

J. COCKSHOOT, Jr., & H. WEATHERILL.

Car Brake.

No. 83,042.

Patented Oct. 13, 1868.

Fig. 1

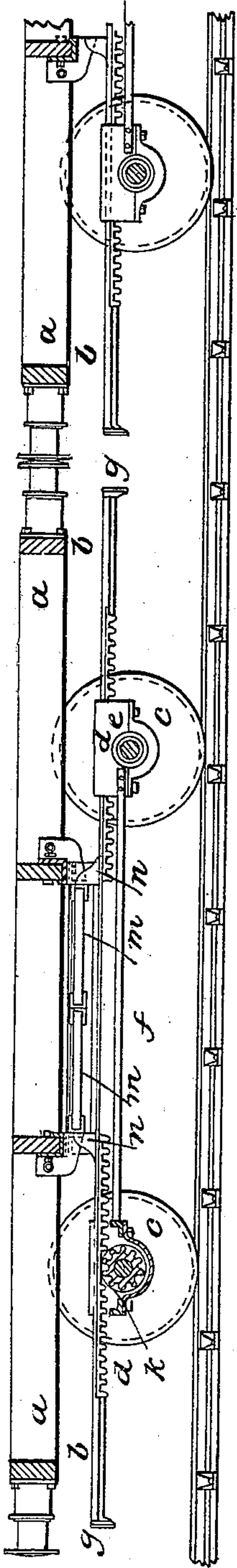


Fig. 2

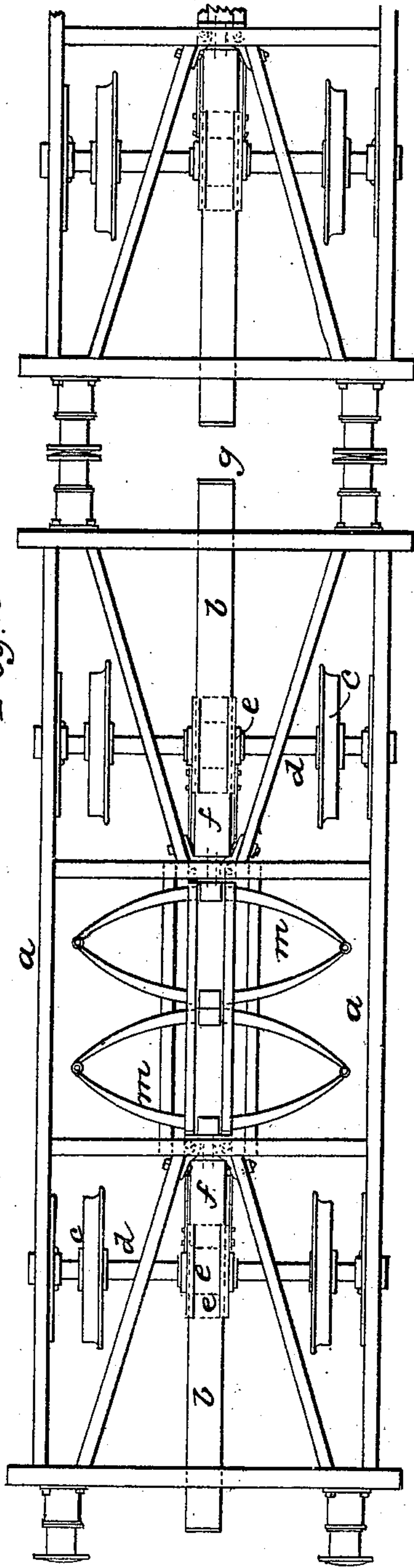


Fig. 4

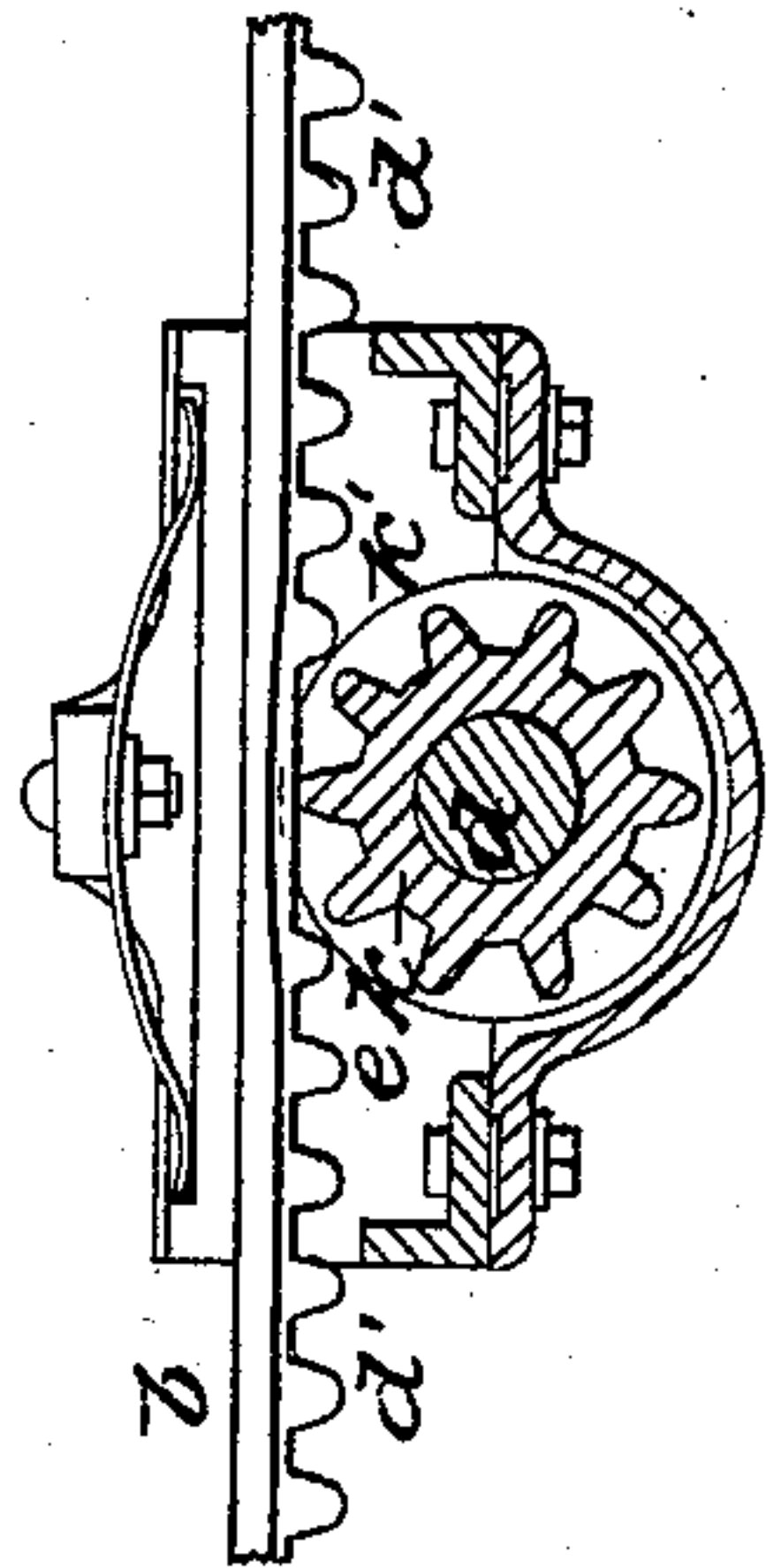
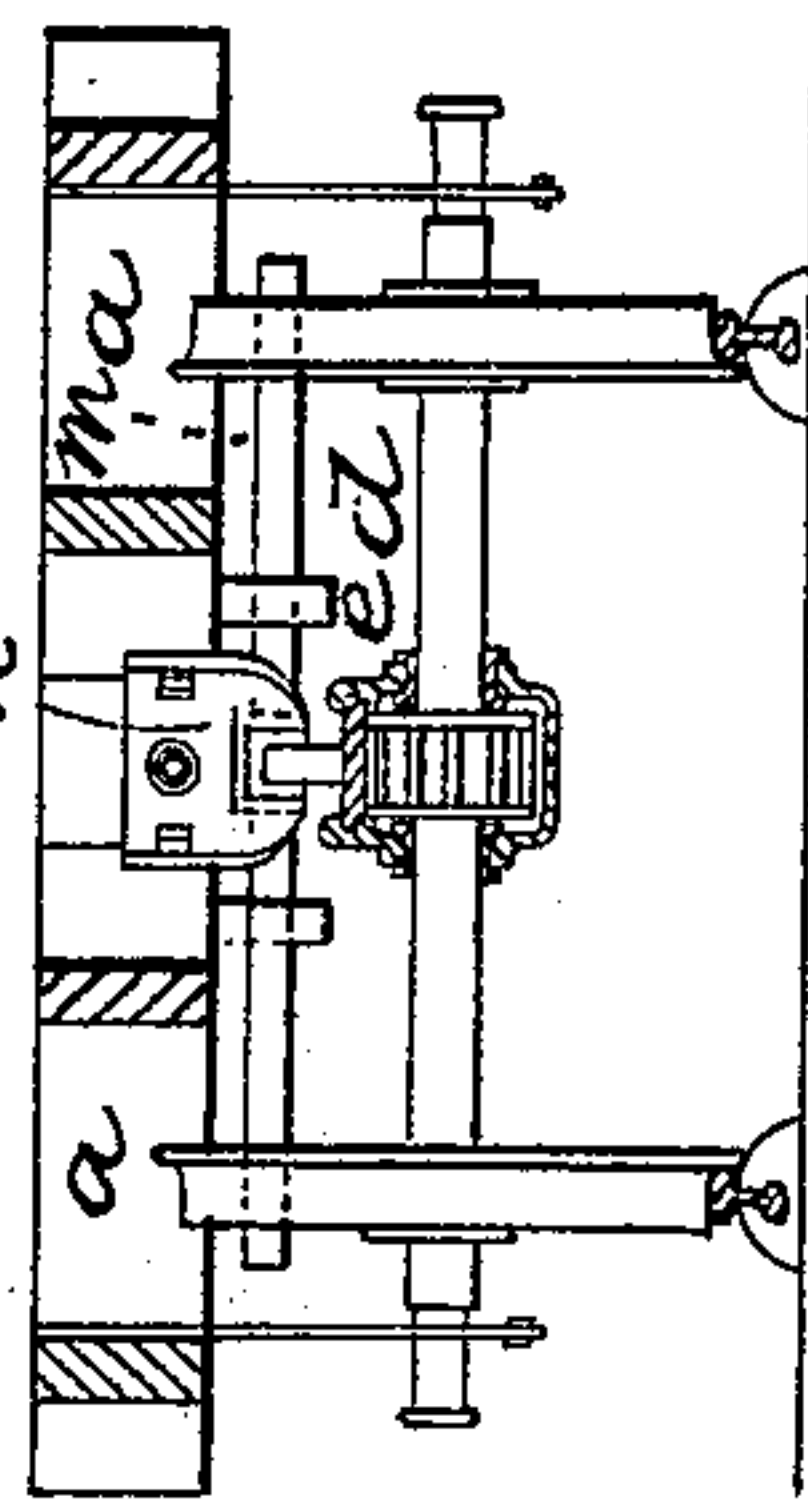


Fig. 3



witnesses  
Saml. Demmison  
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# United States Patent Office.

JOSEPH COCKSHOOT, JR., AND HENRY WEATHERILL, OF MANCHESTER, GREAT BRITAIN.

Letters Patent No. 83,042, dated October 13, 1868; antedated October 10, 1868.

## IMPROVED CAR-BRAKE.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern;*

Be it known that we, JOSEPH COCKSHOOT, Jr., and HENRY WEATHERILL, both of Manchester, county of Lancaster, Kingdom of Great Britain and Ireland, have invented certain Improvements in Railway-Car Brakes; and we do hereby declare the following to be a full, clear, and exact description of the same.

Our invention is designed for the purpose of preventing or stopping the revolution of the wheels of railway-cars by the power and speed of the train, so as to break or stop the revolution of the car-wheels by self-acting means, when it is desired to retard or stop the train; and the improvements consist in the novel employment and use of a plate or bar of metal running longitudinally the length of each car, the said plates being supported by means of brackets secured to the axles, and in which they are allowed to slide. The extremities of each plate or bar terminate in a disk or buffer, which is caused to project a little beyond the ends of the carriage to which such plate belongs.

The under sides of these longitudinal plates or bars are provided with rack-teeth on a portion of their under surface, the remaining lengths or surface being left plain. The axles of the wheels are each provided with a pinion, to which flanges with frictional surfaces are attached, and which are allowed freely to revolve with the axle, so long as the longitudinal plates or bars are in their normal position, that is, when the flat or plain surfaces of the longitudinal plates are over the teeth of the pinions, this position being obtained by means of strong bow or helical springs, with which the plates are in contact.

When the train is coupled up, the disks forming the terminations of each longitudinal plate or bar are within a short distance of actual contact with the disks belonging to the longitudinal plate of the next car, thus forming, with the exception of such slight opening places between the car, a continuous length of plate or bar throughout the whole train.

In the guard's van a handle is provided, in connection with a lever, that will enable the guard or brakeman to give a slight forward movement to the longitudinal rack or friction-plate of the last car, which brings it into gear with the revolving wheel on the axle, which is immediately, by the power and speed of the train, forced forward, so as to come into contact with the next plate-rack, and so on, progressively until the whole longitudinal bars are run up, the effect of which is gradually to compress the springs, so as to bring the whole length of bars throughout the train into stationary contact with each other, preventing, thereby, the revolution of the car-wheels, which soon brings the train to a stand, at which time the combined action of the compressed springs, both in connection with the longitudinal plate-racks and the car-buffers, gives each

car, from back to front, a slight retrograde or backward movement, thus freeing the racks from the pinions, and placing them in their normal position, which leaves the car-wheels free to revolve. By the employment of sliding racks, in connection with blocks that will fit the periphery of the car-wheels, the pinion may be employed for the purpose of forcing such blocks against the wheels, so as to retard and stop them in the ordinary manner.

In order to enable others skilled in the art to make and use our invention, we will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 represents a longitudinal frame-work of the lower portion of a railway-car, having the body and front wheels removed, in order more clearly to illustrate the working-parts of the improved "brake rack;"

Figure 2 represents a plan view of the same, in which are seen the position and arrangement of the retarding-springs, in connection with the longitudinal plate-rack;

Figure 3 represents a transverse section of the lower portion of the car, containing the mechanism of the "brake;" and

Figure 4 represents an enlarged detached view of the axle-pinion, and a portion of the longitudinal rack in its sliding supports or bearings.

In figs. 1, 2, 3, *a a* is the body or frame-work of the car *c*, the wheels, and *d d* the axles, all being old and well-known parts of a railway-car. *b b* is a plate of metal, running longitudinally the length of each car, supported in the brackets or bearings *e e*, secured to the axle *c*. These longitudinal plates *b b* are supported in the grooves of the bearings *e e*, in which they are allowed freely to slide, the bearings being bolted together by means of tie-rods *f*, so as to keep them square, or they may be connected by arms with a vertical slide, provided in the bearings of the axle-boxes. The extremities of each longitudinal plate terminate in a buffer or flat plate, *g g*, the outer surfaces of which may be covered with a yielding or elastic surface. These buffer-terminations are caused to project a little beyond the ends of the car to which such plate belongs. The under sides of the longitudinal plates *b b* are provided with rack-teeth, *d'*, on a portion of their under surface, as seen in figs. 1 and 4, (the class of cog or tooth we prefer being shown more clearly in fig. 4, the remaining portion or under surface being left plain.) The axles *d d* are each provided with a pinion, *k*, to which flanges, *k'*, with frictional surfaces, are attached, and which are keyed to and revolve with the axles *d d*, so long as the rack-plates *b b* are in their normal position, as shown, that is, when the flat or plain surfaces of the rack-plates are over



the teeth of the pinion. This position is maintained when the brakes are not employed, by means of the strong bow-springs *m m*, their connection with the rack-plates being effected through the medium of the projecting abutments *n n*. When the train is coupled up, the buffers *g g*, forming the termination of each longitudinal plate, are within a distance of each other that will admit, before actual contact, the ordinary "buffers" of the car to be forced in or compressed, thus forming, with the exception of such opening places between the car, a continuous length of plate throughout the whole train.

Having now described the nature of our said invention, together with the method of carrying the same into practical effect, we wish it to be understood that we do not confine ourselves to the precise details shown,

as they may be varied or modified, without departing from the peculiar character thereof; but

What we claim as and of our invention, is—

The combination of the longitudinal bar or plate *b*, and its racks, the pinions on the axles, and the springs *m m*, the whole being arranged and applied to a railway-car, substantially as and for the purpose herein set forth.

In witness whereof, we have hereunto set our hands in the presence of two subscribing witnesses, this 1st day of February, in the year of our Lord 1868.

JOSEPH COCKSHOOT, JR.  
HENRY WEATHERILL.

Witnesses:

SAM'L DENNISON,  
J. SWARTMAN.