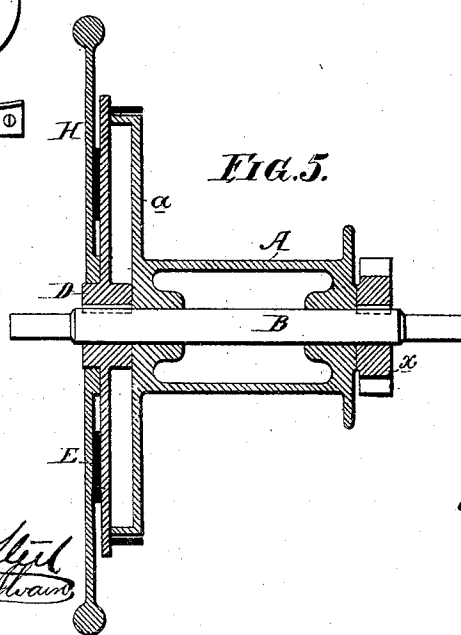
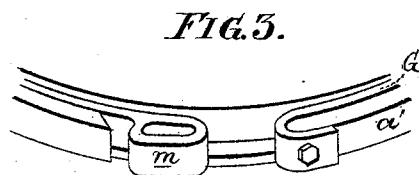
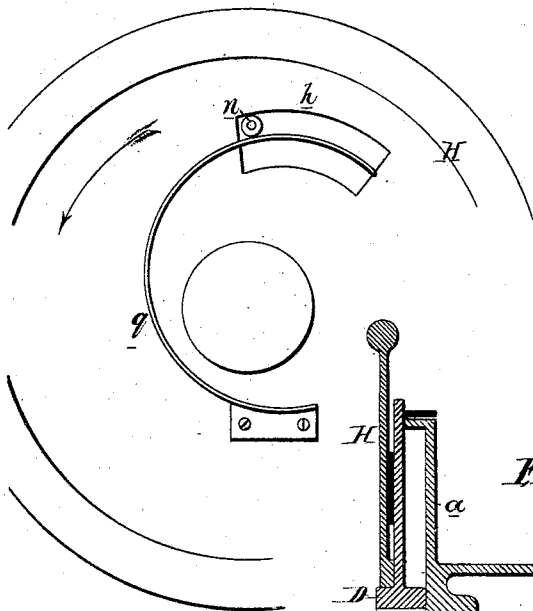
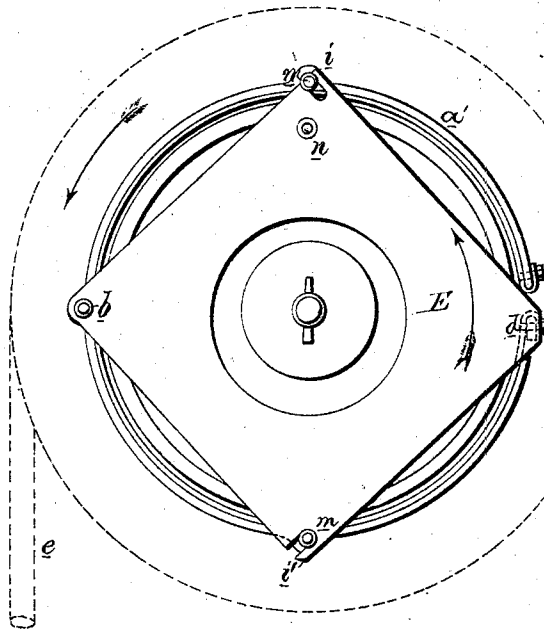
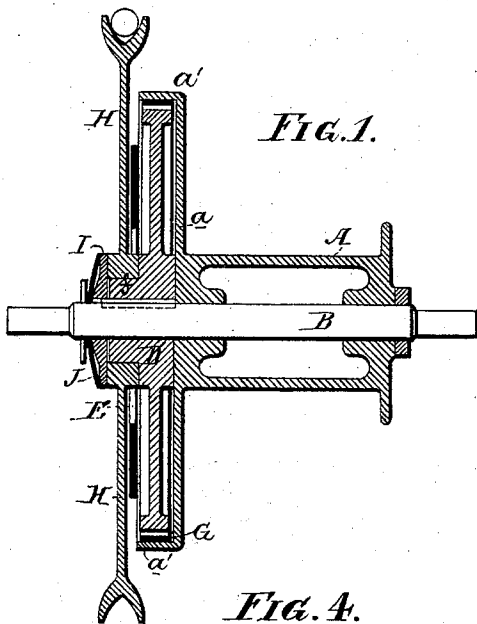


Brake-Clutch for Hoisting-Machines.

Fig. 2.



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Chas. McLean

J. A. Weston
By his attys
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UNITED STATES PATENT OFFICE.

THOMAS A WESTON, OF RIDGEWOOD, NEW JERSEY.

IMPROVEMENT IN BRAKE-CLUTCHES FOR HOISTING-MACHINES.

Specification forming part of Letters Patent No. 134,958, dated January 14, 1873.

To all whom it may concern:

Be it known that I, THOMAS A. WESTON, of Ridgewood, Bergen county, New Jersey, have invented a Brake-Clutch for Hoisting Apparatus, &c., of which the following is a specification:

The object of my invention is to readily and effectually operate the friction-band of a brake-clutch for hoisting and other machinery, and this object I attain by means of a lever, E, shown in Figs. 1 and 2 of the accompanying drawing, and operating in conjunction with hoisting mechanism.

A is a hoisting-barrel which can revolve freely on a shaft, B, or can be clutched thereby by brake mechanism, which I will proceed to describe.

A plate, E, which, as will be seen hereafter, performs the functions of a lever, is situated immediately in front of the wheel D, and is pivoted at *p*. Fig. 2, to a pin projecting from the rim *a'* of the enlarged flange *a* of the barrel, so that it can be moved in a plane at right angles to the shaft B. The plate E has opposite to the pivot *a* a projection, *d*, adapted to an eye, *m*, in one end of the friction-band G, the opposite end of which is secured to the rim *a'* of the enlarged flange *a* of the barrel, in the manner which will be best observed in the perspective view, Fig. 3, the said rim being cut away or recessed, and the end of the band being simply bent round one end of the recess and secured by a bolt. The plate-lever E is in the present instance square, so that it may be well steadied by bearing with three of its corners against the rim *a'* of the enlarged flange *a* of the barrel, the fourth corner being that which is connected to one end of the friction-band. The opposite corners *i i'* are confined to the said rim by studs or bolts *m* passing through curved slots in the plate, so that the latter can be vibrated to a limited extent on its pivot *b*. A driving-wheel, H, in the present instance controlled by a hoisting-rope, *e*, is hung to the hub *f* of the wheel D, and in the said wheel H is a curved slot, *h*, for receiving a roller, *n*, on a pin projecting from the plate-lever E. (See Fig. 2.) A washer, I, adapted to the shaft B and keyed to the same, is caused, by a disk-spring, J, to bear against the hub of the wheel H, so that the latter, owing to the friction thus created, cannot be turned inde-

pendently of the wheel D without a slight effort. The curved slot *h* is made in the arc of a circle eccentric as regards the center of the shaft B, and although both edges of the slot may be rigid, I prefer that part of a spring, *q*, shall form the inner edge of the slot for a purpose explained hereafter, the said spring being secured to the driving-wheel H, as shown in Fig. 4, which represents a front view of the said wheel.

In hoisting with the above-described mechanism the wheel H must be driven in the direction of the arrow, and the first movement of the wheel in this direction will, owing to the action of the curved slot *h* on the roller *n* of the plate-lever E, have the effect of moving the latter on its pivot *b* in the direction of its arrow, Fig. 2, and the result will be the embracing of the friction-wheel D by the band G, and the clutching together of the driving-wheel H, plate E, wheel D, and hoisting-barrel A. When the weight has to be lowered, all that is necessary is to retard or turn back the driving-wheel H, when the wheel D will be freed from the control of the friction-band and the barrel will be at liberty to revolve freely on the shaft, or it may be retarded to an extent determined by the manipulation of the driving-wheel.

In the modification illustrated in Fig. 5 the friction-wheel is formed on the enlarged flange *a* of the barrel, and one end of the friction-band is attached to a wheel, D, secured to the shaft, the other end being connected to the plate-lever E, with a result precisely similar to that described above.

In both cases I propose to secure to the shaft B a ratchet-wheel, *x*, adapted to a pawl which will prevent the shaft from turning back when the weight hoisted by the apparatus has to be retained in an elevated position.

The main feature of my invention is the medium through which the friction-band is tightened, this medium being the lever E, which, in the present instance, is in the form of a quadrangular plate, but which may be made in different shapes, provided it is so pivoted as to vibrate in a plane at right angles to the center of the shaft B, and although this plate-lever may be operated by different appliances, I prefer the plan described, and especially prefer the employment of a spring, *q*, which, on move-

ing the wheel in the direction of the arrow, when the hoisting is first commenced, must yield to a limited extent until the end of the curved slot *h* is in contact with the roller *n* on the lever *E*, when the force exerted to hoist the weight will be through a rigid medium, while the spring acted on by the roller will continue to maintain the friction-band tight. In other words, the power to tighten the friction-band is exerted through an elastic medium, which is the spring *q*, while the hoisting is effected through a rigid medium.

The plate-lever *E*, through the medium of which the friction-band is operated, may be applied to brake-clutches generally.

I claim as my invention—

1. In a clutch-brake, the combination of a friction-wheel and friction-band with a lever,

E, through the medium of which the band is controlled, substantially in the manner described.

2. The combination of the driving-wheel *H* and its curved slot *h*, the lever *E* and its pin or slot *n*, adapted to the said slot, the friction-band *G*, wheel *D*, and barrel *A*.

3. A spring, *q*, forming the inner edge of the slot *h* in the driving-wheel, as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOS. A. WESTON.

Witnesses:

WM. A. STEEL,
HUBERT HOWSON.