

(No Model.)

G. W. HOUCK.  
FRICTION CLUTCH.

No. 467,723.

Patented Jan. 26, 1892.

Fig.1.

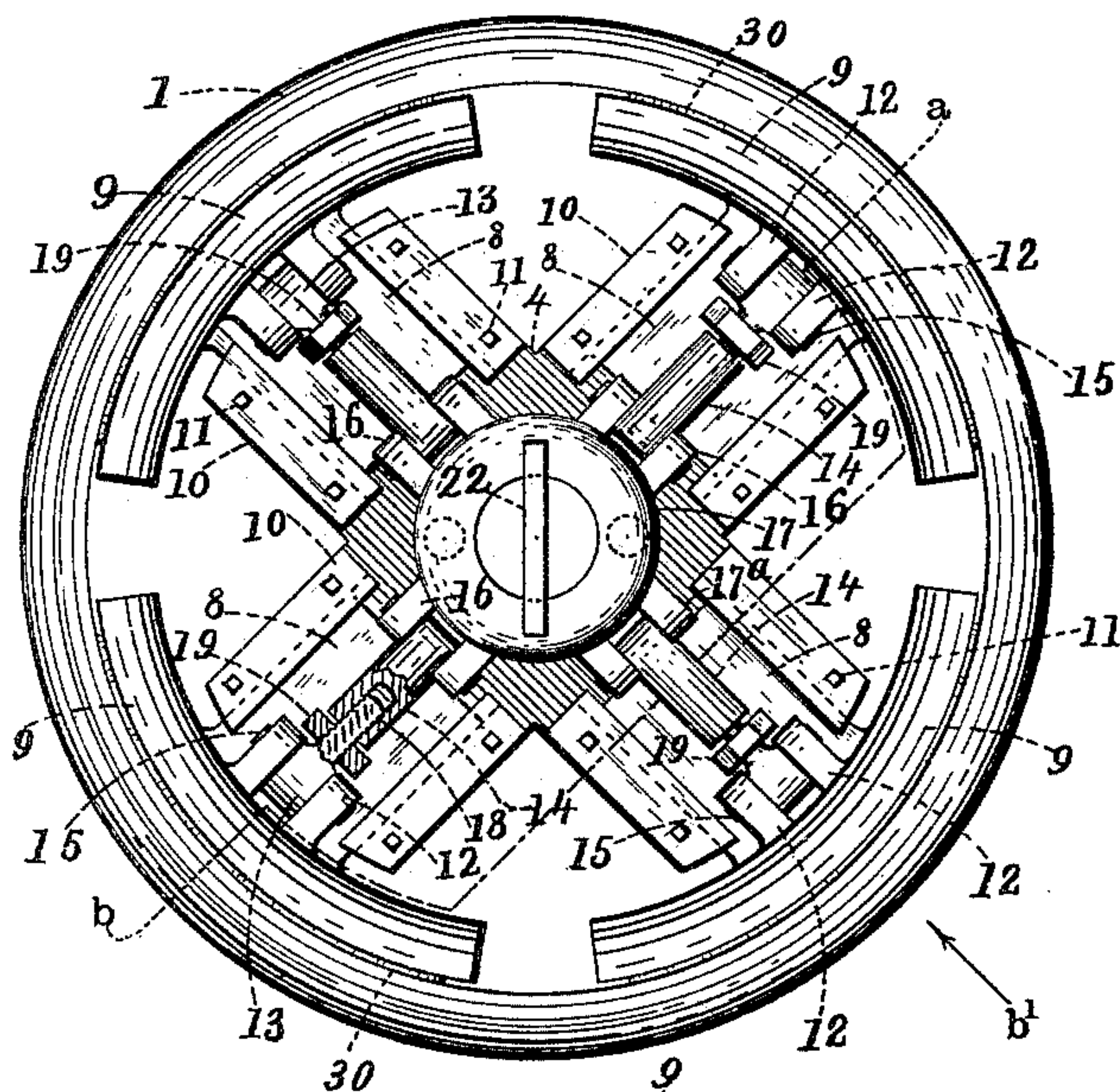


Fig.2.

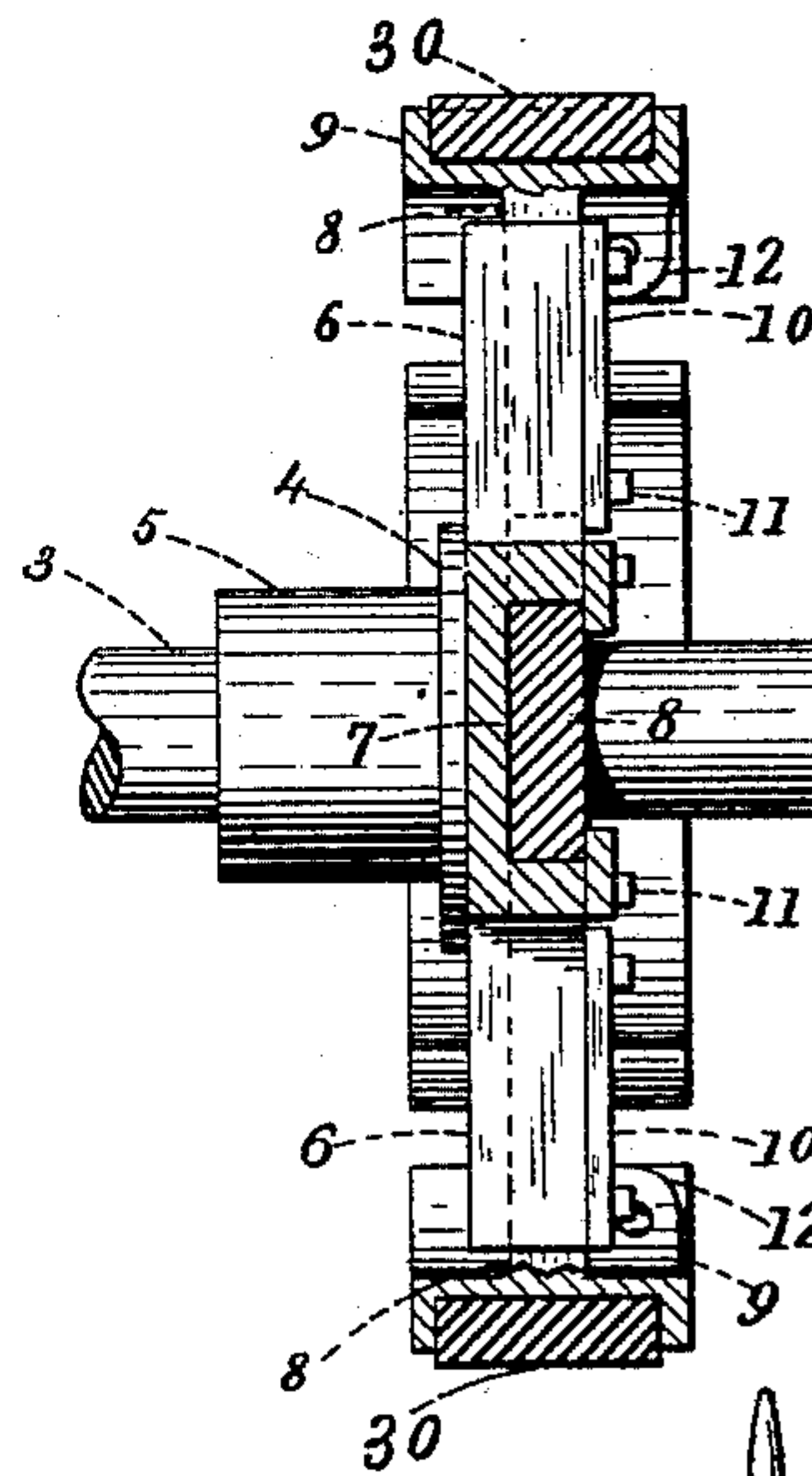
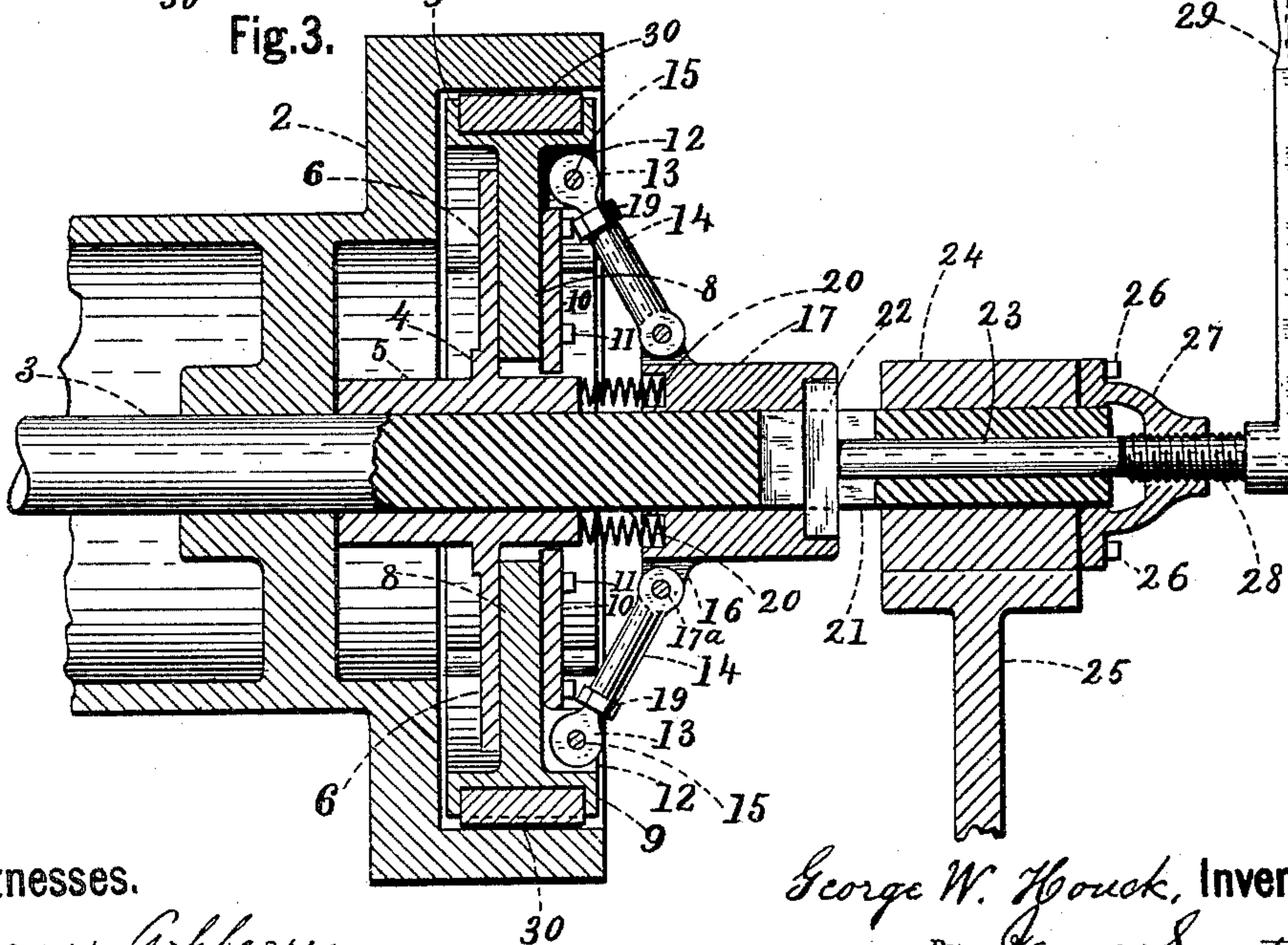


Fig.3.



Witnesses.

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# UNITED STATES PATENT OFFICE.

GEORGE W. HOUCK, OF BUFFALO, NEW YORK.

## FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 467,723, dated January 26, 1892.

Application filed October 31, 1890. Serial No. 369,909. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. HOUCK, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Friction-Clutches, of which the following is a specification.

My invention consists in certain improvements whereby the clutch is made simple, strong, and durable, and the movable curved friction-bars and their connecting parts may be easily removed without taking the whole device apart, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a detached elevation of the movable friction-arms and their holding-frame secured to a portion of the shaft, showing a section through line *a b*, Fig. 1, looking in the direction of the arrow *b'*. Fig. 3 is a central sectional elevation through the clutch and several of its parts and through a portion of the shaft, its supporting-box, and a portion of the hoisting-drum to which the outside clutch-ring is attached.

In said drawings, 1 represents the outside clutch-ring. It is attached to or forms a portion of the hoisting-drum 2. (Shown in Fig. 3.) The driving-shaft 3 passes through the drum 2, so that the drum and outside clutch-ring turn loosely thereon until secured by the clutch.

On the shaft 3 is keyed, in the usual way or otherwise rigidly secured, a clutch-frame 4, having a hub 5, by which it is more securely fastened to the shaft. It is provided with arms 6, which project radially out from the hub 5, and each arm 6 is provided with a recessed slideway 7, (see Fig. 2,) in which the arms 8, carrying the curved friction-bars 9, slide back and forth. The arms 8 are easily removable, being kept in place within the slideways by the removable plates 10, which are held to the arms by the bolts 11.

To each arm 8 and curved friction-bar 9 are secured or cast in one piece with it two ears or holding-pieces 12, between each of which one end 13 of one of the adjustable pushing-bars 14 is secured by a pin 15. The opposite

ends of the pushing-bars 14 are secured between two ears or holding-pieces 16, either securely fastened to or cast in one piece with the sleeve 17, which sleeve is mounted on the shaft 3 so as to move longitudinally back and forth along it. The pushing-bars 14 are made adjustable longitudinally by means of the screw-threaded portion 18 of the pivoted end 13, which screws into the portion 14 and is securely held in position by a jam-nut 19. (See Fig. 1, where a portion of a pushing-bar is in section, so as to show this construction.)

Between the hub 5 of the clutch-frame and the sleeve 17 are springs 20 for forcing the sleeve back when released. (Shown in Fig. 3.) In the front face of the sleeve 17, but not extending to the periphery, is a groove or recess directly in a line drawn through the center, and through the shaft 3 is a slot 21, so that a key or bar 22, passed through the slot 21, may then be moved forward into the openings in the sleeve, as shown in Fig. 3. The bar 22 is also shown in place in Fig. 1. In this position of the bar 22 the sleeve can be moved longitudinally back and forth on the shaft 3 a sufficient distance to operate the clutch, but cannot turn on the shaft. The center of the shaft 3 is bored out from the front end to the slot or transverse opening 21. Into this longitudinal opening is fitted a cylindrical bar 23, adapted to be moved longitudinally easily back and forth, and is forced against the key 22 when tightening the clutch. (See Fig. 3.) To the side of the box 24, in which the front end of the driving-shaft 3 is mounted, (the box 24 being supported by the frame portion 25 of the hoisting-machine,) is secured by bolts 26 a supporting-piece 27. It is provided with an interior screw-thread adapted to receive the screw-threaded bar 28, on the outer end of which is a hand-lever 29 for operating it.

As above described, the locking mechanism can be made and put in position very easily, as the key, which consists of a plain straight piece of material of the same length as the recess in the end of the sleeve, is first slipped through the slot in the shaft and then into the recess, where it is held by the bar 23. The portions 31 of the sleeve which are not cut away at the ends of the recess will pre-



vent the key from moving longitudinally out of the recess after it has been inserted. After it is in place the bar 23 is inserted in its place in the bore of the shaft, and the screw is then  
5 inserted in its place at the end of the shaft.

The curved friction-clutch bars 9 are each provided with a recess, in which is fitted a block or blocks of hard wood 30 so that the grain projects outward from the center. The  
10 ends of this wood act as a friction-surface, and may be easily replaced when worn away sufficiently. From this construction it will be seen that by turning the screw 28 forward by means of the hand-bar 29, and thereby  
15 forcing the curved friction-clutch bars 19 against the interior of the clutch-ring 1, the clutch will be tightened and held rigidly, and when the action of the screw 28 is reversed the springs 20 force the sleeve 17 back, and  
20 the clutch is released. By making the slide-ways as recesses in the arms of the clutch-frame and placing the arms of the friction-bars within them the pressure of the pushing-bars only tends to force them against the  
25 bottoms of the recesses instead of against the plates required to keep them in place, and which are liable to become loose and would be liable to be bent or broken if the strain of the pushing-bars came against them. By  
30 making a closed-ended slot in the end of the sleeve the bar or key 22 is prevented from getting out of it; yet it can be easily removed by withdrawing the bar 23 until the bar 22

can be removed from the slot in the sleeve and then slipped endwise through the slot in  
35 the shaft, thus making a very simple and durable construction.

I claim as my invention—

In a friction-clutch, the combination, with a shaft having a slot through it near one end  
40 and a central bore leading from the end into the slot, of a clutch-frame rigidly secured to the shaft, provided with outwardly-movable friction-bars, a drum loosely secured to the shaft on one side of the frame, and a spring-  
45 actuated sleeve loosely secured to the shaft on the opposite side of the frame, the outer end of which is provided with a recess registering with the slot through the shaft, a portion of the sleeve at each end of the recess re-  
50 maining intact, thereby forming a wall or abutment for preventing longitudinal movement or escape of the key, a series of pushing-bars connecting the friction-bars with the sleeve, a key through the slot in the shaft, con-  
55 sisting of a plain straight piece of material adapted to fit in the recess in the end of the sleeve, a bar in the bore of the shaft engaging with the key, and means for moving the bar longitudinally in the bore of the shaft, sub-  
60 stantially as described.

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Witnesses:

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