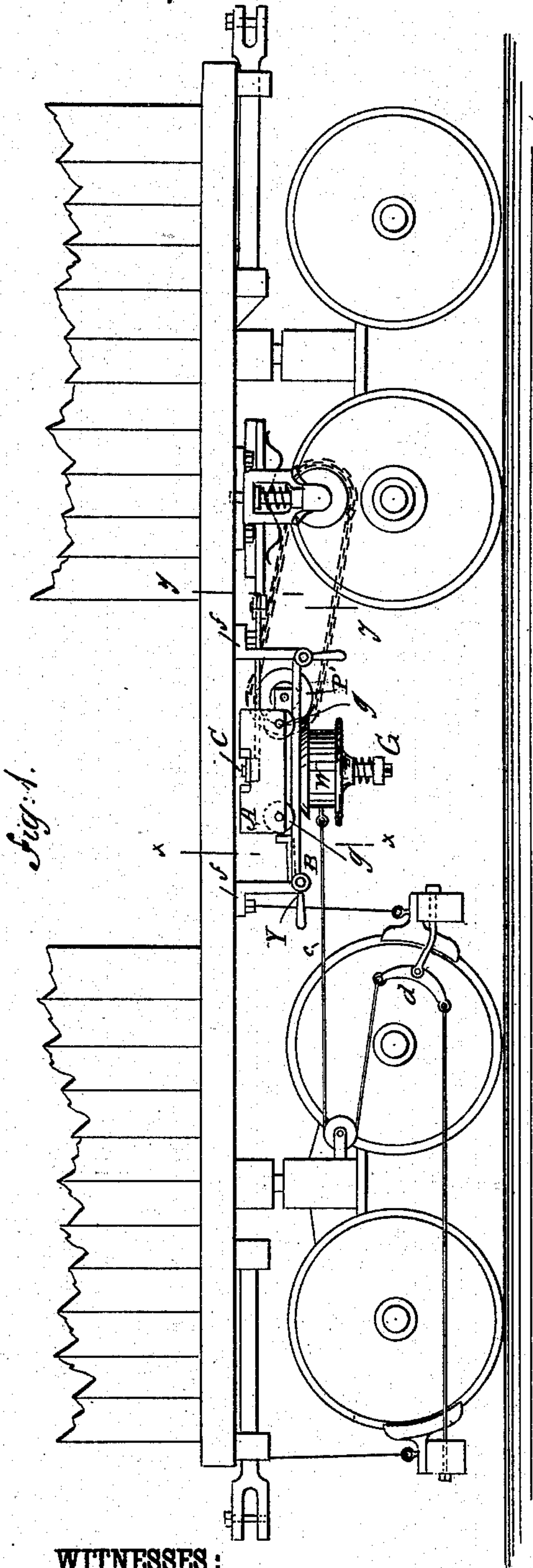


(No Model.)

B. F. SMITH.
AUTOMATIC CAR BRAKE.

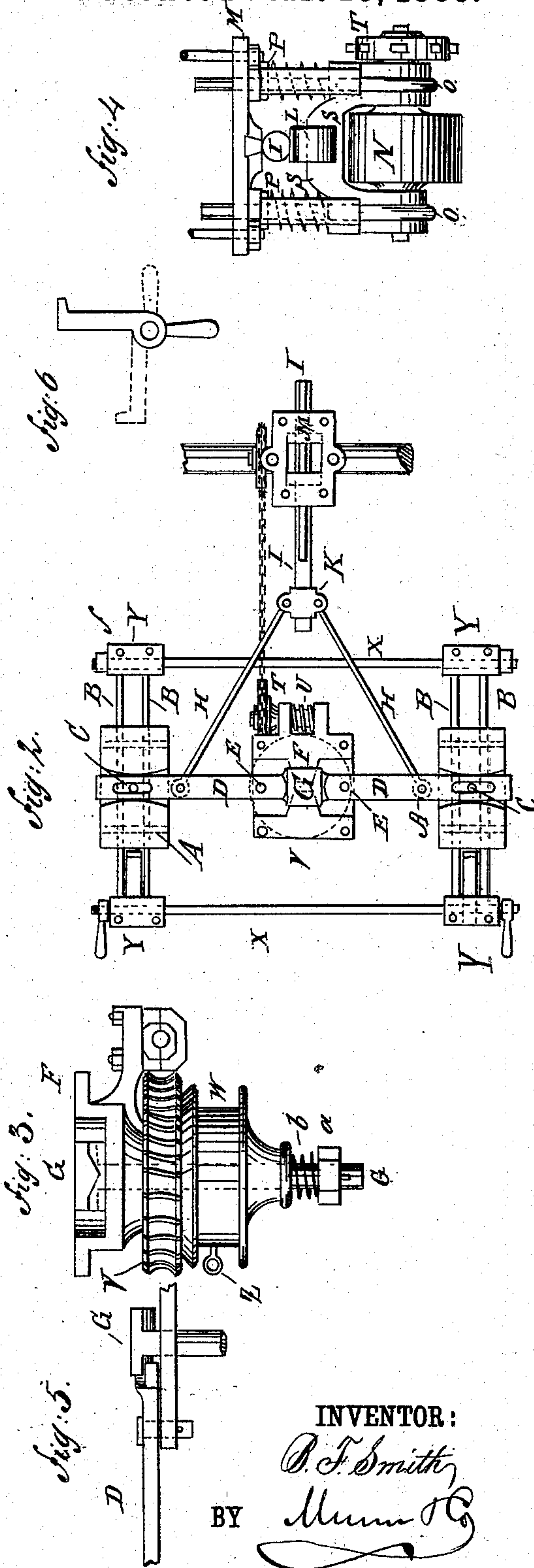
No. 274,043.

Patented Mar. 13, 1883.



WITNESSES:

Chas. Nida
C. Sedgwick



INVENTOR:

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UNITED STATES PATENT OFFICE.

BENJAMIN F. SMITH, OF ALABASTER, MICHIGAN.

AUTOMATIC CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 274,043, dated March 13, 1883.

Application filed August 1, 1882. (No model.)

To all whom it may concern:

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

The object of my improvement is to provide, in connection with the usual brake mechanism on railroad-cars, an apparatus that shall be automatic in its action in applying said brakes whenever required, and also acting independently upon each car without reference to the other cars of the train when the cars are in motion and their speed is checked; and, further, to provide for the automatic release of the brakes by the forward movement of the cars; and, second, to arrange such mechanism so that it can be rendered inoperative whenever required—as, for instance, in making up trains.

To that end my invention consists in brake mechanism that is brought into operation and released by the movement of sliding or rolling weights which are actuated by the momentum of the train, 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 railroad-car provided with my improved brake mechanism. Fig. 2 is a plan view of the mechanism for automatically applying the brake. Fig. 3 is a cross-section on line *xx* of Fig. 1. Fig. 4 is a cross-section on line *yy* of Fig. 1. Figs. 5 and 6 are detail views.

The car, as shown, is fitted with the usual brake-shoes, rods, and levers. Beneath the center of the car is fixed a casting, *F*, which is formed with a journal carrying a loose worm-wheel, *V*, and winding-drum *W*, that are sustained by a nut, *a*, and spring *b* upon the lower end of a pin, *G*, that passes vertically through the casting. The under side of the worm-wheel *V* and upper edges of the drum *W* are formed with surfaces that engage by friction, so as to cause the rotation of the two together, and from the drum *W* a chain, *c*, passes to the lever *d* of the brake mechanism. Upon the bottom of the car, at one side of the casting *F*,

hangers *ff* are attached, and on these hangers are parallel bars *B B*, these bars being arranged in pairs at the opposite sides of the casting *F*, and extending lengthwise of the car. *A A* are weights, of suitable form and size, provided with grooved wheels *g*, taking upon the rods *B*, so that said weights may move freely forward and backward. The upper sides of the weights *A* are recessed to receive the ends of the arms *DD*, and the weights are provided with pins *C*, that engage slots in the ends of the arms. The arms *D* are pivoted upon pins *E* on casting *F*, and their inner ends pass beneath the head of the pin *G*, that is fitted in the casting *F*, as before mentioned, the ends of the arms being beveled to correspond with the bevels on the under side of the head, as shown clearly in Fig. 5, so that as the arms *D* turn on their pivots their beveled ends raise or lower the pin *G*, according to the direction of movement. To the arms *D* are attached two connecting-rods, *H H*, that are in turn connected to the slide-rod *I* by a clamp, *K*. The rod *I* bears upon its outer end a grooved spring-plate, *L*, and upon its upper side is formed with a dovetailed rib, that engages a groove of corresponding shape in a plate, *M*, that is attached to the under side of the car. *N* is a pulley sustained beneath the plate *M* by a cross-shaft in a suitable frame by boxes which are connected to two side rods, *O O*, that pass through the plate *M* loosely, and upon the rods *O*, beneath washers *P*, are spiral springs, that act to retain the pulley *N* in its upward position between its supporting frames. The pulley *N* is provided with a yoke, *S*, which passes over its upper side, the under side of said yoke being grooved to correspond with the pulley, while its upper side is arched to correspond in shape to the spring *L*. Upon the shaft of the pulley *N* is fixed a sprocket-wheel, *T*, that connects by a link belt or chain to another sprocket-wheel, *P'*, that is attached to the shaft of the worm *U*, mounted upon the casting *F*. The worm *U* engages the worm-wheel *V* for rotation of the same and of the winding-drum *W*. In the hangers *f* are fitted rods *X X*, extending transversely of the car, provided with handles at their outer end, and carrying cams *Y*, that are raised and lowered

by turning the rods X. When lowered these
cams come in contact with the weights A and
prevent the movement of such weights in one
direction or in both directions, according to
the arrangement of the cams. These cams are
to be operated by hand to prevent the opera-
tion of the brakes, whenever desired.

The operation of this apparatus is as fol-
lows: Supposing a train of cars provided with
this brake mechanism to be in motion and it is
desired to slow or stop its movement, the en-
gineer would apply the brakes to the engine
so as to check its movement, and this would
bring all the cars in the train together, there-
by suddenly checking the motion. The weights
A, being free to move forward on their sup-
porting-rods, would carry the arms D forward,
and these arms, acting by their double ends,
would raise the pin G and bring the winding-
drum W into frictional contact with the worm-
wheel V. At the same time the arms D, acting
with the rod H, would carry the rod I forward,
and the spring L would force the pulley N
down into contact with a pulley on the axle of
the car. The pulley N would thus be caused to
rotate, and the rotary motion would be commu-
nicated, through sprocket-wheel T and chain,
to the worm-gear, so that the worm-wheel V
and drum W would be rotated and the rope or
chain wound. After such application of the
brakes, to relieve the brakes the train has only
to be started forward, and the forward motion
of the car would cause the weights to return
to their central position, thereby allowing the
pin G to drop and release the drum W.

I am aware that it is not new, when check-

ing a train, to operate brakes by the superior
momentum of a sliding car-body to that of the
truck; but

What I claim as new is—

1. The combination, with suitable car-brake
mechanism, of sliding weights arranged to be
moved by the starting or checking of the train
and to relieve the brakes, as described.

2. In railway-brakes, the sliding weights A,
fitted for movement upon the rods B, and the
arms D, connected to the weights and to the
brake mechanism, substantially as shown and
described, whereby the brakes are applied by
the forward movement of the weights, sub-
stantially as shown and described.

3. In railway-brakes, the combination of the
sliding weights A, pivoted arms D, sliding rod
I, provided with the plate L, and the movable
pulley N, provided with the yoke S, substan-
tially as described, combined together, and
with the car-axle and its pulley R, substan-
tially as shown and described.

4. In railway-brakes, the sliding weights A,
the pivoted arms D, pin G, formed with a
beveled head, the worm-gear V, and the wind-
ing-drum W, substantially as described, com-
bined for operation, whereby the brakes are
applied by the forward movement of the
weights, substantially as set forth.

5. The cams Y, in combination with the
weights A, substantially as and for the pur-
poses set forth.

BENJAMIN FRANKLIN SMITH.

Witnesses:

JAMES W. SHAVER,
EDGAR A. COOLEY.