

No. 837,475.

PATENTED DEC. 4, 1906.

A. JOHNSTON.
SASH PULLEY.

APPLICATION FILED FEB. 9, 1906.

Fig. 1.

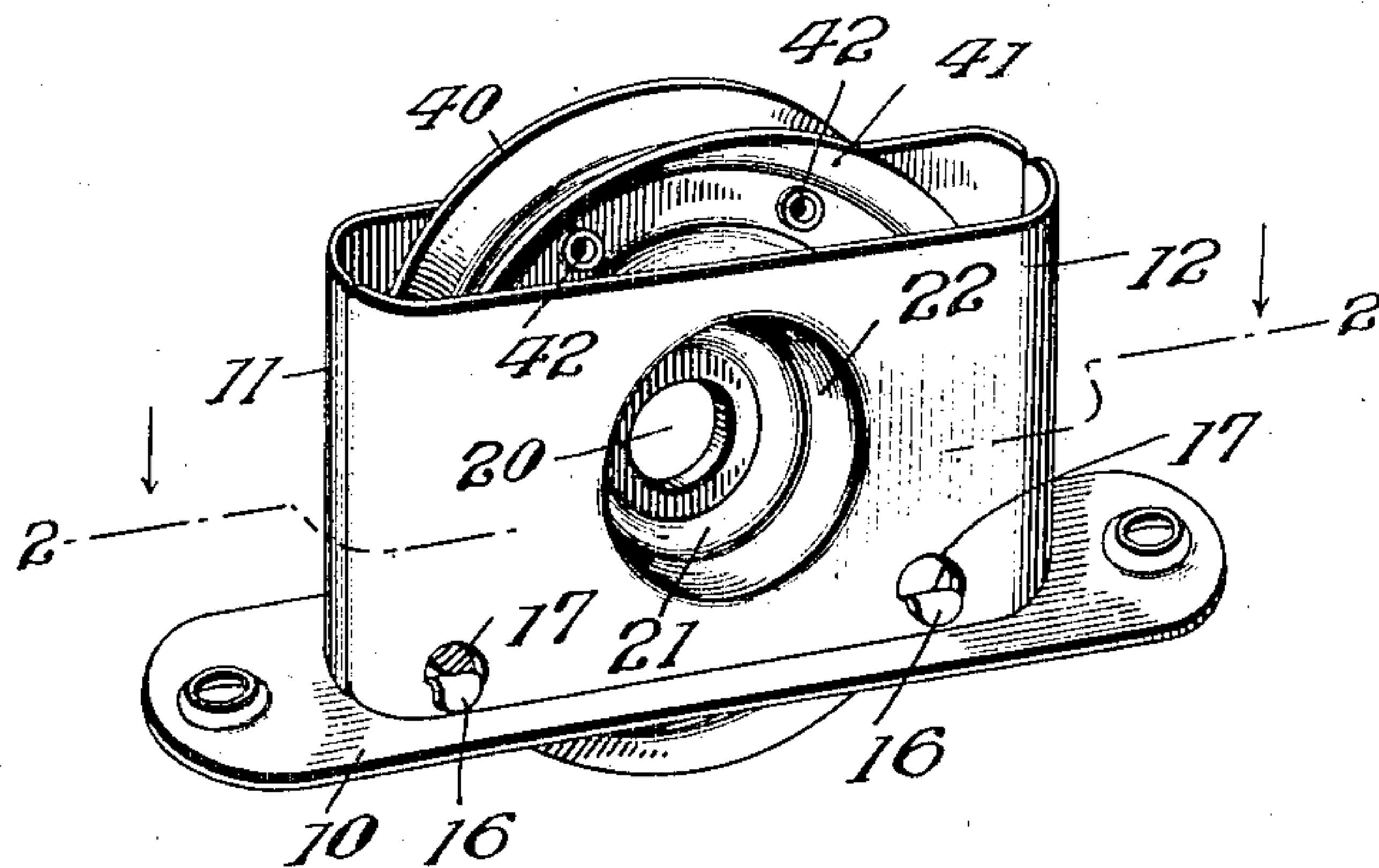


Fig. 2.

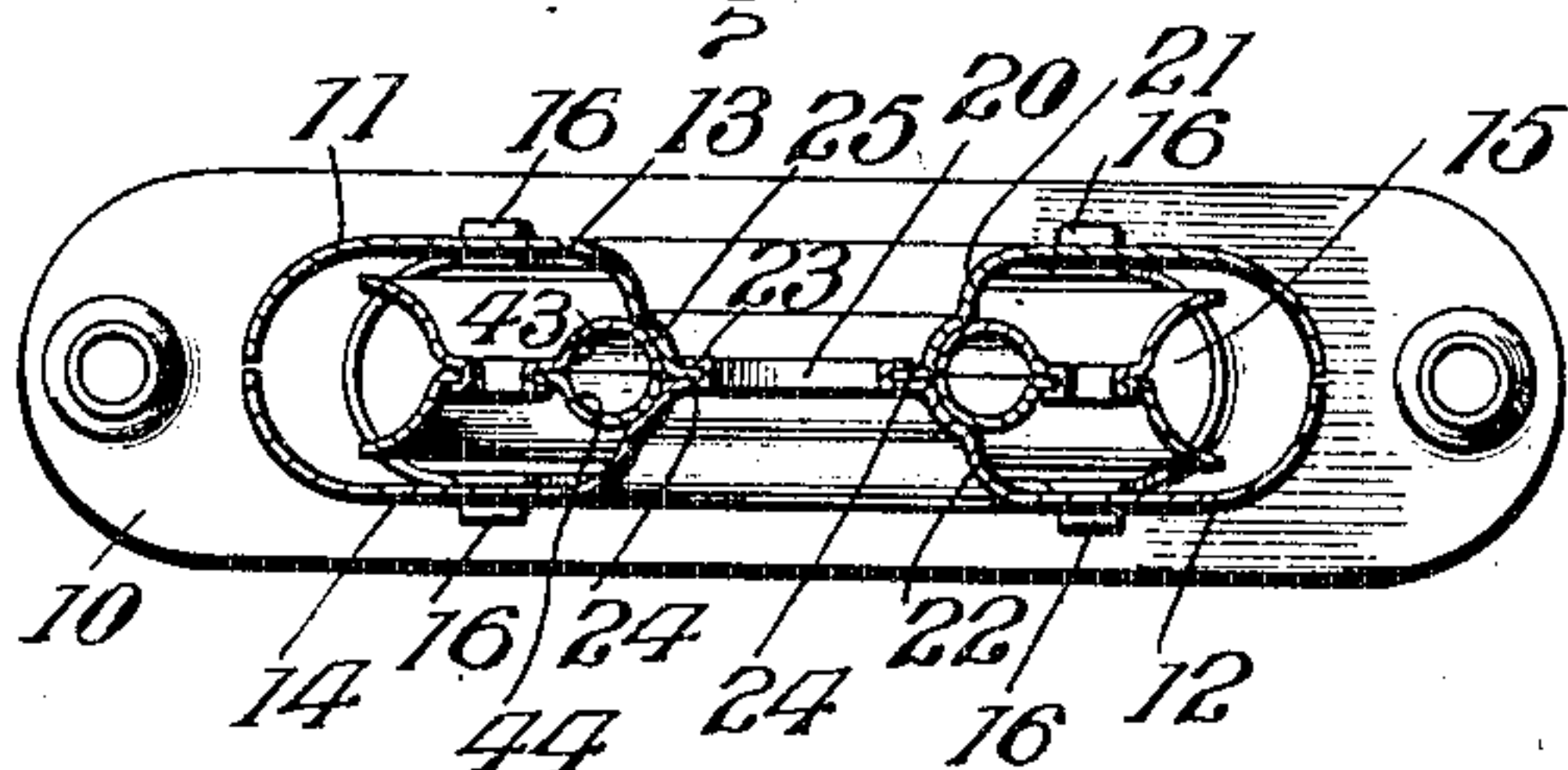


Fig. 3.

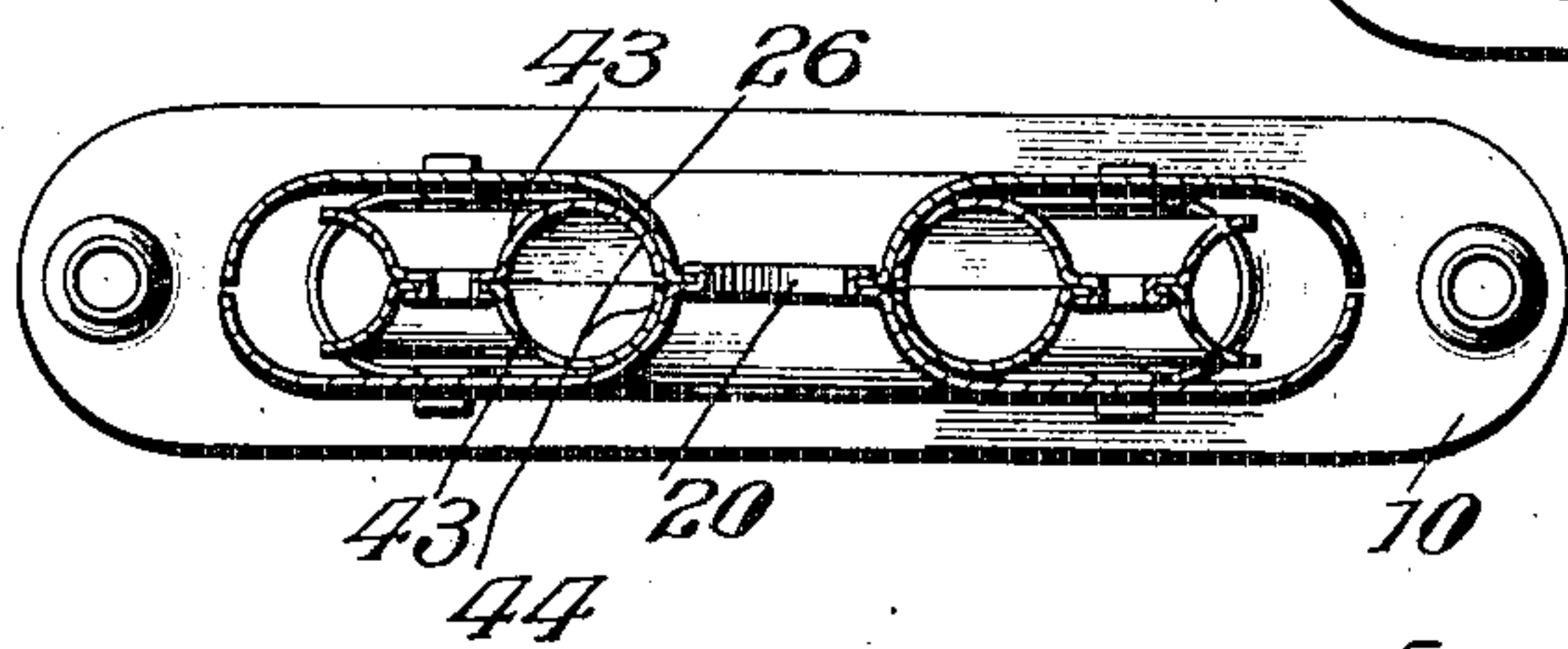


Fig. 4.

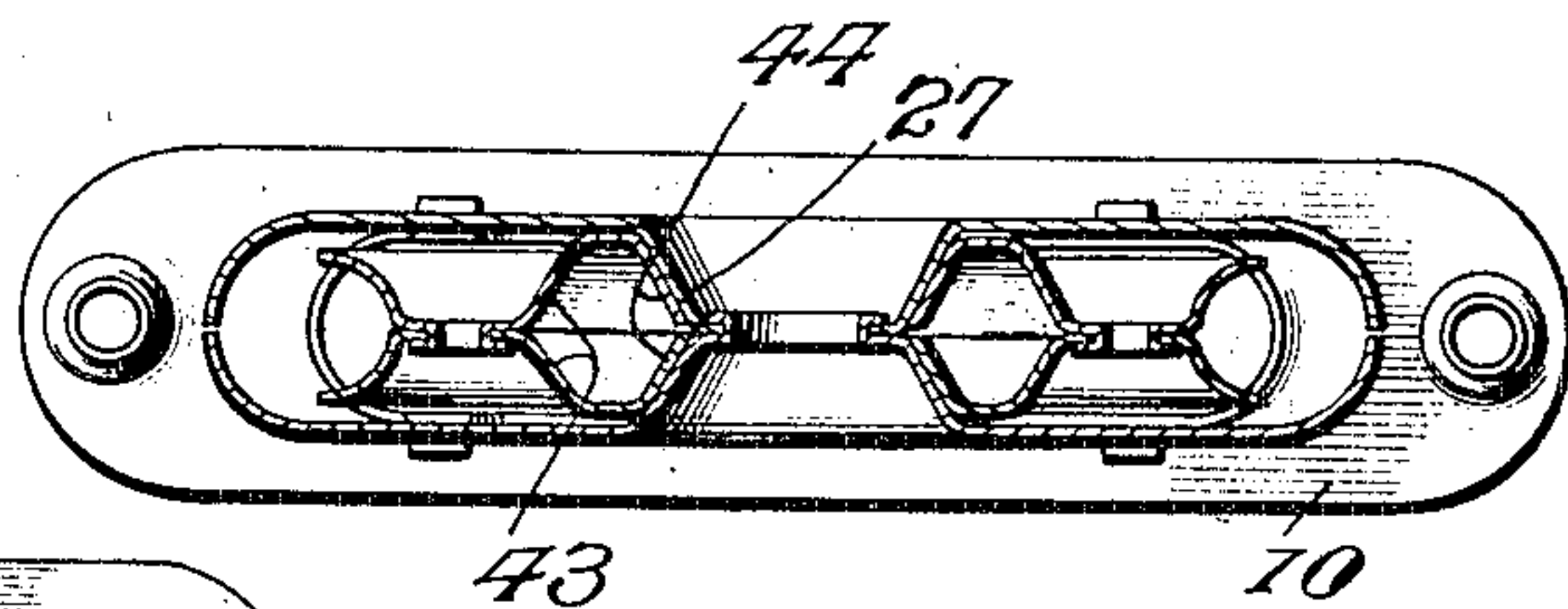
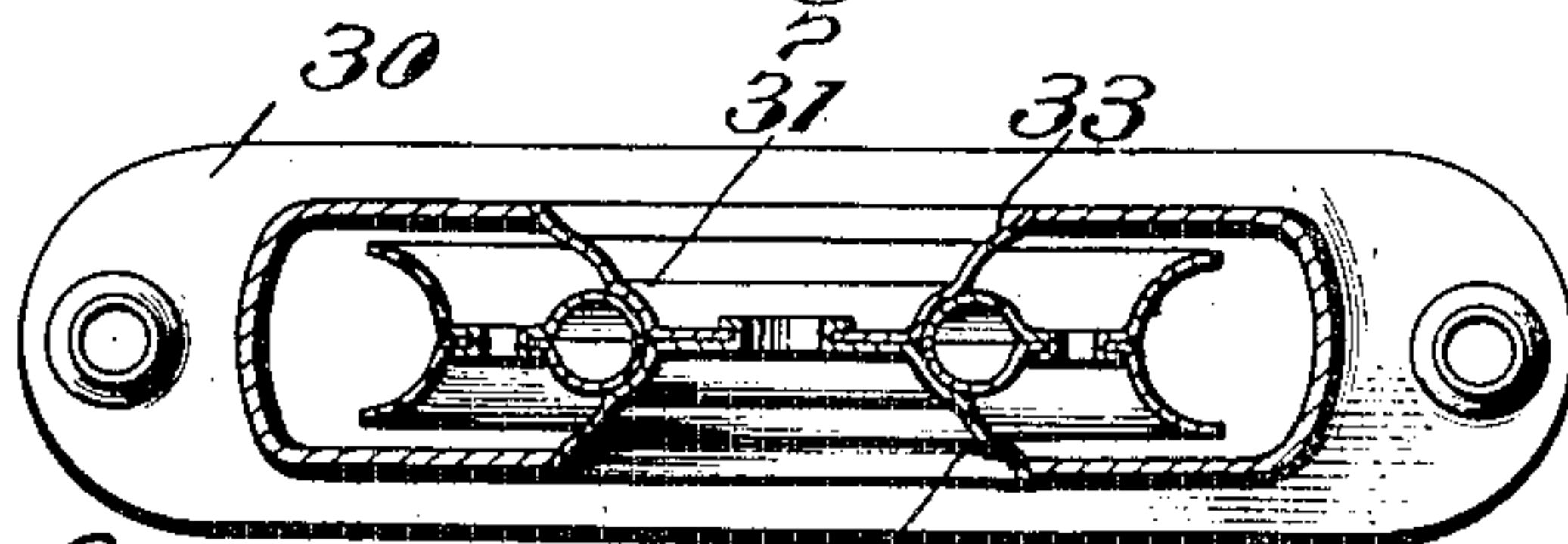


Fig. 5.



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SASH-PULLEY.

No. 837,475.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed February 9, 1906. Serial No. 300,316.

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, which invention is fully set forth in the following specification.

My invention consists of an improved wheel or pulley and the combination therewith of a hollow axle or bearing especially adapted thereto, and more particularly of an improved sash-pulley or the like embodying said wheel or pulley and its bearing.

The improvements constituting the invention are especially designed for sash-pulleys, though obviously they may be applied with advantage to analogous devices, such as trolley-wheels.

The invention and the principal advantages obtained thereby will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective, and Fig. 2 a sectional, view on line 2 2 of Fig. 1 of the preferred embodiment of the invention. Figs. 3, 4, and 5 are sectional views, each showing another embodiment of the invention.

Referring to Figs. 1 to 4, inclusive, 10 is the face-plate, and 11 and 12 are the side plates, these parts together constituting the pulley-casing and support and being formed and connected in the manner described and claimed in my United States Patent No. 694,482, dated March 4, 1902. Plate 10, stamped from sheet metal, has integral therewith flanges 13 and 14 on opposite sides of the central oblong opening 15, through which the pulley projects. On each flange are two ears 16 16, those on flange 14 being bent outwardly through openings 17 in side plate 12, and those on flange 13 similarly engage with side plate 11 through openings in the latter. Each of the side plates is indented or pressed to form about a central opening 20 an inwardly-projecting cone-like or frusto-conical bearing part 21 and 22. These frusto-conical parts meet and are riveted together at the center of the pulley-casing, a flange 23 on part 22 being bent around and tightly pressed against flange 24 on part 21, and constitute a hollow axle upon which the pulley turns. As shown in Figs. 1 and 2, each frusto-conical part is fluted or comprises two surface zones, the transverse curvature of each being on a different center. The inner

zones of the two parts form together a laterally-concave annular bearing-groove 25. As shown in Fig. 3, each frusto-conical part is of a single transverse curvature, and the two form together a laterally-concave annular bearing-groove 26 of approximately the width of the interior space of the casing. As shown in Fig. 4, the frusto-conical parts are in transverse section straight and together form an annular bearing-groove 27 of flattened-V shape and in width approximating that of the interior space of the casing.

Fig. 5 illustrates a pulley-casing 30, cast in one piece. A bearing-groove 31, similar to that of Figs. 1 and 2, is provided by securing frusto-conical parts 32 and 33 in openings in the sides of the casing in the manner described in my Patent No. 724,878, dated April 7, 1903, wherein other ways by which the bearing-groove may be formed are also disclosed.

As shown in all the figures of the drawings, the pulley is formed of two counterpart side members 40 41, stamped from sheet metal and rigidly secured together by hollow rivets 42, integral with member 40, engaging through openings in member 41. At its inner edge each member bends outward, as at 43, Figs. 2, 3, and 4, and then inward, as at 44, forming together a hollow two-part closed or partly-closed hub having an inner peripheral bulging bearing-surface conforming to the shape of and closely fitting the surface of its bearing-groove. The joint or split extending around the bearing-surface constitutes an opening through which lubricant may feed to the contacting surfaces, as hereinafter explained. As shown in Figs. 2, 3, and 5, the inner peripheral bulging bearing-surface of the hub is convex in cross-section, whereas in Fig. 4 it is of approximately V shape.

The inner bulging bearing-surface of the hub contacting directly with the grooved peripheral surface of the hollow axle acts to always center the pulley upon its bearing, preventing canting of the wheel to one side or the other when the pull of the sash-cord or the like has a tendency to produce such canting.

By forming the hollow axle integral with the sheet-metal side plates, as in the preferred embodiment of the invention, Figs. 1-4, I avoid the labor and expense of securing a separate axle in place. Also by mak-

ing the axle and the bearing-surface of the hub of large diameter and of relatively large width I increase the area of the contacting portions of the surfaces and provide a light-
 5 weight and very strong device of compact dimensions capable of sustaining heavy weights and of withstanding without injury or detriment to its operation the application of great pulling power. It has also been found that
 10 lubricant applied to the inner peripheral surface of the hollow axle at or near the central joint or split therein will gradually find its way through said joint to the contacting bearing-surfaces, keeping the latter well lu-
 15 bricated for a relatively lengthy period. Furthermore, lubricant placed within the hollow hub in assembling the parts 43 43 will feed through the opening or split in the hub to the contacting bearing-surfaces. I may
 20 inclose within the hub a material of fibrous nature, such as waste, which may be saturated with the lubricant.

What I claim is—

1. In a sash-pulley or analogous device, a
 25 sheet-metal wheel or pulley, having a hollow hub provided with a bearing-surface bulging toward the axis of rotation.

2. In a sash-pulley or analogous device, a sheet-metal wheel or pulley, having a hollow
 30 hub provided with a bearing-surface bulging and gradually diminishing in width toward the axis of rotation.

3. In a sash-pulley or analogous device, a sheet-metal wheel or pulley, having a hollow
 35 hub bulging toward the axis of rotation and providing a laterally-convex annular bearing-surface.

4. In a sash-pulley or analogous device, a wheel or pulley, formed of two sheet-metal
 40 side members and having a hollow hub provided with a bearing-surface bulging toward the axis of rotation.

5. In a sash-pulley or analogous device, a wheel or pulley formed of two sheet-metal
 45 side members and having integral therewith a hollow hub provided with a bearing-surface bulging toward the axis of rotation.

6. In a sash-pulley or analogous device, a wheel or pulley formed of two side members
 50 and having a hollow hub integral with said side members, said hub having a bearing-surface bulging toward the axis of rotation.

7. In a sash-pulley or analogous device, a wheel or pulley formed of two counterpart
 55 side members and having a hollow hub formed in two parts respectively integral with said side members, said hub having a bearing-surface bulging toward the axis of rotation.

8. In a sash-pulley or analogous device, a
 60 wheel or pulley formed of two counterpart side members and having a hollow hub formed in two parts respectively integral with said side members, said hub having a laterally-convex bearing-surface about its in-
 65 ner periphery.

9. The combination with a casing or support the sides of which are connected by an axle having a peripherally-grooved bearing-surface, of a sheet-metal wheel or pulley hav-
 70 ing a hollow hub provided with a bearing-surface bulging toward the axis of rotation and conforming to and directly contacting with the grooved bearing-surface of the axle.

10. The combination with a casing or support, the sides of which are connected by a
 75 hollow axle having a peripherally-grooved bearing-surface, of a sheet-metal wheel or pulley having a hollow hub provided with a bearing-surface bulging toward the axis of rotation and conforming to and directly con-
 80 tacting with the grooved bearing-surface of the axle.

11. The combination with a casing or support the sides of which are connected by a
 85 hollow sheet-metal axle having a peripherally-grooved bearing-surface, of a sheet-metal wheel or pulley having a hollow hub provided with a bearing-surface bulging toward the axis of rotation and conforming to and di-
 90 rectly contacting with the grooved bearing-surface of the axle.

12. The combination with a casing or support having sheet-metal sides connected by a
 95 hollow sheet-metal axle formed integral with said sides, said axle having a peripherally-grooved bearing-surface, of a sheet-metal wheel or pulley having a hollow hub provided with a bearing-surface bulging toward the axis of rotation and conforming to and di-
 100 rectly contacting with the grooved bearing-surface of the axle.

13. The combination with a casing or support having sheet-metal sides connected by a
 105 hollow sheet-metal axle formed integral with said sides, said axle having a peripherally-grooved bearing-surface, of a sheet-metal wheel or pulley, formed of two side members and having a hollow hub integral with said side members, said hub having a bearing-surface bulging toward the axis of rotation
 110 and conforming to and directly contacting with the grooved bearing-surface of the axle.

14. The combination with a casing or support having sheet-metal sides connected by a
 115 hollow sheet-metal axle formed integral with said sides, said axle having a peripherally-grooved bearing-surface, of a wheel or pulley formed of two counterpart sheet-metal side members, said wheel having a hollow hub formed in two parts respectively integral with
 120 said side members, said hub having a bearing-surface bulging toward the axis of rotation and conforming to and directly contacting with the grooved bearing-surface of the axle.
 125

15. In a sash-pulley or analogous device, a sheet-metal wheel or pulley having a hollow
 130 hub and a lubricant within said hub adapted to feed through an opening in the wall of the hub to the bearing-surface of the hub.
 135

16. In a sash-pulley or analogous device, a
wheel or pulley having a hollow hub, said
wheel and its hub being formed of two coun-
terpart sheet-metal sides, and a lubricant
5 within said hub adapted to feed to the bear-
ing-surface of the hub through the joint or
split between the parts which form the hub.

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

ALLEN JOHNSTON.

Witnesses:

R. W. FUNK,
J. H. McCARTY.