

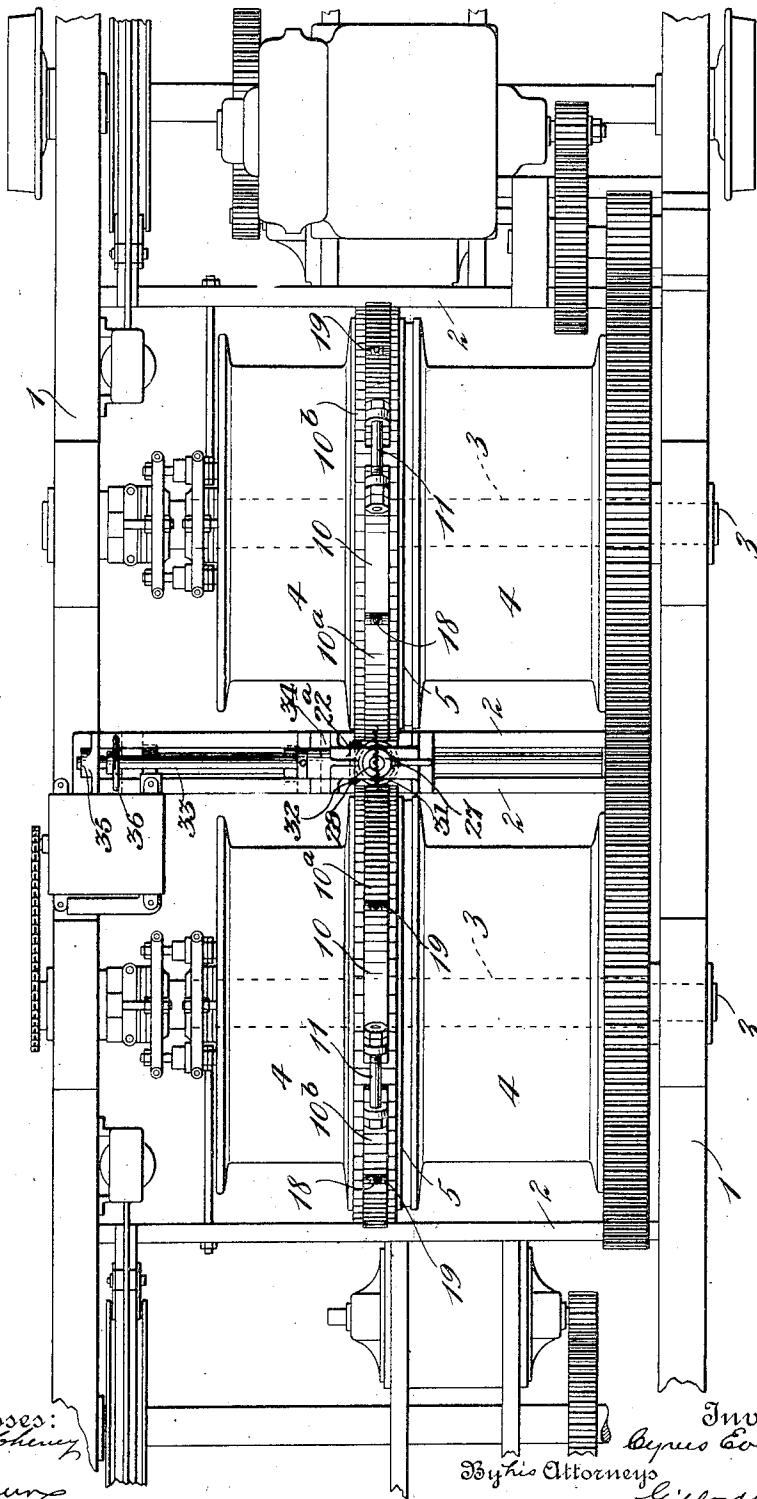
C. EVERS.  
MACHINE BRAKE.  
APPLICATION FILED FEB. 11, 1910.

1,036,594.

Patented Aug. 27, 1912.

2 SHEETS—SHEET 1.

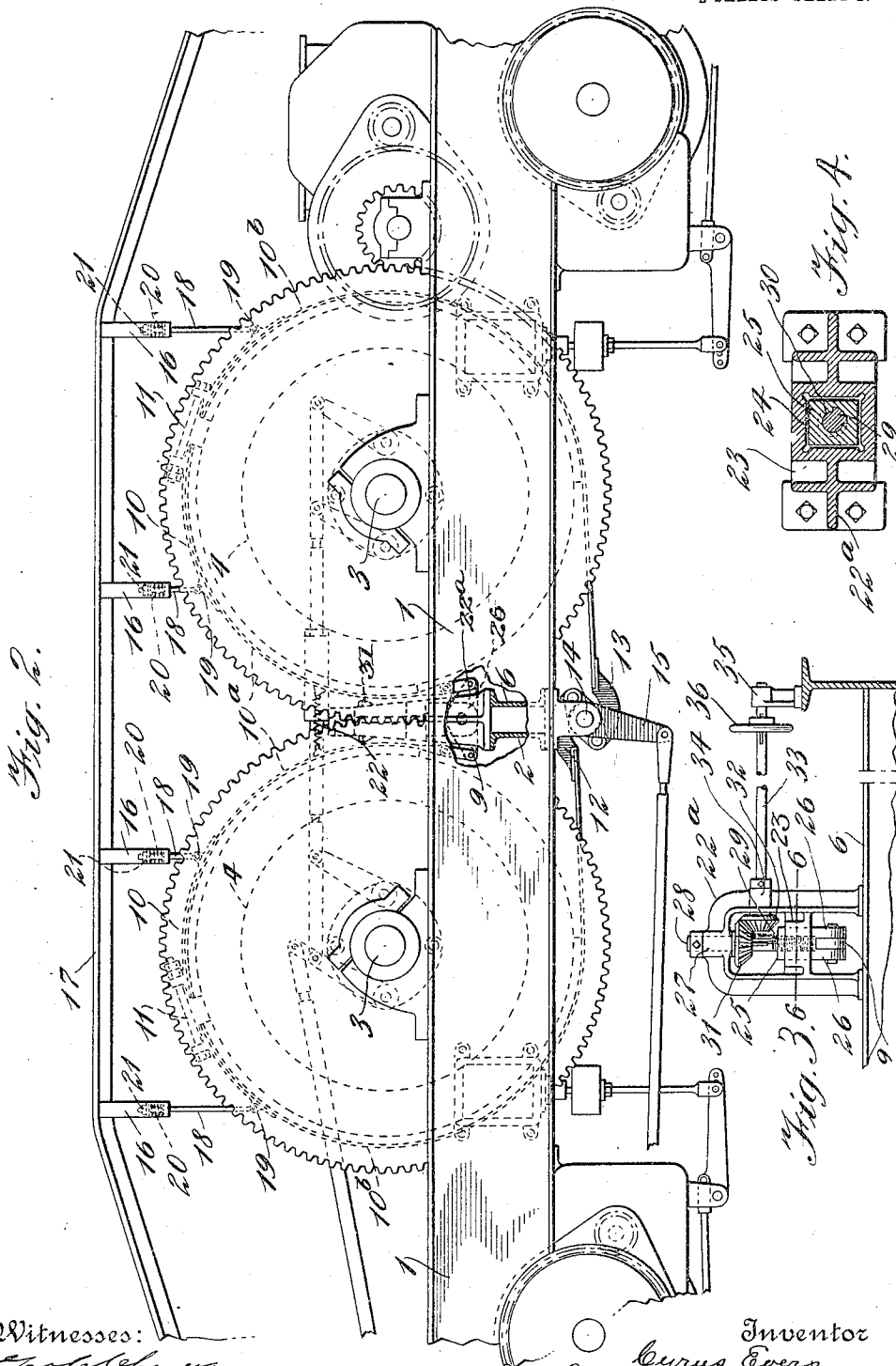
Fig. 1.



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# UNITED STATES PATENT OFFICE.

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## MACHINE-BRAKE.

1,036,594.

Specification of Letters Patent.

Patented Aug. 27, 1912.

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*To all whom it may concern:*

Be it known that I, CYRUS EVERS, a citizen of the United States, residing at New York city, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Machine-Brakes, of which the following is a specification.

My invention relates generally to new and useful improvements in machine brakes, and more particularly to a braking arrangement embodying a plurality of band brakes for braking or controlling a plurality of rotatable elements.

The primary object of the invention is to provide an improved operating means for controlling by a single operation a plurality of band brakes, so that all of said brakes may be applied or released simultaneously.

A further object is to provide means in connection with the operating means for automatically compensating for any difference in wear which may take place between the several brake bands, so that a positive application of the brakes will always be insured irrespective of the wear thereon.

A further object is to provide means whereby the bands may be simultaneously adjusted relative to the elements to be braked in order to provide for the proper degree of friction being produced when the brakes are applied.

The invention consists in the improvements to be fully described hereinafter and the novelty of which will be particularly pointed out and distinctly claimed.

I have fully and clearly illustrated my invention in the accompanying drawings to be taken as a part of this specification and wherein—

Figure 1 is a plan view of a structure embodying my invention. Fig. 2 is a view in side elevation of the construction shown in Fig. 1. Fig. 3 is a detailed view of a regulating mechanism shown in Figs. 1 and 2. Fig. 4 is a section on the line 6—6 of Fig. 3.

Before proceeding to a description of the invention in detail, I would state that I have shown the same as applied to the bucket line operating drums of a self-pro-

PELLING trolley hoist, but I desire it understood that this showing is made merely for purposes of illustrating one of the applications of which the invention is capable, without any intention of limiting myself thereto.

Referring now to the drawings by characters of reference, 1, 1, designate portions of the longitudinal side frame members of a self-propelled trolley hoist, said members being horizontally disposed and shown as consisting of I-beams, connected by cross-beams 2, 2.

Mounted on the longitudinal side frames are transversely extending drum shafts 3, 3 parallel to each other and horizontally disposed, and upon each shaft is mounted a pair of cooperating drums 4, 4, one of which drums of each pair being provided with an annular friction face 5. The construction of these shafts and drums forming no part of my present invention, and being shown merely for purposes of illustration, I do not deem it necessary to describe the construction of the same or their operation in greater detail. Extending between the drums and mounted upon the side frames is a transversely extending member 6, said member being rigidly connected at its respective ends to the side members of the frame. Upon this transverse member 6, is supported a fulcrum element, consisting of an intermediately fulcrumed equalizing or compensating lever 9, said lever being fulcrumed on an adjustable support to be more fully described hereinafter. Surrounding each of the annular friction surfaces 5, hitherto described, is a brake band 10, preferably made in relatively adjustable sections 10<sup>a</sup>, 10<sup>b</sup>, connected by an adjusting bolt 11. One end of each of these brake bands is connected to an end of the lever 9, the opposite ends of said bands being connected to oppositely disposed arms 12, 13, rigidly secured to a transversely disposed operating shaft 14, having an arm 15 by means of which connection is made to the operating device which is manipulated by the operator in applying and releasing the brakes.

The equalizing or compensating device

performs an important function, in assuring that both brake bands will be applied with substantially equal promptness and force irrespective of the fact that one band may be worn to a greater degree than the other. Should one band become more worn than the other it is clear that the pull on the other band will serve to rock the compensating lever to pull the loose band into closer engagement with the friction surface of the drum with which it coöperates. In other words, should one band become more loose than the other, the pull on the tighter band will, through the agency of the equalizing means, draw the loose band about its friction surface to make said bands bear substantially the same relation to their respective annular braking surfaces.

In order that the brake bands will be held out of contact with the annular friction surfaces when the brakes are released and the drums running free, I provide means for supporting the bands normally out of applied position, such means consisting of hangers 16, secured to a part 17 of the hoist frame. Slidably connected to each hanger is a rod 18, pivotally connected to the brake band, as at 19, and engaged by a spring 20 serving to normally retract the rod to lift the bands from the drums. The springs are preferably coiled about the rods 18 and between the hanger proper and a projecting part on the rods; for instance, the nuts 21. Between the drums, the bands are held from engagement with the rotatable friction surfaces by means of a contractile spring 22, the ends of which are connected to the respective bands.

I will now describe a means whereby the equalizing lever 9 is adjustably supported on said member 6, so that the bands may be adjusted relative to the rotatable braking surfaces: 22<sup>a</sup> designates an arch-like frame which is supported on the transverse member 6, said arch-like frame including a horizontal member 23, having a polysided guide opening 24 in which is slidably arranged a vertical supporting element 25 having spaced ears 26 at its lower end between which the equalizing device 9 is fulcrumed. Rotatably mounted in a bearing 27 in the apex of the arch frame is a vertical shaft 28 having a threaded portion 29 threaded into a socket 30 in the element 25, and feathered onto the shaft is a beveled gear 31, with which meshes a bevel gear 32, on the end of an operating shaft 33, rotatably mounted in a bearing 34 on the arch frame. The opposite end of the shaft turns in a bearing 35 on one of the side members of the hoist frame, a hand-wheel 36 being provided for turning the operating shaft. It will be seen that by the mechanism just described the supporting element 25 may be adjusted to increase or decrease the amount

of friction produced when the bands are operated.

Having thus described my invention, what I claim is:—

1. In combination, a pair of rotatable members, a pair of brake bands acting on said members, an intermediately fulcrumed lever to the opposite ends of which corresponding ends of the said bands are respectively attached, means for adjusting the fulcrum of said lever, and means acting on the opposite corresponding ends of said bands for operating the same.

2. In combination, a pair of rotatable members, a pair of brake bands acting on said members, an equalizing means connecting the end of one of said bands with the corresponding end of the opposite band, operating means connecting the opposite corresponding ends of said bands, and means for adjusting the equalizing means to take up slack in the bands.

3. In a device of the character described, in combination, a pair of rotatable members, a pair of brake-bands acting on said members, a support, an equalizing device on the support, means for adjusting the support to regulate the bands, and means independent of the equalizing device for operating the bands.

4. In a device of the character described, in combination, a pair of rotatable members, a pair of brake bands acting on said members, a slidable support, an equalizing device on the support, means for adjusting the support to regulate the bands, and means independent of the equalizing means for operating the bands.

5. In a device of the character described, in combination, a pair of rotatable members, a pair of brake bands acting on said members, a slidable support, a screw for sliding the support, an equalizing device on the support to which corresponding ends of the brake-bands are connected, and means connected to the opposite corresponding ends of the brake bands for operating the said brake bands.

6. In a device of the character described, in combination, a pair of rotatable members, a pair of brake-bands acting on said members, a slidable support, an equalizing device on the support and to which the brake-bands are connected, a screw engaging the support, and gearing for turning the screw.

7. In a device of the character described, in combination, a pair of rotatable members, a pair of brake-bands acting on said members, a slidable support, an equalizing device on the support and to which the brake-bands are connected, a screw engaging the support, gearing for turning the screw, and a hand shaft for operating said gearing.

8. In a device of the character described, in combination, a pair of rotatable members, 130

a pair of brake-bands acting on said members, a frame including a guide, a support slidable in the guide, an equalizing device on said support, a screw on the frame for  
5 operating the support, gearing for operating said screw, and means for operating the brake-bands.

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

CYRUS EVERS.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."