

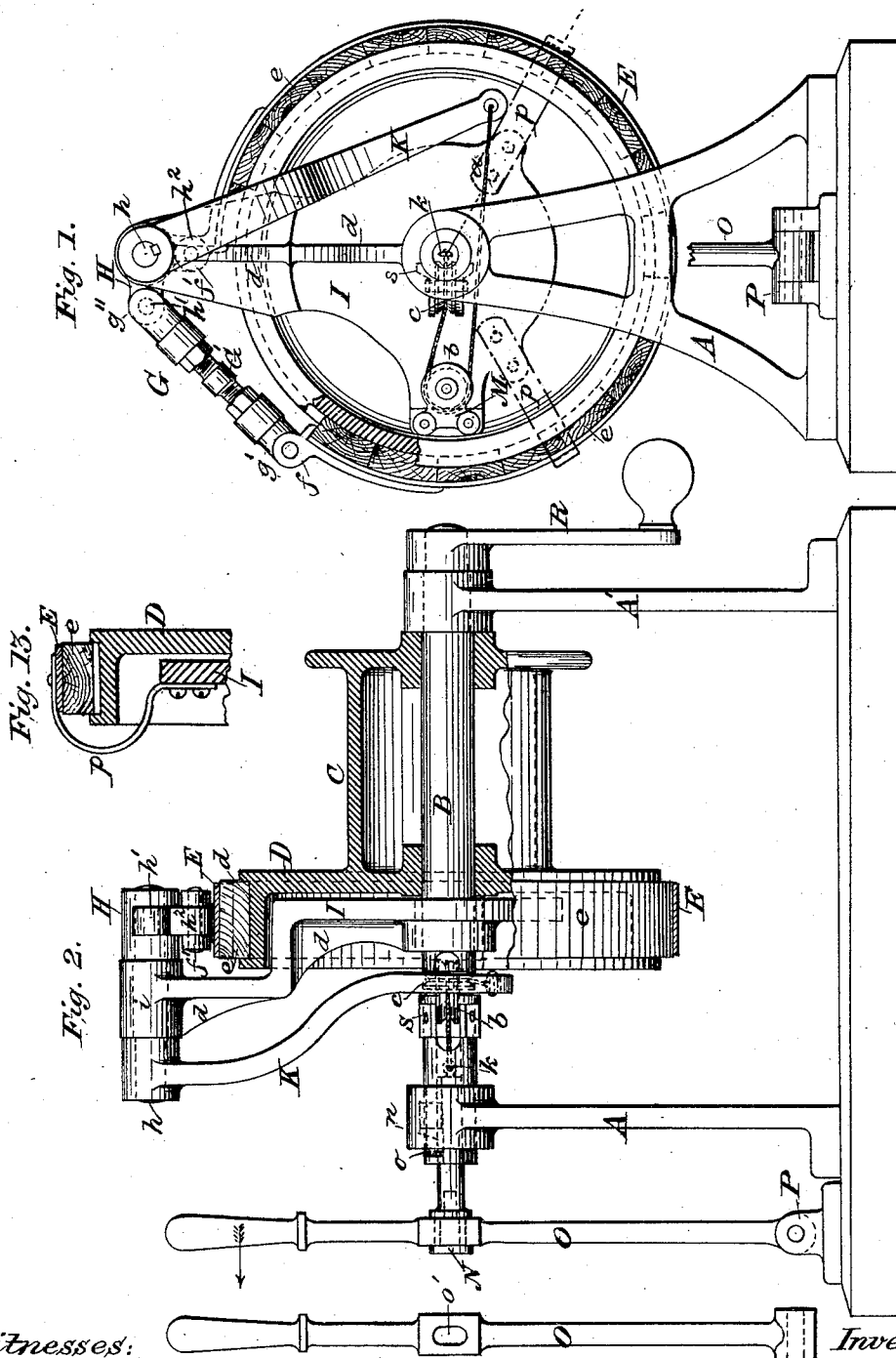
(No Model.)

2 Sheets—Sheet 1.

T. SYMONDS.
FRICTION DEVICE FOR WINDLASSES.

No. 472,564.

Patented Apr. 12, 1892.



Witnesses:

Le. N. Parker.
Geo. W. Perkins.

Inventor:

Thomas Symonds,
By T. C. Doughty
Attorney.

(No Model.)

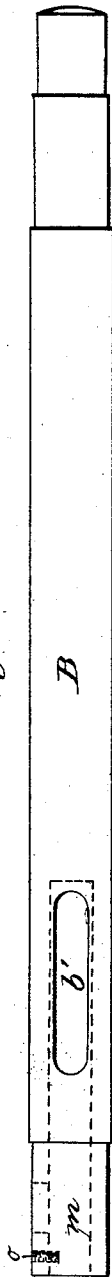
2 Sheets—Sheet 2.

T. SYMONDS.
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Patented Apr. 12, 1892.

Fig. 3.



Witnesses:
Chas. W. Parker.
Geo. W. Jenkins.

Fig. 4.



Fig. 6.

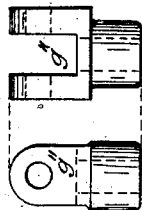


Fig. 9.

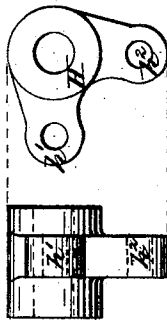


Fig. 8.

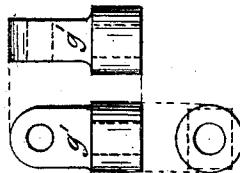


Fig. 12.



Fig. 5.

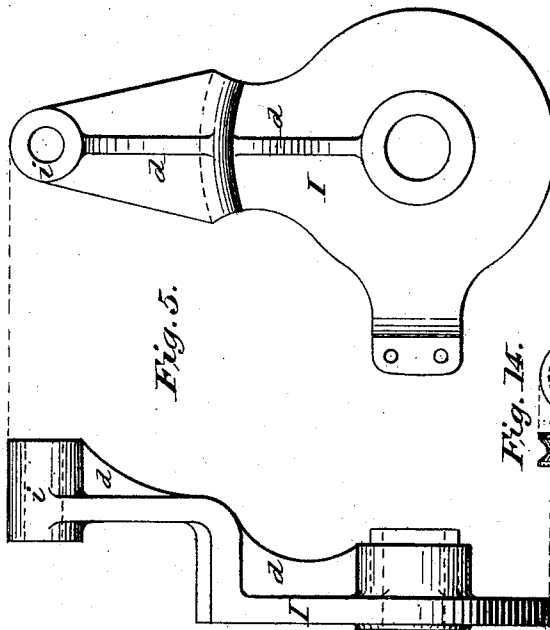


Fig. 14.

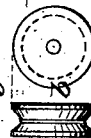


Fig. 11.

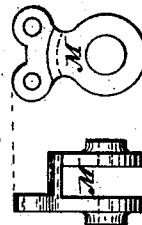
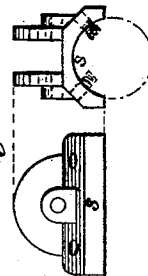


Fig. 10.



Inventor:
Thomas Symonds,
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UNITED STATES PATENT OFFICE.

THOMAS SYMONDS, OF LEOMINSTER, MASSACHUSETTS.

FRICTION DEVICE FOR WINDLASSES.

SPECIFICATION forming part of Letters Patent No. 472,564, dated April 12, 1892.

Application filed April 18, 1891. Serial No. 389,503. (No model.)

To all whom it may concern:

Be it known that I, THOMAS SYMONDS, a citizen of the United States, residing at Leominster, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Friction Devices for Windlasses; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in revolving friction-bands; and the object is to produce devices by which a friction-band can be easily and quickly applied to the usually revolving drums, pulleys, wheels, &c., of hoisting machinery, and also to act as a brake or clutch mechanism whenever desired; also, to facilitate the stopping of the friction-band while the machinery is in motion by releasing it, and, finally, to produce a very simple and effective friction attachment for machinery of any kind at a very reasonable expense and one not liable to get out of order.

With these objects in view my invention consists in the construction of certain details and arrangement of parts, as will be more fully described hereinafter, and more specifically pointed out in the claims, reference being had to the accompanying drawings and the letters of reference marked thereon.

Like letters indicate similar parts in the different figures of the drawings, in which—

Figure 1 represents an end elevation of the improved friction-band, partly broken away. Fig. 2 is a side elevation of the same, partly in section and broken away. Figs. 3 to 14, inclusive, are detail views, on an enlarged scale, of different parts thereof.

In the accompanying drawings, A and A' represent the stands or frames secured to the foundation of any suitable kind. In the bearings of this frame the main shaft B is journaled, and upon it is the drum C, revolving loosely thereon until the brake-band is applied, when it revolves with the shaft B. It has on one side the friction-wheel D, which is provided with flanges on each side, forming the groove *d*, in which the friction-band fits.

This band is composed of the metal strap E, to which the blocks of wood or other suitable material *e* are secured. To each end of the strap E suitable eyes *f* and *f'* are riveted, and to the eye *f* the turn-buckle G (by which the friction-band is adjusted, as required) is attached. This turn-buckle is composed of the central piece G', provided with a right and left hand thread, and the end pieces *g'* and *g''*. (Shown in detail in Figs. 6, 8, and 12.) One of these pieces *g'* of the turn-buckle is directly connected with the eye *f* of the strap E, while the other end *g''* is attached to the end *h'* of the bell-crank H, secured to a rocker-shaft *h*. The opposite end of the strap E is connected by the eye *f'* to the other arm *h''* of the bell-crank H. The eyes *f* *f'* have forked ends to receive, respectively, the one end of the turn-buckle and one of the arms of the bell-crank H.

The rocker-shaft *h* is supported in the hub of a crank-arm I, having a right-angled bend in it and secured to the main shaft B, while the outer end of said rocker-shaft is carried in the eye of a curved lever K, which is keyed to said rocker-shaft. The crank-arm I is so constructed that its lower part enters into the recess formed in the side of the wheel D, and it is strengthened by suitable brackets *d*. At its lower side the crank-arm has a short arm, to which a bracket M (seen in detail in Fig. 11) is secured, and in it the sheave *b* is journaled.

The outer free end of the lever K is provided with an eye, to which a wire rope *a*, chain, or its equivalent is secured, and passing over the sheave *b* said rope *a* runs over another sheave *c*, and passing through a slot *b'* (seen in Fig. 3) in the shaft B is connected to an eye *k*, screwed into the end of a sliding pin L. The sheave *c* is journaled in a small bracket *s*, secured to the shaft B by screws *t* (see Fig. 10) and fitting onto the shaft B, so that the wire rope can pass over the sheave *c* directly to the eye *k* in the pin L. This pin L fits into a hole *m*, bored into one end of the main shaft B, and is provided with a key-seat *n*, into which a key, feather, or pin *o* of proper size and secured in the main shaft fits, preventing the shaft L from revolving separately, but permitting it to slide forward and backward, as the occasion requires it. Into the

end of the pin L a plug K, forming a pin with collar, is screwed.

A lever O, pivoted to a bracket P, is provided with a slot *o'*, which loosely fits over the pin-plug N, and when drawn upon in the direction of the arrow (shown in Fig. 2) it draws upon the wire rope *a* and its connecting mechanism to the lever K, and thus by means of the bell-crank H and turn-buckle G draws the friction-band against the friction-wheel D. When released from the pressure on the lever K, the friction mechanism can freely revolve independent of the drum until again required and brought in contact with the friction-wheel D.

If desired, two, three, or more springs *p*, curved as shown, may be arranged and secured to the side of the arm I, and passing onto the back of the friction-strap or brake-band E said springs *p* raise it out of contact with the periphery of the friction-wheel D, allowing it to revolve freely, and thereby preventing wear of the blocks *e*, as is ordinarily the case, and permitting the load, whatever it may be, to be deposited wherever desired. When anything is to be hoisted, the friction-band is again applied to the wheel D by the lever O and its intermediate mechanism.

If it is desired to operate the mechanism by hand instead of steam, crank R may be employed, as seen in Fig. 2.

The friction mechanism is well adapted for dredging-machines, elevators, hoisting-machines of all kinds, derricks, or for any other kinds of machinery wherever applicable. It is simple in its construction as well as in its operation. It is not liable to become disarranged during operation. It can be easily and very readily applied to old as well as new machinery at a very small expense. When the friction is applied or hauled taut on the drum, the load will be hoisted, and when released it can readily be lowered.

Another advantage of this device is that the friction of the band is applied to substantially the entire surface or circumference of the friction-drum. It also forms one of the most powerful devices which takes the place of a clutch known to me.

I am aware that stationary friction-bands and mechanism for operating them have been used to act as friction-brakes for machinery and disclaim such construction; but,

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

1. In a machine of the class described, a shaft hollow at one end, a wheel thereon, a friction-strap encircling said wheel, arms connected to the ends of said strap, a rock-shaft, a lever for rocking said shaft, a pin adapted to enter said hollow shaft, and a flexible connection between said pin and the aforesaid lever, as specified.

2. In a machine of the class described, a shaft hollow at one end, a pin movable therein, a wheel loose on said shaft, a crank-arm fixed on said shaft, a rock-shaft mounted in said arm, a lever thereon, a bell-crank secured to said rock-shaft, a brake-strap connected to said bell-crank and loosely encircling said wheel, and a rope connecting said pin and said lever, substantially as set forth.

3. In a machine of the class described, a shaft hollow at one end, a pin therein, a wheel loose on said shaft, a crank-arm secured on said shaft, sheaves mounted on said crank-arm, a brake-strap carried by said crank-arm and encircling said wheel, and a flexible connection between said pin and said brake-strap, passing around said sheaves, substantially as described.

4. In a machine of the class described, a main shaft, a wheel thereon, a crank-arm secured thereto, a rocker-shaft carried at the outer end of said crank-arm, and a bent lever attached to said rocker-shaft, in combination with a bell-crank, also attached to said rocker-shaft, a turn-buckle attached to one end of said bell-crank, and a strap attached at its opposite ends to said turn-buckle and said bell-crank and passing about said wheel, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS SYMONDS.

Witnesses:

T. C. BRECHT,
GEO. W. JINKINS.