

(No Model.)

2 Sheets—Sheet 1.

W. H. McCONNELL.
FRICTION CLUTCH.

No. 428,568.

Patented May 20, 1890.

Fig. 2.

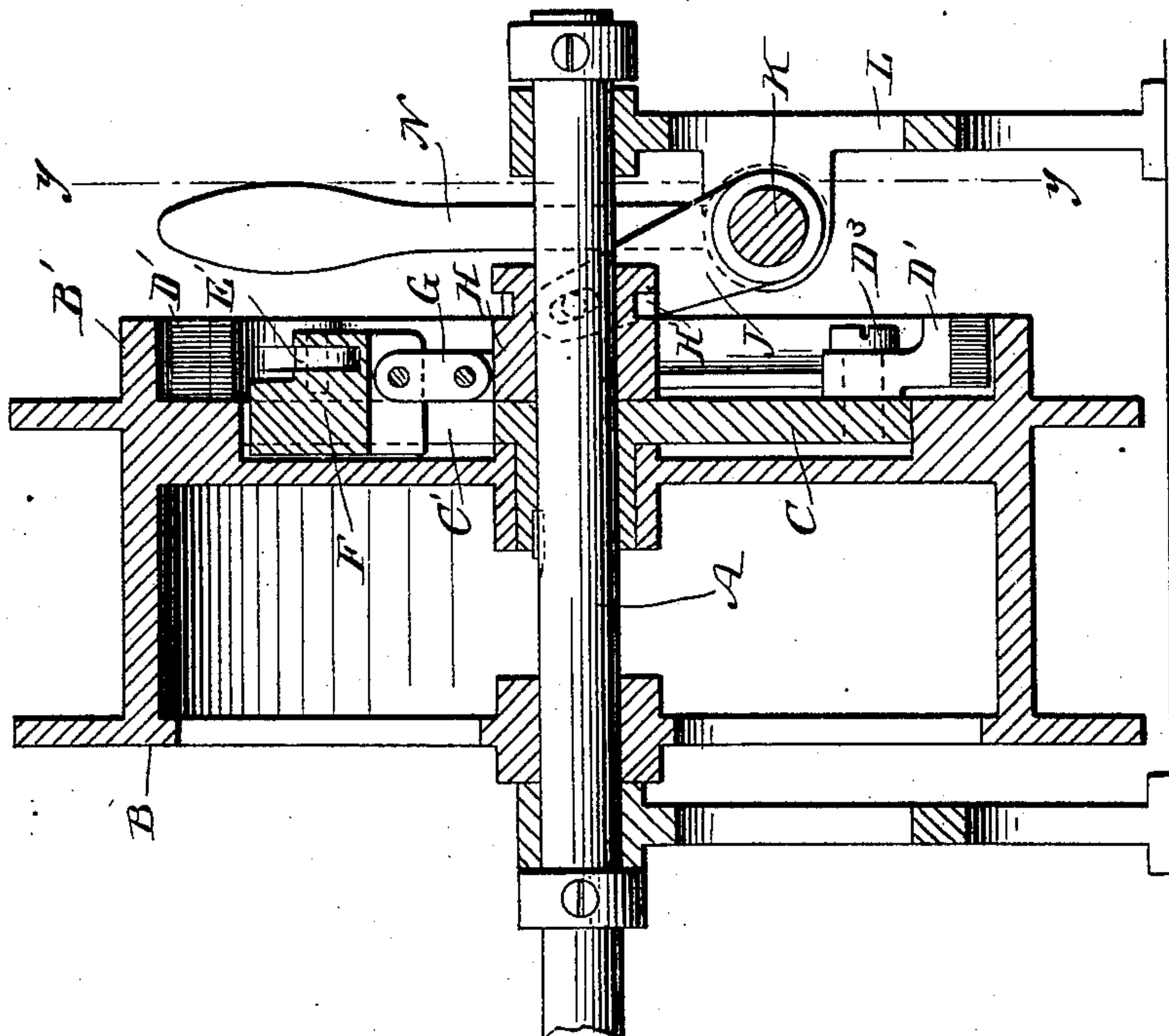
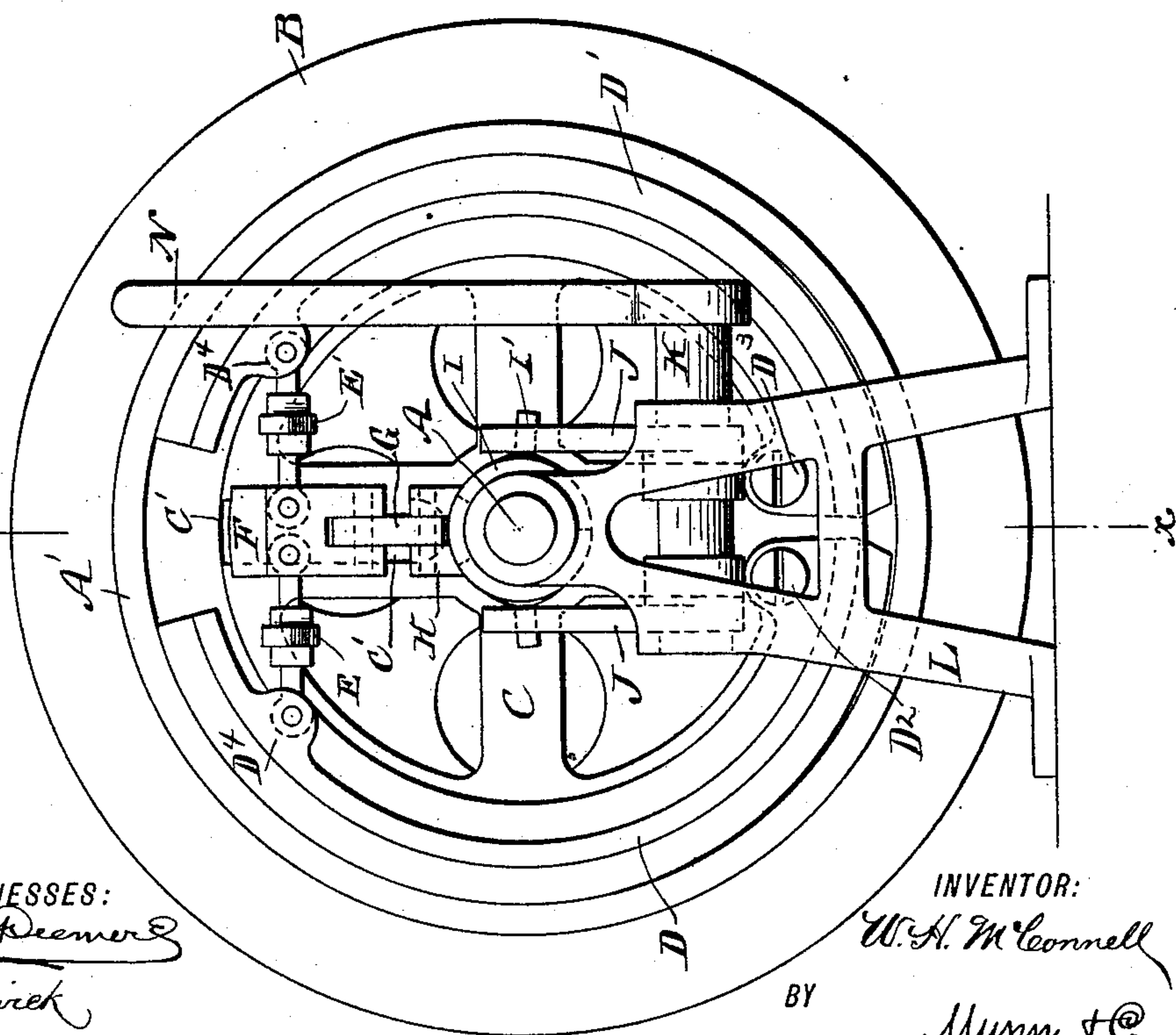


Fig. 1.



WITNESSES:
John B. Deemer
C. Sedgwick

INVENTOR:
W. H. McConnell
BY *Munn & Co.*
ATTORNEYS.

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Fig. 3.

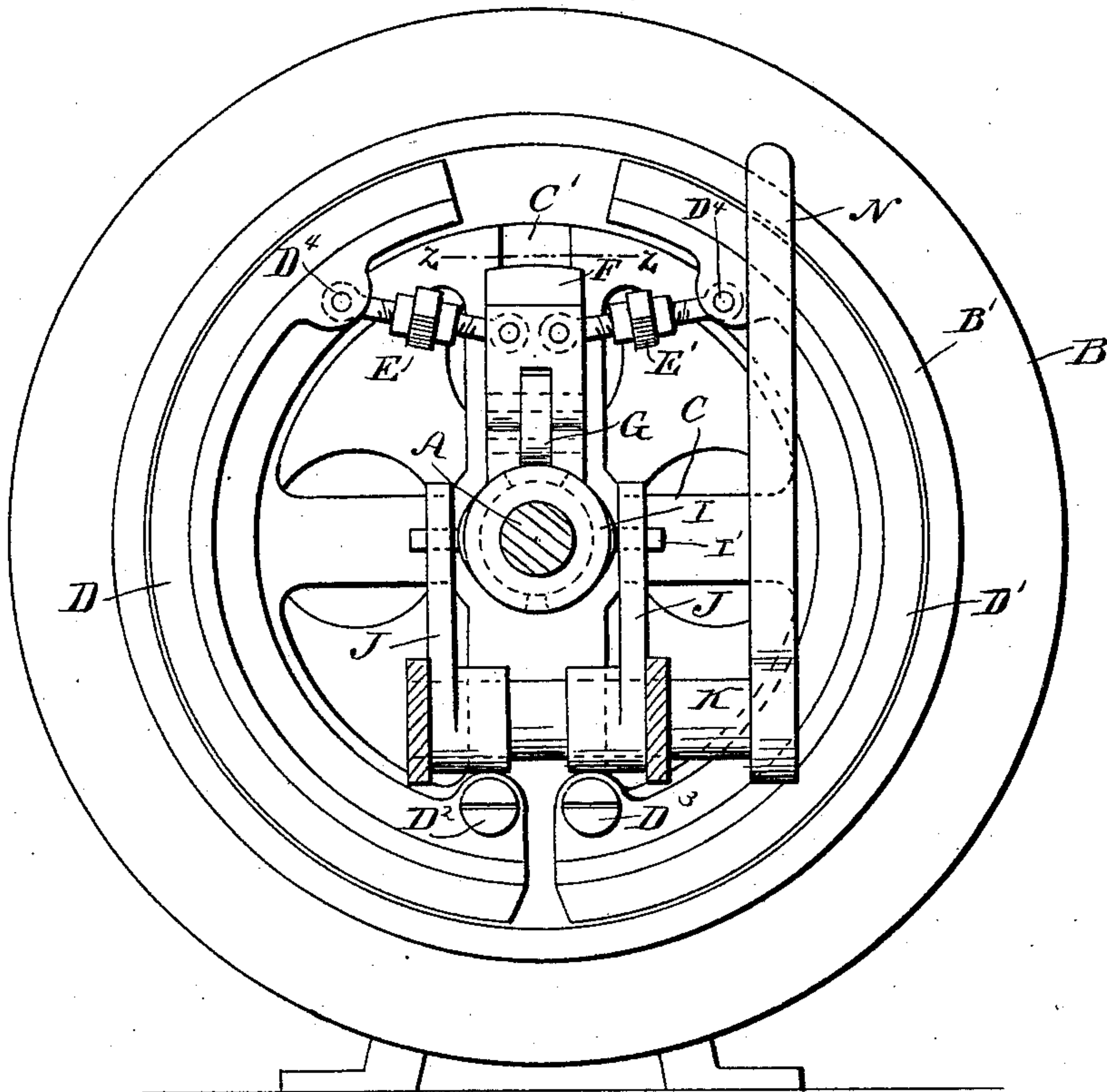


Fig. 5.

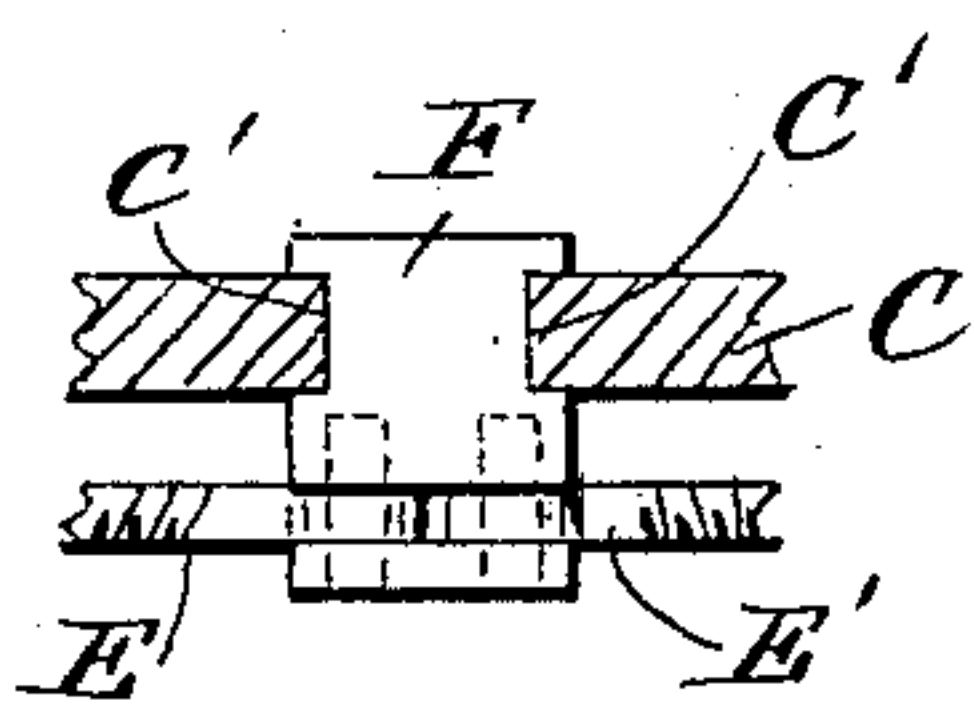


Fig. 4.

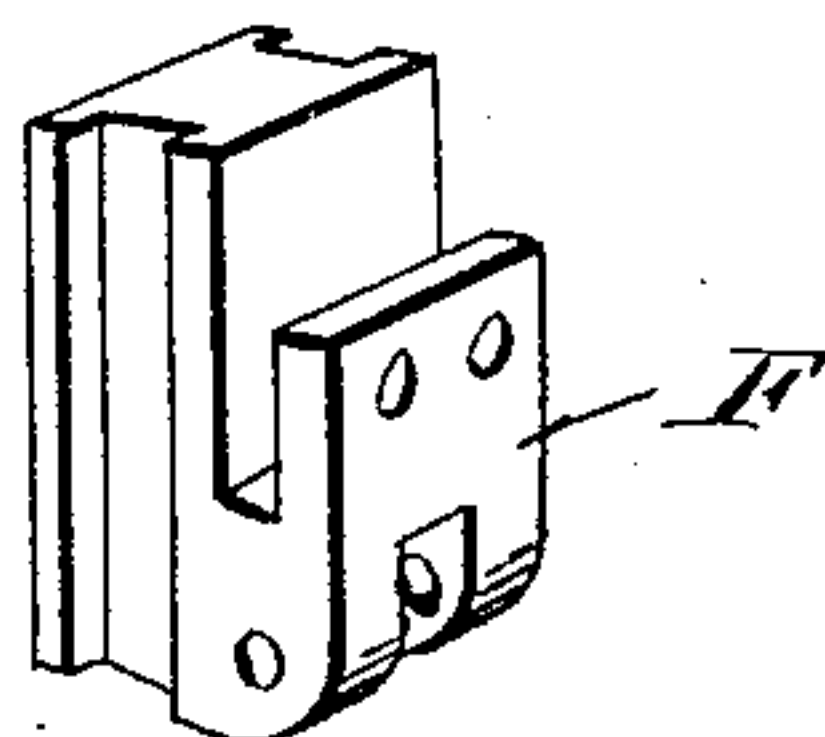


Fig. 6.

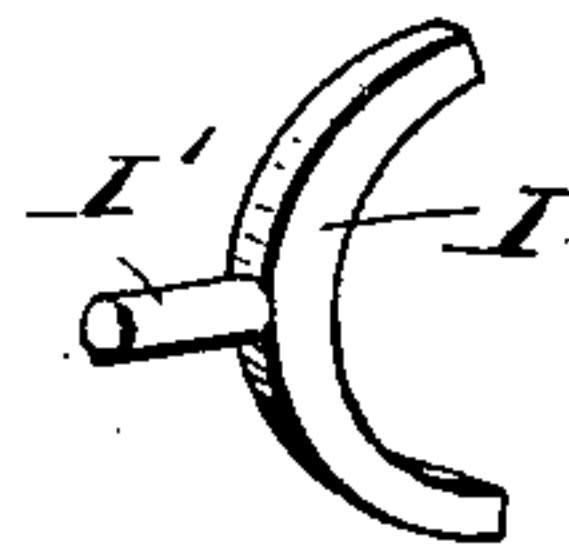
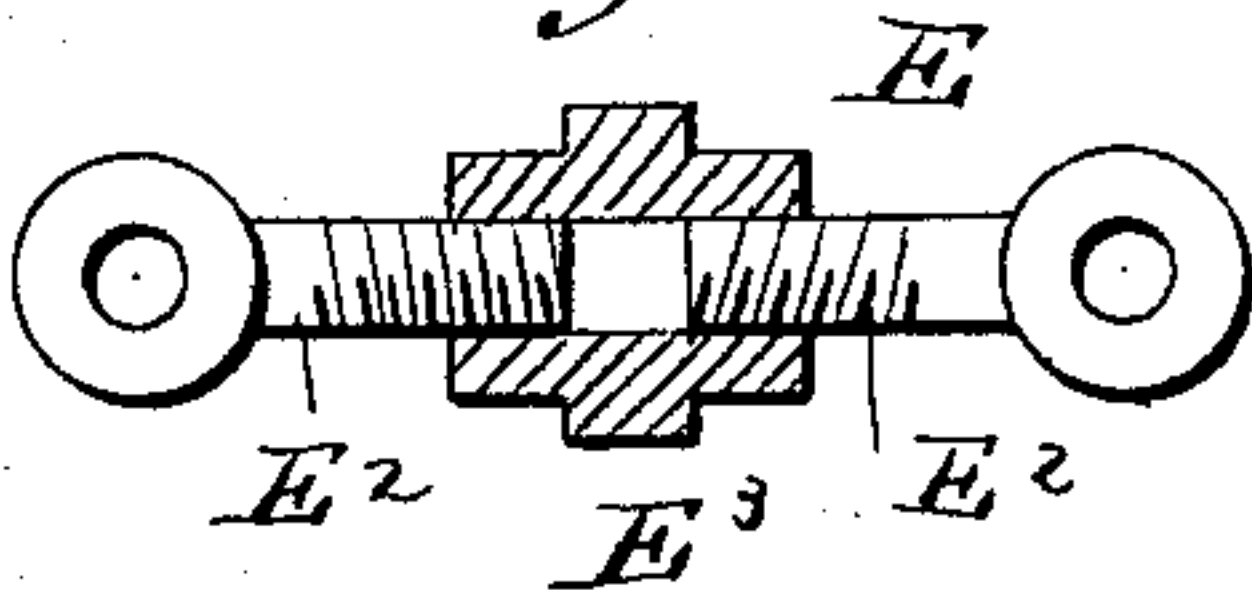


Fig. 7.



WITNESSES:
John H. Deemer
C. Sedgwick

INVENTOR:
W. H. McConnell
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM H. McCONNELL, OF NELSONVILLE, OHIO.

FRICITION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 428,568, dated May 20, 1890.

Application filed September 10, 1889. Serial No. 323,508. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. McCONNELL, of Nelsonville, in the county of Athens and State of Ohio, have invented a new and Improved Friction-Clutch, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved friction-clutch which is simple and durable in construction, very effective in operation, and easily adapted to all classes of hoisting and other machines.

The invention consists in certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is an end elevation of the improvement. Fig. 2 is a sectional side elevation of the same on the line xx of Fig. 1. Fig. 3 is a sectional end elevation of the same on the line yy of Fig. 2. Fig. 4 is a perspective view of the block or cross-head. Fig. 5 is a sectional plan view of part of the improvement on the line zz of Fig. 3. Fig. 6 is a perspective view of one of the shifting-forks; and Fig. 7 is an enlarged side elevation, with parts in section, of one of the toggle-arms.

On the shaft A is mounted loosely the drum B, connected with the hoisting-machine and adapted to be rotated with the shaft A by the friction-clutch presently to be described. On the shaft A is secured a pulley C, on one face of which are pivoted at D^2 and D^3 the segmental arms D and D' , respectively, adapted to engage with their rims the inside of an annular rim B' , formed on one face of the drum B. Each segmental arm D or D' is preferably made of metal, having its periphery covered with wood, so as to increase the friction of the contacting surfaces. The free ends of the segmental arms D and D' are provided with lugs D^4 , pivotally connected by the toggle-arms E and E' , respectively, with a block or cross-head F, mounted to slide radially in suitable guideways C' , formed on the pulley C.

The block or cross-head F is pivotally connected by a link G with a sleeve H, mounted to turn loosely on the shaft A, and adapted to

slide forward and backward on the same by a shifting mechanism, preferably of the construction shown in the drawings, in which the said mechanism is provided with two segmental arms I, engaging an annular groove H' on the sleeve H. A pin I' projects from each of the segmental arms I and fits into an elongated slot formed in a crank-arm J, secured on a shaft K, mounted to turn in suitable bearings formed in the standard L, which latter also forms part of the bearing for the main driving-shaft A.

On the shaft K is held a handle N, serving to conveniently turn the shaft K, so as to move the sleeve H inward or outward to throw the segmental arms D or D' in or out of contact with the annular flange B' on the drum B.

Each of the toggle-arms E is adapted to be lengthened or shortened, being provided for this purpose with the threaded rods E^2 , screwing in the nuts E^3 , as is plainly shown in Fig. 7. The outer ends of the rods E^2 are formed with eyes for the reception of the pivots which connect the respective segmental arm D or D' and the block F with the said toggle-arm. By turning the nuts E^3 the two rods E^2 are moved toward or from each other, according to the direction in which the nut is turned, so that each toggle-arm can be lengthened or shortened at pleasure to set the segmental arm D or D' in the proper position in relation to the annular flange B' .

The operation is as follows: When the shaft A is rotated and the sleeve H is in an outermost position, the segmental arms D and D' are out of contact with the annular flange B' on the drum B, as shown in Fig. 3. When the operator throws the handle N into the position shown in Figs. 1 and 2, the movement of the handle N turns the lever K, so that the arms J move the sleeve H inward, whereby the link G is moved outward into a vertical position, moving the block or cross-head F radially outward in its guideways C' on the pulley C. The outward radial movement of the block or cross-head F moves the toggle-arms E and E' outward, so that they press against the free ends of the segmental arms D and D' until the latter are forced at their peripheries into contact with the inside of the annular flange B' of the drum B. As the rotary motion of the shaft A rotates the pulley C and

the latter carries the said segmental arms D and D', the drum B is rotated with the said pulley C and the shaft A as soon as the said segmental arms D and D' are thrown in frictional contact with the flange B' of the drum B. When the drum B is engaged, the toggle-arms E and E' stand at right angles to the link G and the block F, so that the several parts are locked in place and remain in this position until the operator moves the handle N outward from the drum B, so as to move the sleeve H in the same direction, whereby the link G pulls the block or cross-head inward until the toggle-arms E and E' assume an inclined position toward each other and draw the segmental arms D and D' out of contact with the annular flange B' of the drum B. The rotary motion of the latter then ceases, while the pulley C and the parts carried by the same still rotate with the main shaft A.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A friction-clutch comprising two segmental arms pivoted at one end of the driving-pulley, toggle-arms connected with the free ends of the said segmental arms, and a block or cross-head mounted to slide radially on the driving-pulley and connected with the

said toggle-arms, substantially as shown and described.

2. The combination of the shaft, the pulley thereon having radial ways, the two segmental arms pivoted at one end to the pulley, the radially-sliding cross-head mounted on said ways, and toggle-arms connecting the free ends of the segmental arms with said cross-head, with a sleeve on the shaft movable toward and from the pulley, and a link connecting the cross-head and sleeve, substantially as set forth.

3. The combination, with the shaft A and the loosely-mounted drum B, having an annular rim B', of the pulley C, fixedly secured to the shaft and provided with radial ways C', the segmental arms D D', pivoted to the pulley at D² D³, the cross-head F, sliding in said ways, the toggle-arms connecting the free ends of said segmental arms with the cross-head, the collar H on the shaft, the link G, connecting the collar and cross-head, the rock-shaft K at right angles to the shaft A and provided with arms J, extending to opposite sides of the collar, connections between said collar and arms, and the lever N, substantially as set forth.

WILLIAM H. McCONNELL.

Witnesses:

EUGENE J. CABLE,
WESLEY C. HICKMAN.