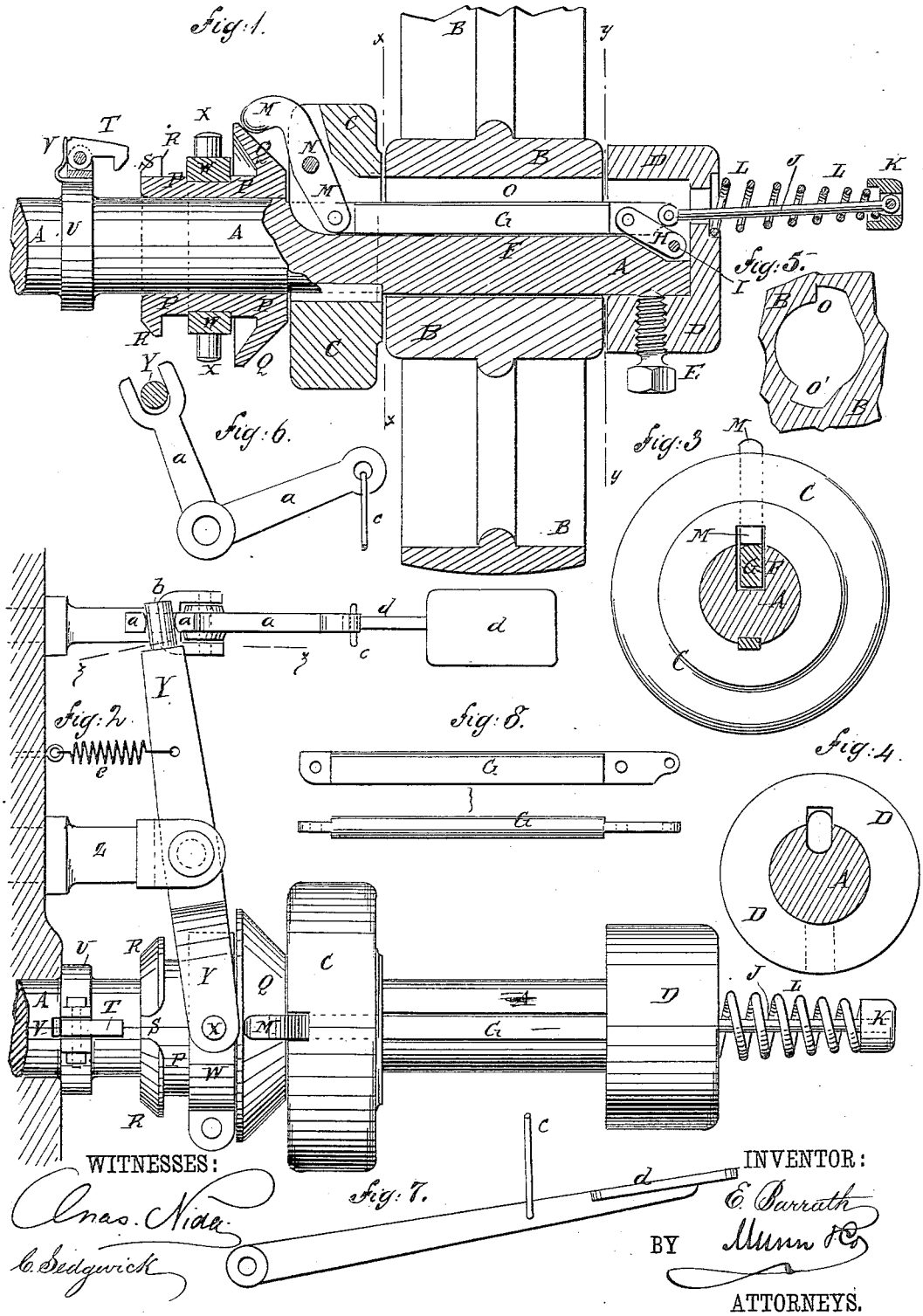
(No Model.)

E. BARRATH.

CLUTCH.

No. 303,789. Patented Aug. 19, 1884.



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CLUTCH.

SPECIFICATION forming part of Letters Patent No. 303,789, dated August 19, 1884.

Application filed January 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD BARRATH, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Clutches, of which the following is a full, clear, and exact description.

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

Figure 1 is a sectional side elevation of my improvement. Fig. 2 is a plan view of the same, the pulley being removed. Fig. 3 is a sectional elevation of the same, taken through the line *x x*, Fig. 1, and looking to the left. Fig. 4 is a sectional elevation of the same, taken through the line *y y*, Fig. 1, and looking to the right, the clutch-bar being removed. Fig. 5 is a sectional elevation of a part of the pulley-hub, showing the grooves to receive the clutch-bar. Fig. 6 is a side elevation of the elbow-lever for operating the forked lever that operates the sliding collar, the forked lever being shown in section through the line *z z*, Fig. 2. Fig. 7 is a side elevation of the treadle and the lower part of its connecting-rod for operating the elbow-lever. Fig. 8 is a side elevation and a plan view of the clutch-bar.

The object of this invention is to provide clutches for presses and other machinery, designed especially for use where the clutches are required to work both ways, and which shall be simple in construction and reliable in operation.

The invention consists in a clutch constructed with a clutch-bar placed in a groove in a shaft and in recesses in collars attached to the said shaft, and pivoted at its ends to a link and a lever, and connected at its one end with a spiral spring for raising it into gear with the grooved pulley-hub, and thrown out of gear by a sliding collar having a conical or inclined head at its inner end, and at its outer end a flange having a cross-groove to engage with a spring-pressed hook-catch, the said sliding collar being thrown out of and into gear by a forked lever, an elbow-lever, a treadle, and a spring, as will be hereinafter fully described.

A represents a shaft, upon which is placed a loose-pulley, B. The hub of the pulley B rests at one end against a collar, C, keyed to the shaft A, and at its other end rests against a cap-collar, D, secured to the said shaft A by a set-screw, E.

In the shaft A is formed a groove, F, to receive the clutch-bar, G, which is made of such a length as to pass through the hub of the pulley B and extend into the collars C D, and of such a size that its outer edge will be flush with the surface of the shaft A when its inner edge rests in the bottom of the groove F.

To the clutch-bar G, near its outer end, is hinged the upper end of a link, H, the lower end of which is placed in a recess in the shaft A, and is hinged to the said shaft by a pin, I.

To the outer end of the clutch-bar G is hinged the inner end of a rod, J, which passes out through an aperture in the cap-collar D.

To the outer end of the rod J is attached a head, K, against which rests the outer end of the spiral spring L. The inner end of the spiral spring L rests in a recess formed in the cap-collar D.

The inner end of the clutch-bar G is hinged to the lower end of the lever M, placed in a recess in the collar C, and pivoted at its middle part to the said collar by a pin, N. The upper end of the lever M projects above the collar C, and has a forwardly projecting head formed upon it. With this construction, when the lever M is left free, the spring L will draw the clutch-bar G outward, causing the link H and the lever M to raise the said clutch-bar G from the groove F, and cause it to enter a groove, O, in the inner surface of the hub of the pulley B. The groove O is made with one side radial and the other curved or inclined, so that the bar G will enter the said groove and carry the pulley B with it when the shaft A is turned in one direction, but will readily pass out of the said groove when the shaft A is turned in the other direction. When the pulley B is to be driven sometimes in one direction and sometimes in the other direction, a second groove, O′, is formed in the inner surface of the hub of the pulley B, with its radial side in the opposite direction from the raidial side of the first groove, so that the clutch-bar G will engage with the radial side of one groove when the shaft A is turned in one direction, and with the radial side of

the other groove when the said shaft is turned in the opposite direction.

Upon the shaft A at the outer side of the collar C is placed a sliding collar, P, within which the said shaft A revolves freely. Upon the inner end of the collar P is formed a conical head, Q, which, when the collar P is forced inward, presses the upper end of the lever M upward and inward, drawing the clutch-bar G down into the groove F and releasing the pulley B.

If desired, the conical head Q can be replaced by a cam formed upon the collar P, and operating upon the lever M as the shaft A revolves.

Upon the outer end of the collar P is formed a flange, R, having an inclined outer side, and provided with a cross-groove, S, for the outward passage of the hook-catch T, which is pivoted to a band, U, passing around and secured to the shaft A, so that the said catch will be carried around by and with the said shaft in its revolution. The hook-catch T has its forward end beveled, and is held down by a spring, V, attached to the band U, so that the said hook-catch will engage automatically with the flange R and hold the collar P until the revolution of the shaft A brings the hook-catch T opposite the groove S, when the said collar P will be moved inward automatically in the manner hereinafter described.

In a groove around the middle part of the collar P is rigidly secured a band, W, to which, upon the opposite sides of the shaft A, are attached two gudgeons, X, to receive the forked end of the lever Y. The lever Y is pivoted to a bracket, Z, attached to the frame of the machine or other suitable support. The other end of the lever Y is placed in a slot or fork in the end of the upper arm of the elbow-lever *a*, which is pivoted at its angle to a bracket, *b*, attached to the frame of the machine or other suitable support.

To the end of the lower arm of the elbow-lever *a* is pivoted the upper end of a connecting-rod, *c*, the lower end of which is pivoted to the treadle *d*. The treadle *d* is pivoted to a bearing attached to the floor or other suitable support. The free end of the treadle *d* projects into such a position that it can be readily reached by the operator with his foot. With this construction the downward movement of the treadle *d* operates the levers *a* Y, and forces the collar P outward, where it is caught and held by the hook-catch T until the revolution of the shaft A brings the said catch T opposite the groove S, which allows the collar P to be again forced inward in the manner hereinafter described. The outward movement of the collar P releases the lever M, and allows the spring L to draw the clutch-bar G outward and raise it into gear with the hub of the pulley B.

To the lever Y is attached the end of a spiral or other spring, *e*, the other end of which is attached to the frame of the machine or other suitable support. With this construction, when the treadle *d* is released, the spring *e* operates the lever Y and forces the collar P inward, operating the lever M and forcing the clutch-bar G into the slot F of the shaft A, releasing the pulley B.

The spring *e* can be connected with the forked lever Y, the elbow-lever *a*, or the treadle *d*, the effect being the same in either case.

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

1. In a clutch, the combination, with the clutch-bar arranged in a groove of the shaft, and pivoted to a link and lever, respectively, at opposite ends, of a spring for raising the clutch-bar out of the groove, and a sliding collar having a conical or cam head engaging the free end of the said lever for drawing the clutch-bar down into the groove, substantially as herein shown and described.

2. In a clutch, the combination, with the grooved shaft A, the recessed collars C D, and the grooved hub of the pulley B, of the clutch-bar G, the pivoted link and lever H M, carrying the clutch-bar, the spring and rod L J, raising the clutch-bar, and the sliding collar P, having conical or cam head Q, for lowering the said clutch-bar, substantially as herein shown and described, whereby the said clutch can be thrown into and out of gear by operating the said sliding collar, as set forth.

3. In a clutch, the combination, with the shaft A, and the sliding collar P, provided with a flange, R, having cross-groove S, of the spring-pressed hook-catch T, substantially as herein shown and described, whereby the said collar will be held out of gear and released automatically, as set forth.

4. In a clutch, the combination, with the clutch-bar-operating lever M, the sliding collar P, provided with the cam-head Q, and grooved flange R S, and the spring-pressed hook-catch T, of the forked lever Y, the spring *e*, and the elbow-lever *a*, substantially as herein shown and described.

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Witnesses:

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