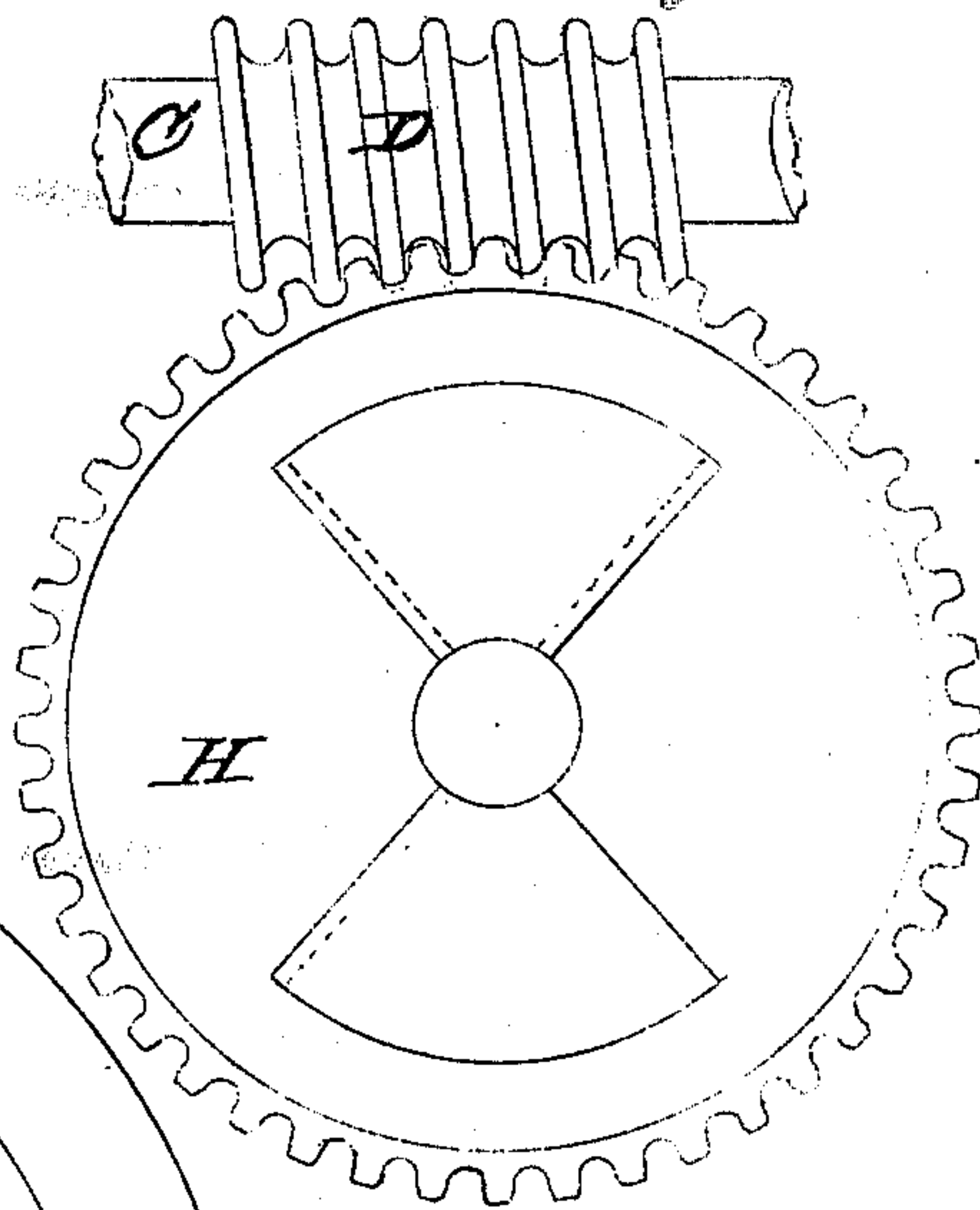
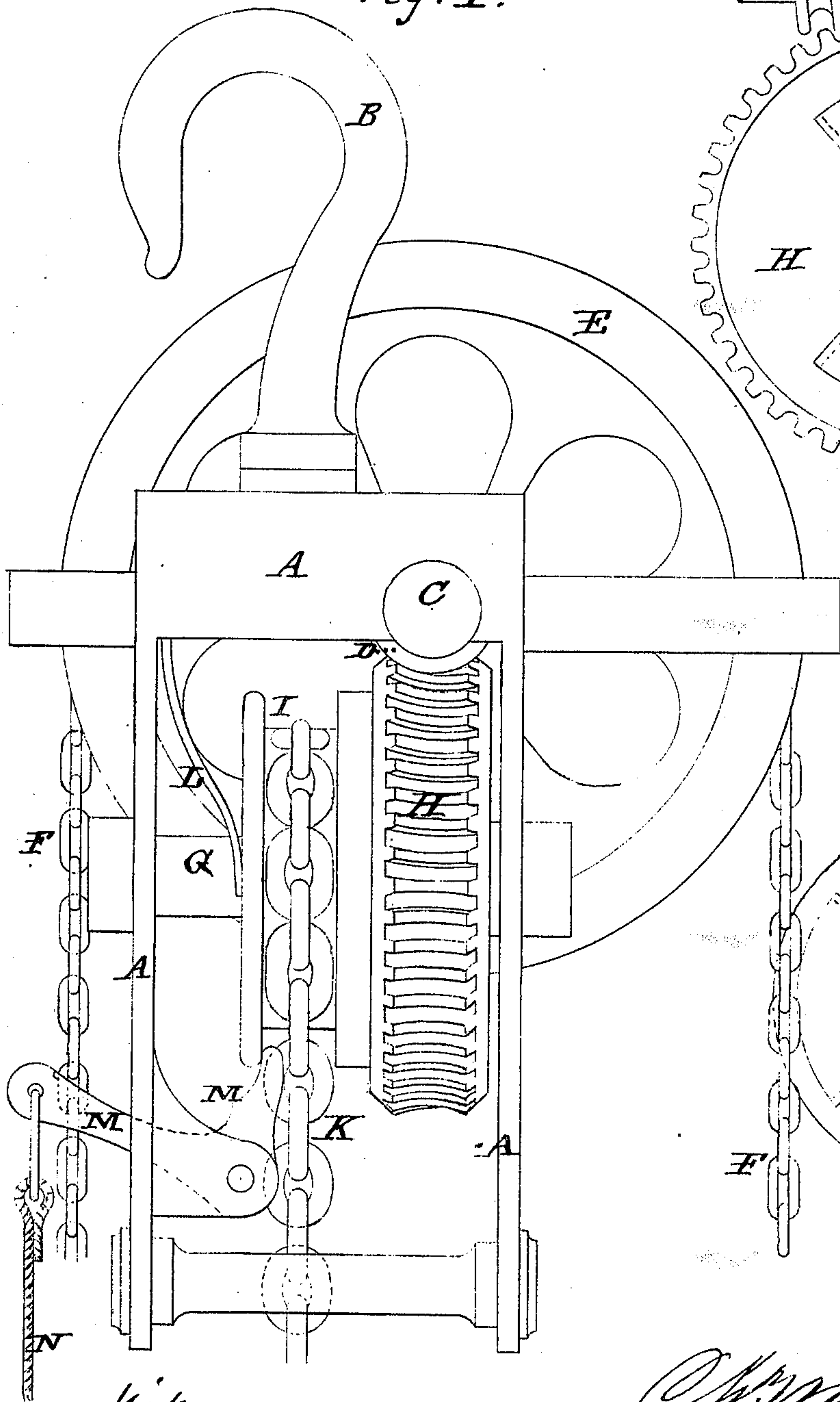


*Robt Marsden. Imp<sup>t</sup>s in Pulley Blocks. Fig: 2.*

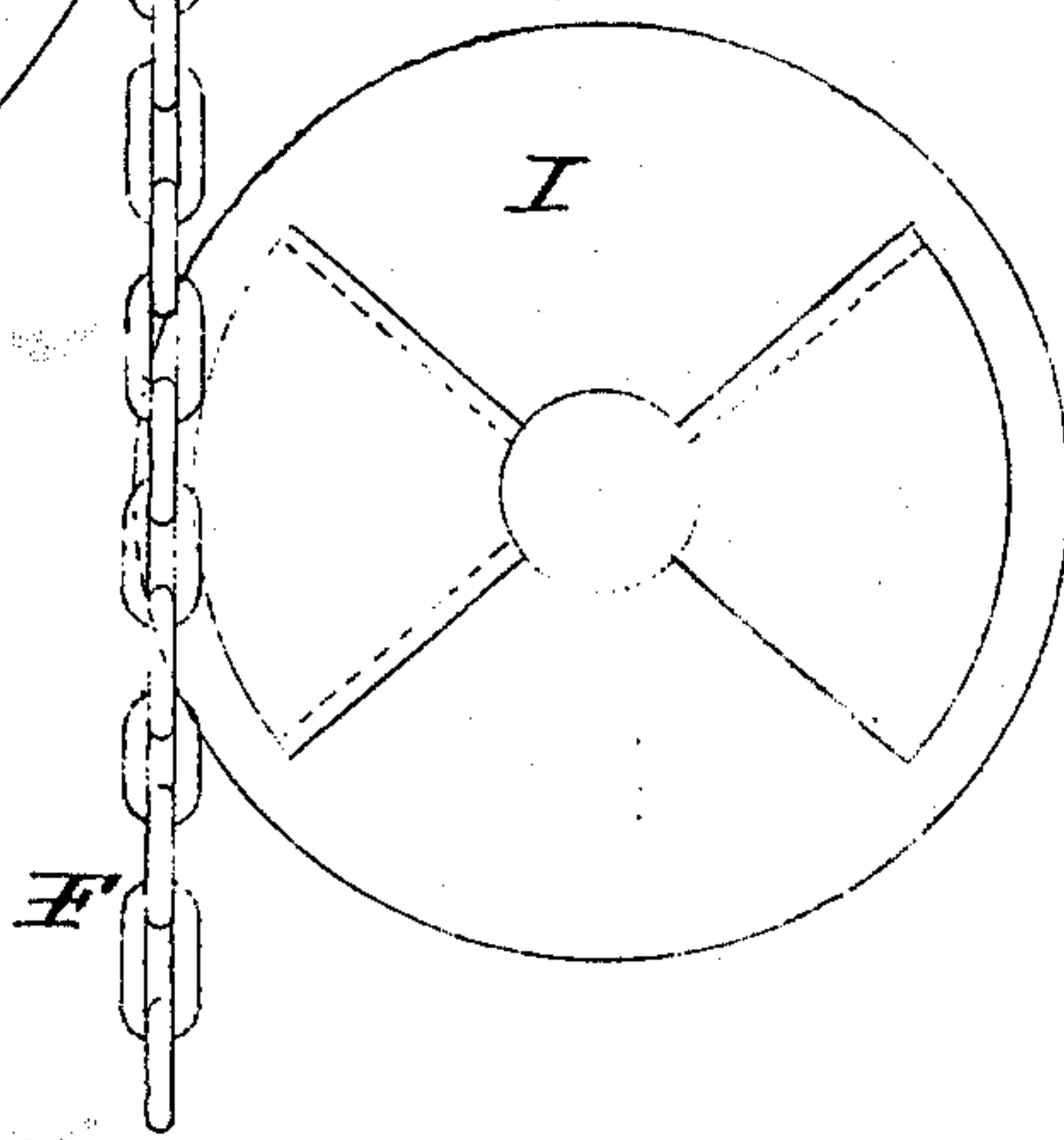
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*Fig: 1.*



*Fig: 3.*



*Witnesses  
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# UNITED STATES PATENT OFFICE.

ROBERT MARSDEN, OF SHEFFIELD, ENGLAND.

## IMPROVEMENT IN PULLEY-BLOCKS.

Specification forming part of Letters Patent No. 116,613, dated July 4, 1871.

*To all whom it may concern:*

Be it known that I, ROBERT MARSDEN, of Sheffield, in the county of York, England, have invented certain new and useful Improvements in Pulley-Blocks for Raising Heavy Weights; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification.

I make use of the well-known principle of the endless screw or worm and worm-wheel, and, by a novel arrangement of parts, I make them applicable to the purposes for which pulley-blocks are ordinarily used—that is, for the purpose of moving or raising heavy weights; then I make, by casting in malleable or cast-iron or other metal, a worm-wheel of the size I require, and then, by cutting or casting, make a worm or endless screw to correspond with and work into such wheel. I then make, either in cast or malleable iron, or by forging, a frame, which shall contain the hook from which the whole is to be suspended and likewise the above worm and wheel, the worm being carried in suitable bearings either in the top or bottom of the frame, and the axis of the worm-wheel in bearings in the side cheeks thereof. I then make a small cast-iron pulley to carry the lifting-chain, which is made to run freely on its axle, which is also the axle of the worm-wheel, and which gears into the above worm-wheel by means of clutches cast onto the faces of the said wheel and pulley respectively. The clutches are forced together by means of a spring fixed to one of the side cheeks of the frame. On the sides of the frame mentioned above I place a small bent lever, which, acting on the chain-pulley, compresses the spring and draws the pulley out of gear, by which the chain runs freely, and can be at once adjusted to its work. I then attach either a chain or sprocket-wheel or rope-wheel, over which a hand-chain or rope is worked, to the end of the spindle, upon which the worm is placed, and the whole of the parts are then complete.

In order that my said invention may be more

fully understood and readily carried into effect, I will proceed to describe the drawing hereto annexed.

Figure 1 is a side view of a pulley-block constructed according to my invention.

A A is the frame, and B the hook by which it is suspended. C, an axis carried by the frame, and having upon it the worm D and the hand-chain wheel E. F is a hand-chain passing over the wheel E, and by it the axis C is rotated to raise and lower the weight. G is an axis carried by the cheeks of the frame, and having fixed upon it the worm-wheel H, which gears with the worm D. I is a chain-wheel to receive the lifting-chain K; it is mounted loosely on the axis G, and is pressed toward the worm-wheel H by the spring L. The wheels H and I have clutching projections upon them, so that when the wheel H revolves it carries the wheel I with it. These projections are clearly shown in Figs. 2 and 3, which are side views of the wheels H and I respectively. The projections are somewhat inclined, so that the strain on the lifting-chain has a tendency to hold the parts of the clutch together. M is a lever with a cord, N, attached to it. By pulling this cord the wheel I is drawn out of gear with the wheel H, and then the wheel I is able to turn freely to allow the lifting-chain to be adjusted to its work without loss of time.

Having thus fully described the nature of my invention and the manner in which it is to be carried into effect, I wish it to be understood that I claim as my invention—

1. The frame, as shown in the drawing and described in the above specification, in which the hook for suspending the same and the other working parts are contained.

2. The combining together the worm-wheel and the chain-pulley by means of clutches, by which they can be geared or ungeared into each other as occasion may require.

ROBT. MARSDEN.

Witnesses:

F. F. HIBBERT,  
C. L. HARVEY.