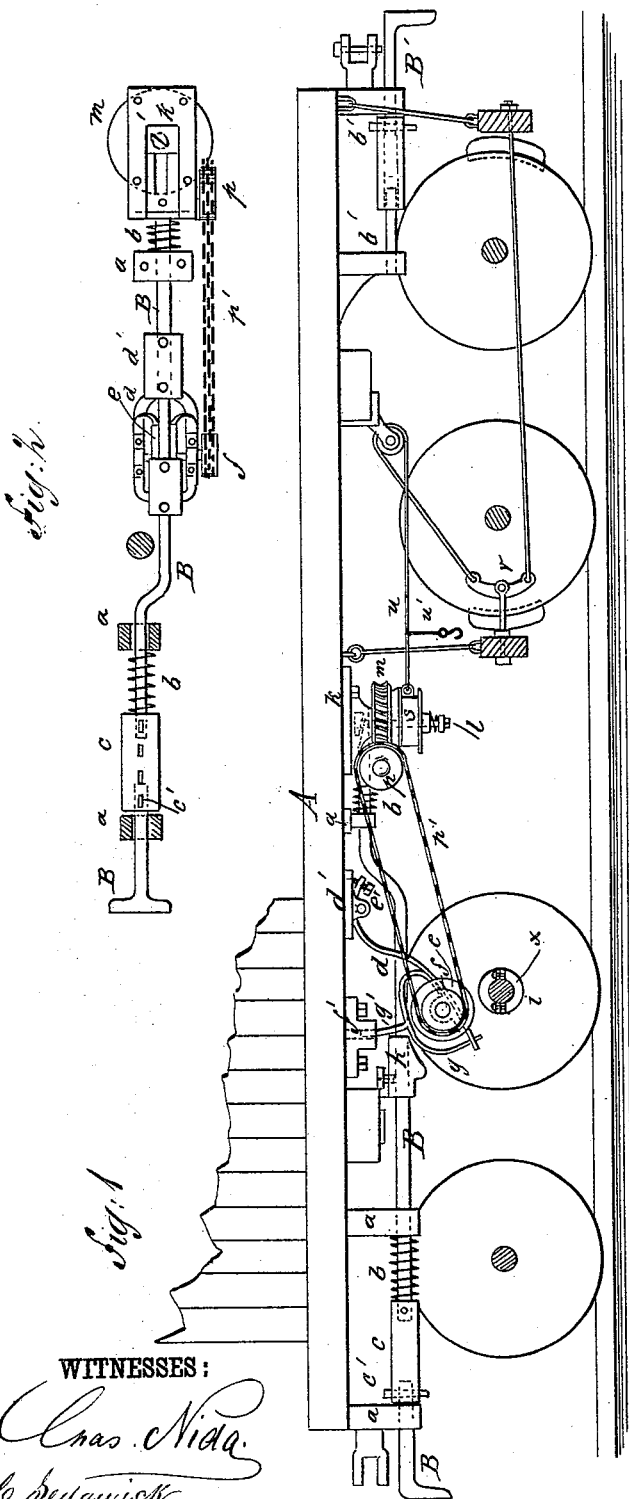


(No Model.)

B. F. SMITH.
AUTOMATIC CAR BRAKE.

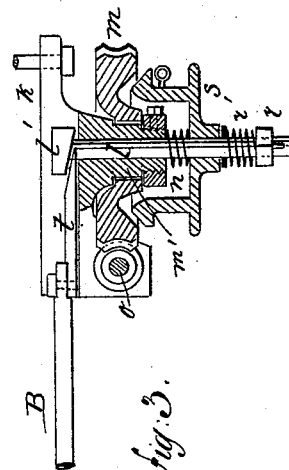
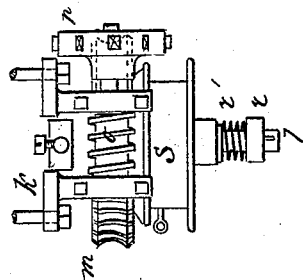
No. 262,139.

Patented Aug. 1, 1882.



WITNESSES:

Chas. Nida.
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UNITED STATES PATENT OFFICE.

BENJAMIN F. SMITH, OF ALABASTER, MICHIGAN.

AUTOMATIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 262,139, dated August 1, 1882.

Application filed May 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. SMITH, of Alabaster, in the county of Iosco and State of Michigan, have invented a new and Improved Automatic Car-Brake, of which the following is a full, clear, and exact description.

My improvements relate to the class of car-brakes in which the power for applying the brakes is obtained from the rotation of the axle; and it consists in a novel arrangement of the mechanism for automatically applying the brakes, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a car provided with my improved brake mechanism. Fig. 2 is a plan view of certain parts. Fig. 3 is a detail section, in larger size, of the winding-drum and its connected parts; and Fig. 4 is a side view of the same.

A represents a car of ordinary construction provided with the usual brakes, rods, and levers, to which my improved mechanism is connected, as hereinafter described.

In suitable boxes, *a*, beneath one end of the car, is a slide or buffer rod, *B*, fitted with spiral springs *b* for retaining it in its forward position. The forward end of the rod *B* is divided in two parts, connected by a sleeve, *c*, that is slotted to receive a key, *c'*, by which the end of the rod *B* is connected, and which allows the rod to be shortened and lengthened, as required. At the opposite end of the car is a similar buffer-rod, *B'*, but of shorter length and connected firmly in its supports *b'*, so that it serves merely as a bumper to take against the slide-rod *B* of the next car.

d is a spring-arm secured at one end to a plate, *d'*, which is attached upon the bottom of the car, and receiving in its forked lower end the pulley *e*, the pulley being sustained in suitable boxes upon the ends of the spring-arm.

f is a sprocket-wheel fixed upon one end of the axle of the pulley *e*.

e' is a set-screw tapped through the upper end of the spring-arm *d*, and bearing upon the plate *d'* for the purpose of regulating the tension of the spring-arm, and for retaining the pulley *e* and sprocket-wheel in proper position

for action. At the lower end of the spring-arm *d* is attached a plate, *g*, which is bent in elliptical form, and is provided with a guide-pin, *g'*, that enters the guide-socket *f'*, attached upon the bottom of the car.

h is a cam attached upon the slide-rod *B* in position for bearing upon the elliptical plate *g* when the slide-rod is moved backward for the purpose of moving the arm and the pulley *e* downward. The cam is attached by a set-screw, which allows of its adjustment.

To the axle of the car, beneath the pulley *e*, is attached a pulley, *i*, shown as made in two parts, with wings attached together by bolts, which clamp the pulley to the axle.

To the bottom of the car, adjacent to the inner end of the slide-rod *B*, is attached a plate, *K*, (shown most clearly in Figs. 3 and 4,) which plate is apertured vertically to receive the pin *l*, the head *l'* of which is beveled, and is contained within a groove in the upper part of the plate *K*. The plate *K* is formed with a journal, *m'*, that receives a spur-wheel, *m*, retained in place by a screw-collar, *n*, on the journal beneath the spur-wheel.

o is a worm journaled on the plate *K* at the side of and engaging with the spur-wheel *m*, and upon the axle of the worm *o* is a sprocket-wheel, *p*, that connects by a chain, *p'*, with the sprocket-wheel *f*, before mentioned.

On the lower end of the pin *l* is a nut or collar, *r*, retained by a key, and on the pin, above the collar *r*, is a hollow drum or pulley, *s*, that rests upon a spiral spring, *r'*, between its under side and the roller *r*. The upper edge of the pulley *s* is beveled and enters a beveled groove of corresponding form that is in the under side of the spur-wheel *m*.

Upon the inner end of the slide-rod *B* is attached a beveled cam-piece, *t*, extending beneath beveled head *l'* of the pin *l*, the cam being slotted to pass at each side of the pin.

To the drum or pulley *s* is connected one end of a rope or chain, *u*, that passes over a suitable guide-pulley, and is connected to the lever *v* of the usual brake mechanism. The rope *u* is provided, as shown at *u'*, with a short rope having a hook at its end for connection to the eyebolt on the winding-drum *s*, so that when necessary the rope can be shortened when a quicker application of the brakes is desired.

This brake mechanism operates as follows:

The train being in motion, to apply the brakes the engineer will check the speed of the locomotive either by application of the hand-brake or by cutting off the steam, and this will cause
 5 all the cars of the train to come together, and the fixed buffers B' being thus brought in contact with the sliding rods or buffers B, the latter will be moved inward. The effect of this movement is that the cam *h* on the rod B, pressing
 10 upon the plates *g*, will carry the pulley *e* into contact with the pulley *i* on the axle, and the sprocket-wheel *f* being thus revolved, the motion is communicated to the sprocket-wheel *p*, and through the worm to the spur-wheel *m*.
 15 At the same time, the cam *t* being forced beneath the head of the pin *l*, the pin is raised, and the winding-drum *s* is carried into contact with the spur-wheel *m*, so that the winding-drum is rotated by the friction, and the chain
 20 or rope being thereby wound, the brakes are applied. It will be evident that when the cars are again apart the slide-rods B will return to their first position, and the cam *t* being thereby withdrawn from beneath the head of the
 25 pin *l*, the winding-drum will be released and the brakes thrown off, and at the same time, the cam *h* being drawn forward, the pulley *e* will rise and its rotation cease.

This mechanism is adjustable in all its parts
 30 to allow application of the brakes with more or less force, as required, or more or less quickly.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

35 1. In brake mechanism, the combination of the slide-rod B, provided with cam *h*, the spring-arm *d*, carrying pulley *e* and sprocket-

wheel *f*, and the plate *g*, connected to the spring-arm, together and with the axle provided with the pulley *i*, substantially as described. 40

2. In brake mechanism, the combination of the pulley *e*, sprocket-wheel *f*, chain *p'*, sprocket-wheel *p*, worm *o*, and spur-wheel *m*, fitted for operating the winding-drum, substantially 45 as described.

3. In brake mechanism, the combination of the spur-wheel *m*, the winding-drum *s*, the pin *l*, formed with a beveled head, cam *t*, and buffer-rod B, substantially as described, for op- 50 eration as set forth.

4. The combination of the buffer-rod B, cam *t*, pin *l*, spur-wheel *m*, winding-drum *s*, rope *u*, and brake-lever *v*, substantially as described, 55 for operation as set forth.

5. In brake mechanism, the combination of the spur-wheel *m*, fitted for rotation from the car-axle, the winding-drum *s*, formed with beveled edges to engage the spur-wheel, and the buffer-rod B, operating by its backward move- 60 ment to engage the winding-drum and spur-wheel, substantially as described.

6. In brake mechanism, the pulley *e*, fitted for rotation by contact with the pulley on the car-axle, the sprocket-wheel *f*, chain *p'*, sprock- 65 et-wheel *p*, and worm *o*, fitted to operate the winding-drum of the brake, chain, or rope, substantially as described, combined for operation as set forth.

BENJAMIN FRANKLIN SMITH.

Witnesses:

JAMES W. SHAVER,
 JOHN ROBINSON.