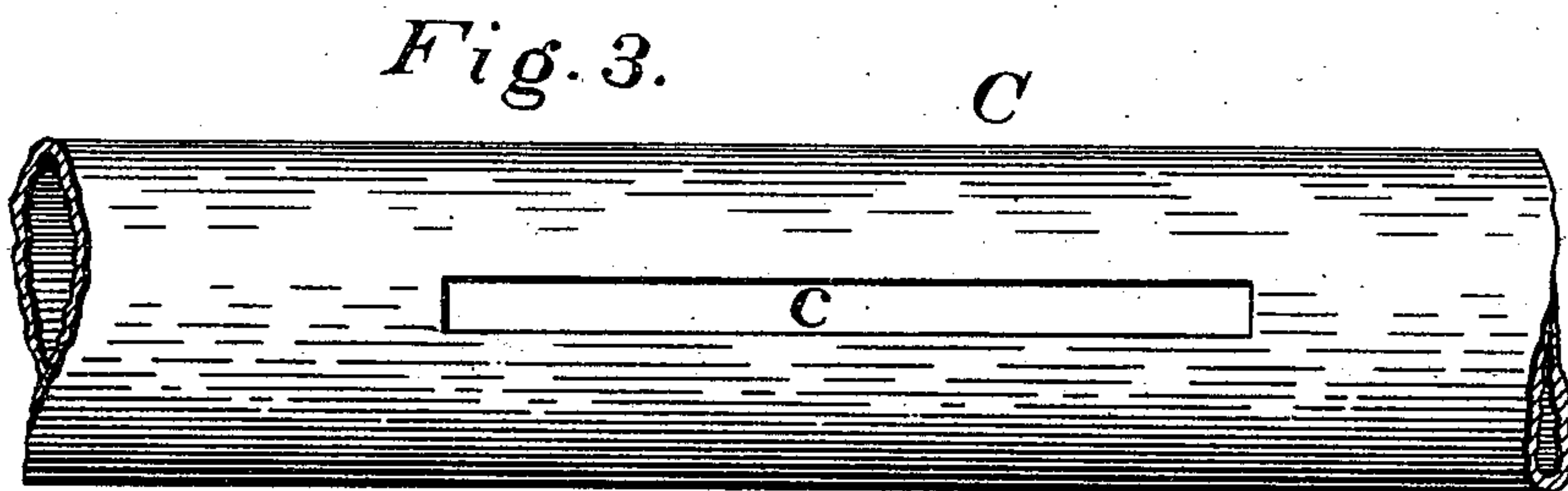
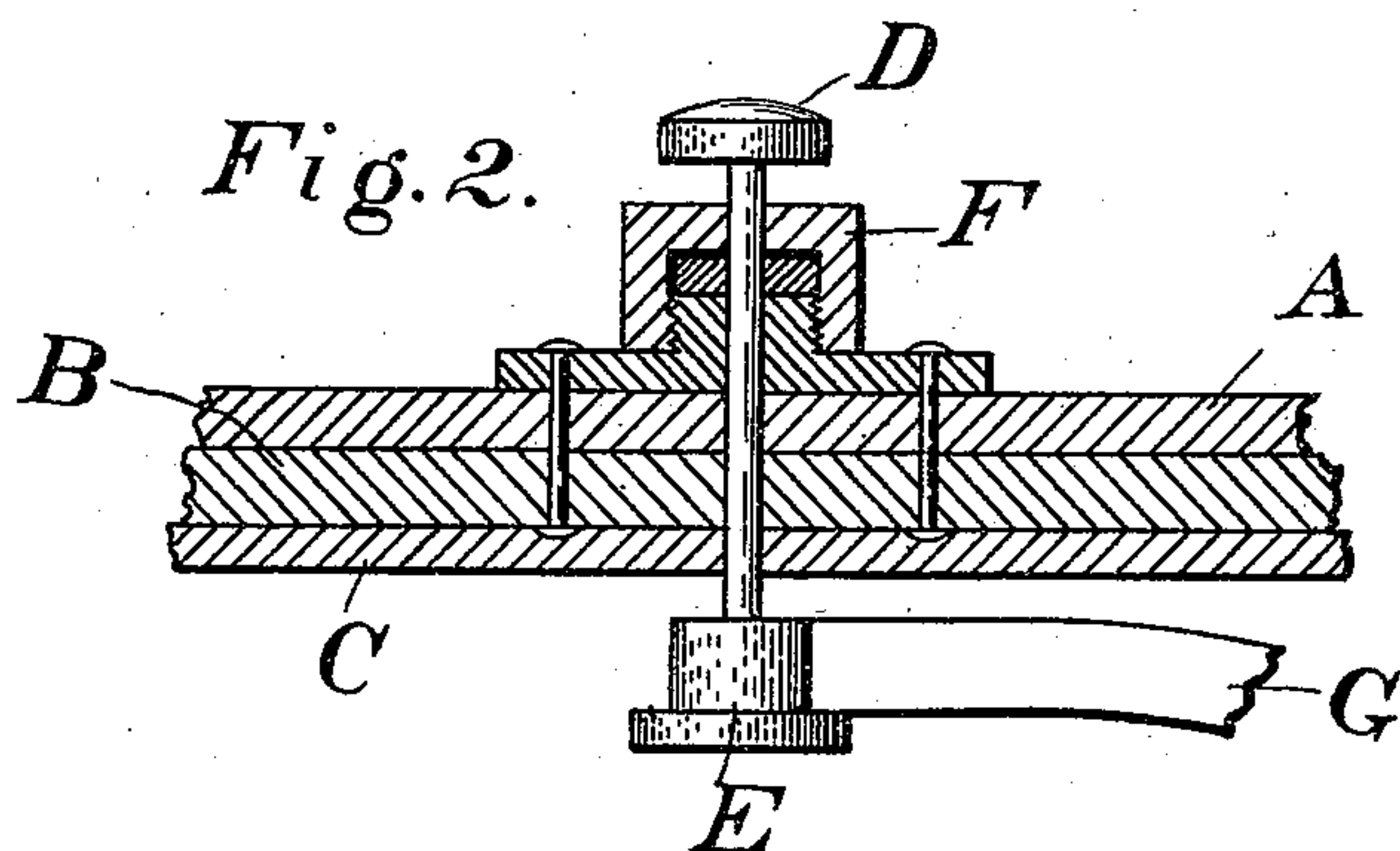
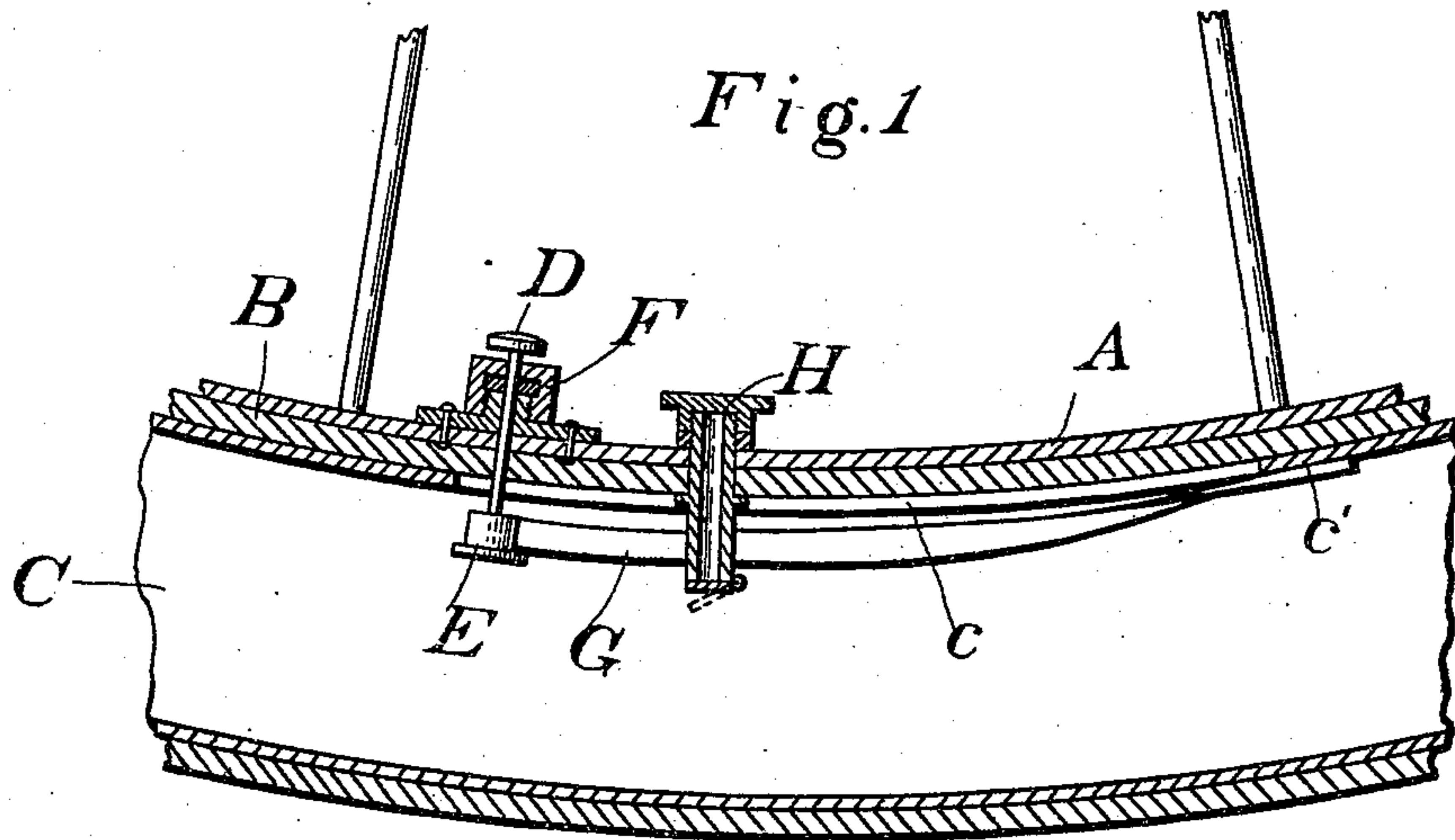


(No Model.)

J. M. GILMORE.  
TIRE FOR VEHICLE WHEELS.

No. 548,047.

Patented Oct. 15, 1895.



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# UNITED STATES PATENT OFFICE.

JAMES M. GILMORE, OF NEW YORK, N. Y.

## TIRE FOR VEHICLE-WHEELS.

SPECIFICATION forming part of Letters Patent No. 548,047, dated October 15, 1895.

Application filed August 22, 1895. Serial No. 560,145. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. GILMORE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Tires for Vehicle-Wheels; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to tires for vehicle-wheels, and has for its object the construction of a pneumatic tire, the parts of which may be so manipulated as to seal an accidental puncture of the air-inflated tubes.

My invention consists, essentially, of a principal air-tight tube or tire suitably attached to the felly of a wheel, an auxiliary slotted inner expansible tube, an air-port valve and conduit by which the inflating air is delivered first within the auxiliary tube, and mechanism for varying the position of the inner with respect to the main tube, as more particularly described hereinafter.

In the accompanying drawings, wherein like letters represent like parts, Figure 1 is a side view, principally in section, showing the relative position of the tubes and attachments when the parts are first assembled. Fig. 2 represents a vertical sectional view of the mechanism employed to move the inner tube, the scale of the drawing being slightly increased beyond that of the first figure to better exhibit the construction adopted. Fig. 3 shows in perspective the slotted portion of the inner tube.

Referring to Fig. 1, A marks the felly of the wheel; B, the main air-tight tube of any chosen cross-section, formed into a closed ring and fixed to the felly by any approved method in use at present; C, the inner slotted expansible tube surrounded by the main tube. The slot *c* extends through and along the inner wall of the tube C. The interior surface of the main tube B and the exterior surface of the slotted tube C are preferably as smooth as practicable, the advantage resulting from

this condition being the more perfect sealing or stoppage of a leak, as explained below.

D represents a key with a cylindrical shank terminating in the drum E. The shank of the key D passes through the stuffing-box F, located upon the rim of the wheel, and through a tightly-fitting aperture in the main tube B. The shank projects through the slot in the auxiliary tube C, and the drum E is situated in the interior of that tube. Attached to the drum and adapted to be wound about it is the ribbon G, the opposite end of which is connected with the tube C at any desired point *c'*.

H represents a tube, closed by the screw-cap *h*, by which air can be introduced, and it will be observed that this tube is placed near the stuffing-box F, that it passes through the slot *c* in the tube C, and terminates within that tube.

The assembling of the parts of my invention and its operation may be described as follows: The stuffing-box F is riveted upon the inner surface of the felly. Through a slit in the wall of the main or outer tube the inner slotted tube is introduced. The latter tube, which is primarily a straight or slightly-curved piece having free ends and possessing the slot already mentioned, is passed through the outer tube in such a manner that both its ends may be drawn through the slit in the outer tube and cemented together or otherwise joined. The tube C may be now moved within the tube B, and the drum E, ending the key D, as well as the induction-tube H, caused to project through the slot *c*. The free end of the band G is affixed to the tube C, which is again moved so as to unroll the band from the drum as far as permitted by the length of the slot. The slit in the main tube is then sealed, the headless shank of the key passed through stuffing-box, and the tube H inserted in an aperture bored in the felly for its reception. The head of the key and locking-nut of the tube are replaced and the main tube permanently fixed to the felly. It will be noted that this construction affords a double seal for the slit in the main tube. Let the tube H be now connected with a source of compressed air. The delivery of the air within the inner expansible tube causes a



local expansion in the vicinity of the slot, the edges of which are pressed against the interior of the tube B, resulting in a temporary covering of the slot and enabling the expansion of the inner tube to be effected. As the pressure increases within the expanding tube, the air originally remaining in the outer tube with that entering it through the slot distributes itself into an even envelope between the two tubes and the pressures ultimately reach a common limit. Let it be assumed that the outer tube or both tubes have been punctured. If left to themselves, both tubes must now collapse. To remedy the fault, the key D is turned, and by means of drum E, band G, and attachment at *c'* the inner tube is moved a short distance, breaking the direct path through the puncture. The need of comparatively smooth contact-surfaces between the tubes will now become apparent. Compressed air is again delivered within the expansible tube, the local dilation covers the slot, and under these assumed conditions the air between the tubes is driven through the puncture in the outer tube. It is therefore possible to continue the expansion of the elastic inner tube, so that a considerable pressure is available to hold the tubes in contact throughout and to effectually seal the double puncture. As the interior pressure increases, the stoppage of the slot is correspondingly perfected, and any air lurking between the tubes gradually makes its way out through the puncture.

Having thus sufficiently described my invention, what I claim is—

1. In a pneumatic tire for vehicle wheels, the combination of a main outer tube, an in-

ner, expansible, slotted tube movable within the said outer tube, conduit and valve attachments for delivering compressed air within the said inner tube, and mechanism for operating the inner within the outer tube, substantially as and for the purposes shown and described.

2. The combination in a vehicle wheel, of the rim of the wheel, a main outer tube attached to the said rim, an auxiliary expansible, slotted tube movable within the said outer tube, conduit and valve attachments for delivering compressed air within the said inner tube, and mechanism for operating the inner within the outer tube, the said conduit and valve, together with said operating mechanism, being accessible upon the inner surface of said wheel rim, substantially as and for the purposes herein shown and described.

3. The combination in a vehicle wheel, of the rim, A, main tube, B, inner tube, C, possessing the longitudinal slot, *c*, key, D, terminating in the drum, E, stuffing box, F, band, G, connected to and adapted to be rolled upon the drum, E, the other end of said band being attached to the said inner tube, the induction tube, H, provided with suitable closure and valve, the whole arranged substantially as herein shown and described for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES M. GILMORE.

Witnesses:

WM. KAVANAGH,  
HENRY KALNING.