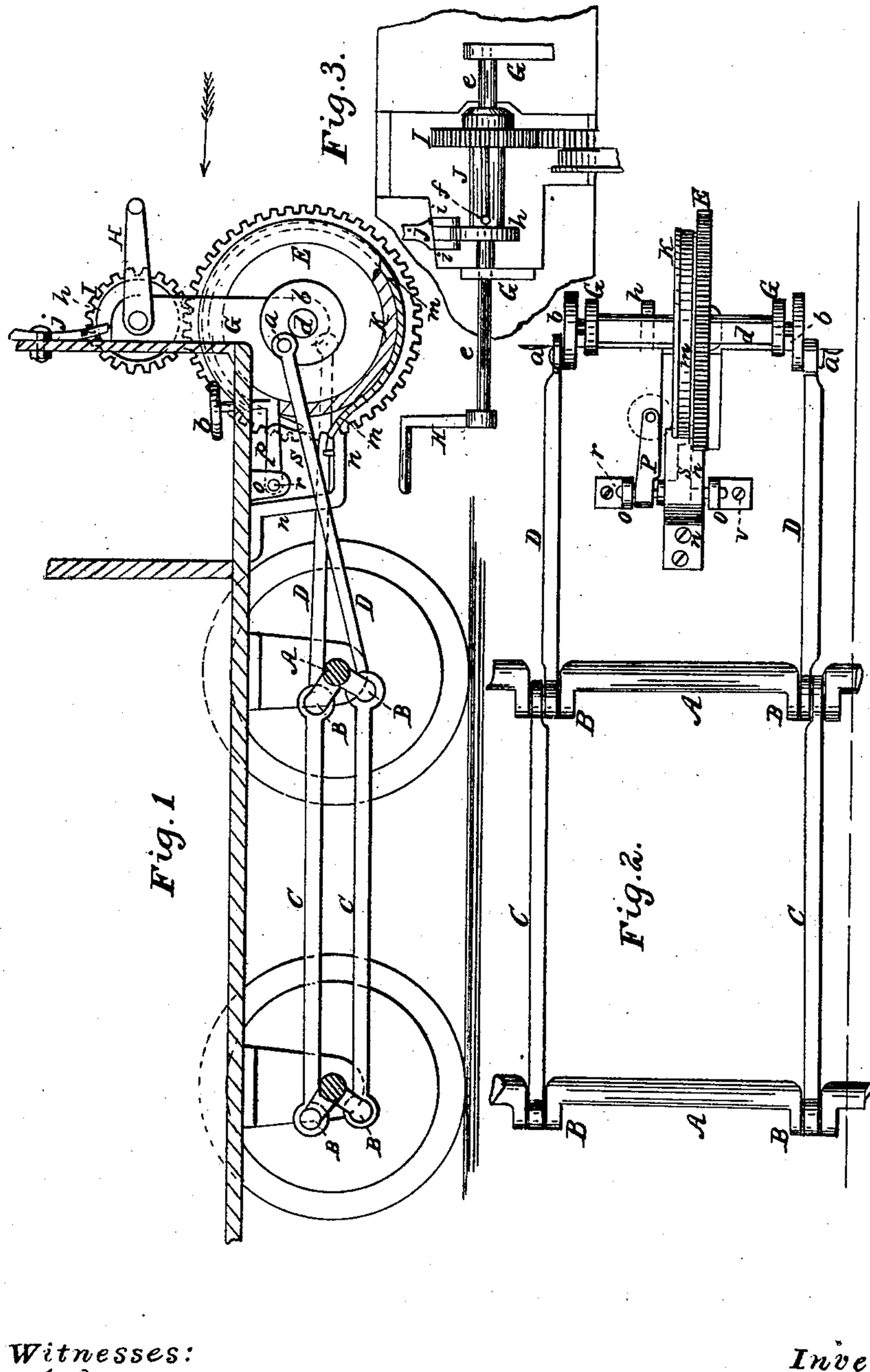
DAVIS & SMITH.

Car Starter.

No. 89,636. Patented May 4, 1869.



Witnesses:
Ath. Becker
Wm A Morgan

Inventors:
G. W. Davis.
A. P. Smith
per Munn & Co
Attorneys

United States Patent Office.

G. W. DAVIS AND ALBERT E. SMITH, OF PROVIDENCE, RHODE ISLAND.

Letters Patent No. 89,636, *dated May* 4, 1869.

IMPROVED CAR-STARTER.

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, G. W. DAVIS and ALBERT E. SMITH, of Providence, in the county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Starting and Stopping Cars; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a sectional side view of our invention.

Figure 2 is a bottom view of the same.

Figure 3 is a detail view in the direction of the red arrow.

Similar letters of reference indicate like parts.

The object of this invention is to provide a simple and effective means for stopping and starting railroad-cars.

It is designed, more particularly, for street-cars, but the stopping-device is applicable to steam-cars, also.

The starting-mechanism consists, in general terms, of a hand-crank, arranged so as to be conveniently accessible to the driver on the front platform of the car.

The shaft of this hand-crank bears a pinion, which engages with a cog-wheel of greater diameter, thus forming a power-gearing.

The shaft of this latter cog-wheel bears two cranks or crank-disks, which are connected by pitmen or connecting-rods with cranks formed in the axle of the front wheels of the car.

The cranks of the first axle are connected with the cranks of the second axle, by means of parallel rods, (as commonly used in connecting two corresponding cranks.)

The two cranks of each axle are arranged at right angles to each other, or nearly so, whereby the liability of dead-centre or dead-point stoppage is avoided.

The hand-crank pinion is mounted on a hollow shaft or sleeve, sliding longitudinally on the hand-crank shaft, so as to be thrown out of gear when the car is fully in motion.

The stopping-device consists in the application of a frictional brake-band, or strap, usually of thin steel, and encircling a friction-disk on the shaft of the large cog-wheel.

This band is actuated to clasp the disk with more or less power, by accessory lever-mechanism, arranged so as to be conveniently operated by the foot of the driver.

Our invention will be better understood by referring to the drawings, where—

A A are the axles, and

B B B B, the cranks of the same, each pair being arranged at right angles to each other, as shown.

C C are the parallel rods connecting the axle-cranks, and

D D are the pitmen or connecting-rods, connecting the cranks of the front axle with the wrist-pins *a a* of the crank-disks *b b*, which latter are firmly mounted on the shaft *d* of the main cog-wheel E.

The bearings for the shaft *d* are afforded by the uprights G G, affixed to the front of the car, as shown, the upper end of these uprights also affording bearings for the shaft *e* of the hand-crank H, by which the starting-mechanism is actuated.

The pinion I is affixed on the sleeve J, which latter is slotted, as shown, to slide on a stud, *f*, projecting through the slot from the shaft *e*, to permit the said pinion to be thrown in or out of gear, by sliding it on the hand-crank shaft, as aforesaid.

The mechanism for throwing the pinion thus in and out of gear, consists of the collar *h* on the sleeve J, the lever *j*, having jams or horns *i i*, acting on each side of the collar *h*.

In the operation of starting the car, the driver, having thrown the pinion I in gear, by shifting the position of the lever *j*, seizes the crank H and turns it in the proper direction; the inertia of the car being thus overcome, the draught-strain, exerted by the horses, acts uniformly, increasing the speed of the car, thus avoiding the slipping and stumbling of the animals, when the car is heavily loaded and the ground is slippery with snow and ice.

This method of starting street-cars is far superior to the method of storing up power, through the agency of compressed springs, to be applied when the car is to be started, for such means of accomplishing this object involves the employment of complex mechanism, which is liable to derangement.

The stopping or braking-mechanism consists of a friction-wheel or disk, *k*, which may be a boss, forming part of the wheel E, or may be a separate wheel on the shaft *d*.

m is the band of spring-steel encircling this disk or boss *k*, one part of the said band being affixed to any plate or bar *n*, affording such attachment, and arranged to enable the band to act upon the boss *k*.

The band extends nearly around the boss, and its end is affixed to an arm, (shown dotted at *s* in fig. 2,) on the shaft *r r*, having bearings in the journal-plates *o*, affixed to the bottom of the car, or other convenient point of attachment.

The shaft *r r* also bears another arm, *p*, from which a stem passes up through the platform, and is surmounted by a foot-plate, *l*.

The natural tension of the spring-band *m* acts to open the spring from contact with the boss, so that when the driver's foot is removed from the foot-plate, the spring-band will spring open from its clasping contact with the boss, and no longer exert its braking-effect.

Having thus described our invention,

We claim as new, and desire to secure by Letters Patent—

1. The method of starting street-cars, by means of a hand-crank, H, and intermediate toothed gearing, I E, or any suitable number of such gear-wheels and pitmen D D, cranks B B B B, arranged at right angles, and parallel rods C C, all substantially as shown and described, and for the purpose set forth.

2. The pinion I, when provided with the means of throwing it out of gear, substantially as described, in combination with the wheel E, pitmen D D, rods C C, and cranks B B B B, on the axles A, all as set forth.

3. In combination with the crank-axles A, connecting-rods C D, disks *b*, and shaft *d*, the boss or wheel *k*, and spring-band *m*, operated substantially as described, for the purpose specified.

The above specification of our invention signed by us, this 21st day of October, 1868.

G. W. DAVIS.
ALBERT E. SMITH.

Witnesses:
M. M. COWING,
MOSES THOMPSON.