

(No Model.)

W. BILBY, Jr.
PULLEY BLOCK.

No. 244,976.

Patented Aug. 2, 1881.

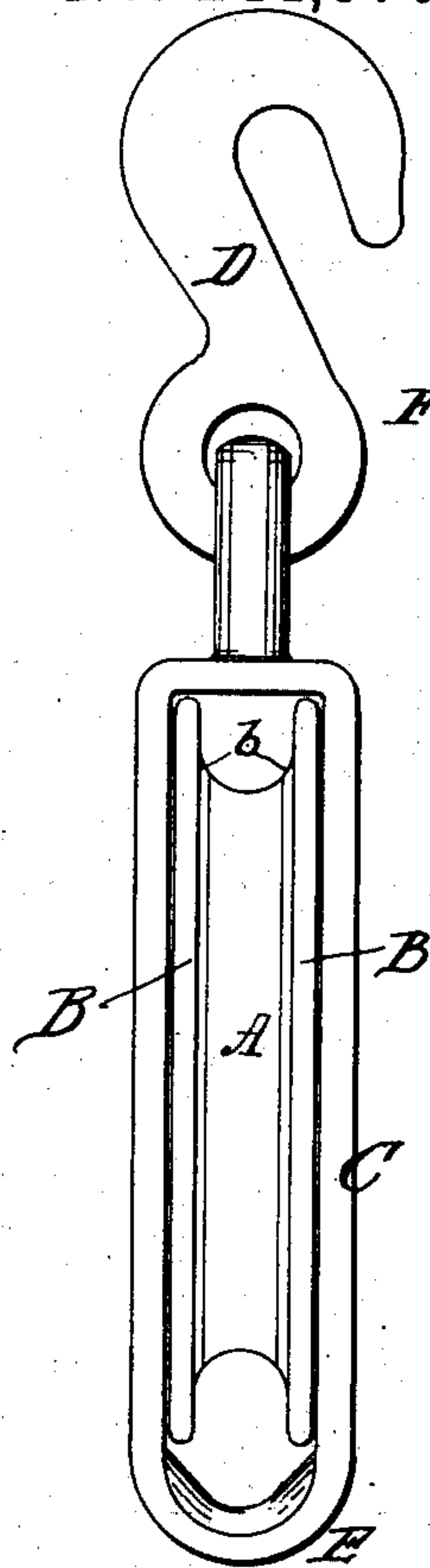


Fig. 2.

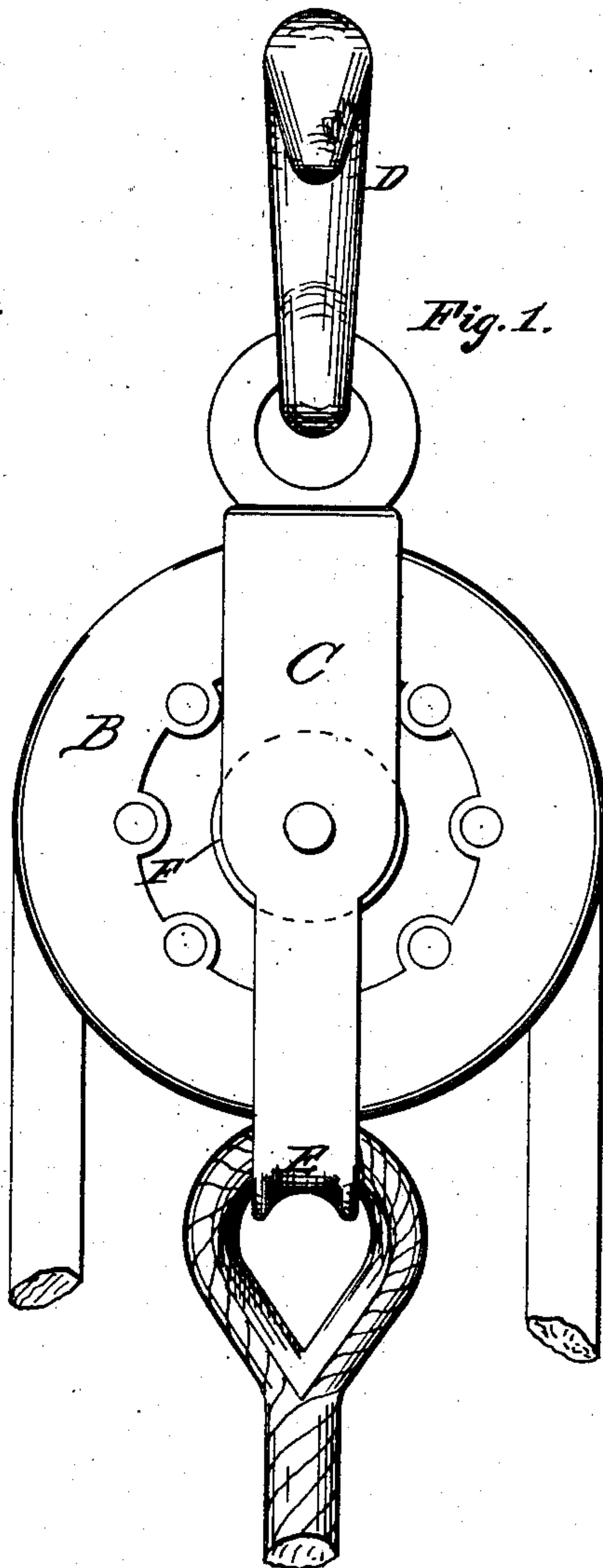


Fig. 1.

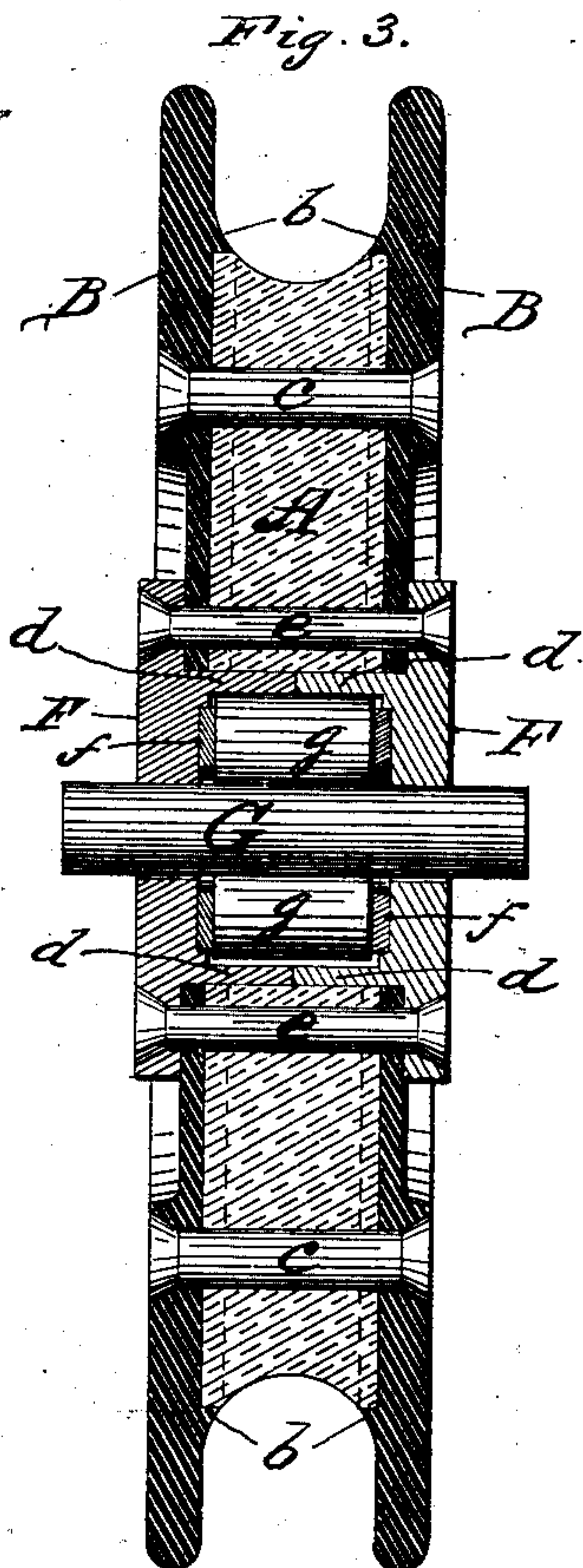


Fig. 3.

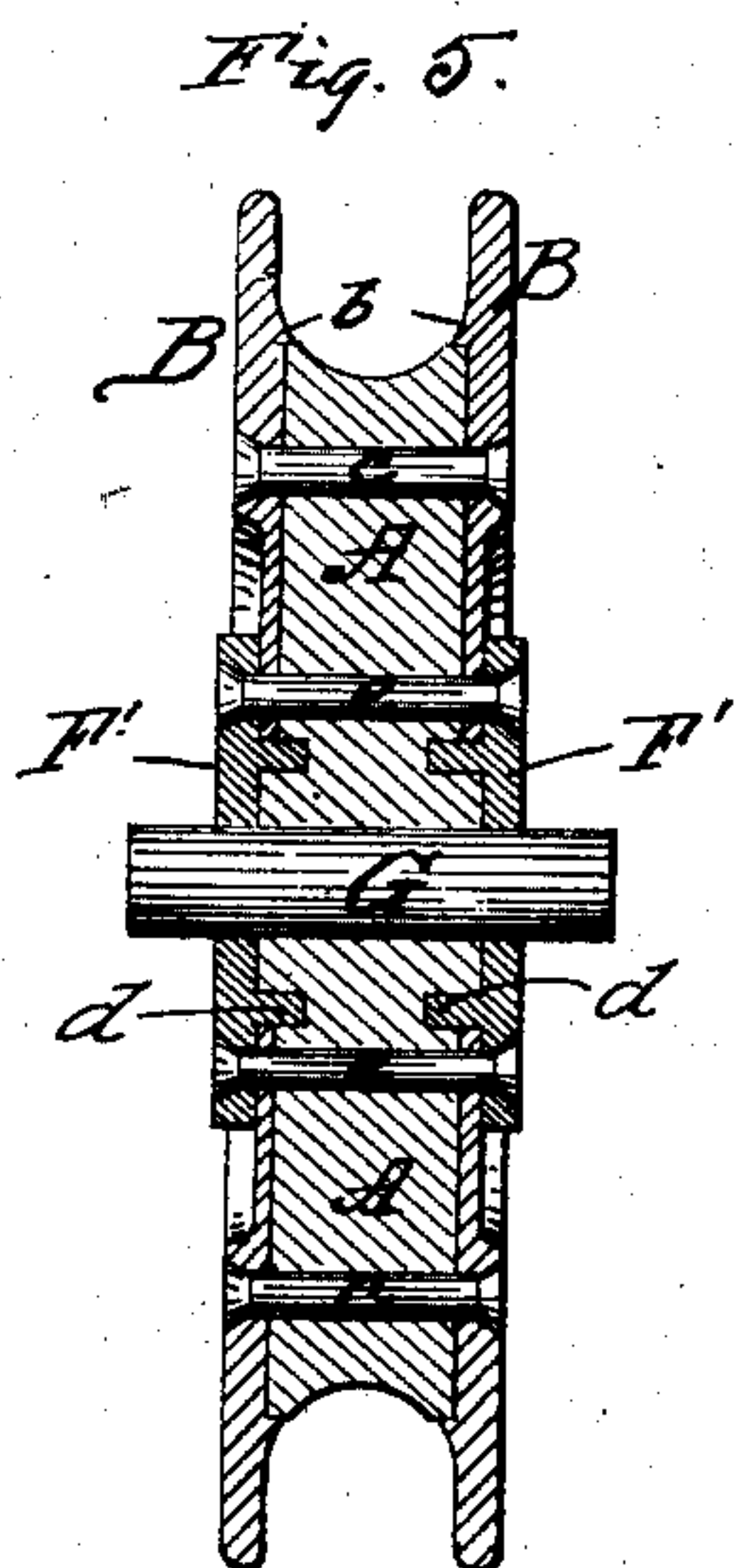


Fig. 5.

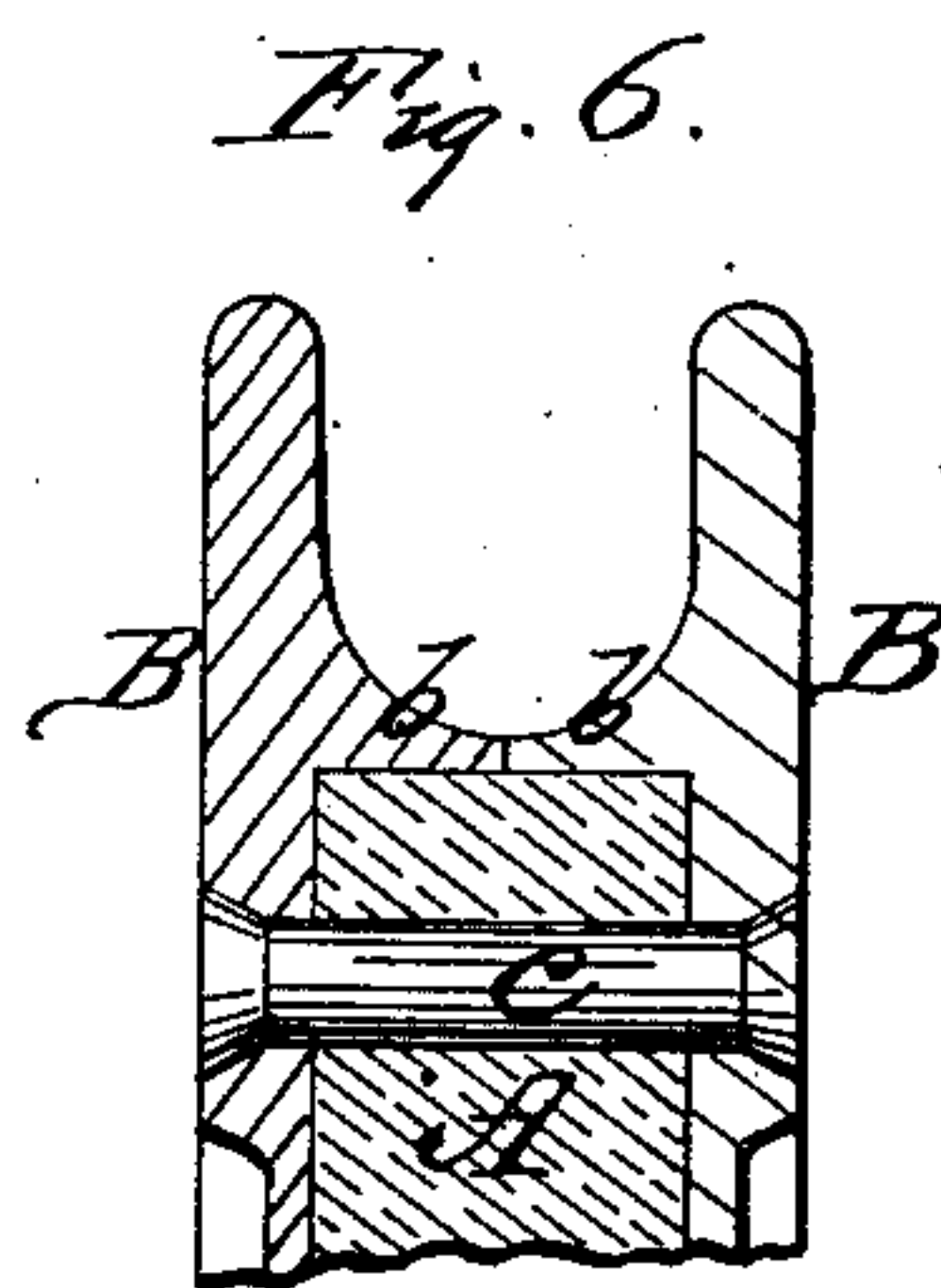
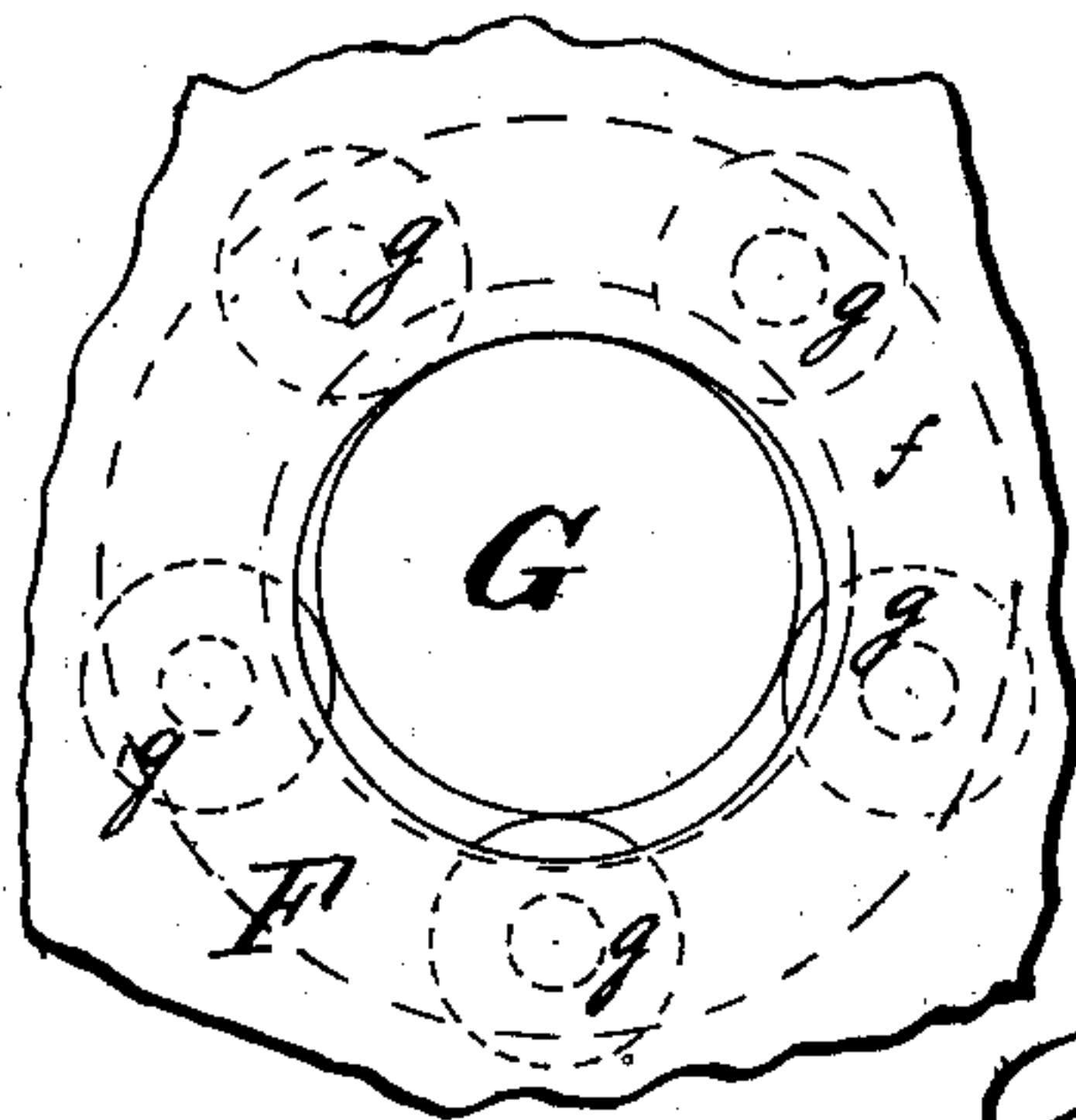


Fig. 6.

Fig. 4.



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WILLIAM BILBY, JR., OF PITTSBURG, PENNSYLVANIA.

PULLEY-BLOCK.

SPECIFICATION forming part of Letters Patent No. 244,976, dated August 2, 1881.

Application filed March 5, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BILBY, Jr., of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Combined Pulley Block and Sheave; 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.

This invention relates to the construction of a combined pulley block and sheave, and it consists in a plain wood sheave having metal cheeks provided with inclosing flanges which project in over the sheave, and whose edges form guiding-cheeks for the rope, said wood sheave and metal cheeks being permanently riveted together and revolving together.

It also consists in the construction and combination of parts, substantially as hereinafter fully described and claimed.

Figure 1 is a side view of a pulley-block complete after my invention. Fig. 2 is an edge view of the same. Fig. 3 is a transverse vertical section, enlarged, showing the combined sheave and block. Fig. 4 is a detail showing the relations of the anti-friction bearing and the pin. Figs. 5 and 6 are modifications in the construction of the wood center.

The object of my invention is to provide a pulley-block of cheap construction, light, and of as much wood and little metal as possible consistent with a due regard for strength and durability, to make it easy running, and to provide against too rapid wear of the rope if of hemp or other fiber, or of the sheave-center if wire-rope be used, and to bring all within a small and convenient compass.

A designates a circular block or sheave of wood (preferably lignum-vitæ) having its face grooved, as shown at Figs. 2 and 3. Metallic cheeks B, having the inwardly-projecting flanges b, are closely fitted on the two sides of the sheave A, and the groove thus formed is circular at its bottom and has the sides rising high enough to completely receive the rope and prevent all possibility of its slipping off the sheave-center, the metal cheeks B thus becoming a substitute for the usual wood block.

Cheeks B are fastened by the rivets c, which pass through the wood center and are headed in the countersunk holes of cheeks B. The combined block and sheave, thus constructed, may be set up in the strap C, and, when provided with the hook D and eye E, is ready for use; but I prefer the anti-friction center, which I construct in the following manner:

Two flanges, F, or bushings, each having the annular rib or projection d, are riveted around the center, through the wood, by means of the rivets e, arranged and fixed like rivets c, the rivets e passing also through the thin web of cheeks B, as shown. The cylindrical cavity still existing after the ribs d meet in the center of the sheave A, is previously filled with the anti-friction bearing, consisting of the annular heads f and the five rollers g. Normally the rollers g form between them an aperture which just neatly receives the pin or spindle G, and the outer openings in the bushings F are slightly larger than the spindle, so that with all ordinary strains the weight is thrown upon the rollers g. The peculiarity of this arrangement is that while the rollers do most of the work in friction, when they rise to the position shown in Fig. 4 the strain on the sheave exerted by the rope and weight tends to force the spindle G up and act like a wedge, and in the ordinary construction the rollers g are thus forced asunder and the bearing damaged, if not destroyed; but by my construction the instant the spindle attempts to act as a wedge between the two upper rollers, g, it meets the solid bearing afforded by the bushing F, which then relieves the rollers of any destructive strain. Another result is that while in ordinary roller-bushings the bearing of the sheave, being on the rollers solely, is short, and the sheave wobbles or oscillates with a tendency to foul the rope, in mine, on the contrary, every time the rollers arrive at the position shown in Fig. 4, (which is five times in every revolution of the roller-cage,) the sheave rests firmly by the solid bushing F on the spindle G, and the sheave will be more steady and keep the rope true.

In Fig. 5 I construct the cheeks B as before, but continue the wood center A to the spindle, and have a plain bushing, F', as shown. For some purposes this answers very well, as the lignum-vitæ absorbs the oil and yields it when

the spindle gets dry, thus holding down the friction and making the running easy.

In Fig. 6 I have shown my invention as applied in part to wire-rope sheaves. I have here 5 the metal cheeks B and the wood center A; but I continue the flanges *b* inwardly till they meet, their sheave faces being concave to fit the rope. The remaining construction is as before. In this way I get all the advantages 10 of lightness and superior strength.

The invention becomes of great advantage in the case of large pulley-blocks, or multiple blocks having several sheaves, on account of the lightness of construction. In all cases I 15 get just as great strength and durability as a pulley-block can possess.

I do not lay claim to the broad idea of a sheave having a bushing containing a number of anti-friction rollers interposed between it 20 and the pin or shaft, as such is old and well known.

I claim as my invention—

1. The sheave for pulley-blocks consisting of the wood center A, in combination with the metal cheeks or sides B, having flanges *b*, and 25 projecting beyond the periphery of the sheave A, and rivets *c*, passing through both cheeks B and center A, substantially as described.

2. The combination of the flanged bushings F F, roller-bearing *f g*, and spindle G, said 30 bushings F having their external openings nearly in contact with spindle G, substantially as described, whereby tendency to excessive pressure throws bushings F into contact with the spindle and relieves the rollers. 35

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

WILLIAM BILBY, JR.

Witnesses:

T. J. McTIGHE,

F. A. POLLOCK.