

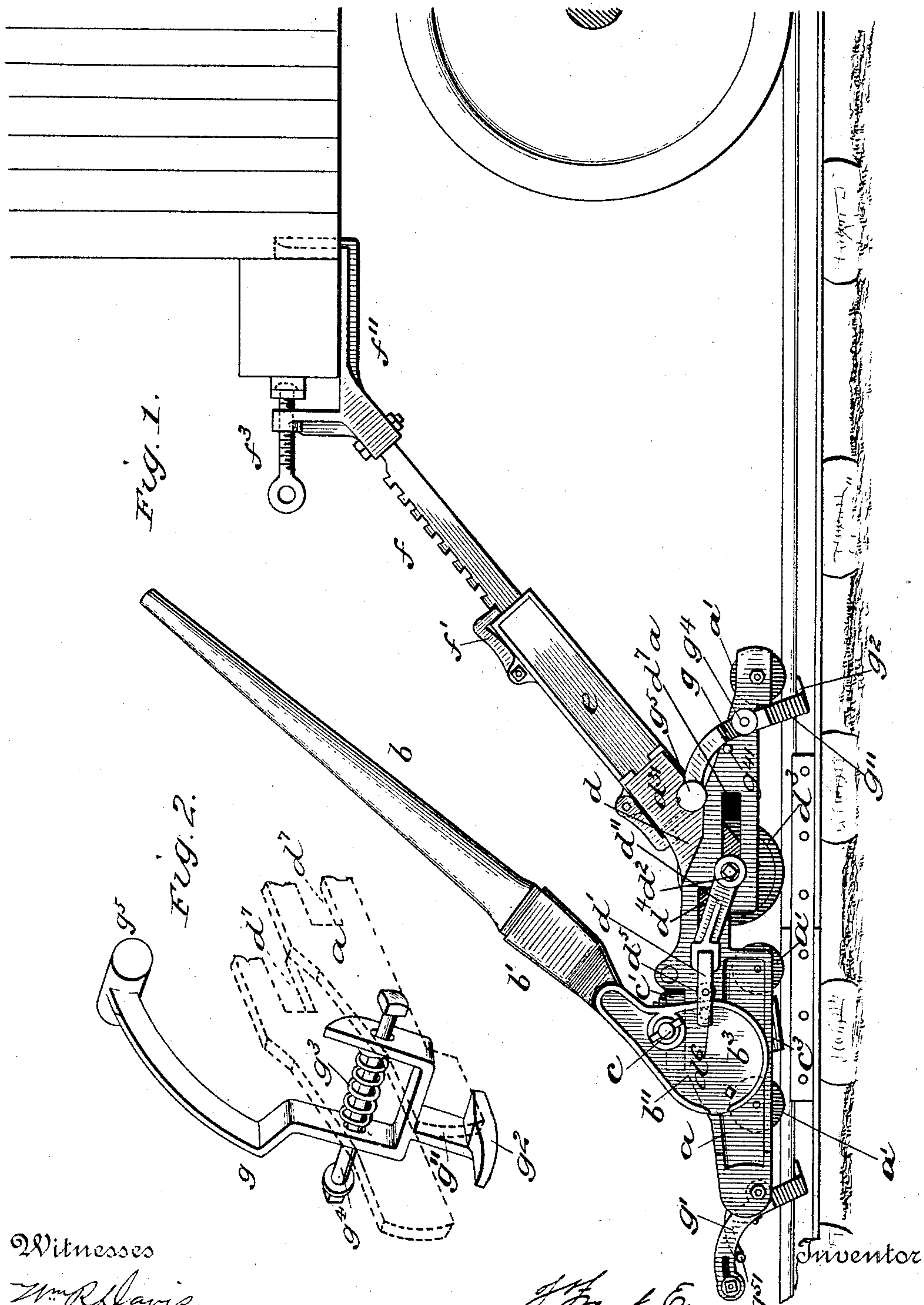
(No Model.)

2 Sheets—Sheet 1.

T. F. EVANS.  
CAR MOVER.

No. 458,889.

Patented Sept. 1, 1891.



Witnesses  
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By his Attorneys  
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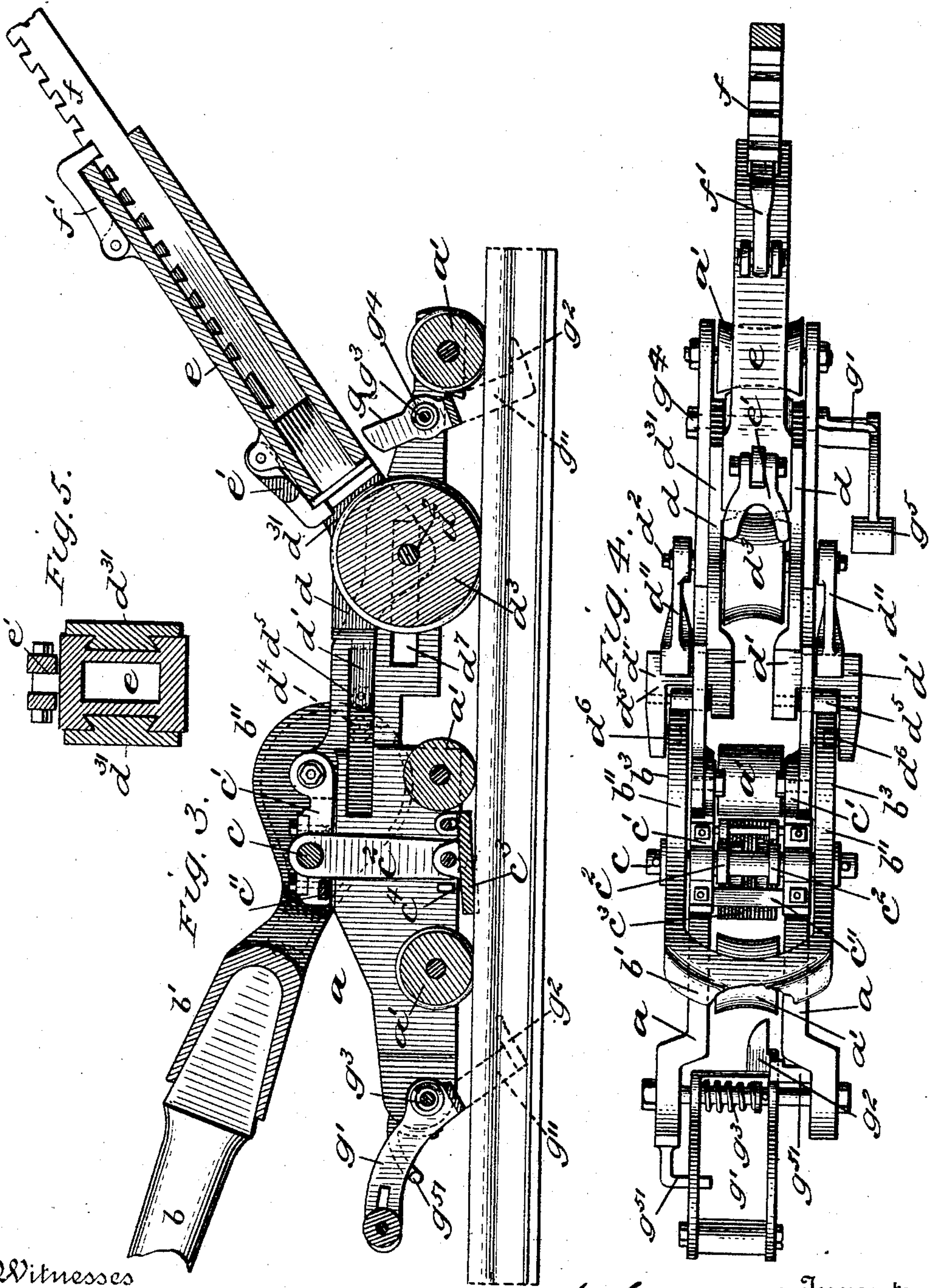
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# UNITED STATES PATENT OFFICE.

THOMAS FRANKLIN EVANS, OF LITITZ, PENNSYLVANIA.

## CAR-MOVER.

SPECIFICATION forming part of Letters Patent No. 458,889, dated September 1, 1891.

Application filed July 10, 1891. Serial No. 399,062. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS FRANKLIN EVANS, a citizen of the United States, residing at Lititz, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Car-Movers, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 represents a side elevation of my improved machine in position for operation, portions of adjacent track-rails and a car being shown; Fig. 2, a detail perspective view of one of my improved rail-gripping devices; Fig. 3, a vertical longitudinal sectional view of the complete machine; Fig. 4, a plan view thereof, the lever-socket being broken away to better show the rear gripping device and Fig. 5 a transverse sectional view of the pushing-bar and its sleeve.

This invention has relation to certain new and useful improvements upon that class of railroad-car movers adapted to travel upon one of the track-rails; and it has for its objects, briefly speaking, to provide a very durable and powerful machine that may be readily moved along the rails and which shall possess all the characteristics desirable in such machines, as will more fully hereinafter appear.

The above objects and others will be fully understood from the following description, when taken in connection with the accompanying drawings.

In the drawings, *a* designates the main frame of the machine, which consists of a pair of separated side plates constructed of strong material and connected together at intervals by transverse bolts. Between these side plates, upon the transverse connecting-bolts, are journaled three rollers *a'*, one being located at the forward end of the machine, another near the rear end thereof, and the third at a suitable intermediate point, these rollers being adapted to run on the rail and serving to support the machine, the two end ones being preferably concaved or grooved to keep the machine on the rail.

The long operating-lever *b* is fitted removably in its socket *b'*, which latter is bifurcated and formed into two depending cams *b''*, which closely embrace the main frame and

which have formed on their forward and lower curved edges outwardly-projecting flanges *b<sup>3</sup>*. The cams are pivoted on a transverse shaft *c*, which is journaled in boxes on the rear ends of arms *c'*, resting on or above the upper edges of the side plates, the forward ends of these arms being pivoted to ears formed on the upper edges of the side plates and their rear ends being connected together by a transverse bar *c''*. Depending from the shaft *c* between the side plates is a pair of pivotal links *c<sup>2</sup>*, which have their lower ends pivotally connected to the rear end of a bearing or clamping plate *c<sup>3</sup>*, whose forward end is pivoted on a transverse bolt connecting the side plates of the frame, this plate being limited in its upward movement by lugs *c<sup>4</sup>*, formed on the inner sides of the side plates.

Fitting snugly between the forward portions of the side plates is a movable frame *d*, composed of a pair of separated plates, between which, on a transverse shaft *d<sup>2</sup>*, carried by said frame, is journaled a large grooved roller *d<sup>3</sup>*, adapted to travel upon the rail. The forward ends of the plates of this frame *d* have formed on them horizontal plates or extensions *d'*, which project out through and work in slots *d<sup>4</sup>* in the side plates of the main frame, the forward ends of these horizontal plates being bifurcated or slotted to embrace the cams, said slots being provided with anti-friction rollers *d<sup>5</sup>*, adapted to travel upon the front edges of the cams. Pins *d<sup>6</sup>* on the plates engage behind the flanges on the cams. Side bars *d''* connect the outwardly-projecting shoulders of the horizontal extensions *d'* to the projecting ends of the shaft *d<sup>2</sup>*, whereby the said extensions are braced and strengthened, so as to withstand the heavy strain to which they are subjected in operation. These bars *d''* are slipped on the projecting ends of the shaft *d<sup>2</sup>*, and their forward ends are bifurcated, so as to embrace the rear ends of the horizontal plates, the said shaft working in horizontal slots *d<sup>7</sup>* in the main side plates and adapted to move back and forth with the frame *d*. The side plates of the frame *d* are extended forwardly and upwardly to form a socket *d<sup>81</sup>*, in which is removably fitted a tube *e*, this tube being dovetailed into the socket—that is to say, the socket at opposite sides is provided with interior longitudinal dovetail



tongues fitted in similarly-shaped grooves in the adjacent sides of the tube. The tube is held in the socket by means of a bifurcated hook *e'*, pivoted on the tube and engaging under the lower end of the socket.

Fitted in the tube is a racked pushing-bar *f*, which is adjustable in and out of the tube and which is held in its adjusted positions by means of a dog *f'*, pivoted on the tube and engaging the teeth of the rack. The upper forward end of this pushing-bar is provided with a laterally-swinging pivotal clamp *f''*, carrying a clamping-screw *f<sup>3</sup>* to enable it to be clamped to the end beam of the car.

Pivoted on transverse bolts at the forward and rear ends of the main frame are rail-gripping dogs *g g'*, which are constructed as follows: The forward dog *g* consists of two bars connected together at their lower ends below the main frame and pivoted on a transverse bolt *g<sup>4</sup>*, carried by the frame, one of these bars passing up on the outside of one of the main side plates and bent backwardly and provided with a weight *g<sup>5</sup>* at its end. This dog carries a depending bent arm *g''*, adapted to engage under and grip the under side of the inner shoulder of the rail, and this arm has formed integrally with it a forwardly-projecting outwardly-curved finger *g<sup>2</sup>*, for a purpose hereinafter described. This dog has a limited sliding movement on its bolt and is kept normally pressed against the inner side of the rail by means of a coil-spring *g<sup>3</sup>*, surrounding the bolt between the inner main plate and the shorter arm of the dog. A stop *g<sup>41</sup>* on the main frame prevents the weighted arm dropping too low. The rear dog *g'* is constructed substantially like the front one. It is composed of a pair of connected arms pivoted on a transverse bolt and bent backwardly and weighted, stops *g<sup>51</sup>* being provided to restrict its movements. This dog is also provided with the depending bent arm *g''*, carrying the curved finger *g<sup>2</sup>*, which is kept normally pressed in under the inner shoulder of the rail by a coil-spring *g<sup>3</sup>* on the bolt.

The construction and relative positions of the parts having been described, the operation and advantages of the machine will now be set forth.

In operation the machine travels upon one of the track-rails, and the clamp at the end of the pushing-bar is clamped on the end beam of the car to be moved. It will be observed that this clamp is pivotally connected to the rack-bar in such a manner that it readily accommodates itself to beams of different sizes and shapes. When in position on the rails, the rail-gripping dogs engage under the inner shoulder of the rail, the rearwardly-bent weighted arms serving to cause the depending fingers to automatically and normally grip the under side of the rail-shoulder and resist any tendency to back the machine. These gripping devices, while they prevent any backward movement of the ma-

chine, at the same time permit it to be readily moved forward as the car to which it is attached advances. These gripping devices grip the rail very rigidly and by reason of their biting action effectually prevent the slightest backward movement of the machine. The greater the back-pressure exerted the greater will be the gripping action. The special advantage in permitting the dogs to slide laterally on their pivotal bolts and providing springs to keep them normally pressed in against the rail lies in the fact that they are thereby rendered capable of automatically passing the fish-plates at the rail-joints or other obstructions. As the machine advances the curved part of the forwardly-projecting fingers strike the ends of the fish-plates and cause the dogs to slide bodily laterally far enough to permit the fingers to pass along the faces of the fish-plates, the coil-springs serving to restore the dogs to position as soon as the obstructions are passed. The machine is sufficiently long, so that one of the dogs only will be thrown out at a time by the fish-plates, whereby the machine is rendered operative at all points along the rail, irrespective of fish-plates, as is evident. These devices are a very essential feature of this invention, and I do not restrict myself to the construction shown and described, as the same may be varied without departing from the invention in the least. When the machine is in position ready for an operation, the long operating-lever *b* leans forward. By throwing the lever rearwardly the flanged cams, by reason of their engagement with the horizontal extensions of the frame *d*, serve to push the said frame forward on the rail, and with it the car attached to its pushing-bar, the main frame being held stationary on the rail by means of its gripping-dogs. By reason of this cam arrangement and the long lever great power is obtainable with a comparatively small expenditure of power, which, as is well known, is a very great desideratum in this class of machines. It will be observed that the forward flanged edges of the cams (when the lever is in position for operation, as in Fig. 1) curve downwardly and rearwardly from the pivotal fulcrum-bolt *c*, whereby the greatest power is exerted when it is most needed—that is, in starting the car. By throwing the lever forward again the flanged cams engaging the extensions serve to draw the main frame forward ready for another operation, the gripping devices automatically releasing the rail as the machine advances. In this way—that is, simply by a backward and forward movement of the operating-lever—the heaviest railroad-cars may be readily and rapidly pushed along the rails by but a small expenditure of manual power. To relieve the main frame of undue strain when the lever is pressed backwardly to move the car, the pivotal shaft *c* of the lever is journaled in movable arms and connected to depending links, as described. When the lever is pressed



backwardly, these depending links serve as the fulcrum and receive the strain, thereby taking it off the frame, the bearing-plate connected to the lower ends of the links resting upon the top of the rail and assisting in clamping the same. The arms *c'*, on which the shaft *c* is journaled, do not rest upon the main frame when the machine is in operation. The tube *e* is made removable from its socket simply to facilitate its manufacture and transportation. They may be made integral, if desired. By having the gripping devices engage the inner shoulder of the rail it is evident that the planking, paving, or other filling usually placed between the tracks at crossings will not interfere in the least with their free operation.

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

1. The combination of a main frame adapted to travel upon a rail, a cam journaled on the main frame and connected to an operating-lever, the forward edge of said cam being curved, a supplemental frame provided with rearward extensions bearing against the forward curved edges of the cams, and a pushing-bar carried by said supplemental frame, as and for the purposes described.

2. The combination of a main frame, a cam pivoted thereon and provided with an operating-lever, the forward edge of said cam being curved and flanged, and a supplemental frame connected to the main frame and provided with rearward extensions, said extensions being provided with rollers bearing upon the front edge of the cam and with pins engaging behind the curved flanged edge of the cam, and a pushing-bar carried by the supplemental frame, substantially as described.

3. The combination of a main frame adapted to travel upon a rail, a rail-gripping dog pivoted on a transverse bolt thereon and provided with a depending bent arm, said depending bent arm being adapted to extend down on the inner side of the rail and under its inner shoulder, and means for causing the arm to automatically grip the under side of said shoulder, as and for the purposes described.

4. The combination of a main frame adapted to travel upon a rail, a laterally-movable gripping-dog pivoted thereon and provided with a depending bent arm adapted to extend down on the inner side of the rail and under its inner shoulder, the lower end of said arm being provided with a forwardly-extending curved finger *g*<sup>2</sup>, and means for normally keeping said curved finger pressed in under the inner shoulder of the rail, substantially as described.

5. The combination of a frame, a gripping-dog mounted loosely on a transverse bolt thereon and provided with a depending bent arm engaging under the rail-shoulder, and a rearwardly-extended weighted arm connected to said gripping-dog to normally hold said

bent arm in engagement with the rail-shoulder, substantially as described.

6. The combination of a main frame carrying pushing devices and adapted to travel upon a rail, and a gripping-dog mounted loosely on a transverse bolt at each end of said main frame, so as to be capable of a bodily lateral movement thereon, each of said dogs being provided with a depending bent arm normally engaging under the rail-shoulder, substantially as described.

7. The combination of a main frame constructed of separated plates, rollers journaled between said plates and adapted to travel upon the rail, pivoted cams embracing said side plates and connected to an operating-lever, a supplemental frame working between said side plates and provided with a push-bar, extensions *d'*, projecting rearwardly from said supplemental frame and projecting out laterally and working in horizontal slots in the main side plates, said extensions engaging the forward edges of the cams, a grooved supporting-roller journaled on the supplemental frame and adapted to travel upon the rail, the shaft of said roller projecting out through slots in the main side plates, and bracing-arms *d''*, connecting the extensions *d'* to the ends of the said shaft, substantially as described.

8. The combination of a frame, a lever journaled on a shaft thereon and provided with operating-cams, pushing devices engaging the cams, arms pivoted to the frame and supporting the pivotal shaft of the lever, and depending links connected to the shaft and carrying at their lower ends a bearing-plate adapted to bear upon the rail, substantially as described.

9. The combination of a main frame, a lever journaled thereon and provided with flanged cams embracing the frame, a supplemental frame carrying a roller, and extensions engaging the flanged cams, and a pushing-bar connected to this supplemental frame, substantially as described.

10. In a car-pusher, the combination of a main frame mounted on rollers to run on a rail and carrying automatic gripping devices, cams journaled on this frame and having their forward curved edges flanged, a lever connected to the cams for operating them, a sliding frame mounted on the main frame and connected to the flanged cams, so as to be operated by the same, and an adjustable push-bar carried by the sliding frame, substantially as described.

11. The combination of a main frame composed of connected side plates, grooved rollers journaled between these plates, two flanged cams journaled on the frame and embracing the same and provided with a lever-socket, a lever inserted in said socket, a sliding frame working between the plates of the main frame and provided with lateral forward extensions engaging the flanged edges of the cams, a supporting-roller journaled on



said sliding frame, and a push-bar carried by the sliding frame, substantially as described.

12. The combination of a main frame, a sliding frame thereon, said sliding frame having formed on its forward end a socket, a tube dovetailed in this socket, means for holding the tube in the socket, and a racked push-bar held adjustably in the socket, substantially as described.

13. The combination of a main frame, a sliding frame thereon, said sliding frame having formed on its forward end a socket, a tube

dovetailed in this socket, means for holding the tube in the socket, a racked push-bar held adjustably in the socket, and a clamp *f''*, pivotally connected to the forward end of the push-bar.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS FRANKLIN EVANS.

Witnesses:

I. C. ARNOLD,

M. G. SCHAEFFER.