

(No Model.)

R. J. BLUME.

MEANS FOR PRODUCING INSTANTANEOUS FRICTION.

No. 541,712.

Patented June 25, 1895.

Fig. 1.

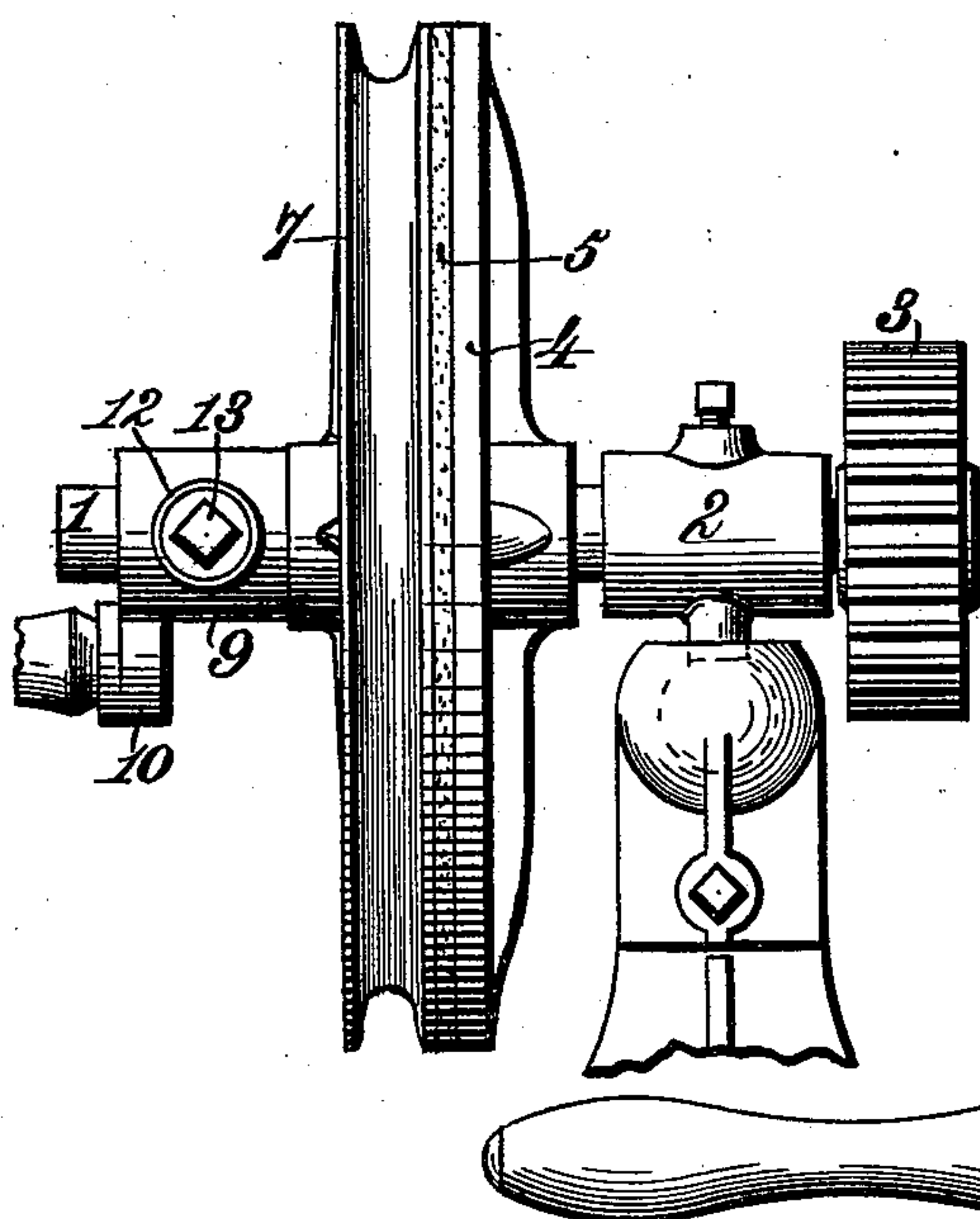


Fig. 2.

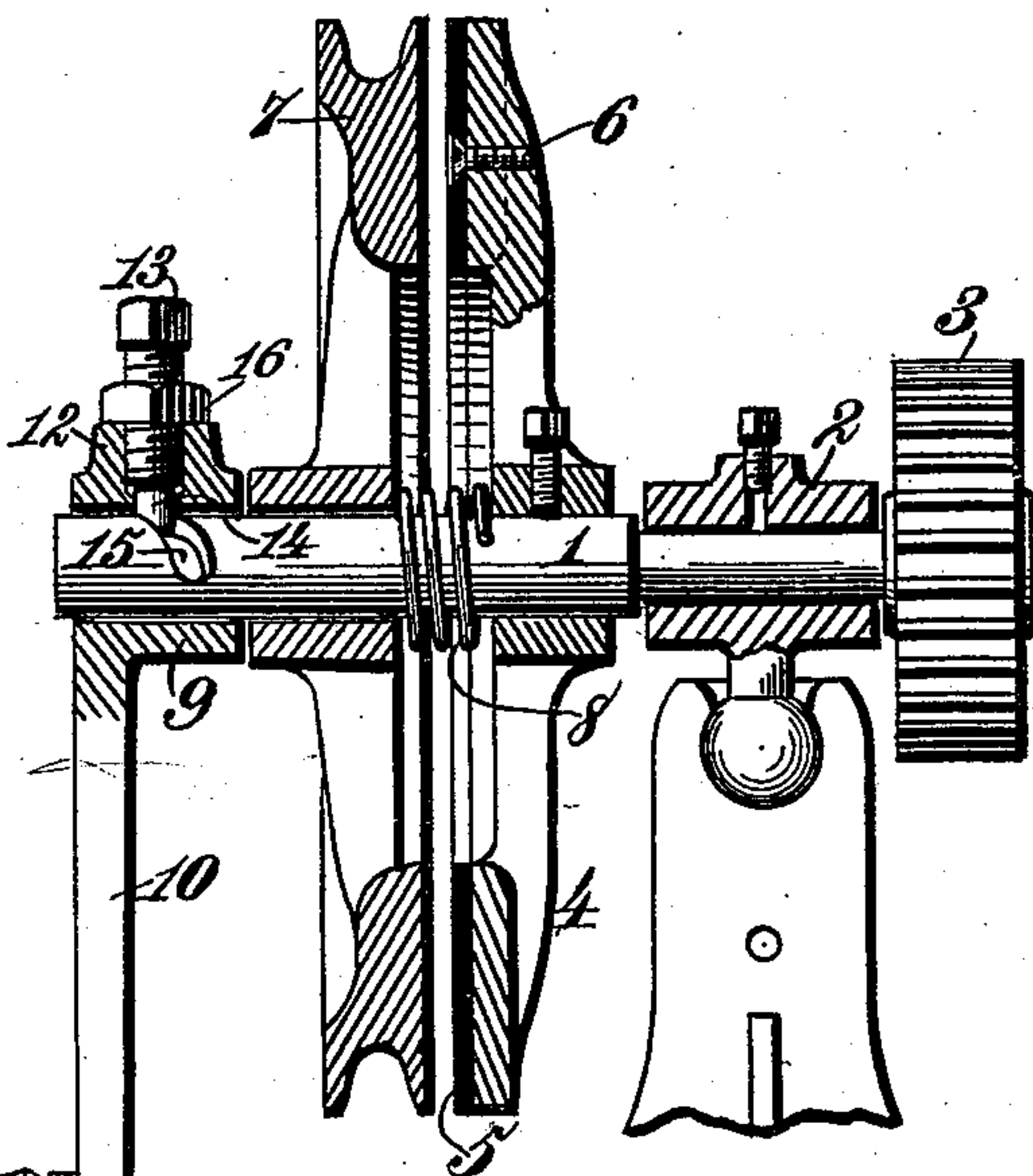


Fig. 3.

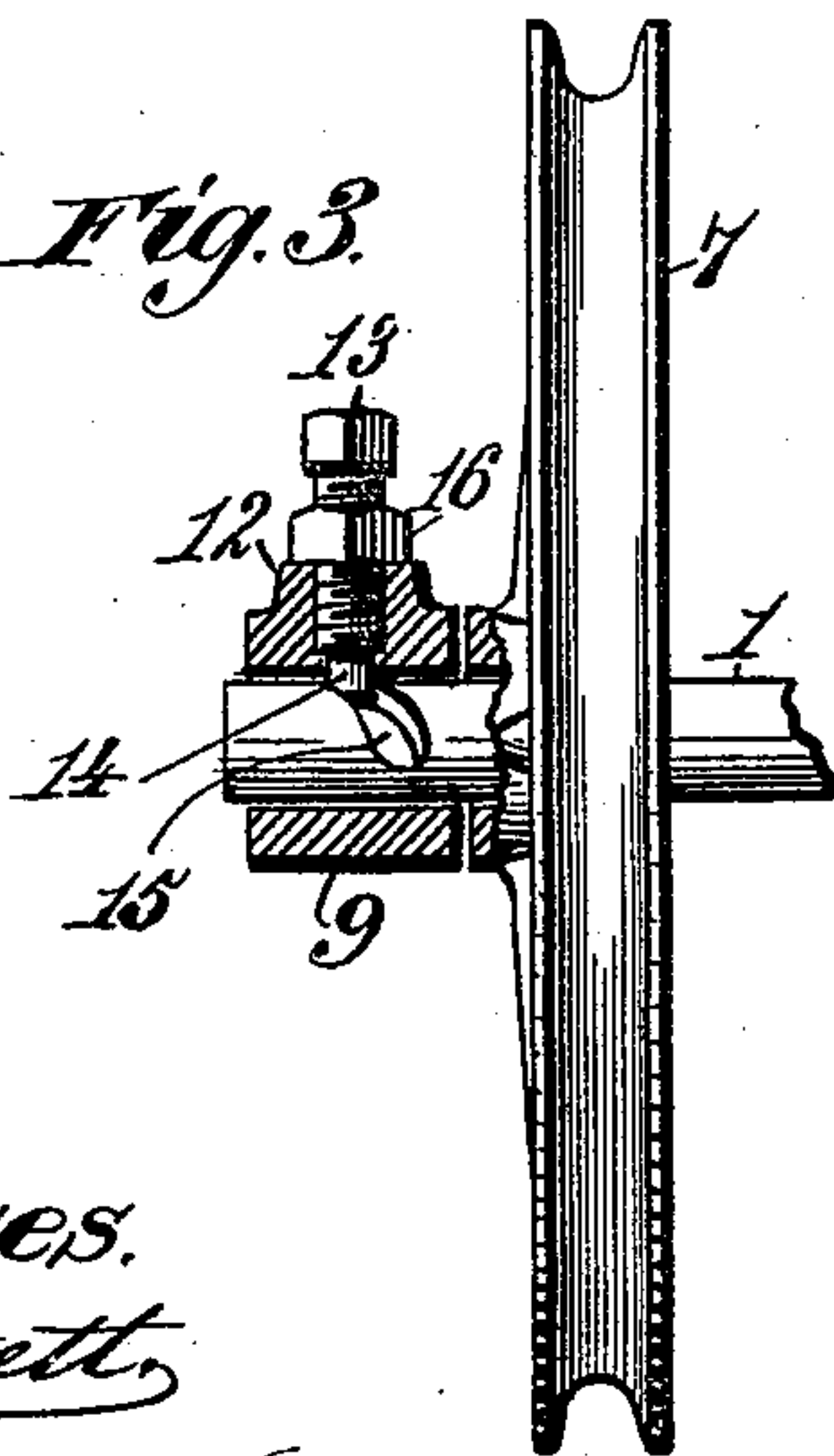
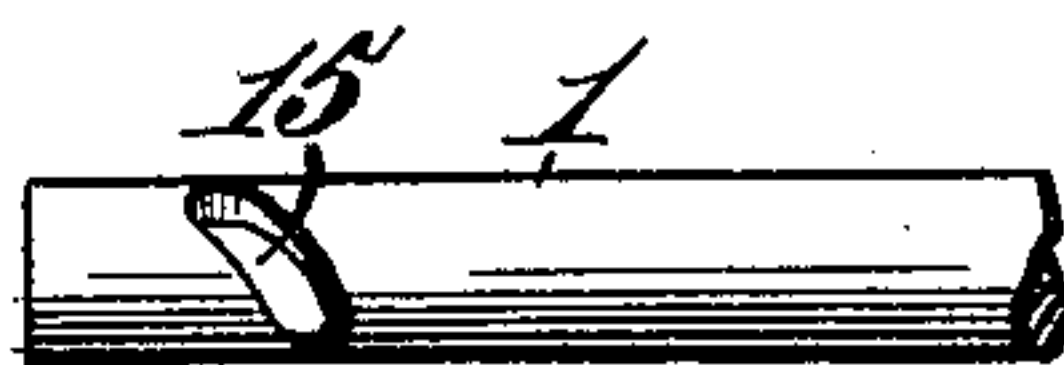


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

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MEANS FOR PRODUCING INSTANTANEOUS FRICTION.

SPECIFICATION forming part of Letters Patent No. 541,712, dated June 25, 1895.

Application filed June 8, 1894. Serial No. 513,949. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. BLUME, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Mechanism for Producing Instantaneous Friction, of which the following is a specification.

My invention relates to mechanism for producing instantaneous friction, my purpose being to provide simple and inexpensive means, especially adapted for mechanism which is operated by hand-power, whereby the movement of a crank in one direction shall effect an instantaneous operative engagement between a loose and a fixed pulley upon the crank-shaft, and cause both to revolve in unison, said engagement being terminated with equal celerity by simply arresting, or checking, the rotary movement of the crank, without diminishing the momentive revolution acquired during the continuance of the operative engagement.

My invention also comprises the provision of simple means for reducing the wear of the operative devices to the minimum and for preserving the maximum freedom and ease of action, and said invention consists, to these ends, in the novel features of construction and new combinations of parts hereinafter fully described and then particularly pointed out and defined in the claim which makes part of this specification.

To enable others to fully understand and make, construct and use my said invention, I will proceed to describe the same in detail, reference being had, for this purpose, to the accompanying drawings, in which—

Figure 1 is a side elevation showing part of an operative mechanism containing my invention. Fig. 2 is a vertical section taken in the axial line of the shaft in Fig. 1. Fig. 3 is a detail view showing a slight modification in construction whereby the invention is adapted to mechanism driven by power. Fig. 4 is a detail view showing the channeled portion of the shaft.

The reference-numeral 1, in said drawings, indicates a shaft, or countershaft, of any ordinary kind, by which movement is communicated to machinery. For the purposes of

the present invention the shaft is illustrated as having support in a single bearing 2, and provided with an ordinary spur-gear 3. As all these details of construction are subject to a wide modification in practice, due to differences in organization and purpose between different classes of mechanism, it is unnecessary to show, or describe, more than is required for a complete understanding of the present invention.

Upon the shaft 1 is mounted in any suitable manner, a fixed pulley 4, the periphery of which is, preferably, of comparatively narrow width, in order to diminish weight. One face of this pulley lying at right angles to the shaft, or nearly so, is dressed off to a plane surface, which may be, and preferably is, annular, and of suitable width, and upon this surface is attached a flat cushion 5, which may consist of leather, rawhide, leatherboard, or any other material adapted to the purpose. The cushion is of a size and shape corresponding, substantially, with the surface against which it rests and it is secured by screws 6, and may also be glued, or cemented, to the face of the pulley, though any other method of attachment may be adopted, if preferred. Upon the shaft 1 is also mounted a loose pulley 7, having a diameter equal to, or greater than, that of the fixed pulley 4. The face of the loose pulley which is adjacent to the fixed pulley is dressed off to a plane surface which is substantially similar in form and area to the annular, cushioned face of said fixed pulley. Between the latter and the loose pulley 7 is a spiral, or other suitable form of spring 8, coiled loosely upon the shaft, its tension being exerted upon both pulleys and normally tending to drive the loose pulley away from and hold it out of contact with the fixed pulley. Upon the shaft is also placed a short sleeve, or cylinder 9, which lies closely adjacent to the hub of the loose-pulley 7, being in one piece with a crank-arm 10; this construction being adopted when the shaft is driven by power, and substantially that used when it is operated by hand. The cylinder is provided with a boss 12, through which is tapped a set-bolt 13, its end passing through the inner surface of the cylinder and being provided with a friction-roll 14. This friction-roll lies in a

channel 15, formed spirally in the shaft 1, at such a point and having such length that when the friction-roll lies at one end of said channel, the cylinder 9, which is movable on the shaft will permit the spring 8 to separate the loose from the fixed pulley. By turning the cylinder, on the other hand, so as to cause the friction-roll to traverse the channel toward its other end, the loose pulley will be driven against the cushion 5, on the fixed pulley, with such force as to instantly lock the two pulleys together by frictional contact. The channel 15 has its pitch in such direction that the rotary movement of the cylinder or sleeve 9 in the direction of the normal revolution of the shaft 1 will produce the operative engagement described. By operation of the crank 10, therefore, or when revolution is given to the loose pulley from any suitable source of power, the operative engagement of the two pulleys will take place instantaneously and will be maintained by the continuance of such revolution. The cessation of the latter produces a disengagement with equal celerity, the acquired momentum being usually sufficient to carry the fixed pulley and shaft forward far enough to cause the channel 15 to move upon the arrested friction-roll on the end of the set-bolt 13 far enough to permit, or effect, the disengagement of the two pulleys. A small fraction of a revolution will be sufficient for this purpose. Ordinarily, however, the disengagement will be effected by the spring 8. As the friction-roll upon the end of the set-bolt 13 prevents all tendency on the part of the bolt to bind, or stick, in the channel 15, when the pulleys are pressed together with great force, a spring of comparatively moderate tension will be sufficient to effect the disengagement. In order to hold

the bolt at any point to which it is adjusted, a jam-nut 16 is provided, which may be screwed against the boss 12.

By my invention a perfect operative engagement between the two pulleys is effected instantaneously, and automatically, and, practically speaking, at the moment revolution is imparted to the loose pulley. The construction is extremely simple and inexpensive, the number of parts is reduced to a minimum, and the wear is so gradual that the devices are remarkably durable. Moreover, the frictional engagement of the two pulleys is always proportional to the load upon the shaft, or to the resistance to be overcome, so that if this load is suddenly increased, the additional power applied to overcome it drives the loose pulley more closely against the fixed pulley and preserves the locking engagement.

What I claim is—

The combination with a shaft of a fixed pulley having a friction-cushion attached to one plane face, a loose pulley adjacent to said friction-cushion, a short-sleeve, or cylinder, adjustable on said shaft and forming part of a crank-arm by which said sleeve, or cylinder, is turned, and a set-bolt tapped through said cylinder and having a friction-roll on its inner end which lies in a channel formed spirally in said shaft, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ROBERT J. BLUME.

Witnesses:

SILAS C. WALTERS,
JOHN FITZ SIMONS.