

W. WILMINGTON.
Car-Wheel Mold.

No. 217,840.

Patented July 22, 1879.

Fig. 1.

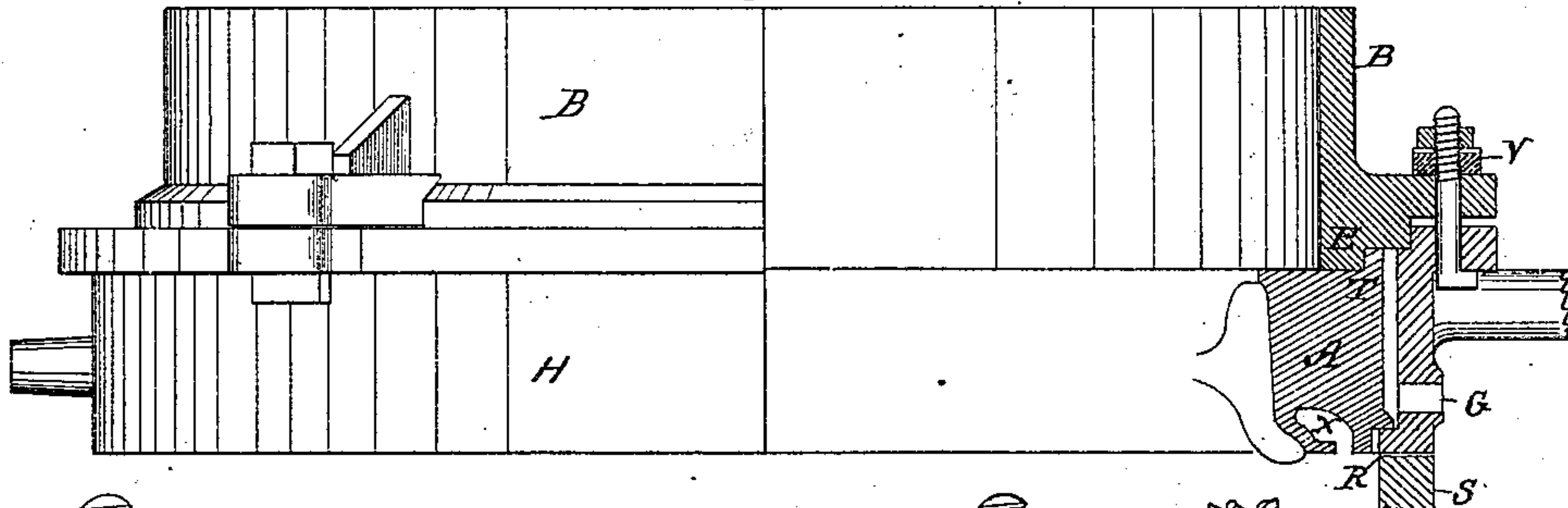


Fig. 2.

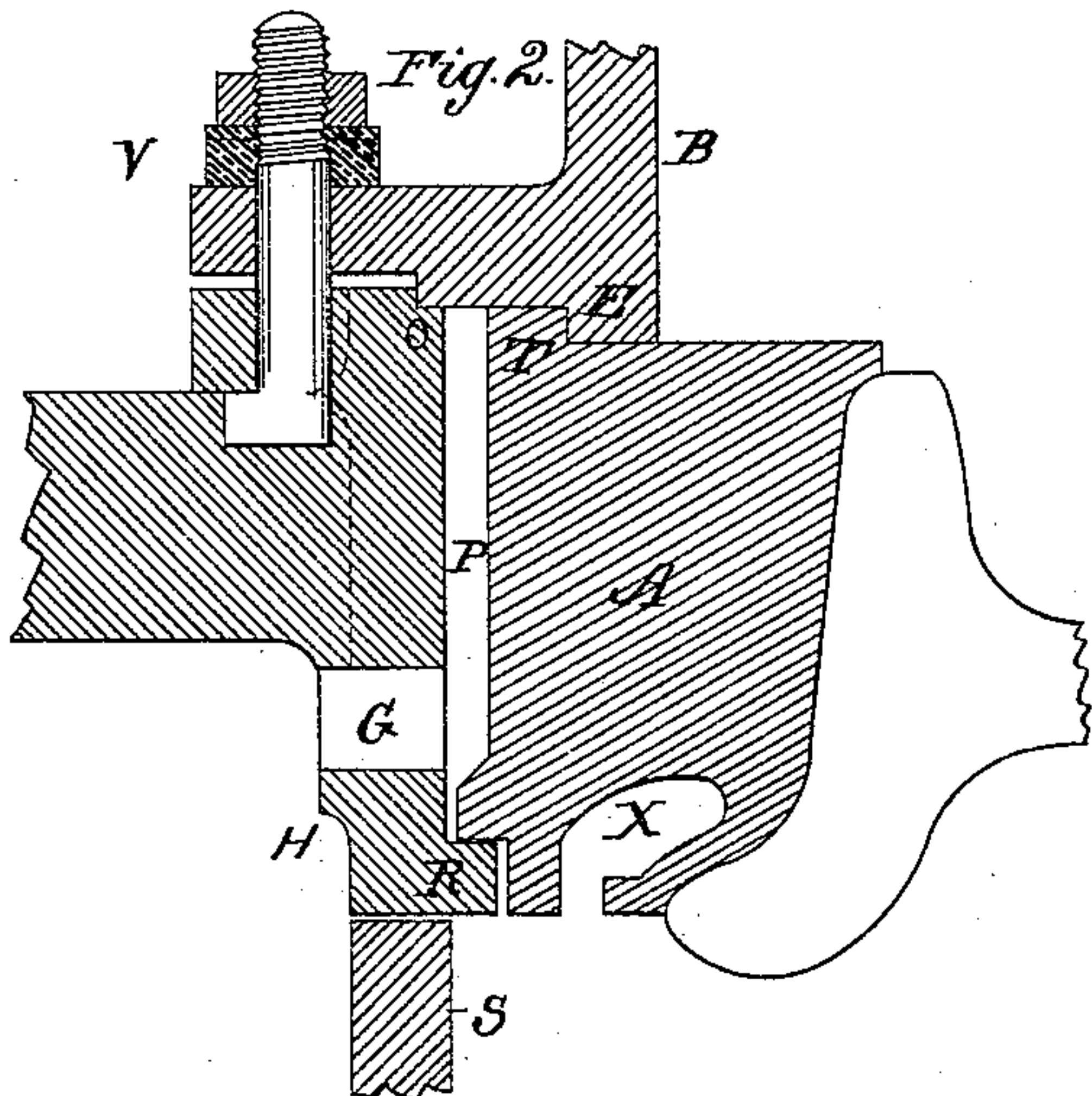


Fig. 3.

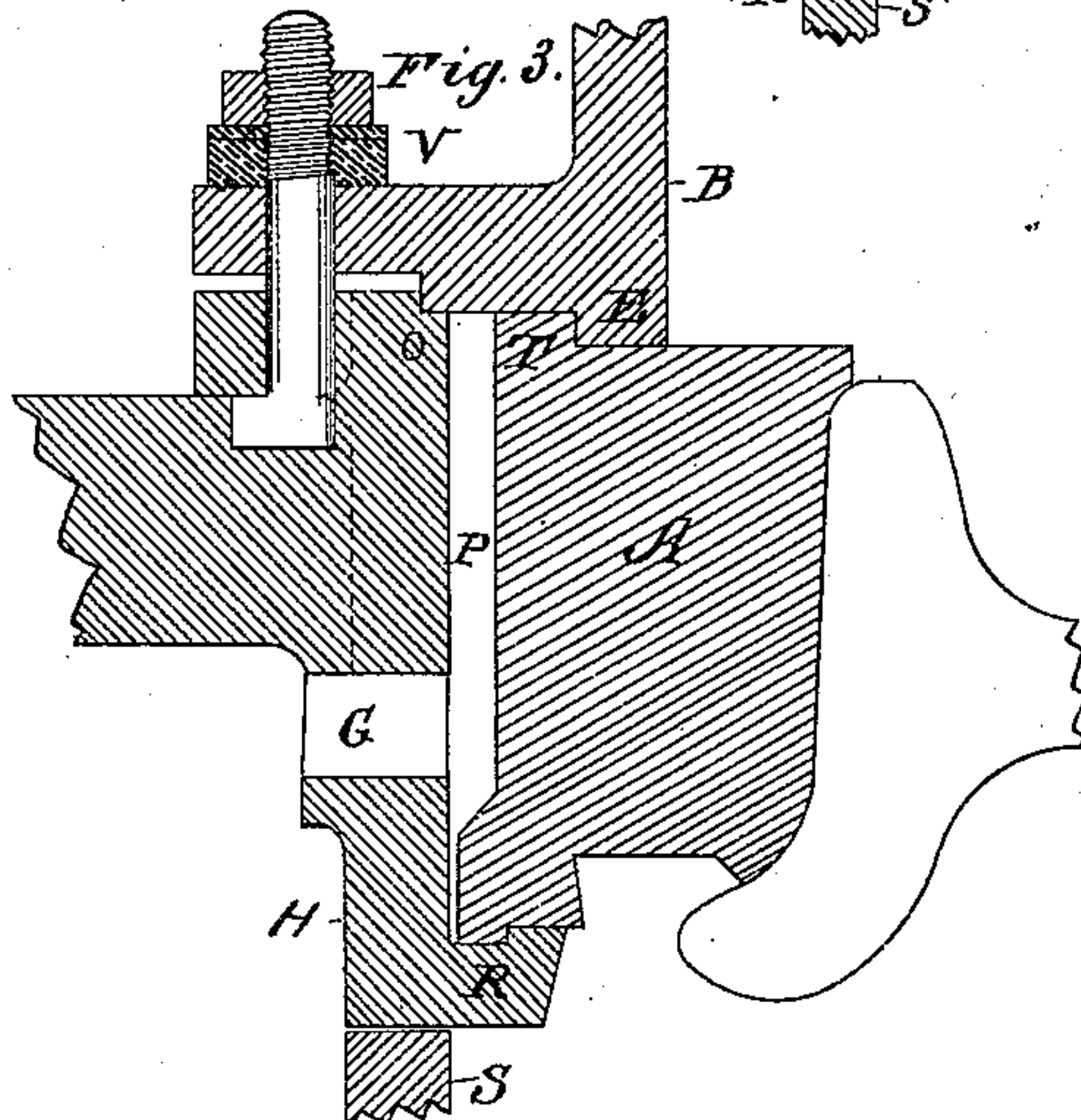


Fig. 4.

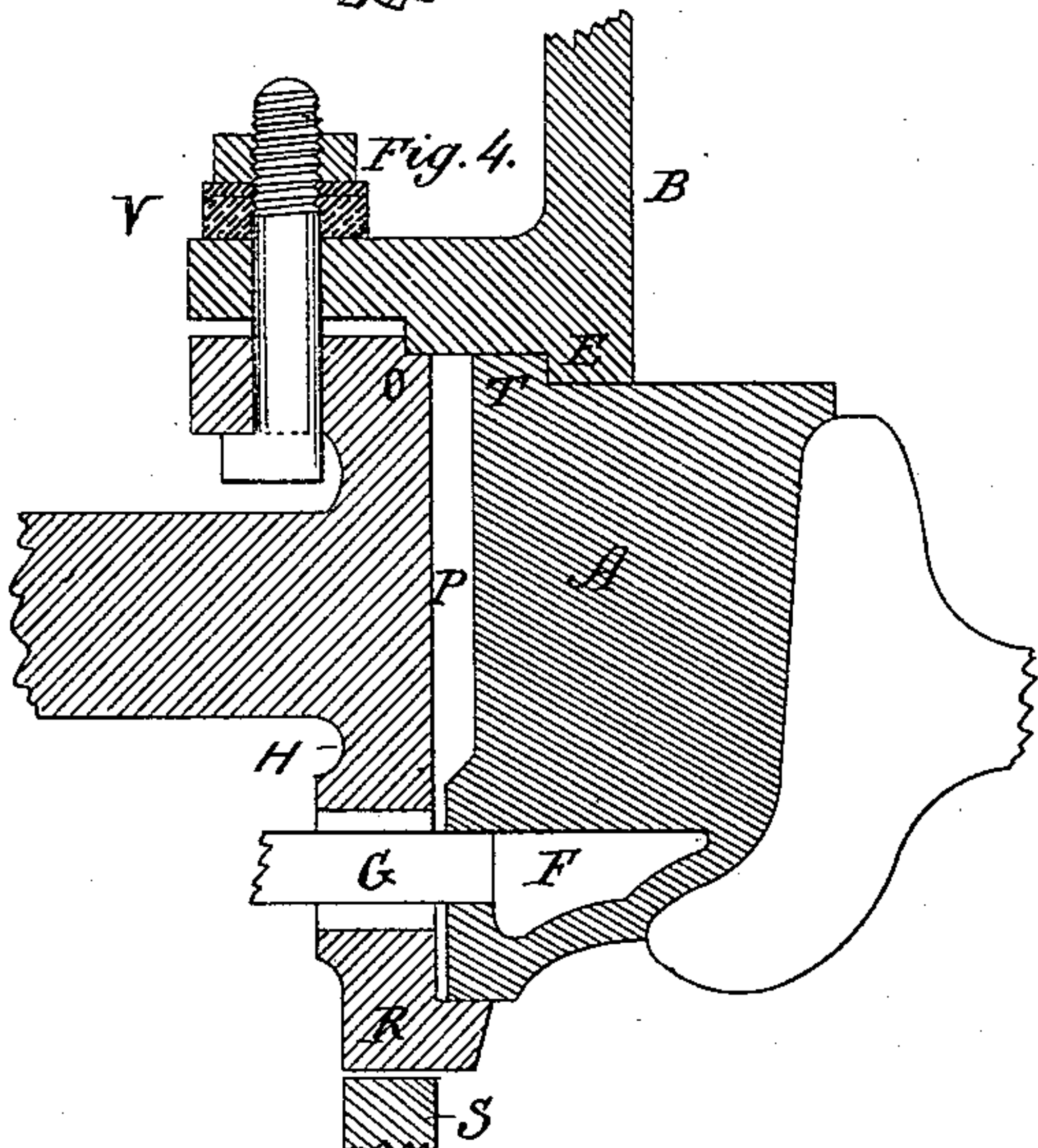
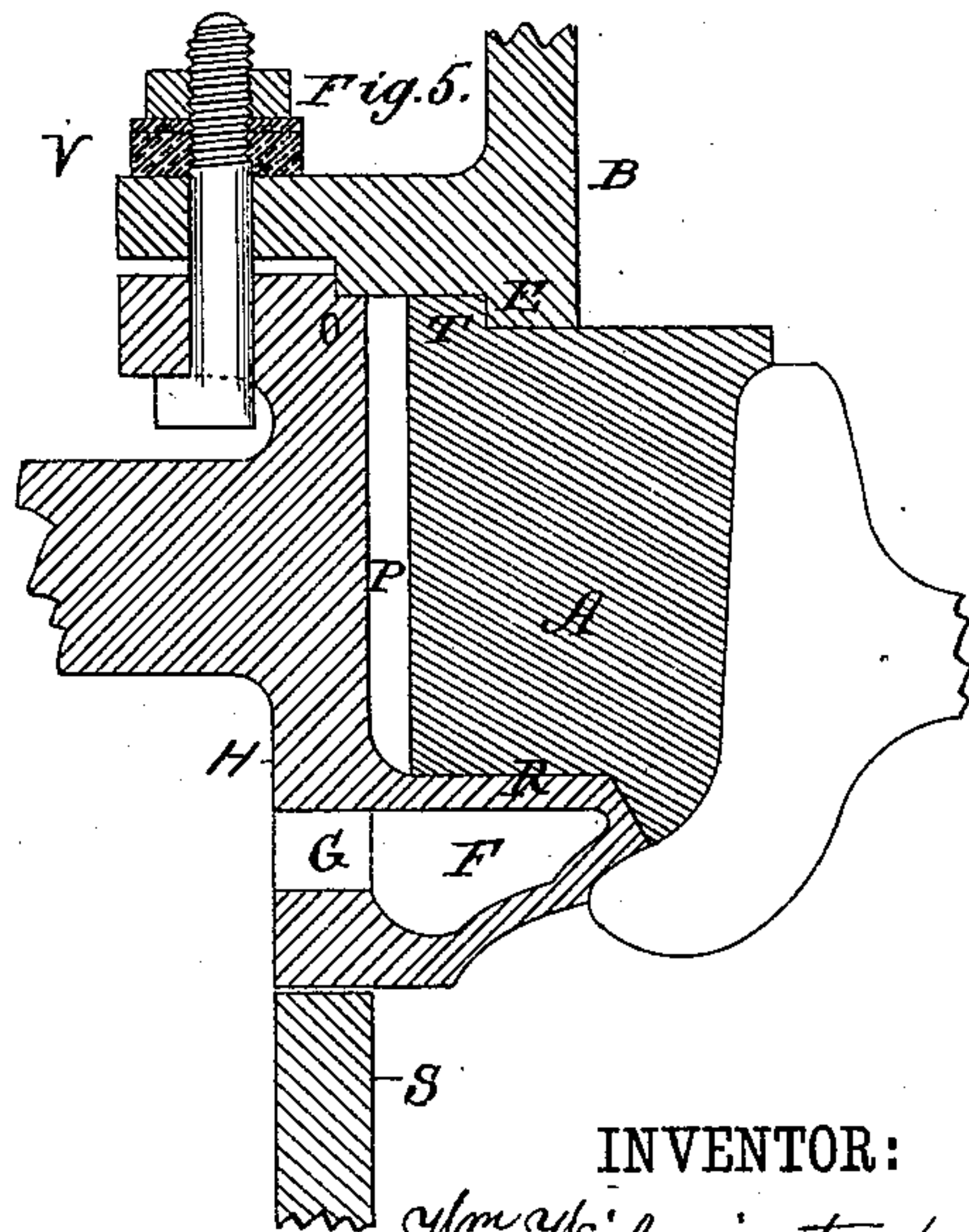


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM WILMINGTON, OF TOLEDO, OHIO.

IMPROVEMENT IN CAR-WHEEL MOLDS.

Specification forming part of Letters Patent No. **217,840**, dated July 22, 1879; application filed April 21, 1879.

To all whom it may concern:

Be it known that I, WILLIAM WILMINGTON, of Toledo, in the county of Lucas and State of Ohio, have invented a new and Improved Car-Wheel Mold; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a half-side and half-sectional view of so much of a car-wheel mold as is necessary to illustrate my invention. Fig. 2 is an enlarged sectional view. Figs. 3, 4, and 5 are similar sectional views of modified forms.

This invention relates to improvements in the molds which are used in casting car-wheels; and the invention consists in inclosing the outer periphery and a portion of the bottom of the chill in a suitable ring, while a portion of the top of the chill is embraced by the bottom of the cope, provided with mechanical devices that will retain the chill in place when molding the wheel, and at a later period will permit the chill to expand freely during the operation of casting the wheel.

The invention also consists in providing for the circulation of superheated steam around and in contact with the outer periphery of the chill for the purpose of heating the chill to evaporate any moisture that may accumulate on its inner periphery prior to casting the wheel.

In the old form of constructing car-wheel chills unequal bodies of metal are attached to and distributed around the periphery of the chill, and made in one piece therewith. This increased bulk of metal projects away from the body of the chill, and the molten metal of which the wheel is being cast will impart a greater heat to the portions of the chill where it has the least metal in its construction. The effect of this is to cause the chill to expand unequally, and, in connection with the expansion that is incident to casting wheels in these chills, check-cracks are formed across its inner periphery of unequal size and distances apart, which cause the chill to be distorted from a true circle, which impairs the quality of the wheel cast therein, and causes the chill to be abandoned.

I have remedied this distortion in car-wheel

chills by constructing the chill of uniform width and thickness in all its peripheral portions, and providing for its uniform expansion and contraction by inclosing the outer periphery and a portion of its bottom in a retaining-ring, while a portion of the top of the chill is embraced by the bottom of the cope of the chill-mold.

In the drawings, A is the car-wheel chill, B the cope, S the drag, and H the retaining-ring, which connects the cope to the drag and incloses the chill. The object of this retaining-ring is to have attached to it instead of to the chill all the necessary unequal bodies of metal, such as the trunnions, lugs, or flanges, which are used to manipulate the chill-mold during the operation of molding and to support the cope and chill in position. The chill, which is uniform throughout its periphery, has a recess upon its outer face, that forms, in connection with the ring, a circular passageway, P, for superheated steam, which is admitted through the opening G and discharged through a similar opening on the opposite side of the ring. The chill A being in place in the retaining-ring H, and resting on the shoulder R, it will be retained in position by the circular projection E on the bottom of the cope, a corresponding projection, T, on the top of the chill engaging with the projection E, and the cope B being held in a central position by the recess O in the top of the inner periphery of the ring.

The cope is retained in the circular recess in the ring by bolts that are provided with suitable elastic washers V under the heads or nuts of the bolts, which washers are employed for the purpose of permitting the chill to expand and contract vertically, at the same time affording sufficient tension on the bolts to prevent any movement of the cope or chill when molding the wheel.

There being space between the inner periphery of the ring and the outer periphery of the chill, it not only permits a steam heat to be employed to heat the chill if desired to drive off moisture, but the chill is not held rigidly against either vertical or outward expansion, and can move freely and expand and contract uniformly, thereby preventing the distortion and loss of the chill.

In Figs. 1 and 2 the cooling of the flange of the wheel is retarded by a groove or chamber, X, for air or sand opening into the sand of the drag.

Fig. 3 is a modification of the chill and the retaining-ring, which is intended to give additional support to the flange portion of the chill, showing, also, an old form of sand-groove as patented by me in 1868.

Fig. 4 is another modification of the chill and the ring. It is designed in this modification to have the steam conveyed through the opening G in the retaining-ring by a connecting-pipe independent of the ring, to conduct the steam to the circular chamber F in the flange portion of the chill, and by a similar connecting-pipe and opening on the opposite side of the ring to permit the steam to escape.

Fig. 5 is also a modification of the retaining-ring and chill. In this modification it is designed to have the circular chamber F formed in the lower portion of the ring that forms the shoulder R, so that the ring will give form to the outer portion of the flange of the wheel, an opening, G, being provided for the inlet of steam, and a similar opening for its escapement on the opposite side of the ring.

I do not confine myself to any particular form of chill as to its flange portion, but may

adopt any of the known forms of car-wheel chills that will produce the best results.

With respect to the projecting flanges T and E, lugs, pins, or other mechanical equivalents may be substituted therefor.

I do not claim, broadly, as my invention a retaining-ring, for they have been in use in many kinds of mechanical appliances.

I am also aware that in one instance there has been used a ring in U shape for the purpose of rigidly bolting together sections of a car-wheel chill; but

What I claim as my invention is—

A car-wheel chill having a circular projection, T, or its equivalent, as described, formed on its top, combined with the cope having a similar circular projection, E, or its equivalent, on the bottom of the cope, for the purpose of retaining the chill in place when molding the wheel and yet permitting the chill to move outward freely during the operation of casting; together with the retaining-ring H, having a support, R, for the chill, all substantially as herein described, and for the purpose as heretofore set forth.

WILLIAM WILMINGTON.

Witnesses:

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