

LEOPOLD KLEE.

Improvement in Brake for Inclined Planes and Hoists.

No. 124,592.

Patented March 12, 1872.

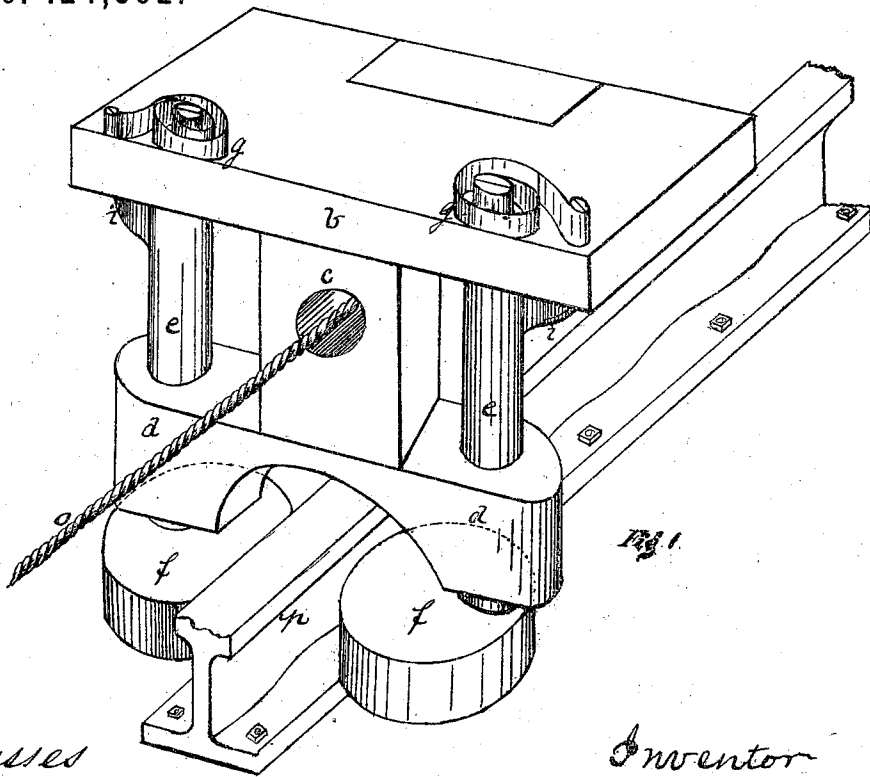


Fig. 1.

Witnesses

R. Henshall

James J. Kay

Inventor

Leopold Klee

*By Bakewell, Wisely & Merr
his Attorneys*

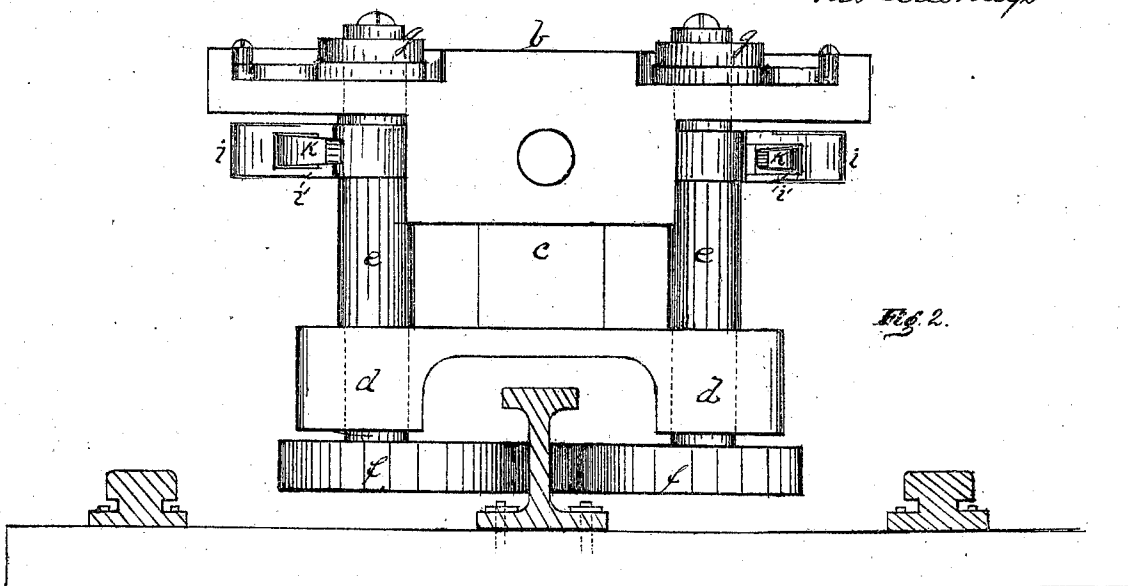


Fig. 2.

LEOPOLD KLEE.

Improvement in Brake for Inclined Planes and Hoists.

No. 124,592.

Patented March 12, 1872.

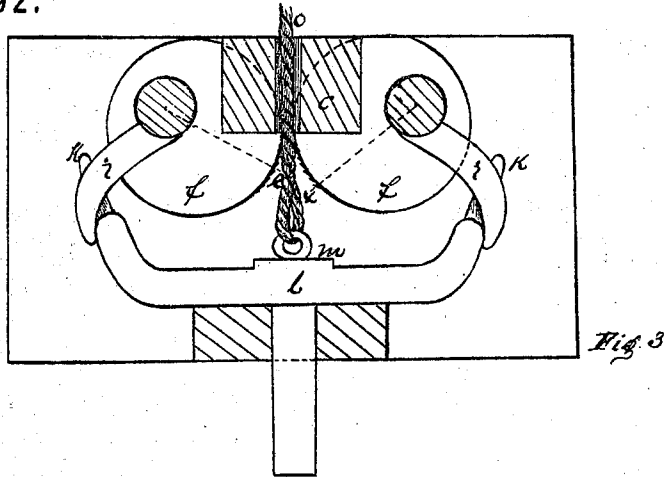


Fig. 3.

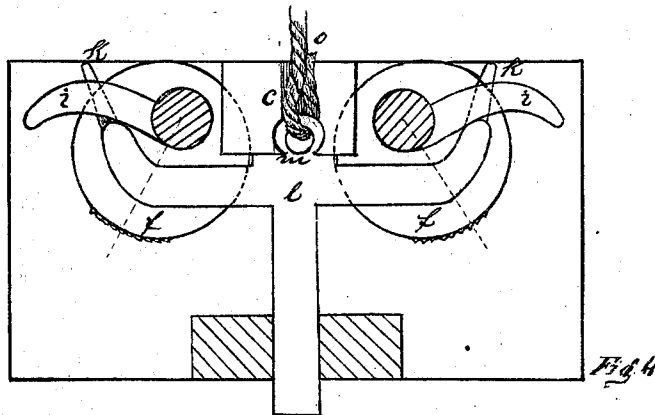


Fig. 4.

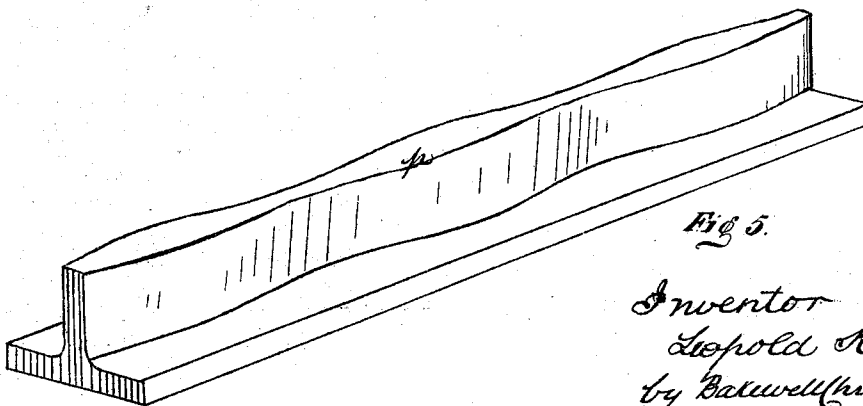


Fig. 5.

Inventor
Leopold Klee
by Bakuwell, Christy & Herr
his Attorneys

Witnesses
R. C. Marshall
James. J. Kay.

UNITED STATES PATENT OFFICE.

LEOPOLD KLEE, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN BRAKES FOR INCLINED PLANES AND HOISTS.

Specification forming part of Letters Patent No. 124,592, dated March 12, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, LEOPOLD KLEE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Automatic Brake for Inclined Planes and Hoists; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing which forms part of this specification, and in which—

Figure 1, Plate *a*, is a perspective view of my invention, showing it as applied to a car. Fig. 2, Plate *a*, is a front elevation of the same. Fig. 3, Plate *b*, is a plan view of the brake device when in action. Fig. 4, Plate *b*, is a like view of the same when at rest; and Fig. 5, Plate *b*, is a perspective view, showing the peculiar construction of the web of the center rail, the upper flange being removed.

Like letters of reference indicate like parts in each.

The object of my invention is to provide a means whereby the car of an inclined-plane railway or hoist will be promptly arrested and securely held in place in case it should become detached from the rope by which it is raised and lowered. My invention consists in the arrangement of two eccentric cams in such relation to a central rail and the draft-rope which sustains the car that, when the weight of the car (or a determinate proportion of the weight) is sustained by the draft-rope the cams are revolved on their axes so as to be relieved of contact with the center rail, and thus permit the car to pass freely up and down the plane; but when the weight of the car does not bear on the draft-rope, the cams will rotate against the center rail in such a manner that the downward motion of the car will be arrested by their frictional pressure against the sides of the center rail.

To enable others skilled in the art to make and use my invention, I will describe its construction and mode of operation.

In a convenient and suitable position at the under part of the car *a* I securely fasten a frame for carrying the brake device, which frame is made of iron, wood, or any other suitable material; preferably I make it of iron, for it must be very strong. This frame consists of the cross-piece *b*, block *c*, and bearings

d d. Passing through the cross-piece *b* and supported in the bearings *d d*, one on each side of the block *c*, are two shafts, *e e*, having on their outer ends the eccentrics or cams *f f*. Attached to the inner ends of the shafts *e e* are the coiled springs *g g*, which operate to turn the long axes *x x* of the eccentrics *f f* in toward each other. Attached to each shaft *e* is a curved arm, *i*, which runs backward and outward in an oblique direction. These arms *i i* have long slots *i'*, through which project the tongues *k*. These tongues extend forward from the ends of a bow-shaped follower, *l*, which operates to press forward (by means of the draft power) the rigid arms *i i*, thereby rotating the shafts *e e* and throwing the long axes *x x* of the cams out of conjunction. The draft-rope *o* is attached to the block *m*, which carries the follower *l*. The rope *o* passes through an aperture, *p*, in the rigid block *c*, against which all the strain comes.

When the car is at rest and there is no strain on the rope, the springs *g g*, acting through the shafts *e e* and arms *i i*, throw back the follower *l* into the position shown in Fig. 3; but when the weight of the car is resting upon the rope *o* the pressure of the springs *g g* is overcome, and the block *m* is drawn forward until it comes against the block *c*, which then sustains the weight of the car, so that the function of the springs is only to operate the cams *f f*, and not to support any of the weight of the car.

The track upon which my improvement is designed to be placed is constructed with a center rail, as shown at *p*. The web of this rail is of varying thickness, as shown in Fig. 5, for reasons hereinafter given.

The operation of my invention is as follows: The car is placed on a tramway of the ordinary construction, but with the addition of a center rail of the construction described and shown. As soon as the car begins its ascent or descent its whole weight is supported by the rope *o*. This draws the block *m* forward until it comes against the rigid block *c*. The follower *l*, being carried forward by the block *m*, forces back the levers *i i*. This causes the axles *e e* to rotate and throw the cams *f f* out of conjunction with the center rail *p*, (throwing them back into the position shown in Fig. 4.) This position is retained so long as the weight of the

car is on the rope; but in case the rope breaks the springs *g g* begin to act, rotating the shafts *e e*, pressing back the follower *l*, and throwing the cams *f f* into conjunction with the inner rail, as shown in Fig. 3, when the friction instantly stops the car and prevents its further descent. In order to give the cams *f f* a better "bite" upon the rail *o*, I corrugate the biting or engaging part of the cams; and further, to make sure, I give to the engaged or "web" portion of the rail the peculiar shape shown in Fig. 5. With a rail of such construction, if the cams once close on it at one of the thin parts the car will be arrested, even in absence of all rubbing friction; for the part of the rail immediately below will present the form of a wedge, over which the cams cannot pass without opening, and they cannot open until the weight of the car is sustained by the rope.

The web of the center rail may be made perfectly plain; but the shape shown is preferable.

My brake is operative on inclined planes of any angle from one degree upward until it reaches a perpendicular, when they are denominated hoists, though in such case it is better when arranged to operate in connection with

both of the "ways," when the third rail may be dispensed with. It may in like manner be operated in connection with the tram-rails of an inclined plane and dispense with the center rail.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A pair of cams, *f f*, arranged one on each side of a central rail, as constructed, and held free from a gripping contact with said rail by the draft power, and automatically caused to engage the rail, when the draft power ceases to act, by means of springs *g g*, substantially in the manner and by the means set forth.

2. The cams *f f*, shafts *e e*, and springs *g g*, in combination with a rail, *p*, alternately thick and thin, substantially as described.

3. The block *m*, follower *l*, and arms *i i*, in combination with the cams *f f* for throwing back the same out of the path of the rail *p*, substantially as described.

In testimony whereof I, the said LEOPOLD KLEE, have hereunto set my hand.

LEOPOLD KLEE.

Witnesses:

THOS. B. KEER,

W. N. HOWARD.