

(No Model.)

H. H. BLAKE.

MANUFACTURE OF PULLEYS, &c.

No. 295,336.

Patented Mar. 18, 1884.

Fig. 1.

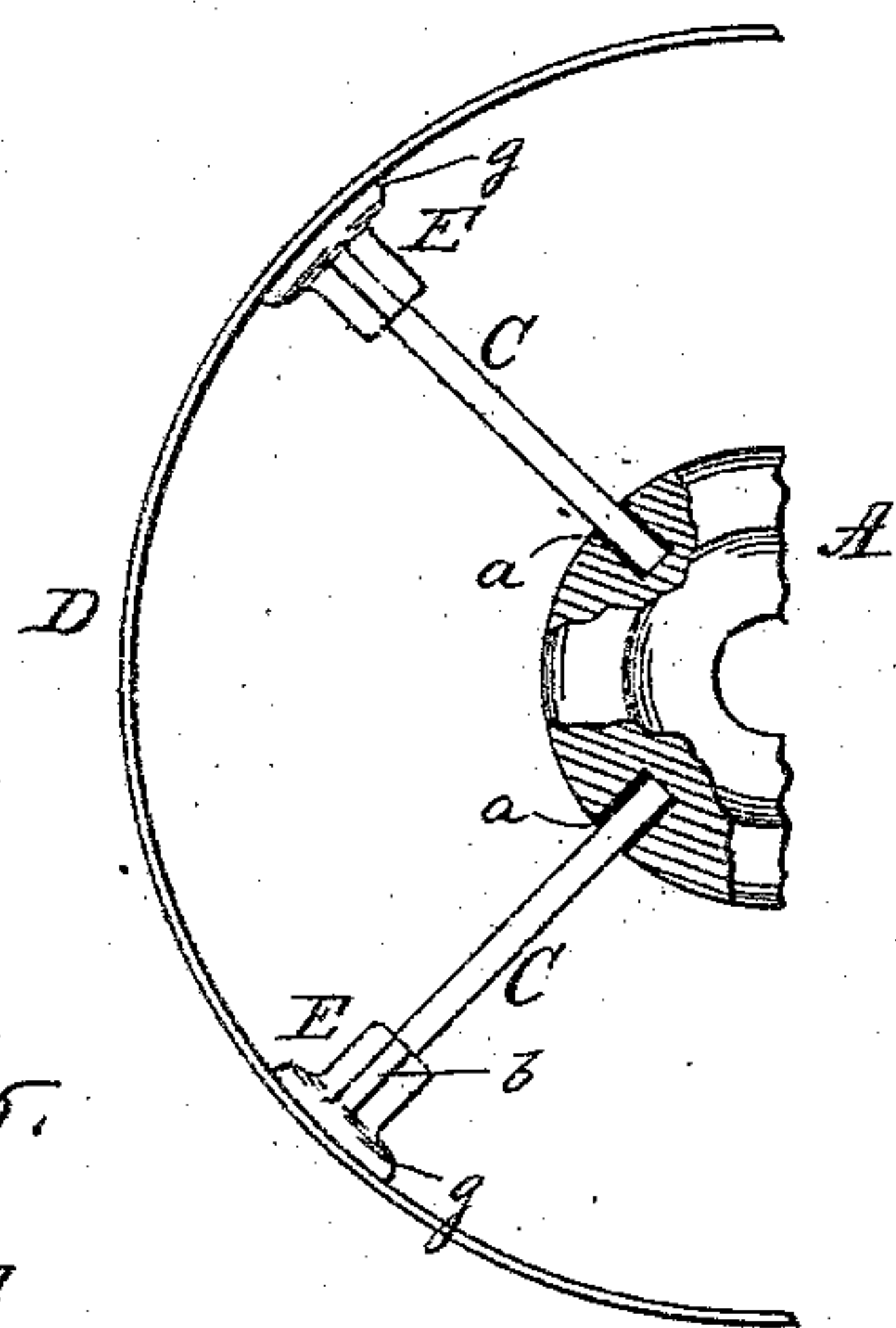


Fig. 2.

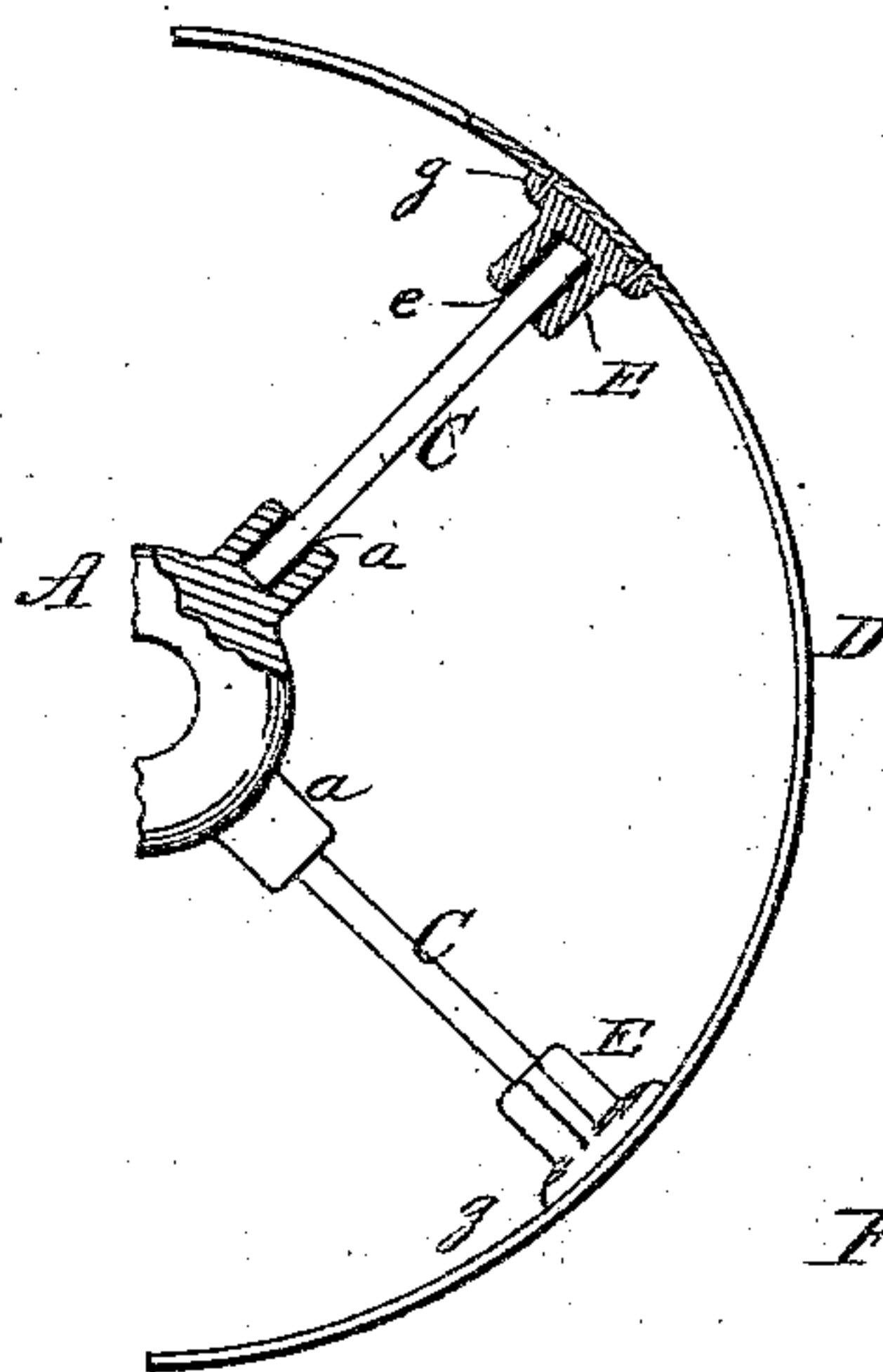


Fig. 5.

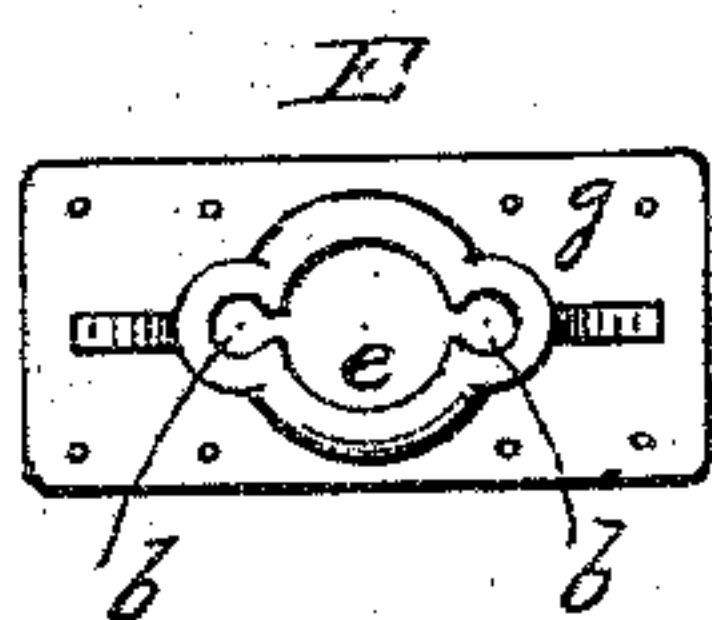


Fig. 3.

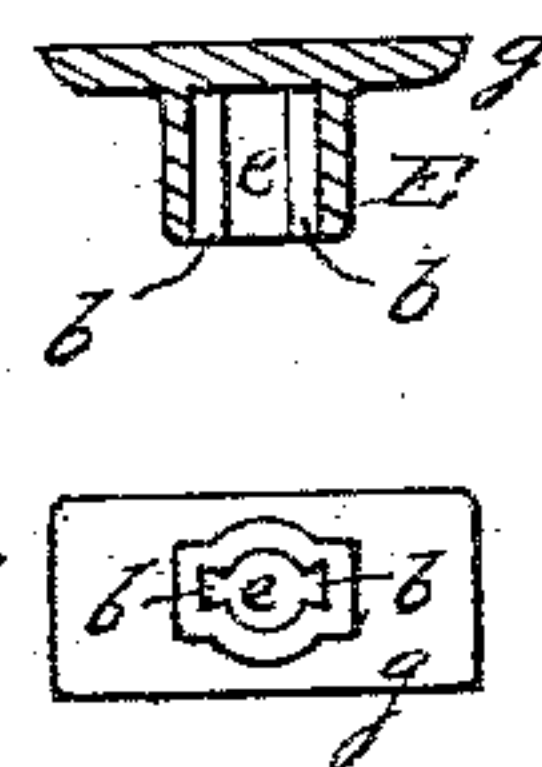
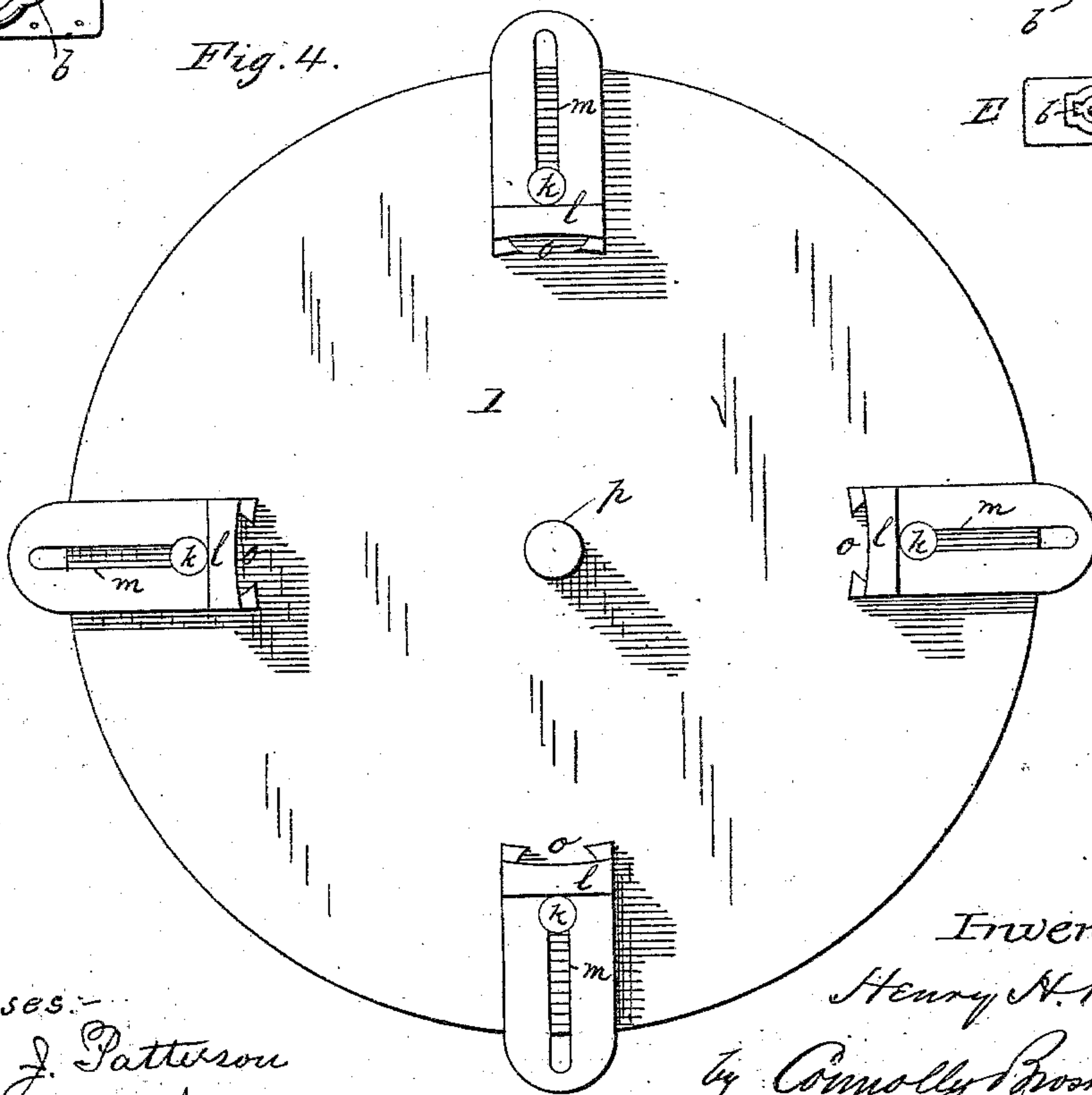


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## MANUFACTURE OF PULLEYS, &c.

SPECIFICATION forming part of Letters Patent No. 295,336, dated March 18, 1884.

Application filed August 11, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY H. BLAKE, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Pulleys, &c.; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 is a sectional view of a wheel or pulley after my invention. Fig. 2 is a similar view with a modified hub. Fig. 3 is a detail (section and plan) of a spoke-lug. Fig. 4 is an elevation of my centering and adjusting device. Fig. 5 is a plan view of a modified form of spoke-lug.

This invention relates to a novel construction of pulleys and analogous articles, and to the manufacture thereof; and it consists in the improvement hereinafter fully described and claimed.

In the drawings, A designates a cast hub, having the spoke-recesses *a* either formed in casting or attached after casting, preferably the former. The recesses *a* may be cored out of a flange around the hub, as in Fig. 1, or out of separate bosses or projections, as in Fig. 2. In all cases the recesses *a* are slightly larger than the spokes to be used. Pockets *b* are formed beside the recesses *a*, parallel and communicating with said recesses, and these pockets are so formed as to have undercut or overhanging walls adjacent to the recesses *a*—that is to say, the walls of pockets converge or narrow toward the recesses. The spokes C are cut to length, and their ends inserted in the recesses *a*, after which a cement capable of hardening is poured around the spokes in recesses *a* and pockets *b*, the alignment of the spokes being meanwhile properly secured. After the cement has set, the spokes will be found to be firmly and rigidly anchored in the hub. The shrinkage of the cement, acting against the undercut walls of the pockets, causes the cement to grip the spoke tightly and retain it securely. Zinc, lead, tin, Babbitt metal, sulphur, and similar cements may be used; but I prefer Babbitt metal.

The spokes may be cast or wrought. In

the former case they may be formed with integral lugs for attachment to the wrought rim D; but I prefer to make them of wrought-iron and attach them to flanged lugs E, in a manner similar to that described for seating the spokes in the hub. In that event the lugs E have spoke-recesses *e*, pockets *b*, and flanges *g*, for attachment to the rim, as shown in detail by Figs. 3 and 5.

To assemble the parts for cementing, I proceed as follows: I construct a plate, I, having its face true, and provided with the clamping-bolts *k*. On this plate I fix the L-shaped guide-lugs *l*, having slots *m*, whereby their radial position is adjusted and secured by nuts on the bolts *k*. Lugs *l* have their inner faces formed with pockets or seats *o*, as shown. The center of plate I is bored and accurately fitted with a post or mandrel, *p*, upon which the previously-bored hub is centered, and secured by the usual set-screws. Then the lugs *l* are set so as to have their inner faces at the same distance from the axis of plate I. Meanwhile the spokes C are inserted in the recesses *a* and *e*, and their lugs E placed or clamped in the pockets *o*. In this arrangement none of the parts can become displaced. The recesses *a* and *e* are successively brought to an upright position by turning the plate I, and the cement poured in till the recesses and the shrinkage-pockets are filled. As soon as the cement has set, the hub and now attached spokes and rim-lugs may be removed, and the rim D secured by rivets through lug-flanges *g*, as shown. For this purpose the rivets may be set in the flanges *g* in the process of casting lugs E. The plate-lugs *l* and clamp-pockets *o* insure the peripheral truth of the outer circumference of the spokes, so that the setting of the rim completes the pulley.

The only lathe-work is the boring of the hub and set-screw fitting, as the spoke-recesses and shrinkage-pockets are simply cored out in casting, and the rivets may be anchored at the same time, and therefore the construction is exceedingly simple and cheap.

I claim as my invention—

1. In the manufacture of pulleys, wheels, and analogous articles, the method of securing independent arms or spokes to the hub, consisting in forming recesses in the hub larger than the spokes, and pockets beside said re-



cesses, having overhanging walls and communicating therewith, then inserting the arms or spokes into said recesses, and pouring into said pockets and recesses a cement which  
5 shrinks in setting, substantially as described.

2. In a pulley, the cast hub A, having recesses *a* larger than the spokes, in combination with spokes C and cement filling the space between the spokes and recess-walls, sub-  
10 stantially as set forth.

3. In a pulley, the cast hub A, having recesses *a* larger than the spokes, and pockets *b*, communicating therewith and having overhanging walls, in combination with the spokes  
15 C and cement filling in the space between the spokes and recess-walls and in the pockets, substantially as shown.

4. In the manufacture of pulleys, the plate

I, having mandrel *p*, and adjustable centering-lugs *l*, having pockets or clamps *o*, adapted to  
20 receive and rigidly hold the independent hub and spokes of a pulley, substantially as described.

5. In a pulley, the combination of hub A, having recesses *a* and pockets *b*, spokes C, 25  
lugs E, having recesses *e* and pockets *d*, and cement filling for said recesses and pockets, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in  
30 presence of two witnesses.

HENRY H. BLAKE.

Witnesses:

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THOMAS J. PATTERSON.