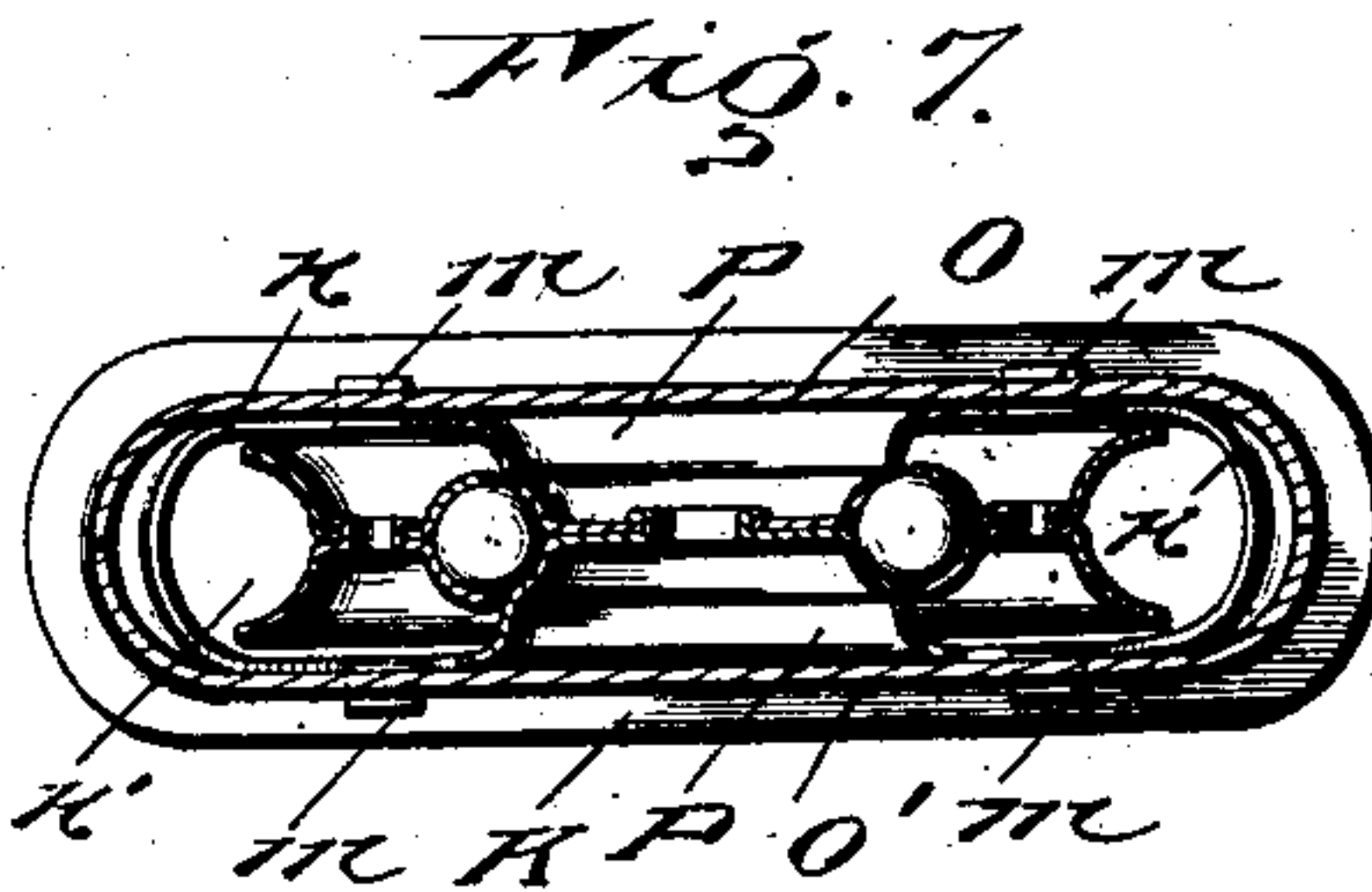
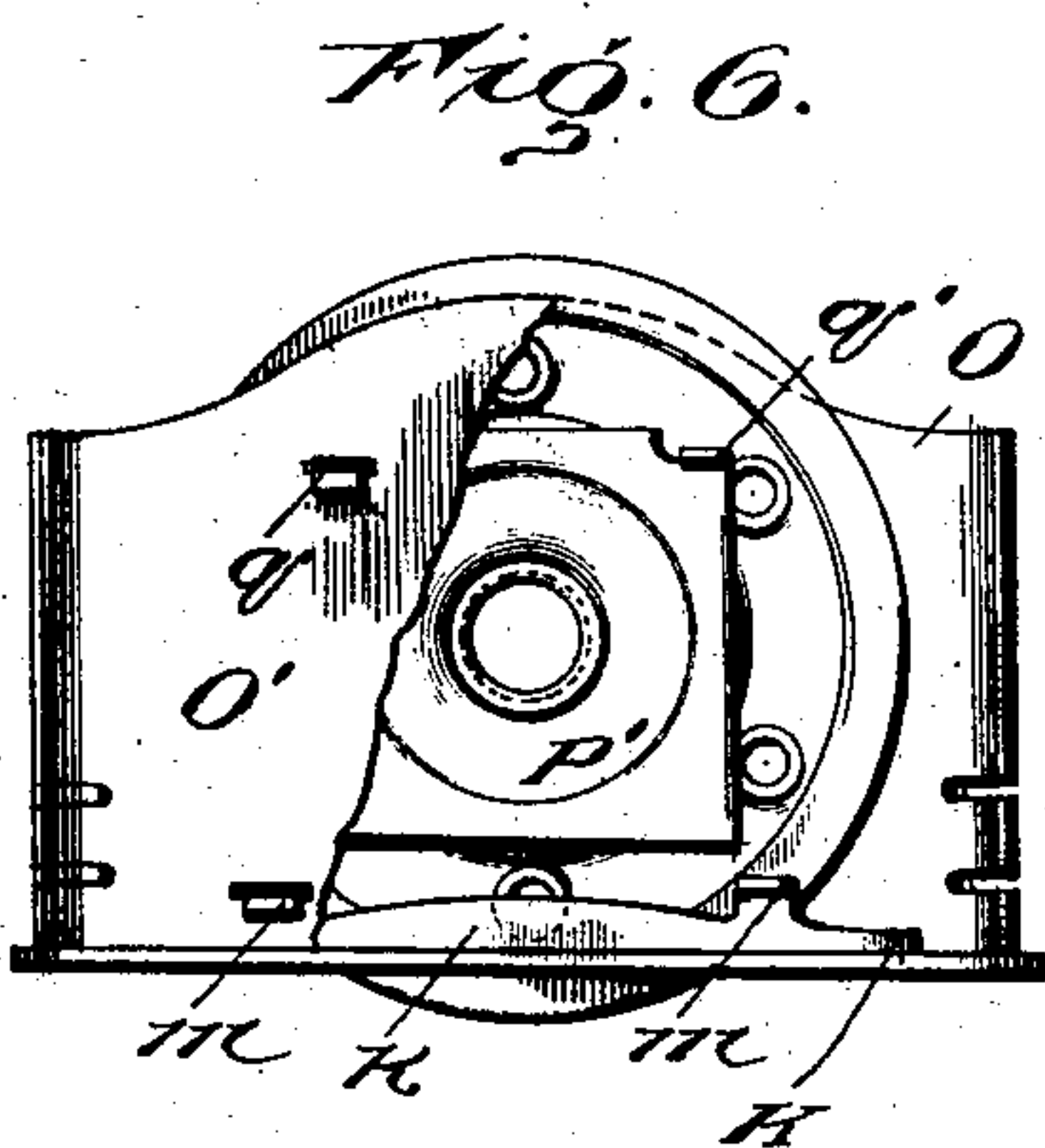
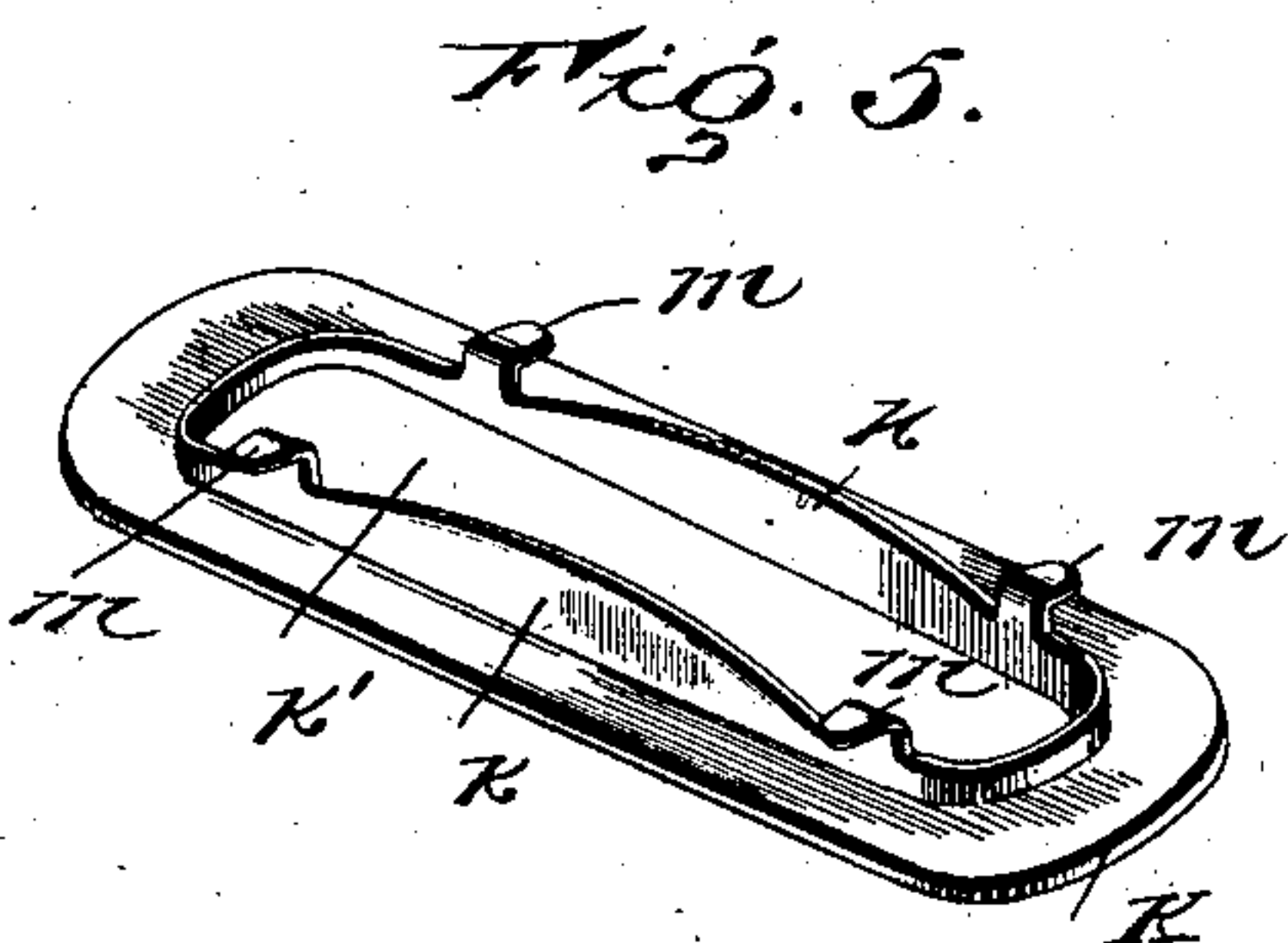
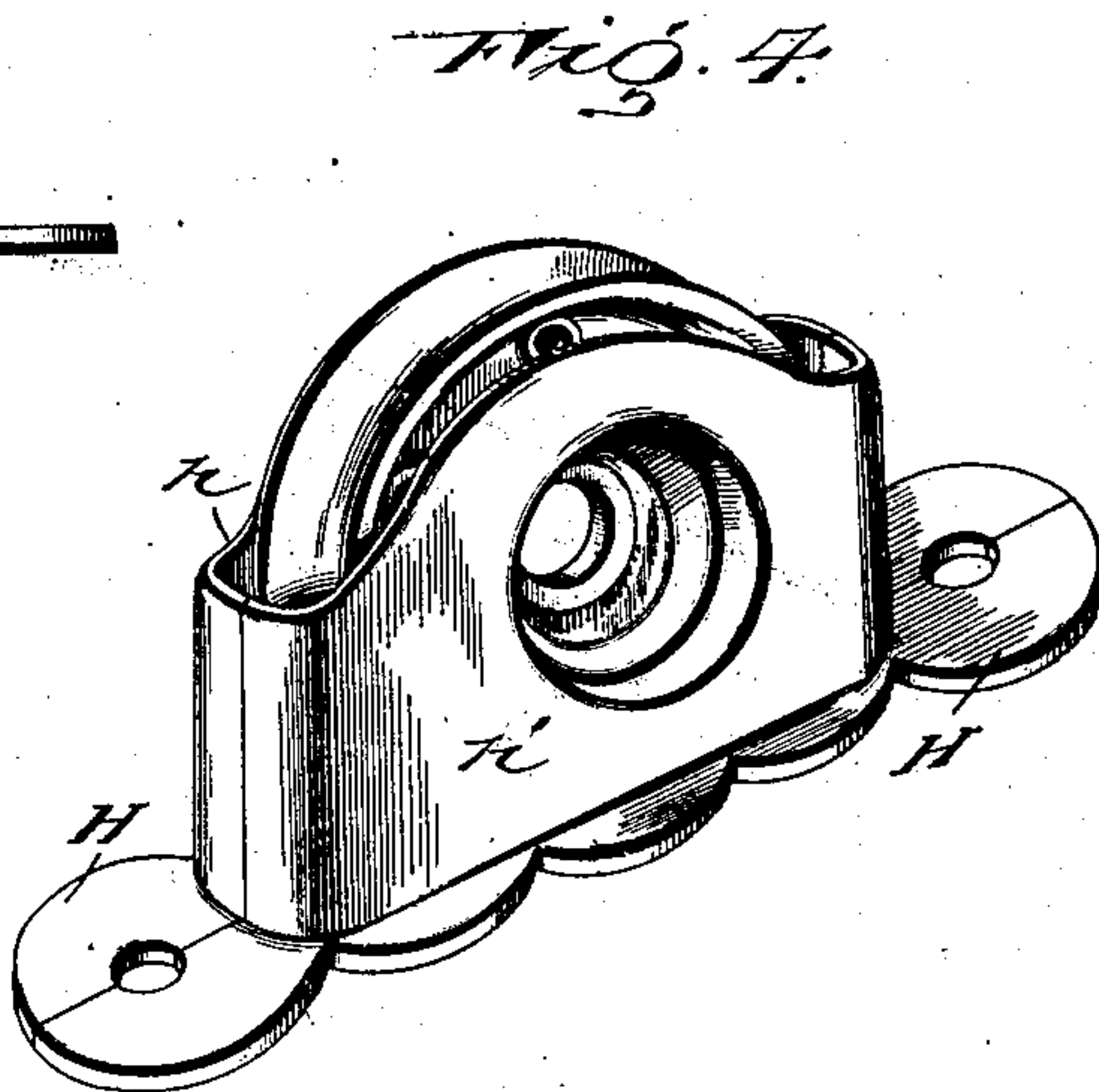
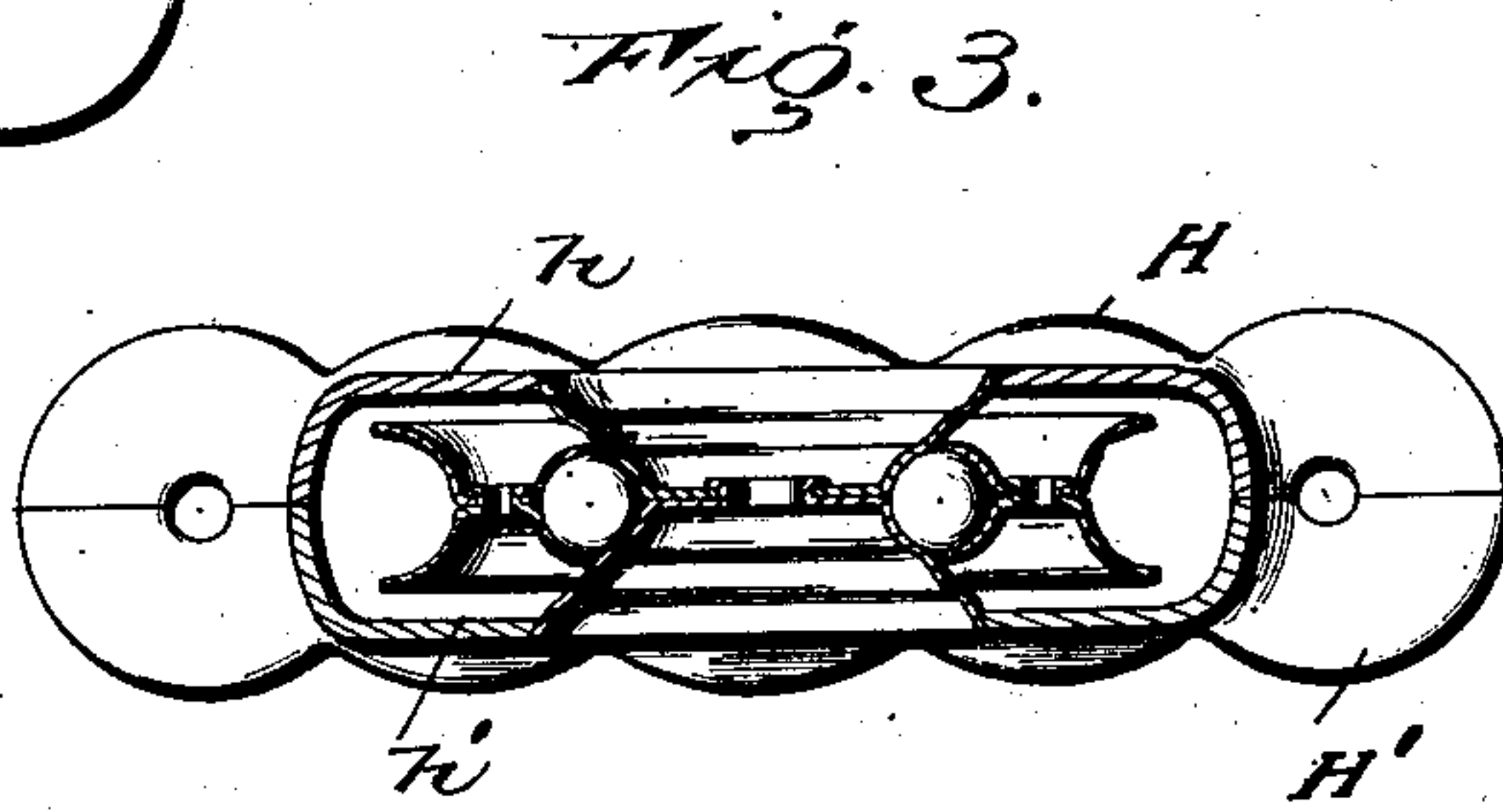
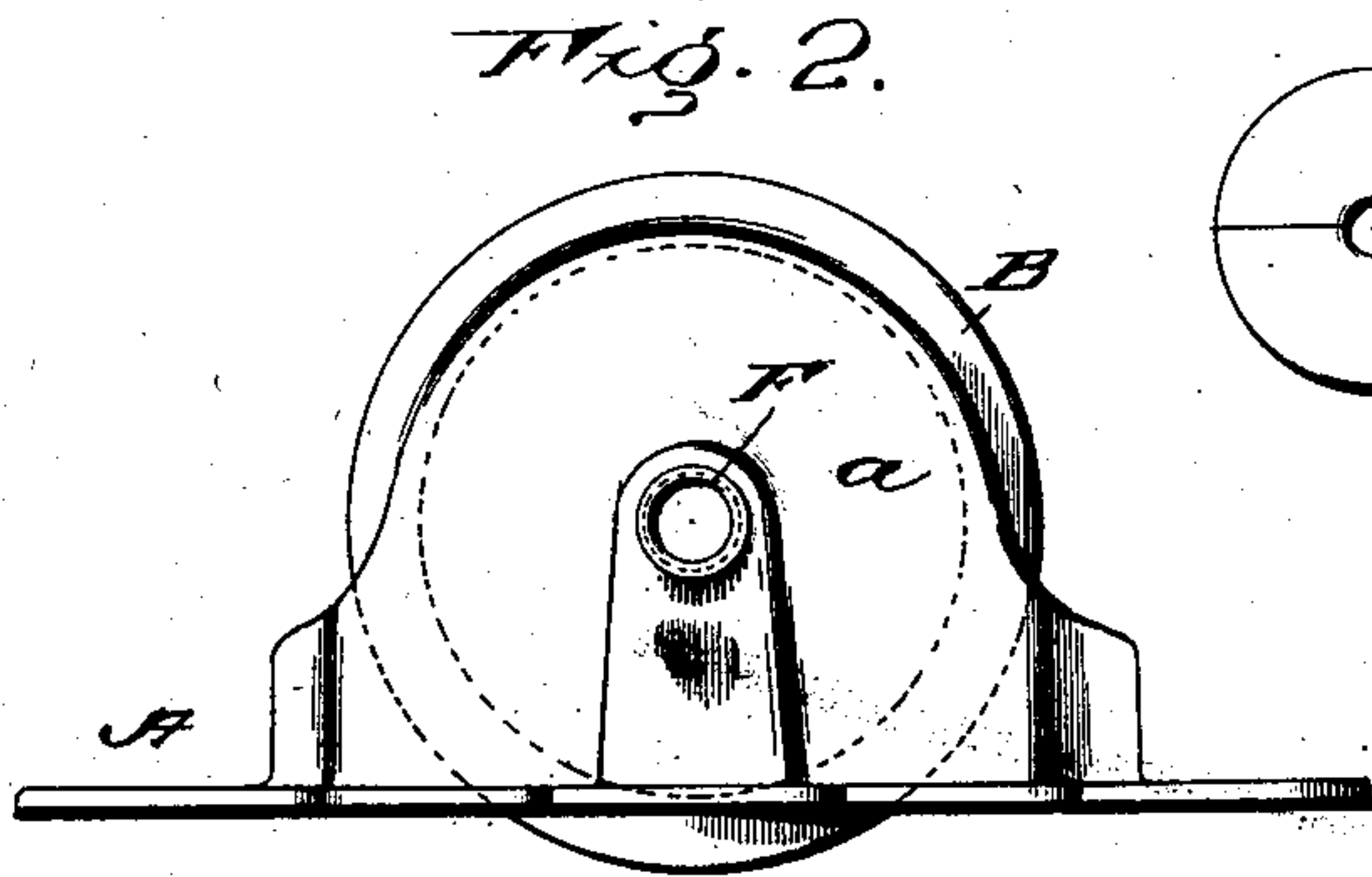
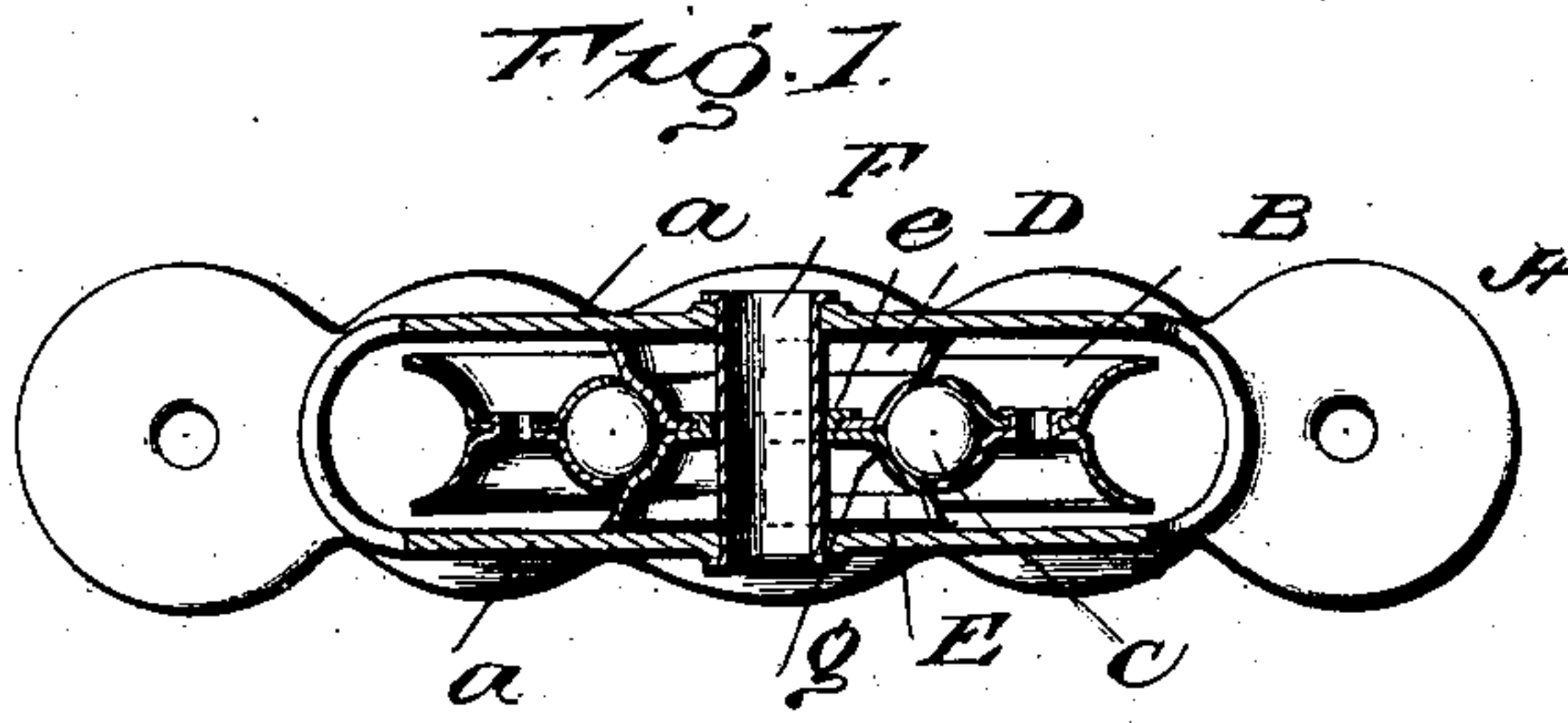


No. 724,878.

PATENTED APR. 7, 1903.

A. JOHNSTON.
SASH PULLEY OR SIMILAR DEVICE.
APPLICATION FILED AUG. 4, 1902.

NO MODEL.



Witnesses

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By

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UNITED STATES PATENT OFFICE.

ALLEN JOHNSTON, OF OTTUMWA, IOWA.

SASH-PULLEY OR SIMILAR DEVICE.

SPECIFICATION forming part of Letters Patent No. 724,878, dated April 7, 1903.

Application filed August 4, 1902. Serial No. 118,273. (No model.)

To all whom it may concern:

Be it known that I, ALLEN JOHNSTON, of Ottumwa, Iowa, have invented a new and useful Improvement in Sash-Pulleys or Similar Devices, which invention is fully set forth in the following specification.

My invention relates to ball-bearing pulleys, door-hangers, and like articles, and particularly to sash-pulleys, wherein the balls upon which the wheels rotate bear upon and between cone-like surfaces projecting toward each other from the inner faces of the sides of the frame which support the wheels. When a cast-metal frame having the cone-shaped projections formed integral therewith is employed in such articles or devices, it is necessary to turn off, grind down, or otherwise finish the surfaces of the cone-like projections, as said surfaces come out of the sand mold rough, untrue, and unfit as bearing-surfaces for the balls. This turning off, grinding, or finishing of the bearing-surfaces is a tedious and more or less expensive operation and adds materially to the cost of the article. According to my present invention I eliminate the necessity of this operation and am enabled to decrease the cost by making the cone-like parts separate from the cast frame and securing them in place in any suitable manner. Preferably they are stamped from sheet metal having a smooth surface. I have also found it to be economical and advantageous in some cases to employ these separate cone-like parts in conjunction with frames made of sheet metal instead of forming said cone-like parts integral with the parts of the sheet-metal frame, as shown, for example, in my Patent No. 694,482, of March 4, 1902.

The invention will be more fully understood by reference to the accompanying drawings, which show the same applied to sash-pulleys, and wherein—

Figure 1 is a longitudinal sectional view, and Fig. 2 an elevation, of a sash-pulley embodying my invention. Fig. 3 is a longitudinal sectional view, and Fig. 4 a perspective view, of a different embodiment of the invention. Fig. 5 is a detail view; Fig. 6, a part plan and part sectional view with one side of the frame omitted, and Fig. 7 a longitudinal

sectional view showing the invention applied to a sheet-metal sash-pulley frame.

Referring to Figs. 1 and 2, A is a cast-metal frame. B is a pulley-wheel made of sheet-metal parts, and C represents bearing-balls for the latter. D and E are two oppositely-arranged hollow cone-like parts, preferably formed from sheet metal by a suitable stamping operation. An annular flange *e* at the small end of part E projects through an opening in the small end of part D and is riveted down against the latter to firmly secure the parts together. The parts D and E thus secured together fit closely between and are secured to the side plates *a* of frame A by a hollow pin F, which is riveted at its opposite ends, as clearly shown in Fig. 1. The balls C bear against and between the concave parts *g* of the cone-like parts D and E.

In the embodiment of the invention shown in Figs. 3 and 4 I employ a cast-metal frame made in two parts H H', each having a countersunk opening in its side plate *h h'*, respectively. The hollow cone-like parts bear at their larger ends in said countersunk openings, so that when riveted together at their smaller inner ends they securely fasten the two parts H H' together with the pulley and bearing-balls in proper position.

In Figs. 5, 6, and 7 I have shown my invention applied to a frame made of parts formed from sheet metal. K is a face-plate having a flange *k* turned up around an elongated opening *k'* thereon. Flange *k* has four ears *m* formed integral therewith. O O' are side plates having openings therethrough for receiving lugs *m*, which are bent over against the outer faces of plates O O', securely fastening said plates to face-plate K. P P' are the cone-like parts riveted together at their smaller ends, as before. In this instance, however, each of the cone-like parts has a base of square outline, having ears *q q'* formed integral therewith. Said lugs pass through openings in the side plates O O' and are turned down tightly against the outer surfaces of said plates to securely hold the parts together.

As will be apparent, modifications may be made within wide limits without departing from the principle of my invention.

What I claim is—

1. In a sash - pulley or similar device, a frame, a wheel, two oppositely-disposed cone-like parts formed separate from the frame
; but held in place therein, bearing-balls interposed between the wheel and bearing-surfaces afforded by the cone-like parts.
2. In a sash - pulley or similar device, a frame, a wheel, two oppositely-disposed cone-
10 like parts struck up from sheet metal, said parts being separate from the frame but held in place therein, bearing-balls interposed between the wheel and bearing-surfaces afforded by the cone-like parts.
- 15 3. In a sash - pulley, or similar device, a

cast-metal frame having side plates, a wheel, two oppositely-disposed cone-like parts struck up from sheet metal and held in place between the side plates of the frame, and bearing-balls interposed between the wheel and bearing-surfaces afforded by the cone-like parts.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALLEN JOHNSTON.

Witnesses:

THOS. RODGERS,
L. E. STEVENS.