(No Model.) 2 Sheets—Sheet 1.

E. L. STREET.

FRICTION CLUTCH.

No. 354,494. Patented Dec. 14, 1886.

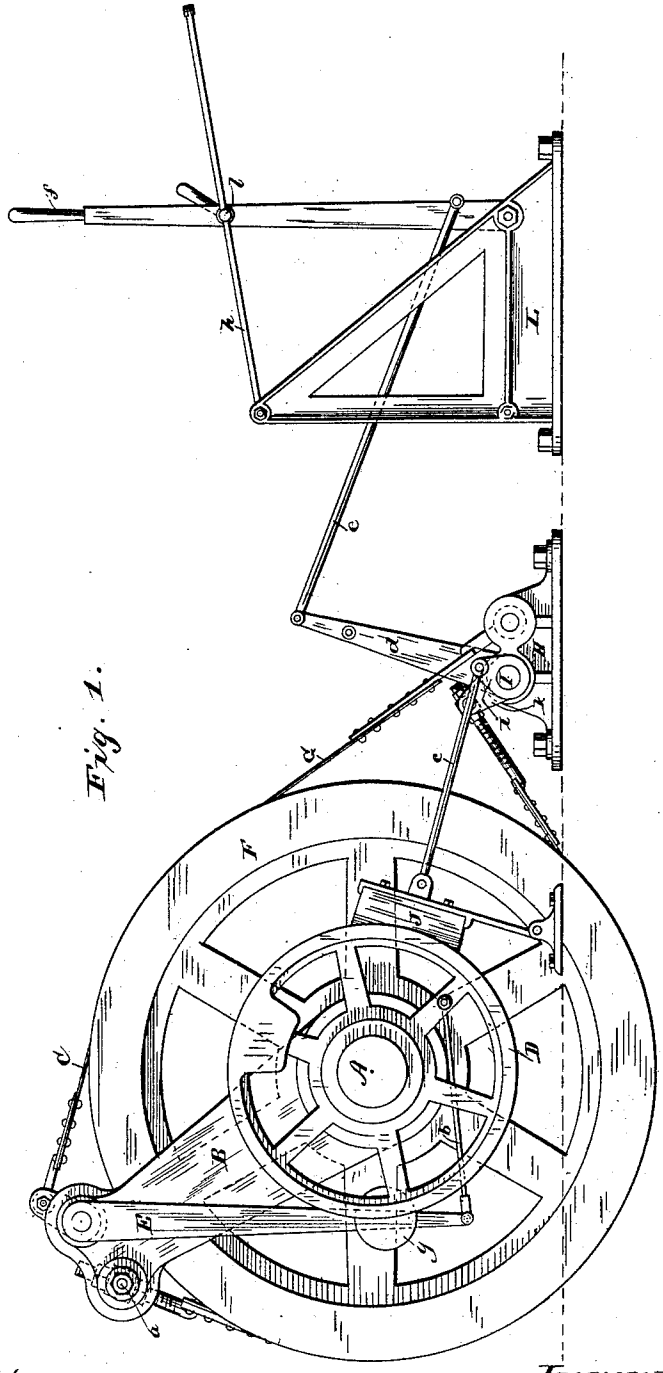


Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

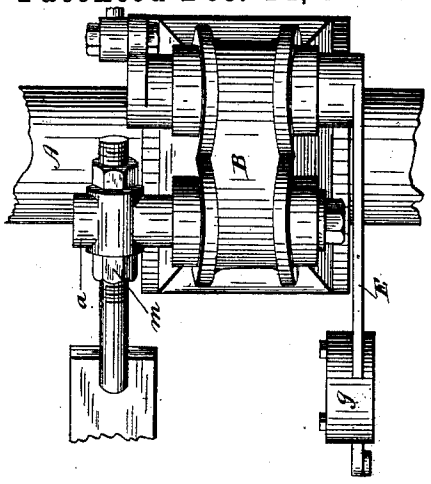
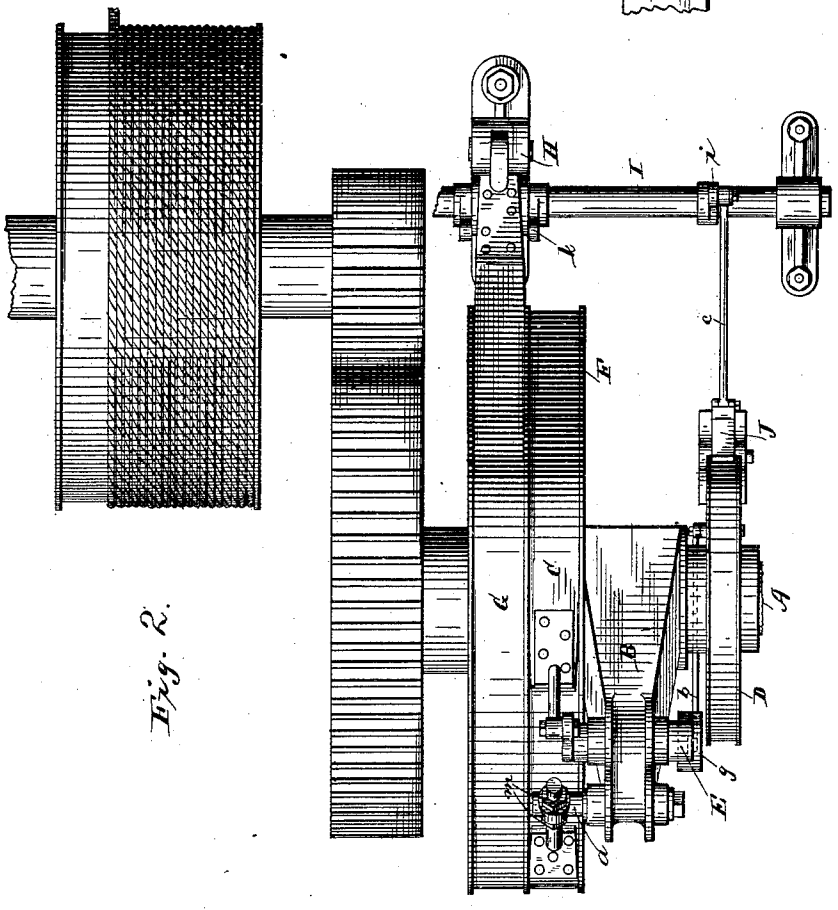


Fig. 2.



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UNITED STATES PATENT OFFICE.

EDGAR L. STREET, OF JOHNSTOWN, PENNSYLVANIA.

FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 354,494, dated December 14, 1886.

Application filed July 20, 1886. Serial No. 208,554. (No model.)

To all whom it may concern:

Be it known that I, EDGAR L. STREET, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Friction-Clutches; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My present invention has for its object to improve that class of friction-clutches used more particularly in connection with hoisting-drums and employing a sliding band or belt as the means of connecting the constantly-moving portion of the machinery with the free portion or drum proper; and the said invention consists in certain details of construction and arrangements of parts, whereby the ease of manipulation and more perfect control over the drum and load being operated upon is secured, all as will be hereinafter more particularly described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of the complete clutch, including the operator's handle or lever. Fig. 2 is a top plan view showing the double wheel on which the clutch and brake bands operate and the hoisting-drum attached thereto, and Fig. 3 is a detail of the end of the arm carrying the clutching-band.

Similar letters of reference in the several figures indicate the same parts.

The letter A designates the main or power shaft; B, an arm keyed or otherwise securely fastened to the said shaft, carrying upon its outer end a stud or projection, *a*, to which one end of the clutching-band is adjustably secured, and a lever, E, to the outer end of which the opposite end of the said clutching-band is secured. To the inner end of this lever E is fastened one end of a rod, *b*, the other end of said rod being secured to the wheel D, mounted loosely upon the shaft A, but being turned therewith through the medium of the described connections and the arm B. The inner end of this lever E is made heavy, or has attached to it a weight, *g*, preferably made adjustable, in order to regulate its power, which, when the device is in motion, tends, by reason of its centrifugal force, to hold the inner end of the lever out and the clutching-band loosened.

Hinged to a bracket on the base-piece or floor is an arm carrying the brake-shoe or retarder J, for engagement with wheel D, and manipulated by the operator through the medium of rod *c*, arm *i* on shaft I, lever *d*, also on said shaft, rod *e*, and hand-lever *f*, pivoted to a bracket preferably a short distance from the drum. This brake-shoe or retarder J, in acting upon the periphery of the wheel D, tends to stop its rotation, and when, as shown in the drawings, the shaft A and arm B rotate toward the right the tendency of the wheel D to stop will draw the lever E in and tighten the clutching-band around wheel F.

The clutching or friction band C passes around in one of the two depressions in the periphery of wheel F, which latter is connected with the drum proper either directly or through some intermediate gearing, and together with it revolves independently of the shaft A, save when the clutching-band is tightened. In the other one of these two depressions is a brake-band, G, one end of which is connected to some immovable object, preferably as shown in Fig. 1, where it is connected to the bracket H, which also supports the lever *d*. The opposite end of this band is adjustably connected to an arm, *k*, on shaft I, controlled by the operator through the lever *d*. The hand-lever *f* is held at any point of adjustment by means of set-screw *l*, operating upon an arm, *h*, hinged to bracket L. This, however, is not essential, and may be supplanted by any of the many other well-known equivalents.

Looking now at Figs. 2 and 3, it will be seen that the supports for the clutching-band stand out over the depression in which it works, and the lever carrying one end of said band has a bearing in the end of the arm B. In the latter figure I have endeavored to show the means for adjustably attaching the end of the clutching-band to its support. To the end of said band is secured, by means of rivets or otherwise, a piece of metal having screw-threads cut upon one end, and upon which is screwed a nut, *m*. The end is then passed through a perforation in the support and another nut screwed on it. From this it will be seen that should the band become worn it can be readily

adjusted by simply loosening the inner nut and tightening the outer one.

The operation of the device will now be perfectly apparent to those skilled in the art, and is as follows: We will assume that the power-shaft A is constantly rotating toward the right. Now, when it is desired to raise a load or apply the power, the operator grasps the lever *f* and throws it toward the drum. The result is that the brake or retarder J is applied to wheel D and the latter retarded; thus tightening the clutching-band in proportion to the force employed and causing the rotating of the wheel F and drum or other mechanism attached to it. When the load has been raised high enough, or it is desired to take the power off and stop the mechanism, the hand-lever is reversed and forced away from the drum, thus releasing the retarding-brake J and applying the band-brake G, stopping the wheel F, and, if a hoisting-drum is attached thereto holding the load suspended. Should the load have to be lowered, it may be done by easing or lessening the pressure on the hand-lever, and consequently the amount of brake-pressure, and allowing the load to descend by gravity.

Should it be desired, the power may be made to do the greater part of the work in lowering by simply applying the retarder J very lightly to the surface of the wheel D.

I do not wish to be limited to the precise form and construction of arm supporting the clutching-band, as it is perfectly obvious that I may employ a wheel in its stead, and in that way avoid any of the pounding and wear necessarily incident to the employment of a heavy weight on one side of a rapidly-revolving shaft.

Having thus described my invention, what I claim as new is—

1. In a friction-clutch, the combination, with a clutching-band and a wheel to which it is applied, of mechanism, substantially such as described, rendered operative by friction, to tighten said band, and operated by centrifugal force to release it, substantially as described.

2. In a friction-clutch, the combination, with a clutching-band held at one end by a support moving therewith and at the opposite end by one end of a lever, and a wheel to which said band is applied, of means, substantially such as described, for moving the other end of said lever in one direction by friction and in the opposite direction by centrifugal force, substantially as described.

3. In a friction-clutch, the combination, with an arm carrying the clutching-band, a drum or wheel to which the band is applied, a lever supporting one end of said band, pivoted to the said arm and connected at one end to a wheel free on the shaft, but turned by said lever, of a brake for application to said wheel to retard its motion, and thus move the lever in one direction against centrifugal force tending to move it in the opposite direction, substantially as described.

4. The combination, with a brake-band held by a stationary support, and a clutching-band operating upon the same wheel, of a lever carrying one end of the clutching-band, the said lever being weighted and attached to a wheel free on its shaft, whereby when the said wheel is retarded in its motion the lever will be moved and the clutching-band tightened, substantially as described.

5. The combination, with the arm keyed to the shaft and carrying the clutching-band, and the lever for tightening the same, one end of said lever being pivotally attached to a wheel free upon its shaft, of a brake applied to said wheel to retard its motion and tighten the clutching-band, substantially as described.

6. In a friction-clutch, the combination, with a clutching-band operating upon a friction-wheel to which the load is applied, of a lever carrying one end of the clutching-band, said lever being weighted and attached to a wheel free on its shaft, whereby when the said wheel is retarded in its motion the lever will be moved and the clutching-band tightened, and when released centrifugal force acting upon the weighted lever will release said clutching-band, substantially as described.

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Witnesses:
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CLEMENT F. STREET.