

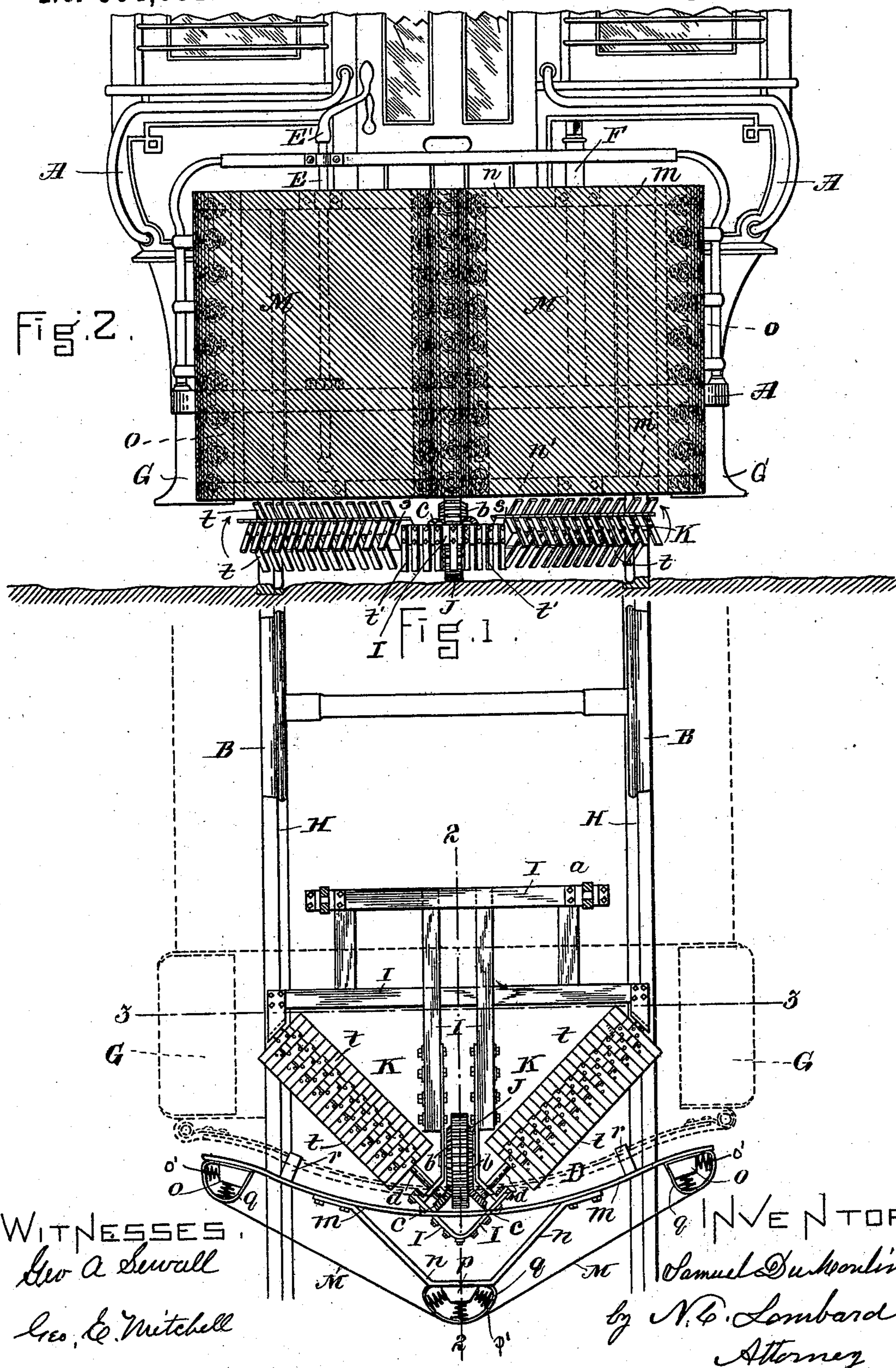
(No Model.)

3 Sheets—Sheet 1.

S. DU MOULIN.
FENDER AND LIFE GUARD FOR STREET CARS.

No. 504,081.

Patented Aug. 29, 1893.



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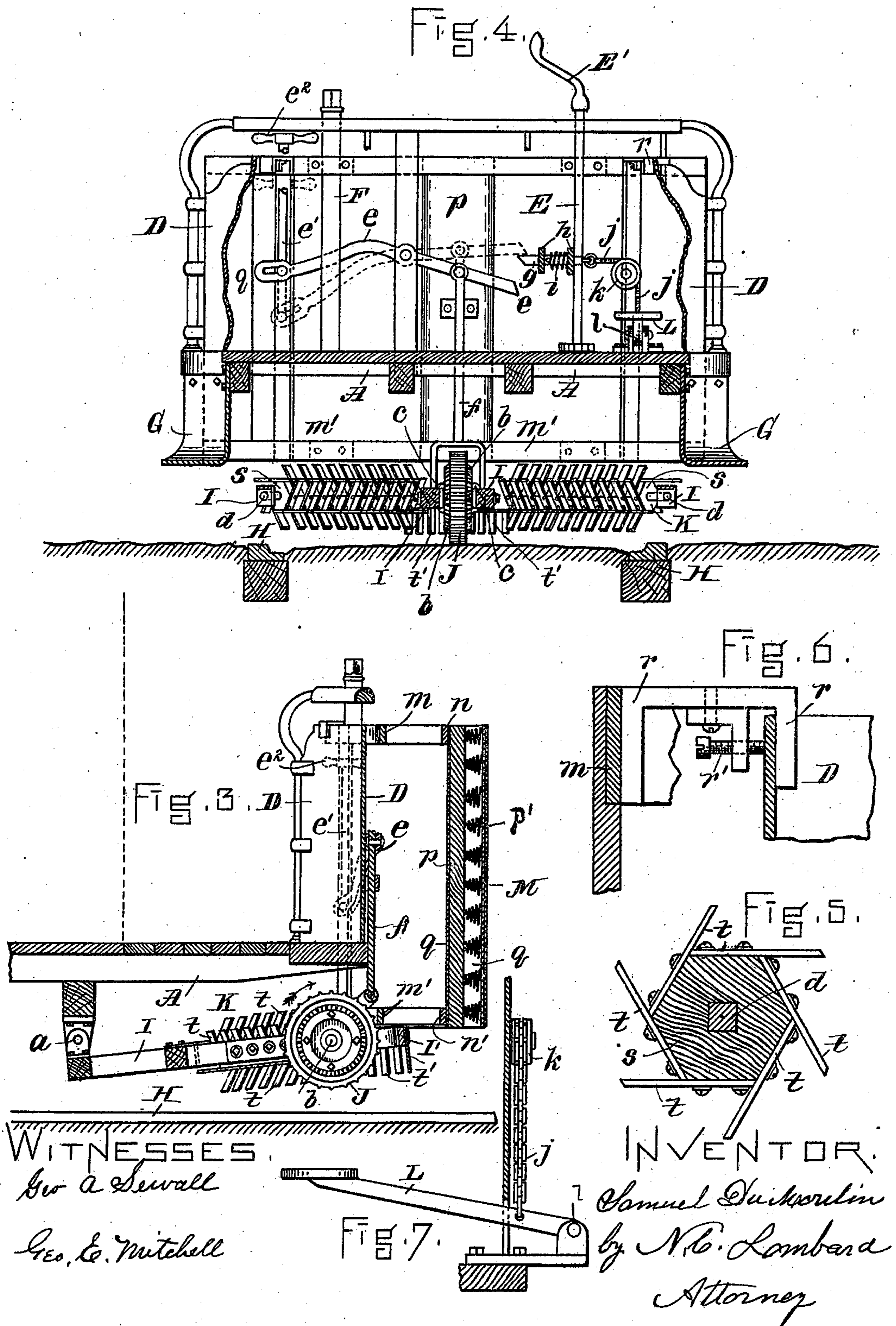
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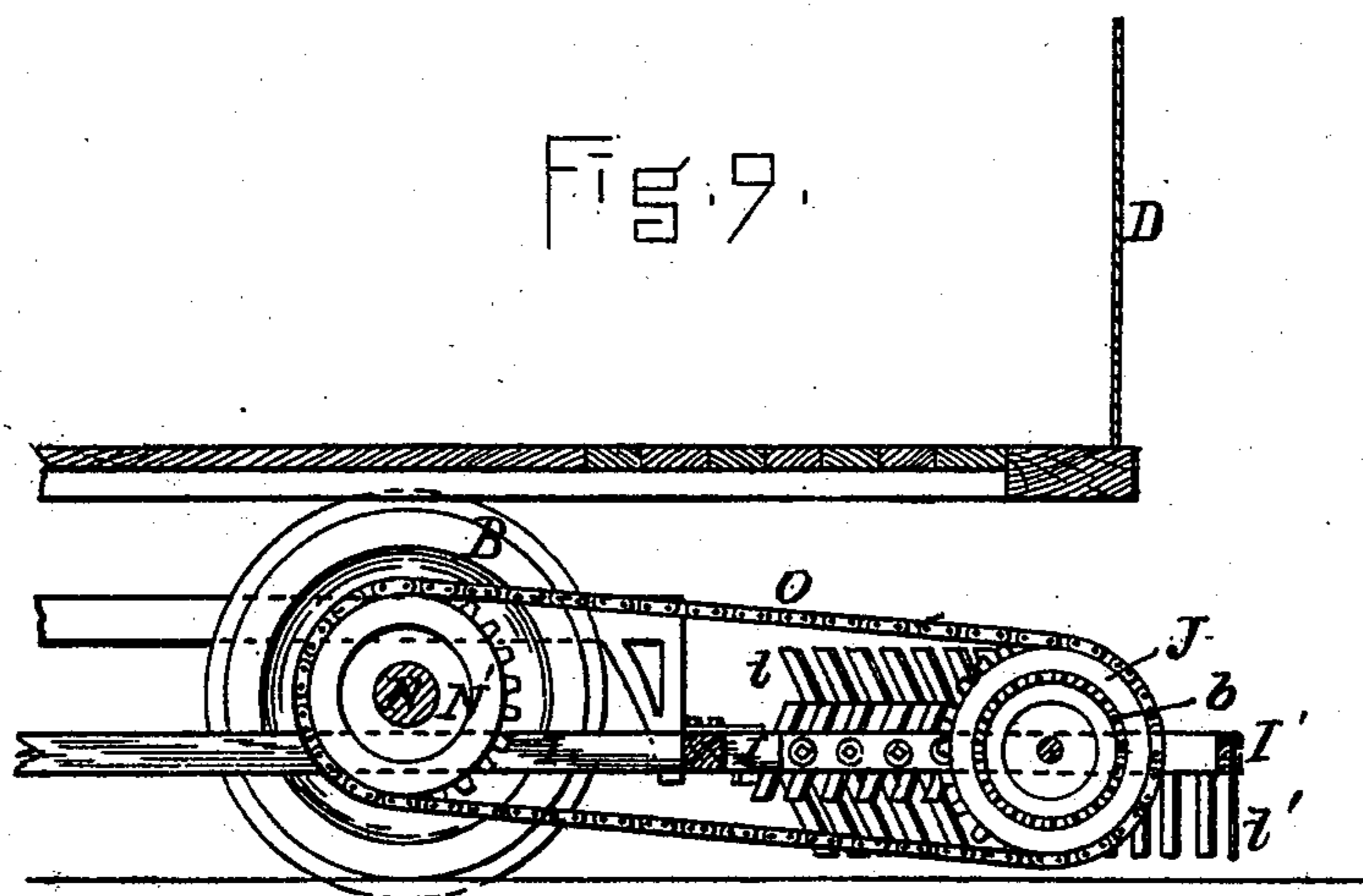
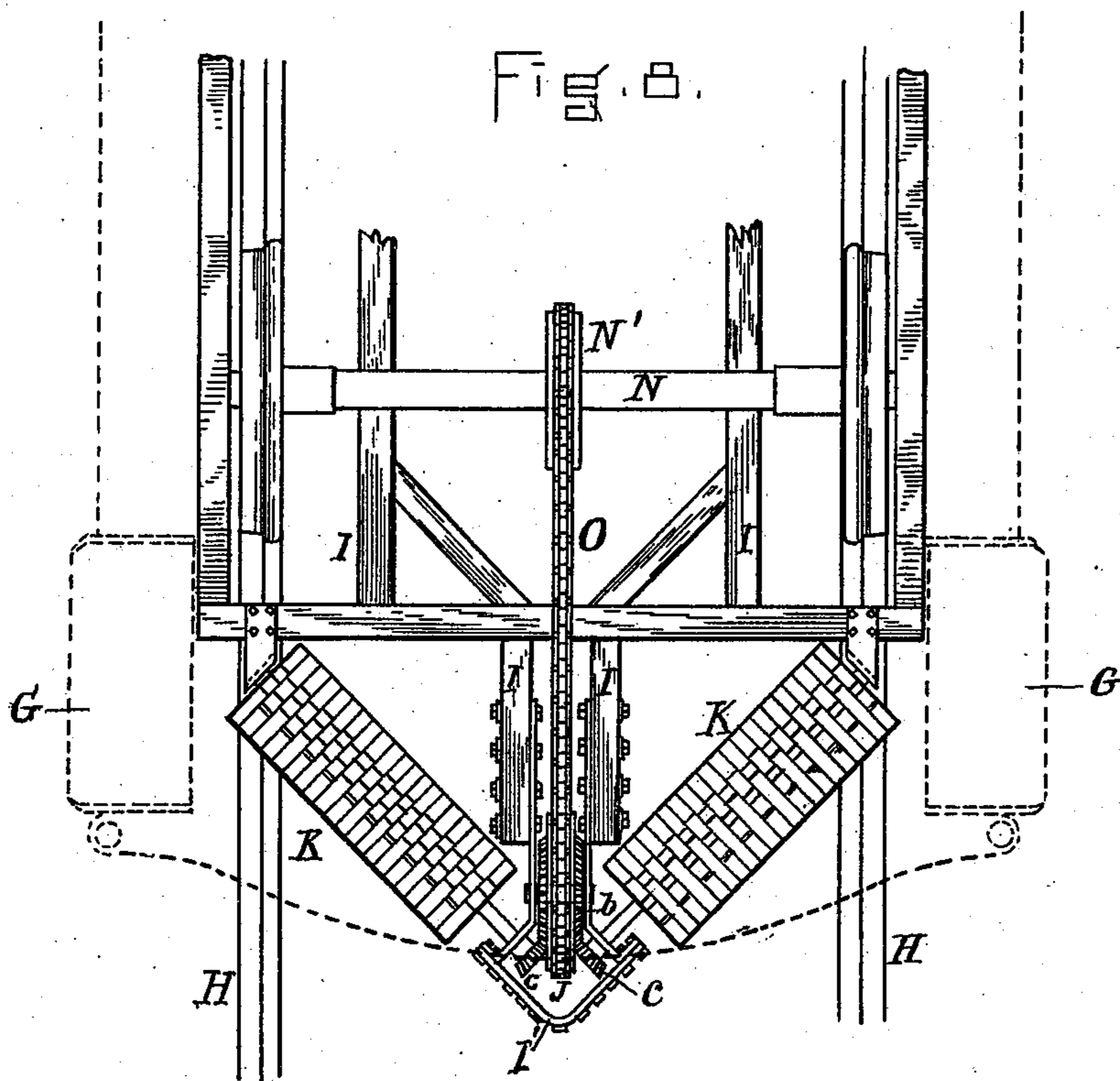
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WITNESSES.

Geo. A. Sewall

Geo. C. Mitchell

INVENTOR.

Samuel DuMoulin
by N. C. Lombard
Attorney.

UNITED STATES PATENT OFFICE.

SAMUEL DU MOULIN, OF BOSTON, MASSACHUSETTS.

FENDER AND LIFE-GUARD FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 504,081, dated August 29, 1893.

Application filed October 15, 1892. Serial No. 449,043. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL DU MOULIN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Fenders and Life-Guards for Street-Cars, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to fenders and life-guards for street railway cars and it consists in certain novel features of construction, arrangement and combination of parts which will be readily understood by reference to the description of the accompanying drawings, and to the claims hereinafter contained, and in which my invention is clearly pointed out.

Figure 1 of the drawings represents a plan of my invention, a portion of the track rails and one pair of the car wheels, with the outline of the car body shown in dotted lines. Fig. 2 is a front elevation of a portion of a car with my invention applied thereto. Fig. 3 is a longitudinal vertical section on line 2, 2, on Fig. 1. Fig. 4 is a sectional elevation the cutting plane being on line 3, 3, on Fig. 1, and looking toward the front, the larger part of the dasher being broken away to show in elevation the mechanism for raising and lowering the revoluble brush-like cylinders, which mechanism is located in front of said dasher. Fig. 5 is a transverse section of one of the revoluble brush-like cylinders, drawn to an enlarged scale. Fig. 6 is an enlarged section of a portion of the dasher, and the fender frame, and illustrating the manner of securing said fender to the front of the car. Fig. 7 is a detail illustrating the manner of mounting the treadle lever for operating the locking bolt, and Figs. 8 and 9 are respectively a plan and a sectional elevation of my revolving brush mechanism as applied to the six and eight wheel electric cars.

In the drawings A is the frame or body of the car, B B are the forward wheels of the truck, D is the dasher, E the brake operating shaft provided with the crank E', F is the power controlling shaft, and G G are the forward steps of the car all constructed in any well known manner.

H H are the track rails which may be of any well known form and laid in any well known manner.

Beneath the car platform is mounted a frame I I', in bearings in which are mounted the driving wheel J and the two cylindrical brushes K K, the wheel J being provided upon each side thereof with a series of bevel gear teeth *b*, which engage with the teeth of the bevel pinions *c c* secured upon the inner ends of the shafts *d d* of the brushes K K, and serve to rotate said brushes when the wheel J is revolved.

As there are now in use upon street railways, and likely to be for some time to come, cars mounted upon four wheels, the axles of which do not swivel, and as a consequence have to be placed at a comparatively short distance from each other and at a considerable distance from the ends of the car, the bodies of which cars are liable to have a considerable fore and aft rocking motion imparted thereto, and as there are also in use cars mounted upon two four-wheel swiveling trucks, and also cars mounted upon a six-wheel radial truck the bodies of which two last mentioned cars have none of the fore and aft motion imparted thereto and only a slight vertical movement due to the yielding of the supporting springs, I arrange to drive the obliquely arranged brushes K K in the case of the four-wheel car by the traction of the wheel J coming in contact with the ground as shown in Figs. 2 and 4, and in case of the six or eight-wheel cars the wheel J is driven directly from the forward axle N of the truck by means of the sprocket wheel N' secured on said axle, and the chain O connecting said sprocket wheel N to the wheel J which is provided on its periphery with the usual sprocket wheel teeth to engage said chain. In this latter case the frame I I' is built into and forms a part of the truck frame and is of sufficient strength and stiffness to support the wheel J and the brushes K K at its front end, and said wheel and brushes revolve within a short distance say about one and one-half inches of the ground, but never touch the ground.

In the case of the four-wheel car the frame I I' is pivoted near its rear end say at *a* to the under side of the body of the car, and during the ordinary running of the car and when there is no danger of running into or upon a person or animal upon the track, the forward

end of the frame I I' is raised into the position shown in Fig. 3 with the driving wheel J some distance above the ground, by pressing down upon the lever *e* through the medium of the rod *e'* and handle *e''* said frame being connected to the lever *e* by the rod *f* as shown in Figs. 3 and 4. The frame I I' and driving wheel J and brushes K K are maintained in said raised position by the locking bolt *g*, mounted in bearings *h h* secured to the front of the dasher or platform, said bolt being normally held in the position shown in Fig. 4 by the spring *i*, which yields when the frame I I' is raised, to allow the beveled end of the lever *e* to pass above said bolt *g*, when said bolt is forced toward the left of Fig. 4 by the tension of said spring, its beveled end passing beneath the right hand end of the lever *e* and serving as a support for said lever and thus maintains the frame I I', the wheel J and the brushes K K in the elevated position shown in Fig. 3. The bolt *g* is connected by the chain *j*, after passing over the pulley *k*, to the treadle lever L, fulcrumed at *l* in front of the dasher, and having its movable or pad end inside, or at the rear, of the dasher in a convenient position for operation by the operator's right foot as shown in Figs. 1 and 4.

In front of the dasher D is suspended therefrom a yielding fender composed of the horizontal metal bars *m m' n* and *n'* the vertical bars *o o* and *p* preferably of wood, the three series of volute springs *p'* mounted on the bars *p*, and two series of similar springs *o'* mounted on each of the bars *o o*, the spring inclosing coverings *q q q* and the fender band M, made preferably of canvas or some strong flexible material. This fender is suspended from the upper edge of the sheet metal dasher D, by means of the clamp irons *r* secured to the bar *m* and provided with the set screw *r'* as shown in Fig. 6.

The brushes K K are each composed of a metal shaft *d*, a wooden covering *s* secured on said shaft and made polygonal in cross section and a series of fingers *t* secured upon each of the flat sides of said covering and projecting therefrom tangential to a circle concentric to the axis of said shaft *d*, as shown in Fig. 5. The fingers *t* may be of the form shown in the drawings or they may be round pieces of any strong tough wood, such as hickory or rattan, or of any other such tough flexible and elastic material as may be found best adapted to the purpose.

Between the inner ends of the brushes K K there is a space not covered by said brushes, and to cover this space I secure to the portion of the metal frame I' which is in front of the wheel J and between the inner ends of said brushes, a series of stationary pendent fingers *t'*, which will serve to push any object struck by them forward with the motion of the car and prevent the wheels passing over the same.

The operation of my invention is as fol-

lows:—The fender band M with its carrying frame being properly mounted on the front dasher and the frame I I' with the wheel J and brushes K K being properly mounted beneath the platform of the car, and, if pivoted as in the case of the four-wheel car, secured in their raised positions by the bolt *g* engaging with the under side of the inner end of the lever *e* as shown in Fig. 4, said lever *e* being then in the position indicated by dotted lines in said Fig. 4, if the car is running at a high rate of speed, and a person or animal steps in front of the car in such near proximity that the object is likely to be struck before the car can be stopped, the motor man or operator places his foot upon the treadle L and depresses it, thus withdrawing the bolt *g* from beneath the lever *e*, when the force of gravity will cause the front end of the frame I I' to descend until the periphery of the wheel J strikes the ground, when it will be revolved in the direction indicated by the arrow *u* on Fig. 3, and the brushes K K will be revolved in the directions indicated by the arrows *v v* on Fig. 2, the ends of the fingers *t t* revolving within about one and a half inches of the ground. If the car is a six or eight wheeler, and the frame I I' carrying the wheel J and brushes K K is mounted on the forward truck as shown in Figs. 7 and 8, the brushes K K will be revolving whenever the car is moving and the motor man or operator will not have to operate any mechanism to drop the brushes to set them in operation and can pay his whole attention to stopping the car. This is the preferred form of the invention and will ultimately be the only form used when the four wheel cars are done away with. If the collision occurs with the person or animal standing, the fender band M will first strike the object, and while in all probability the blow would prostrate the person or animal there would not be the same liability to fatal injury that would occur were the elastic fender of my invention not employed, because of the yielding and elastic nature thereof. If the person or other object were standing when struck at one side or the other of the center of the track he would be thrown outward by virtue of the oblique position of said fenderband on either side of the center of the car, but if he should be prostrated between the track rails or upon one or the other of the rails he would be brushed outward by one or the other of the brushes K K, or be pushed along by the stationary fingers *t'* secured to the frame I' between the inner ends of the revolving brushes K, in case he falls directly in front of the center of the car. In any case the wheels of the car could not run over the person or object and the liability to fatal injury would be very greatly reduced if not entirely done away with.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a street car of an

elastic fender placed in front of and covering the dasher, composed of the flexible band M drawn taut over or around a cluster or series of springs o' at each end, and the cluster or series of springs p' at its center, said springs p' being located in advance of the springs o' substantially as described.

2. In combination with a street car, a yielding and elastic fender covering the front of the dasher; a pair of revoluble brushes arranged obliquely to the center line of the car beneath the car platform with their axes at right angles to each other or nearly so, and adapted to revolve with their peripheries in near proximity to the ground; and means having provision for revolving said brushes when the car is in motion.

3. The combination with a street car of the frame I I'; the wheel J; the two revoluble brushes K K arranged with their axes at right angles to each other; the bevel gears b and c , and means having provision for revolving

said wheel and brushes when the car is in motion.

4. The combination with a street car of the frame I I', pivoted at its rear end to the car body; the wheel J and the brushes K K mounted in bearings in said frame; mechanism for raising the front end of said frame to remove the wheel J from contact with the ground; a locking bolt for supporting said parts in their raised positions; and a treadle mechanism for retracting said bolt to permit said wheel J to fall into contact with the ground.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of October, A. D. 1892.

SAMUEL DU MOULIN.

Witnesses:

N. C. LOMBARD,

ALFRED H. BURLIN.