A. SWINGLE.

CLUTCHES.

No. 171,063. Patented Dec. 14, 1875.

Fig. 1.

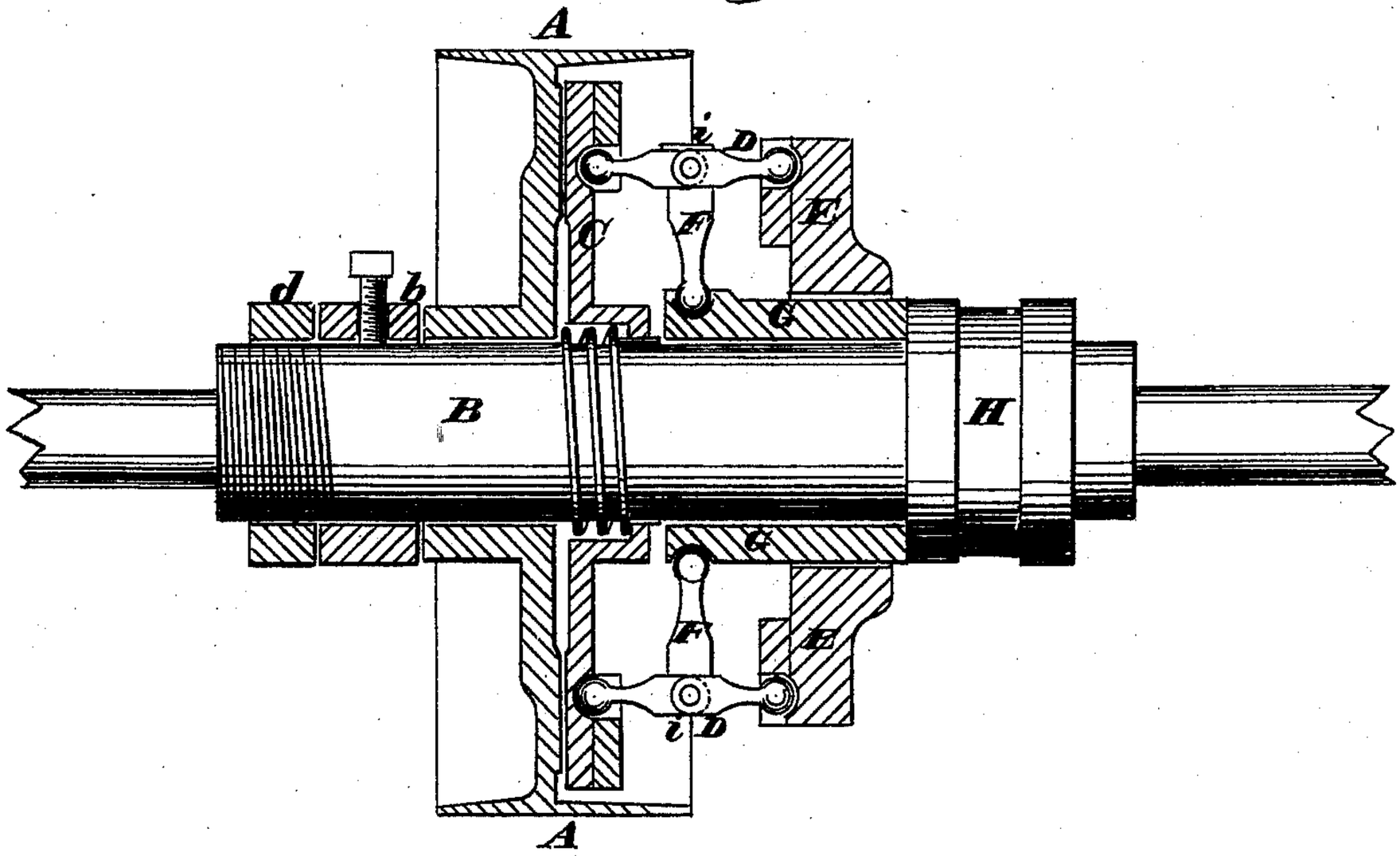
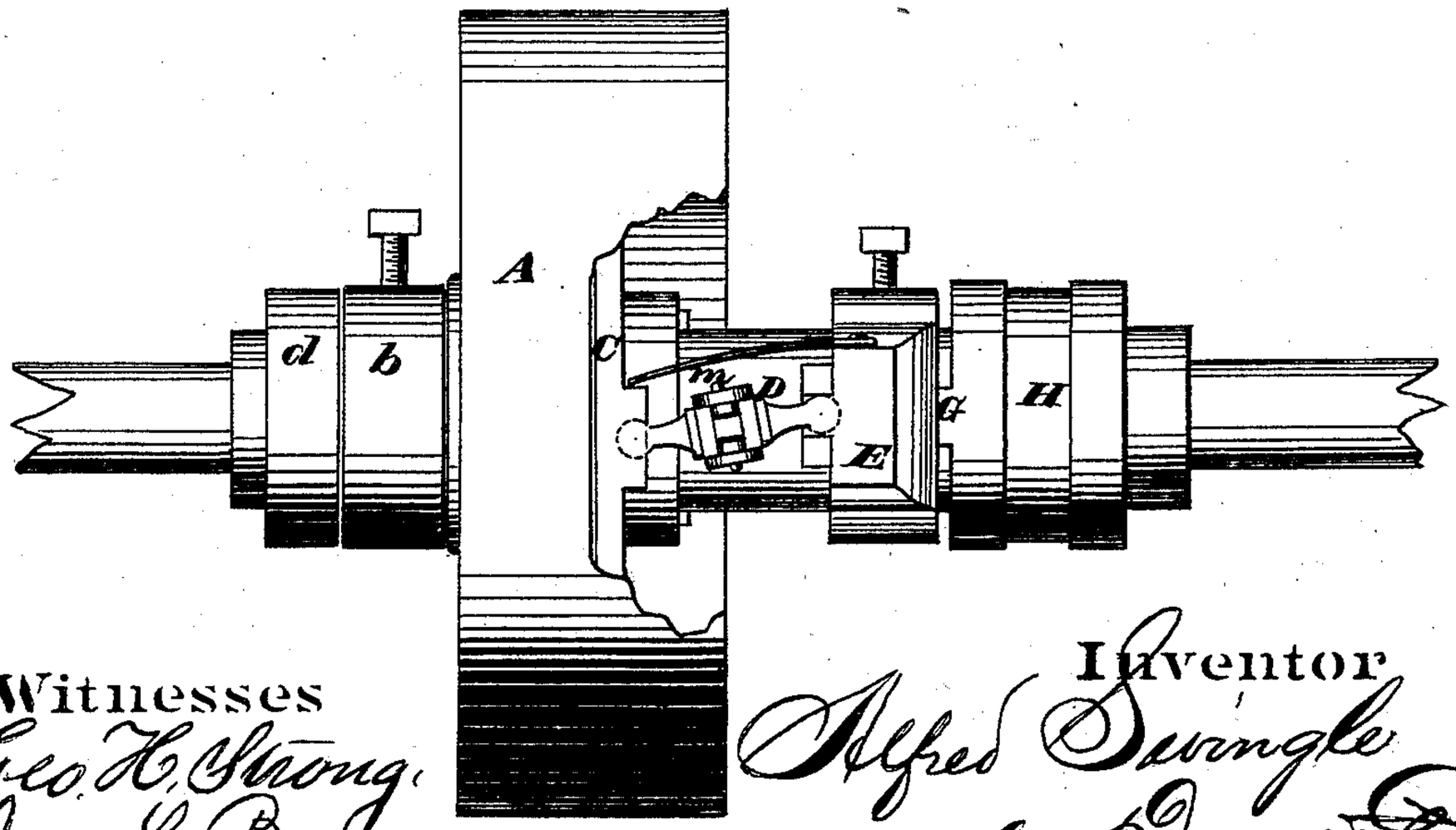


Fig. 2.



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UNITED STATES PATENT OFFICE.

ALFRED SWINGLE, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN CLUTCHES.

Specification forming part of Letters Patent No. **171,063**, dated December 14, 1875; application filed October 29, 1875.

To all whom it may concern:

Be it known that I, ALFRED SWINGLE, of San Francisco city and county, State of California, have invented a Friction-Pulley; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to a novel construction of a friction-pulley; and it consists of a pulley mounted to turn loosely upon a shaft which has a disk moving longitudinally upon a feather, so that by means of a sort of double knee lever or toggle the face of the disk can be moved closely against the side of the pulley, and, by its friction, cause the two to move together as one. These knee-levers are operated by a sliding clutch, and are made to stand at a small angle between the disk and the bar against which they act, so that when the strain comes upon the pulley it will tend to bind the flange closer to it.

Referring to the accompanying drawing, for a more complete explanation of my invention—

Figure 1 is a longitudinal section, showing the interior construction of the pulley. Fig. 2 is a view, showing the position of the knee-levers.

A is a pulley, loosely mounted upon a sleeve, B, this sleeve being fitted with the different parts of the device, and then keyed to the shaft. At one side of the pulley is a collar, *b*, which holds the pulley to its place, and this collar is adjusted by means of a nut, *d*, which turns upon a thread cut on the sleeve, so as to hold the pulley more or less closely to the friction-disk. A disk, *c*, somewhat smaller than the rim of the pulley, moves upon a feather upon the shaft B, so that it can be moved up against the side of the web of the pulley inside the rim, and upon the side opposite to the collar *b*.

When pressed closely together the friction between these parts will be sufficient to revolve the two together; but when the disk is drawn back it will leave the pulley free to revolve loosely upon its axis.

In order to move this disk into or out of contact with the pulley I employ two or more knee or toggle levers, D, which operate between the disk and a support, E, secured firmly to the shaft at a sufficient distance outside the disk.

In the present case I have shown two of these knee-levers secured so as to press upon the disk at points opposite to each other, as shown.

Each of the levers D are hinged together in the middle at *i*, and are connected with the disk and the support E by a ball-and-socket joint. A third arm, F, is pivoted to the central joint of each pair of arms D, and, extending down, they are connected with the slides G, as shown. These slides are simply extensions, projecting from the clutch H along each side of the shaft, so that when the clutch-ring H is moved by its lever it will cause the slide G to draw the arms F downward, and this movement bends the joint *i* between the levers D, thus shortening the distance between the disk C and the support E, and retracting the disk from the pulley, so as to allow the latter to move independently.

When it is desired to cause the pulley and shaft to turn together, it will only be necessary to move the clutch-ring H toward the pulley, when the arms G, which pass through the support E, will move the inner ends of the levers F, until these levers stand nearly or quite at right angles from the shaft, and by this movement the levers D will be brought into a straight line, thus forcing the disk against the pulley.

In order to insure sufficient friction to prevent slipping I have placed the levers D so that they stand at a slight angle, or bracing toward the disk, being held in this position by a spring, *m*, and, when the strain of turning is brought upon them, the tendency will be to force the disk still harder against the pulley by the straightening of the levers, and bringing them into a line parallel with the shaft.

By this construction I am enabled to provide a very efficient and simple frictional device for driving loose pulleys.

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

1. The knee-levers D, operating between the

disk C and the support E, in combination with the operating-arms F and the sliding clutch-ring H, substantially as and for the purpose herein described.

2. In combination with the loose pulleys A, disk C, and the support E, the levers D D, when placed in a line at an angle with the shaft, so as to force the disk against the pulleys as they are moved more nearly parallel with it, substantially as herein described.

ALFRED SWINGLE.

Witnesses:

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