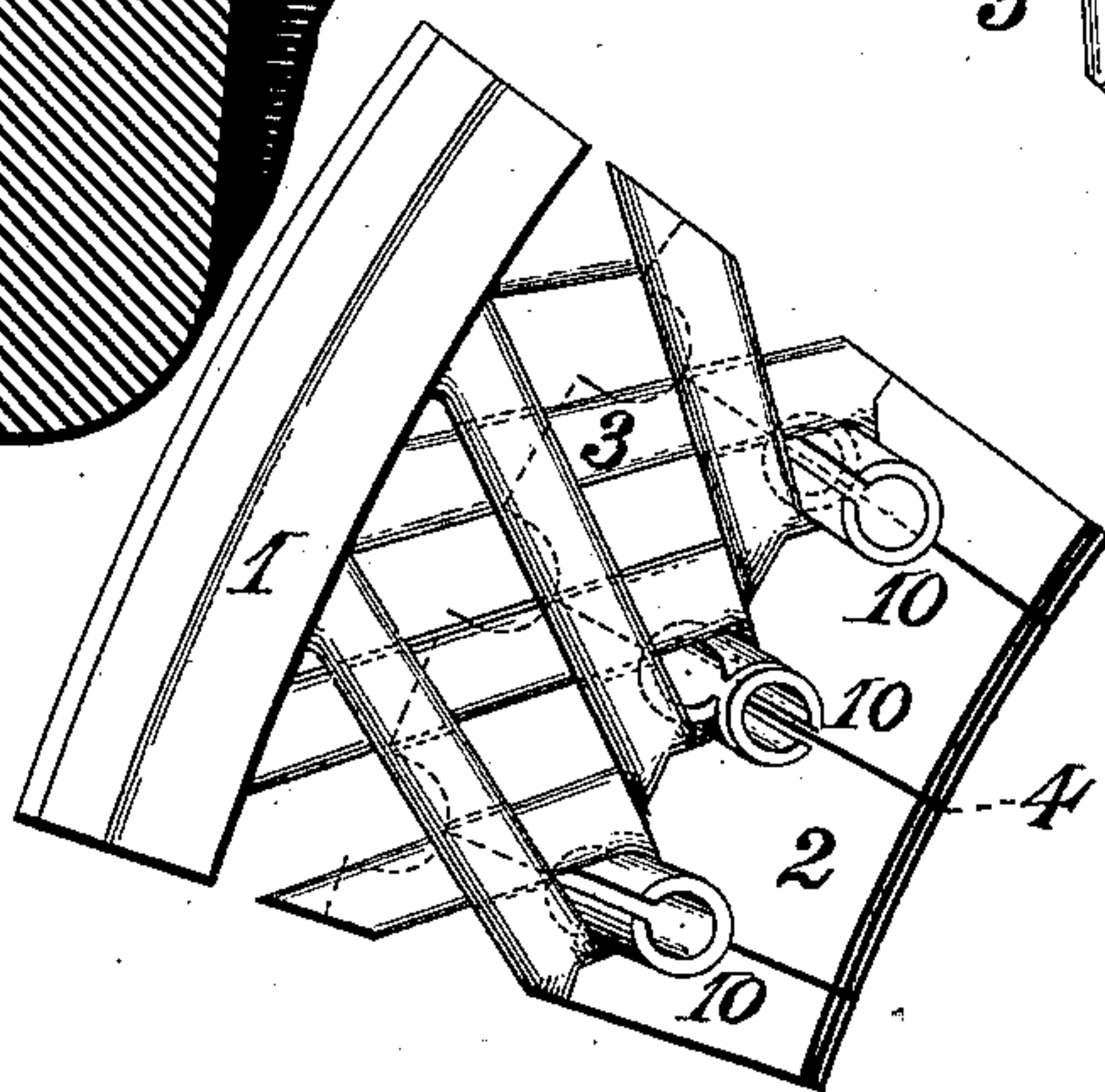


FIG. 1.

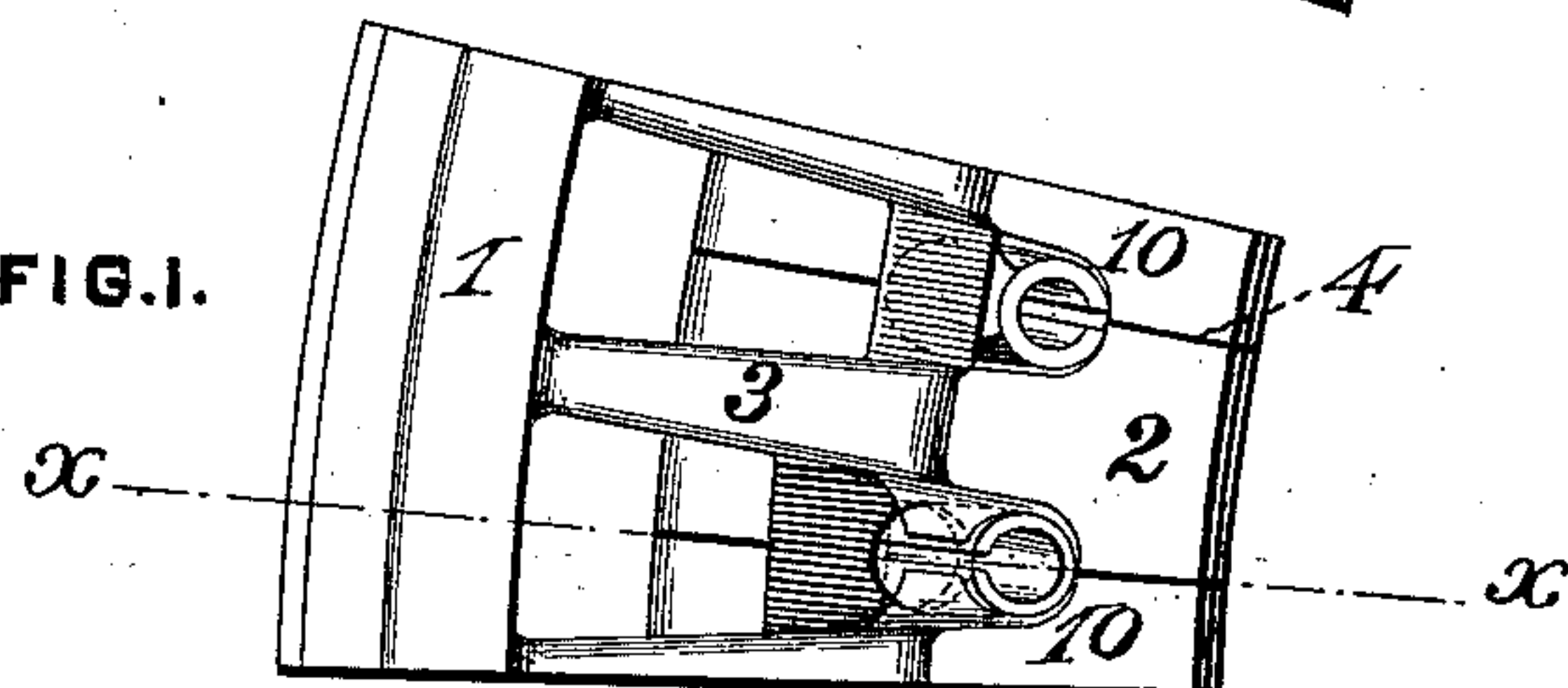
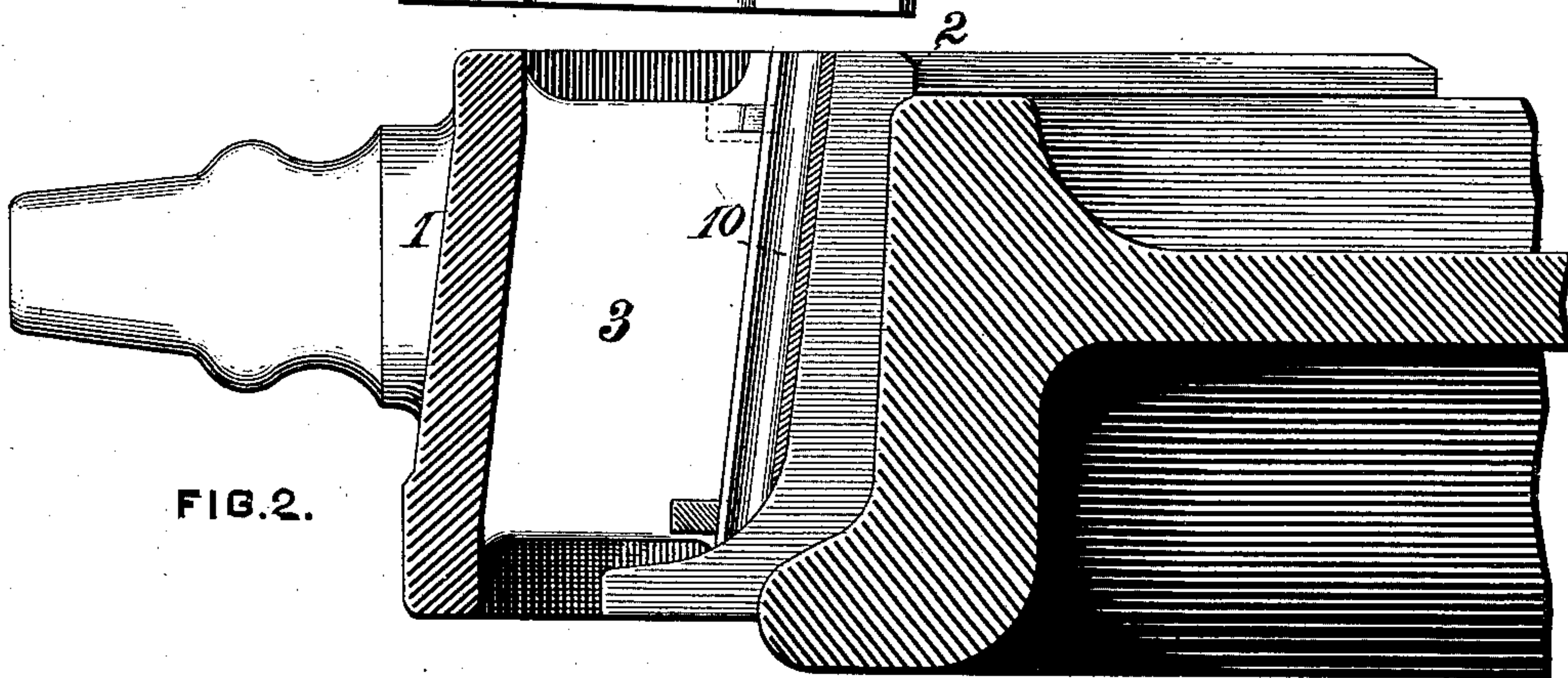


FIG. 2.



WITNESSES:

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*F. E. Gaither*

INVENTOR

*L. R. Faught,*  
*by J. Snowden Bell,*  
*att'y.*

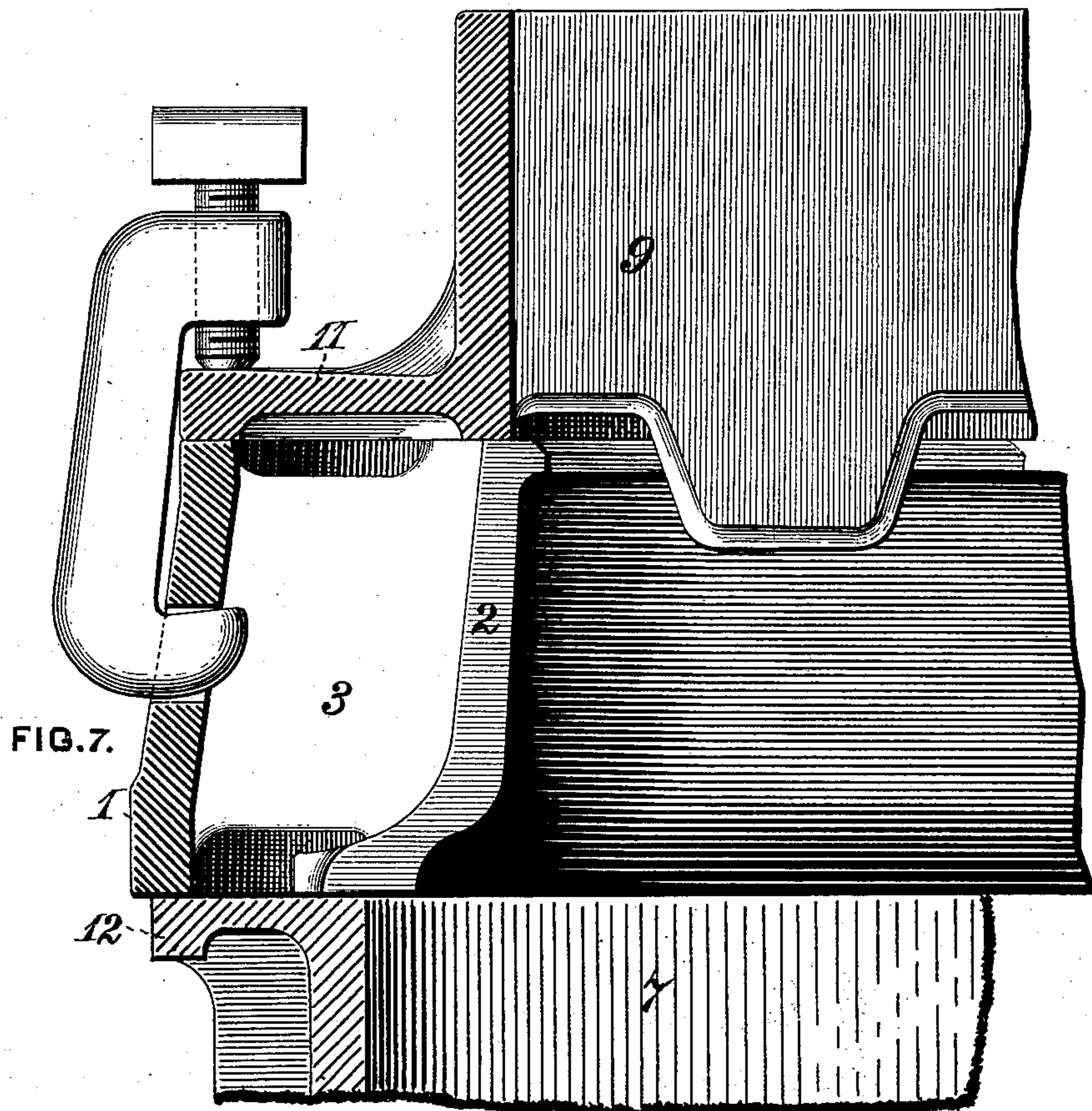
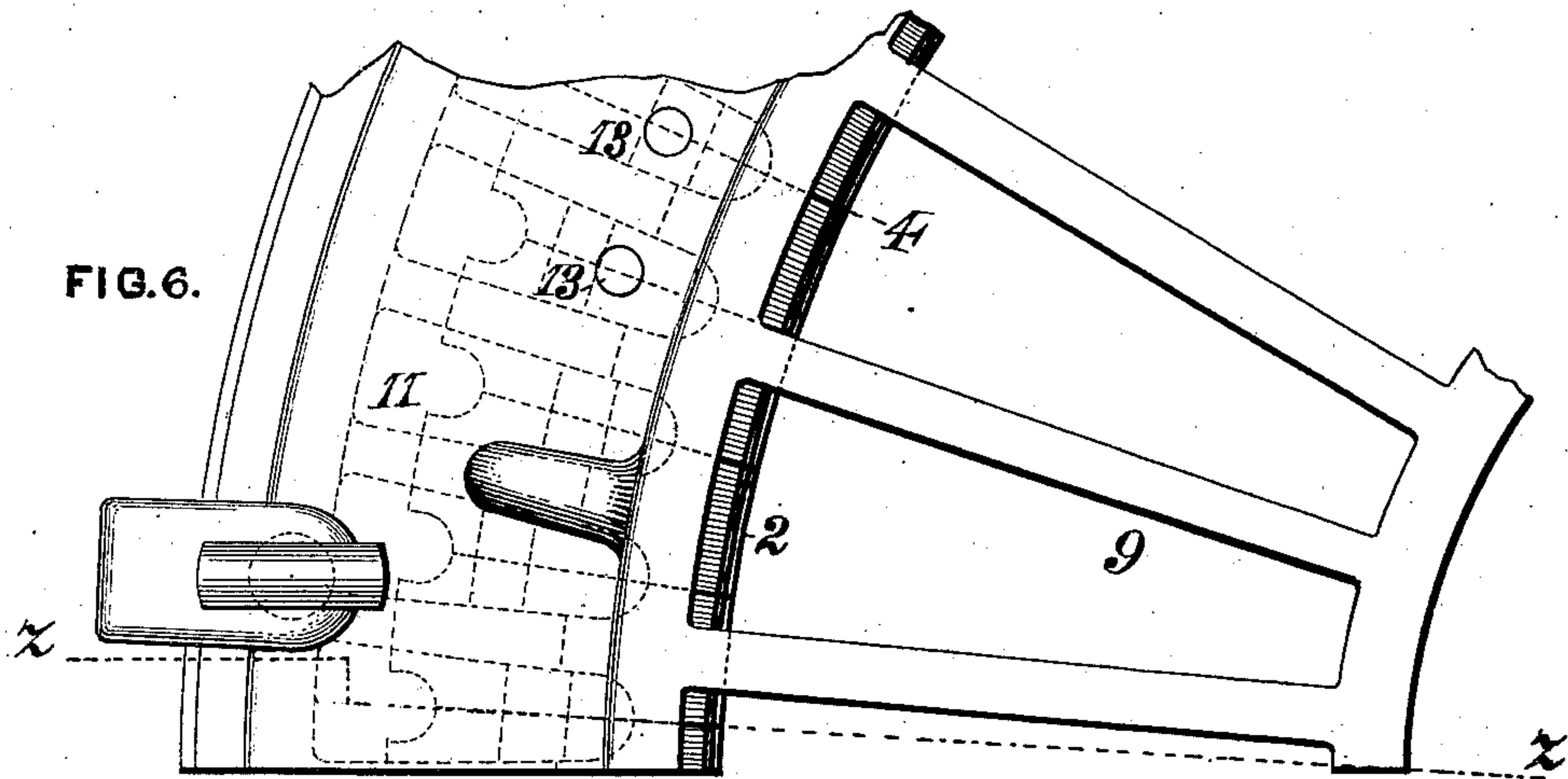
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*by J. Thomson Bell,*  
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# UNITED STATES PATENT OFFICE.

LUTHER R. FAUGHT, OF PHILADELPHIA, PENNSYLVANIA.

## CHILL FOR CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 365,589, dated June 28, 1887.

Application filed April 9, 1887. Serial No. 234,228. (No model.)

*To all whom it may concern:*

Be it known that I, LUTHER R. FAUGHT, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Chills for Car-Wheels, of which improvement the following is a specification.

My invention relates to contracting chills, or those composed of a solid or continuous outer section, and a divided or segmental inner section united by arms or bars to the outer section, an instance of which is exemplified in Letters Patent of the United States No. 341,326, granted and issued to me under date of May 4, 1886.

In casting wheels in chills of the above description the mold is usually made up of three elements—the drag, the chill, and the cope, the lower face of the inner section of the chill resting upon the drag and the cope being placed upon the upper face of said section. When these parts are assembled in their proper relative position for preparing the mold for casting, the outer section of the chill and the arms by which it is connected to the inner section are wholly exterior to the drag and cope, and the openings or divisions between the segments of the inner section thus being exposed to the air, free communication from the interior of the mold outwardly through said openings is permitted. The escape of air through these openings is objectionable, for the reason that it tends to carry with it sand and other foreign matter, which, lodging in the tread of the wheel, materially impair its quality by forming a nucleus for the scaling and speedy deterioration of the wheel when in service. The molten metal being generally poured at the center of the mold, an outward current is instituted, and a considerable volume of gas is generated by the contact of the metal with the sand and facing material employed. The air contained in the mold likewise expands, and, together with the gas, seeks every available avenue of outward passage, which, under the construction heretofore employed, is afforded to a considerable degree by the aggregate of the series of divisions between the segments of the inner section of the chill. While the outward force above indicated tends, as before stated, to the detriment

of the wheel by impelling foreign matters toward and into its tread, the presence of a gaseous element in the mold is not of itself objectionable, as when properly restrained it contributes to the support of the mold by preventing shifting and disintegration of the sand.

It is the object of my invention to obviate the objection incident to the escape of air and gas through the chill, and to prevent such unduly free ventilation of the mold by imposing a restraint upon the passage of the gaseous elements which will permit the relief of an excess thereof through the pores of the sand only.

To this end my invention, generally stated, consists in the combination, with a chill having a continuous outer section and a segmental or divided inner section, of restraining-pieces for preventing the escape of air and gas from the mold by passage therefrom through the chill in the casting and solidification of the wheel.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a plan or top view of a portion of a chill illustrating an application of my invention; Fig. 2, a vertical section through the same at the line *xx* of Fig. 1; Fig. 3, a plan view illustrating a different construction of the arms or bars connecting the chill-sections; Fig. 4, a similar view showing a modification of the restraining-pieces; Fig. 5, a vertical section at the line *yy* of Fig. 4, but showing the arms as similar to those of Fig. 1; Fig. 6, a plan view illustrating an application of my invention, in which the restraining-pieces are connected to the cope and drag instead of to the chill; and Fig. 7, a vertical section at the line *zz* of Fig. 6.

The several chills in connection with which my invention is herein shown as applied are in each instance of the contracting class, being composed of a solid or continuous outer section, 1, and a segmental or divided inner section, 2, connected to the outer section by bars or arms 3, the blocks or segments of the inner section, 2, being separated one from the other by narrow radial splits or divisions 4. Such generic construction broadly is not herein claimed;



neither do I claim as of my present invention the specific form of chill illustrated in Figs. 3 and 4, as the same constitutes the subject-matter of a separate application filed by me May 11, 1887, Serial No. 237,829. In the operations of molding and casting the chill rests upon a drag, 7, and a cope, 9, is placed upon its top, the cope and drag being of the ordinary or of any suitable and preferred construction.

The diameters of the cope 9 and drag 7 correspond substantially with those of the upper and the lower parting faces, respectively, of the inner section, 2, of the chill, and hence, when in operative position, the expansion bars or arms 3 and outer section, 1, of the chill are wholly exterior to the cope and drag, and as heretofore constructed the passages or divisions 4 between the segments of the inner section of the chill, being completely exposed, a free passage of air and gases from the interior of the mold to the atmosphere through the divisions of the inner section is permitted, the objectionable result of which has been hereinbefore explained.

In the practice of my invention I provide for the prevention of such traverse of the air and gases by the employment of restraining-pieces or air-retainers 10, which are so located in or upon the chill as to either substantially close the same as against the outward passage of air and gas or to reduce and limit such passage in period and degree to any desired extent.

Referring to Figs. 1 to 5, inclusive, the restraining-pieces 10 are fixed in the inner section, 2, of the chill, each being interposed between two adjacent blocks or segments of the section at or near the outer extremity of the passage 4, which separates the same, and acting as an end wall to said passage. The restraining-pieces may be made of any suitable material, as, preferably, metal; but clay, carbonized material, or even wood, the latter being, however, subject to the necessity of frequent removal, may likewise be employed. They may be of circular, square, or oblong section and solid or tubular, as preferred, and can be either fixed in the chill in the process of casting the same or be subsequently inserted and fixed in holes drilled for the purpose. In the former case the restraining-pieces can each be placed between two sheets of suitable paper cemented snugly together, so as to maintain a proper position in the mold, and thus be incorporated in the chill while the slots or divisions are being formed in the inner section in casting the chill. Tubular retaining-pieces 10 are shown in Figs. 1 to 3 and solid pieces in Figs. 4 and 5, in each case serving, as above explained, to close the outer ends of the divisions 4 and act as a bar to the passage of air and gas through the same.

In the modification shown in Figs. 6 and 7 the desired result is accomplished by closing

the upper and lower openings of the space between the inner and outer sections of the chill, in lieu of closing the passages between the segments of its inner section, and the retaining-pieces, which in this case are located upon the exterior of the chill instead of within its inner section, as in the construction before described, are formed of two annular plates or flanges, 11 12, one of which, 11, is formed on or fixed to the lower portion of the periphery of the cope 9, and the other, 12, is similarly connected to the upper portion of the periphery of the drag 7. The outer portions of the flanges 11 12 fit closely and truly against the top and bottom surfaces of the outer section, 1, of the chill when the members of the mold are assembled in operative position, and thereby close the chill as against the outward passage of air and gas from the mold. A further advantage of this construction is found in the fact that the connecting arms or bars 3 are protected by the flanges 11 12 from the access of the cool outer air, and their expansion, by which the contraction or inward traverse of the segments of the inner section of the chill is induced, is thus correspondingly promoted.

Under the above construction it will be seen that the undue outward tendency of the air and gas in the mold is restrained similarly to the manner in which this restraint is effected at the outer ends of the divisions 4, as the heated elements which may primarily pass through the same will by their expansion react and establish a substantial equilibrium of pressure upon both sides of the inner chill-section. If it should be found desirable to permit to any extent the relief of an excess of air or gas from the space between the sections of the chill, openings 13, closed by proper removable plugs, may be formed in one or both of the inclosing-flanges, which openings can be closed while pouring the metal and opened thereafter more or less for such period as may be found desirable.

I claim as my invention and desire to secure by Letters Patent—

1. The combination, with a contracting chill, of restraining-pieces closing the avenues of outward passage of air and gas from a mold through the chill, substantially as set forth.

2. The combination, with a chill consisting of a continuous rim or outer section and an inner section having a divided circular series of chilling blocks or segments united by bars to the outer section, of a series of restraining-pieces, each closing one of the divisions between the segments of the inner chill-section, substantially as set forth.

3. The combination of a contracting chill, a cope, a drag, and two or more restraining-pieces, substantially as set forth.

LUTHER R. FAUGHT.

Witnesses:

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JOHN R. FOREMAN.