

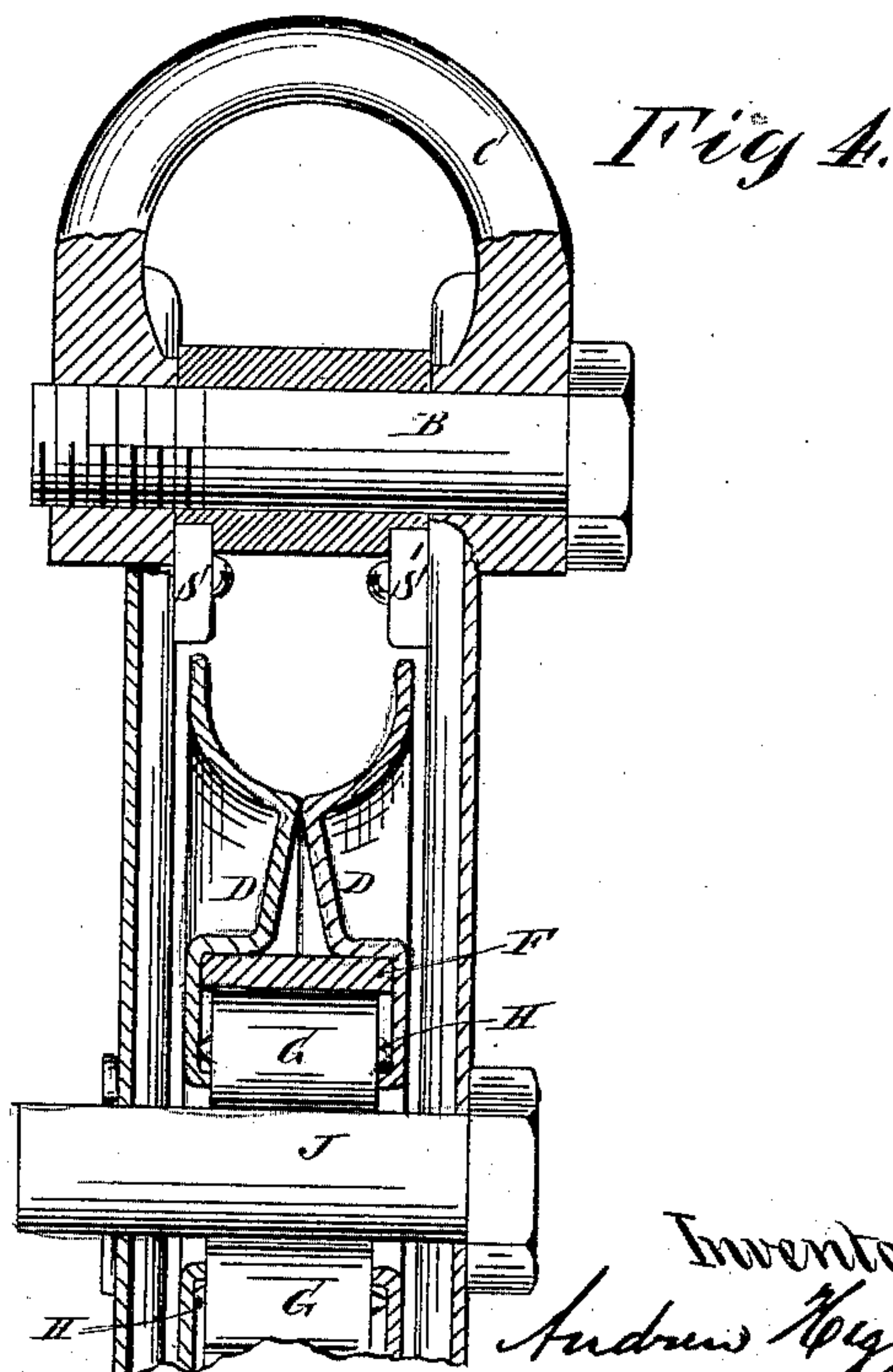
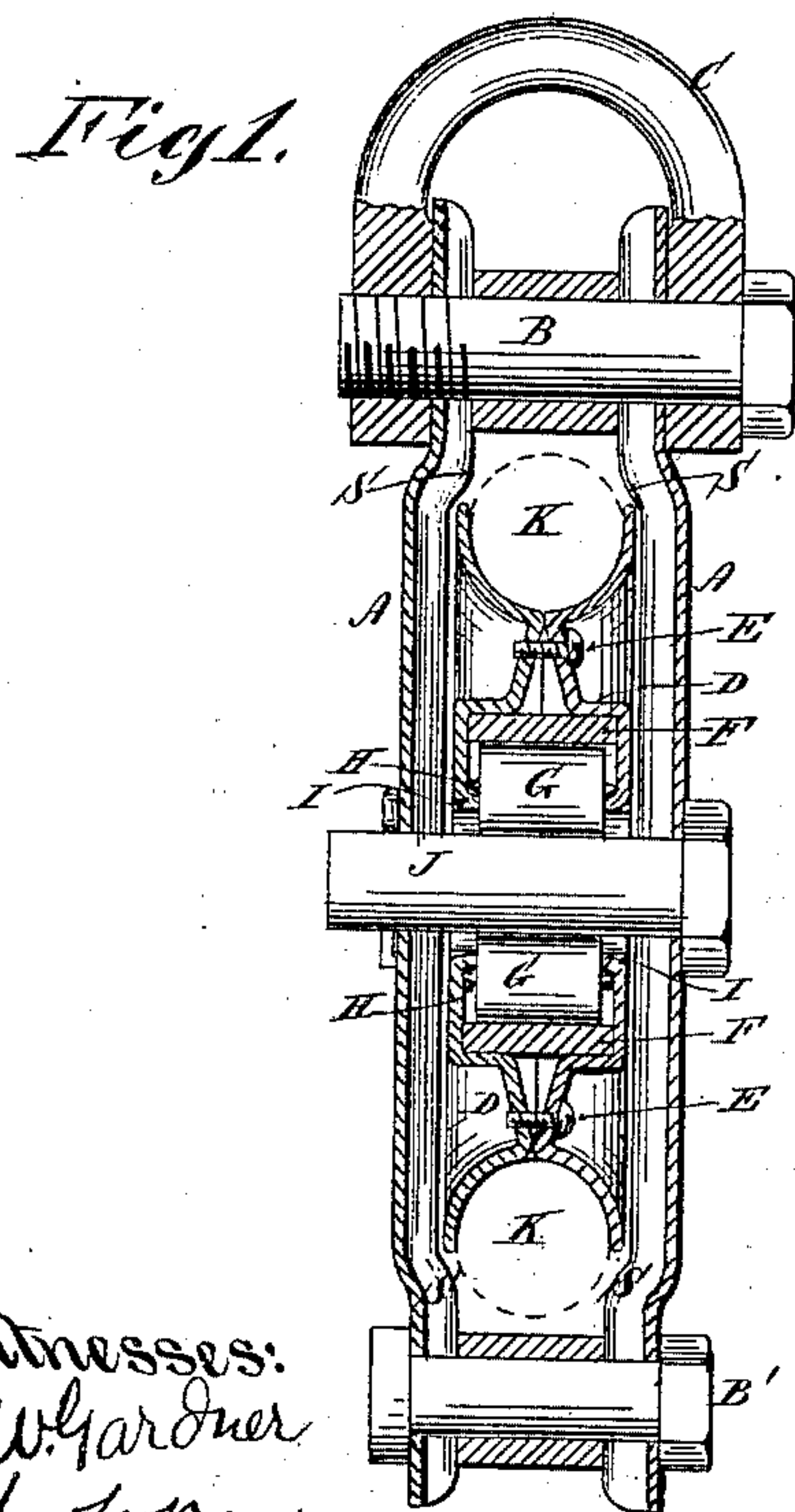
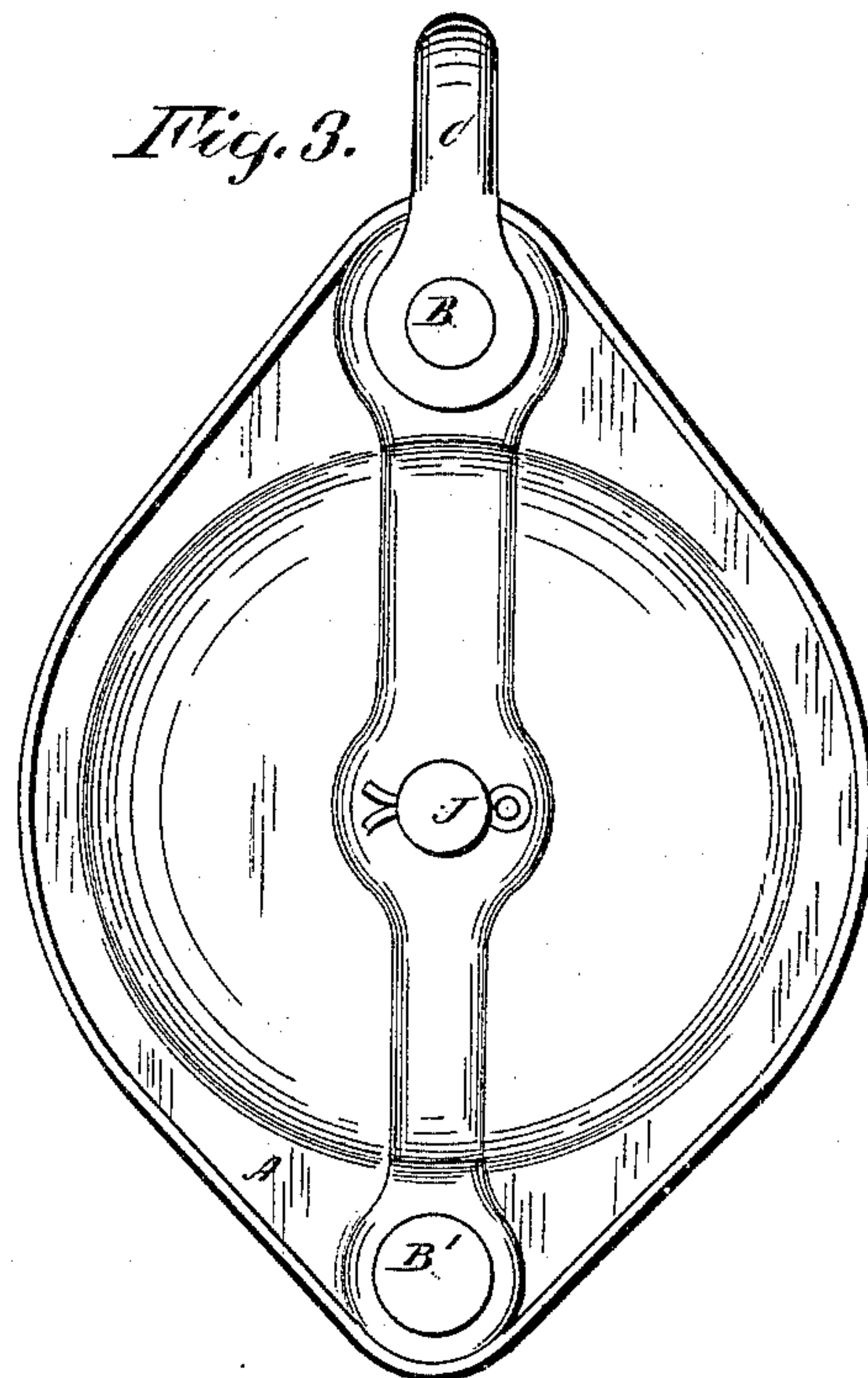
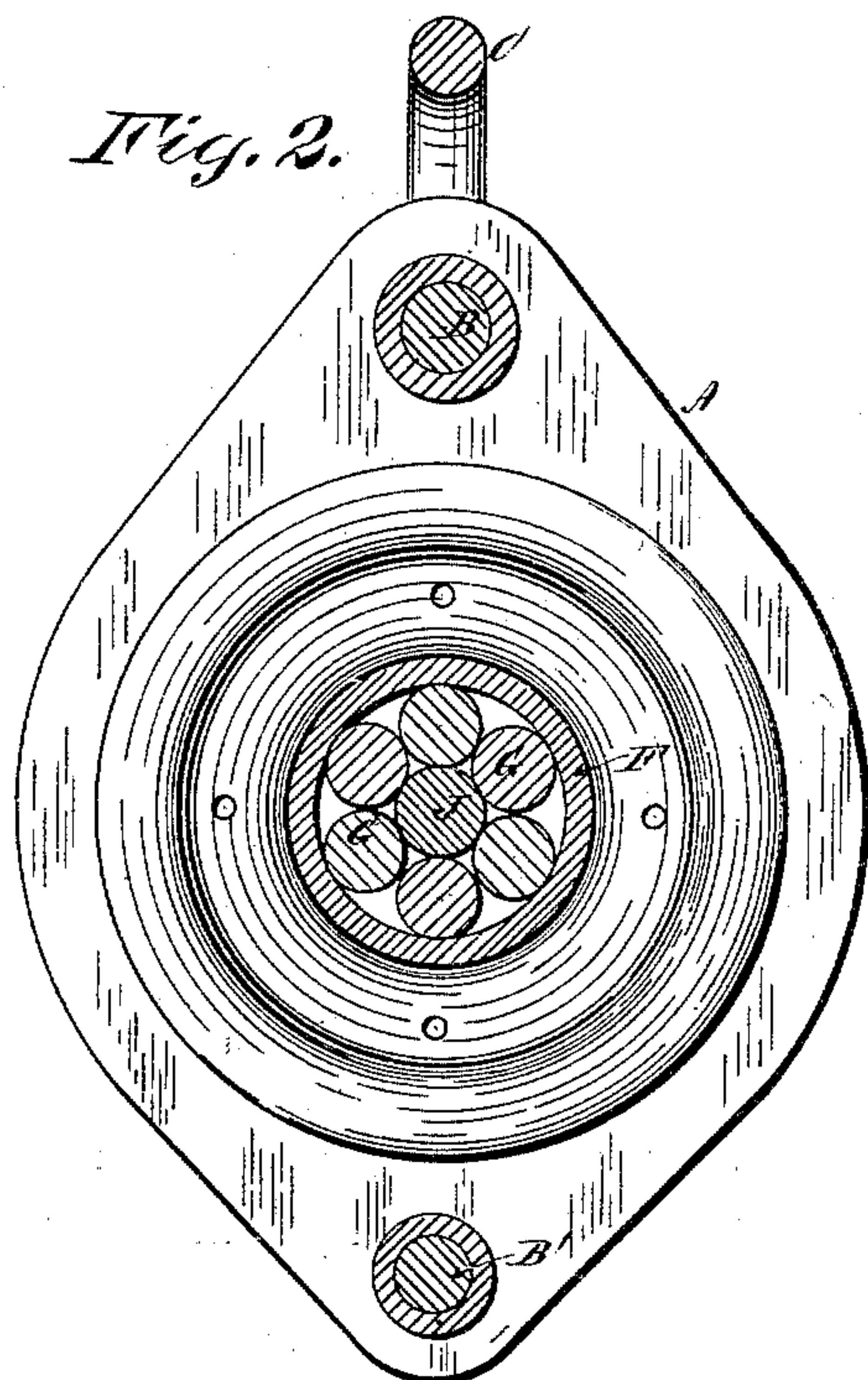
(No Model.)

2 Sheets—Sheet 1.

A. HIGGINSON.
PULLEY AND BLOCK.

No. 426,535.

Patented Apr. 29, 1890.



Witnesses:
 W. Gardner
 J. M. Valentine

Inventor:
Andrew Heggenson
4 Broadway & Pull
N.Y.C.

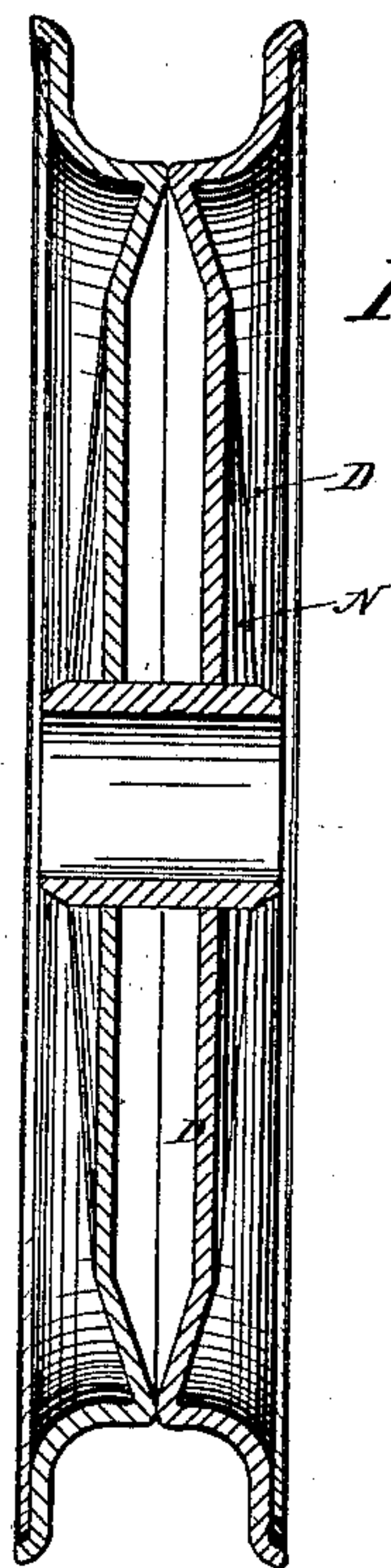
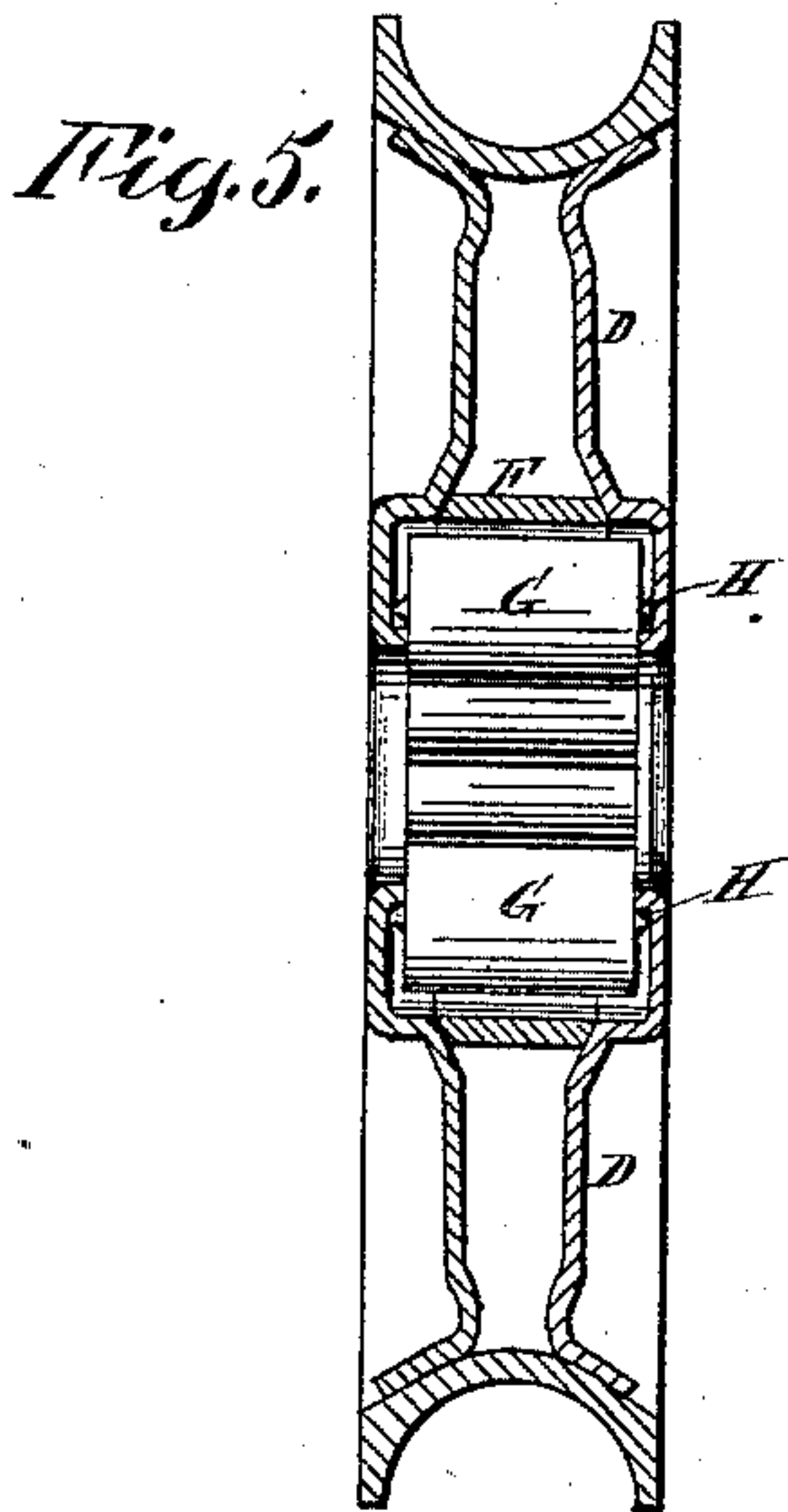
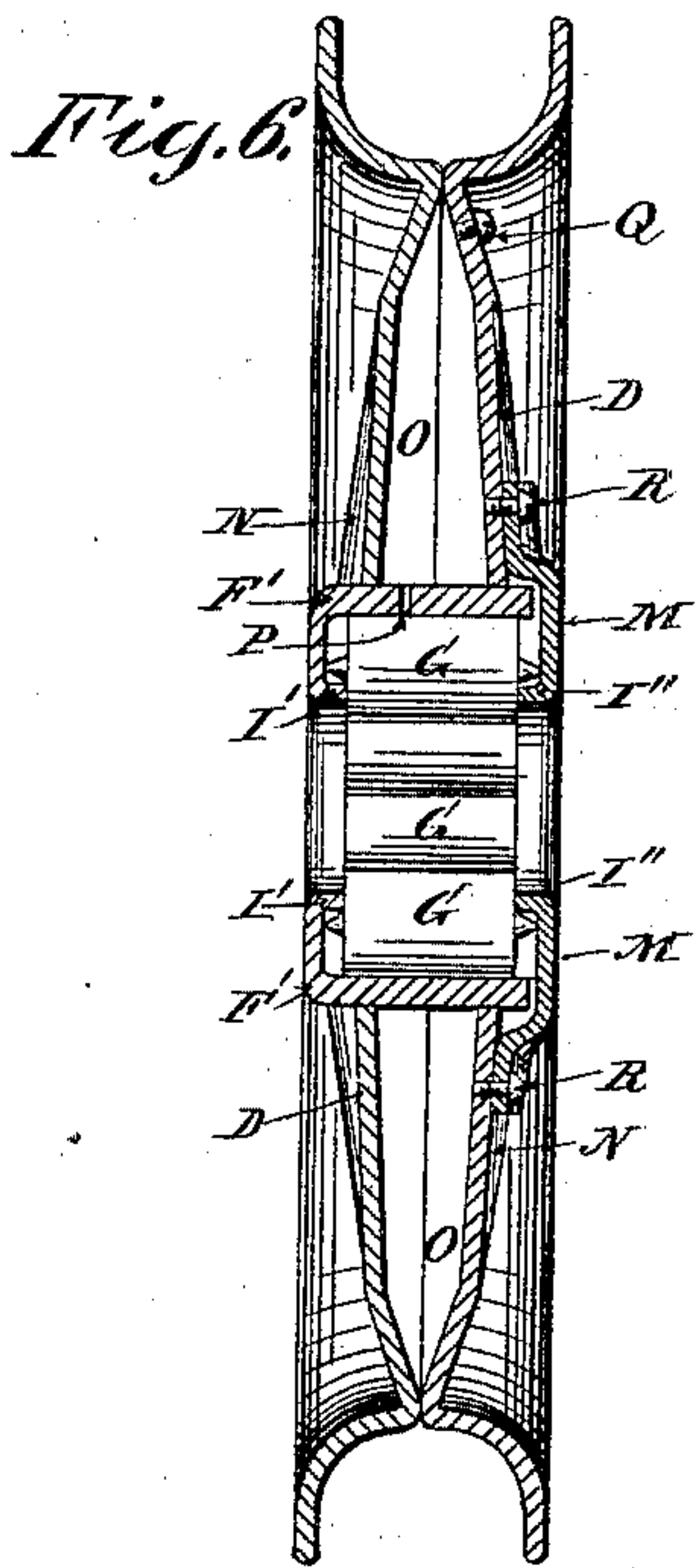
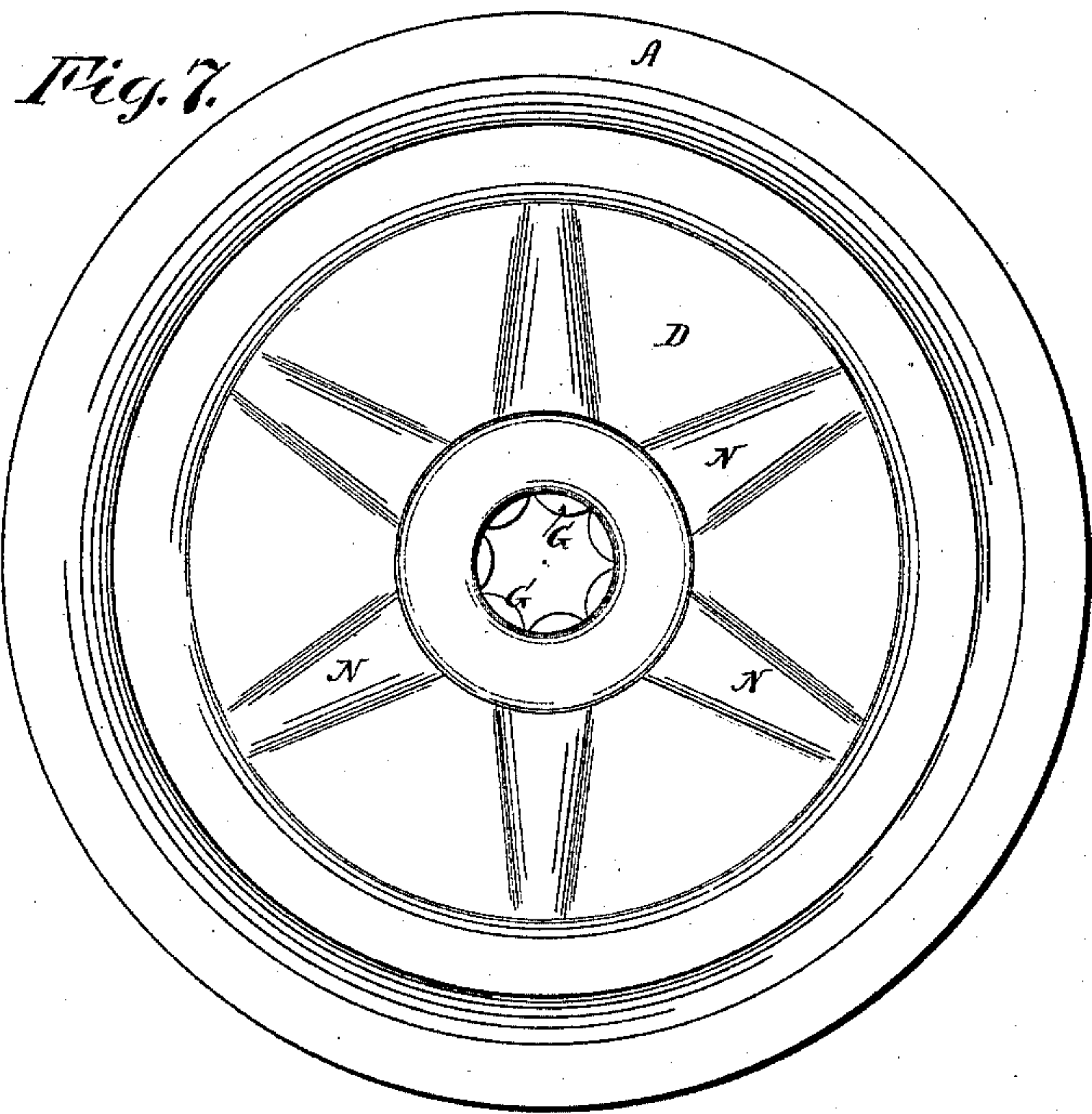
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2 Sheets—Sheet 2.

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PULLEY AND BLOCK.

No. 426,535.

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Witnesses:
D. W. Gardner
John M. Valentine

Inventor:
Andrew Higginson
by Broadway & Phil
Atty.

UNITED STATES PATENT OFFICE.

ANDREW HIGGINSON, OF LIVERPOOL, COUNTY OF LANCASTER, ENGLAND.

PULLEY AND BLOCK.

SPECIFICATION forming part of Letters Patent No. 426,535, dated April 29, 1890.

Application filed April 19, 1889. Serial No. 307,682. (No model.)

To all whom it may concern:

Be it known that I, ANDREW HIGGINSON, a subject of the Queen of Great Britain, residing in the city of Liverpool, county of Lancaster, in that part of the United Kingdom of Great Britain and Ireland called England, have invented certain new and useful Improvements in Pulleys and Blocks; of which the following is a description in such full, clear, concise, and exact terms as will enable any one skilled in the art to which my invention relates or with which it is most nearly connected to make and use the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon.

Similar letters of reference indicate corresponding parts in all the figures of drawings.

Figure 1 is a cross-section through a block and sheave. Fig. 2 is a sectional view of the same, one of the sides of the sheave and block being removed. Fig. 3 is a front elevation of the same. Fig. 4 shows a modification of the block illustrated in Fig. 1, parts being broken away. Fig. 5 shows in section a modification of the sheaves illustrated in Fig. 1. Fig. 6 shows another modification of the sheaves in cross-section, and Fig. 7 a front view of the sheave shown in Fig. 6. Fig. 8 is a cross-section of another modification of the form of the sheave shown in Fig. 1.

My invention consists of certain novel parts and combinations of parts specifically pointed out in the claims concluding this specification.

The following is a description of the devices illustrated in the accompanying drawings, which show sheaves and pulleys embodying in their construction my present invention in preferred forms.

Referring to Fig. 1, A A is a block made of two similar plates held together by the bolts B B'. The bolt B also secures to the block the eye or staple C. The pulley or sheave is composed of two similar plates D D placed back to back and secured to each other by the screws E E. The form of these sheave-plates D D is such that when secured together they provide a circumferential groove for the rope and an interior groove or chamber which contains the sleeve F and the anti-friction rollers G G. These anti-friction rollers are provided with central or radial projections

H H. The interior chamber, which contains the sleeve F, is provided with inwardly-turned flanges I I, which limit the motion of the rollers toward the center of the sheave and prevent the anti-friction rollers falling out of the sheave when the rollers are diminished in size and the sheave-pin J is removed.

K K is a rope running in the circumferential groove of the sheave. The sides of the block at S S project inward immediately above the groove of the sheave so that the rope K will come in contact with this inward projection or shoulder before the sides of the sheave can come into contact with the sides of the block. This keeps the sheave from bearing or wearing against the interior surface of the block and transfers what wear there may be to the rope which keeps the sheave centered.

In Fig. 4 the same arrangement or relation between the block and sheave is shown, but in this case the shoulder is made of a separate piece of metal secured to the interior sides of the block. This shoulder may be made of any suitable metal—such as brass—and as it may be made removable, as shown, it can be replaced with little trouble when worn out.

Fig. 5 illustrates a sheave substantially like that shown in Fig. 1, except that the circumferential rim is made of a separate piece of metal. This permits the rim to be made of a more durable metal—such as brass—without involving the expense of constructing the whole sheave of this comparatively expensive metal.

The sheave illustrated in Fig. 6 consists of the two similar plates D D, attached together in any suitable manner.

F' is a bushing, on one end of which the flange or projection I' is formed.

M is a cap secured to one of the sides of the sheave, and having formed upon it the opposite internal projection I''. These side plates D D are provided with corrugations N, which increase their strength and also their bearing upon the sleeve F'. Between the side plates D D and the sleeve F' is a closed chamber O, which may be employed as an oil-reservoir.

Q is an aperture provided with a screw-plug, by means of which the reservoir may be filled.

P is a perforation through the sleeve F', by means of which the oil in the reservoir O may pass into the chamber containing the anti-friction rollers to lubricate the parts, and, if desired, the perforation P may be provided with a needle or other device for controlling the flow of oil.

I prefer to construct the sheave shown in Fig. 6 as follows: First cast or stamp out the side plates D D'. Then place in position the sleeve F' and weld or otherwise attach the parts firmly together. If the parts be made of steel or iron, I find that the strength of their union is increased, and all crevices through which the oil may leak are effectually closed during the process of galvanizing the metal. This is a cheap and very effectual method of securing the ends desired. The anti-friction rollers G are then set in position and the circular cap M secured in place, preferably by removable means—such as the screws R R. When it is desired to remove or renew the anti-friction rollers, it is only necessary to remove the screws R and take off the cap M.

The sheave illustrated in Fig. 6 is designed to be used preferably in connection with the blocks illustrated in Figs. 1, 2, 3, and 4, as are also all the other sheaves shown in the drawings.

Fig. 8 shows a sheave made of two similar plates secured together by welding or otherwise and provided with strengthening-ridges, substantially as described, but without the nest of anti-friction rollers shown in the other figures.

Having thus described the several forms of pulleys and blocks embracing my present invention, what I claim, and desire to secure by Letters Patent, is—

1. In a sheave, the combination of a central sleeve, anti-friction rollers contained in a chamber, and plates set back to back and secured together, forming said chamber and also the sides and rim of the sheave, substantially as described.

2. In a sheave, the combination of anti-friction rollers provided with axial projections, and a chamber provided with inwardly-projecting flanges for limiting the motion of said rollers toward the center of the sheave, substantially as described.

3. In a sheave, the combination of anti-friction rollers provided with axial projections, a chamber containing said rollers provided with inwardly-projecting flanges for

limiting their motion, and a sleeve upon which they bear, substantially as described.

4. In a sheave, the combination of plates attached together forming an interior chamber provided with inwardly-projecting flanges, and anti-friction rollers provided with axial projections contained within said chamber, the projections on the rollers acting in connection with the flanges of the chamber to limit the motion of said rollers toward the center of the sheave, substantially as described.

5. In a sheave, the combination of a central sleeve, anti-friction rollers contained in a chamber, and plates provided with strengthening-corrugations set back to back and secured together, forming said chamber and also the sides and rim of the sheave, substantially as described.

6. A sheave having a circumferential groove for receiving the rope passing around it, a chamber provided with an interior flange, anti-friction rollers, and a cap provided with an interior flange and removably attached to the side of the sheave, substantially as described.

7. A sheave consisting of plates attached together provided with an interior reservoir for holding lubricating-oil, and a chamber containing anti-friction rollers in communication with said reservoir, substantially as described.

8. The combination of a sheave containing a nest of anti-friction rollers loosely set on a shaft and a block containing said sheave provided with shoulders presenting bearing-surfaces at the sides of the rope passing around said sheave, against which it bears to keep the sheave centered within said block, substantially as described.

9. The combination of a sheave containing a nest of anti-friction rollers loosely set on a shaft and a block containing said sheave provided with shoulders removably attached to said block, presenting bearing-surfaces at the sides of the rope passing around said sheave, against which it bears to keep the sheaves centered within said block, substantially as described.

ANDREW HIGGINSON.

Witnesses:

GEORGE A. BEST,

H. KETTIN.

Clerks with Messrs. Stone, Fletcher & Hull,
Solicitors, Liverpool.