R. R. CARPENTER.

Car Starter and Brake.

No. 88,447. Patented March 30, 1869.

Fig. 1.

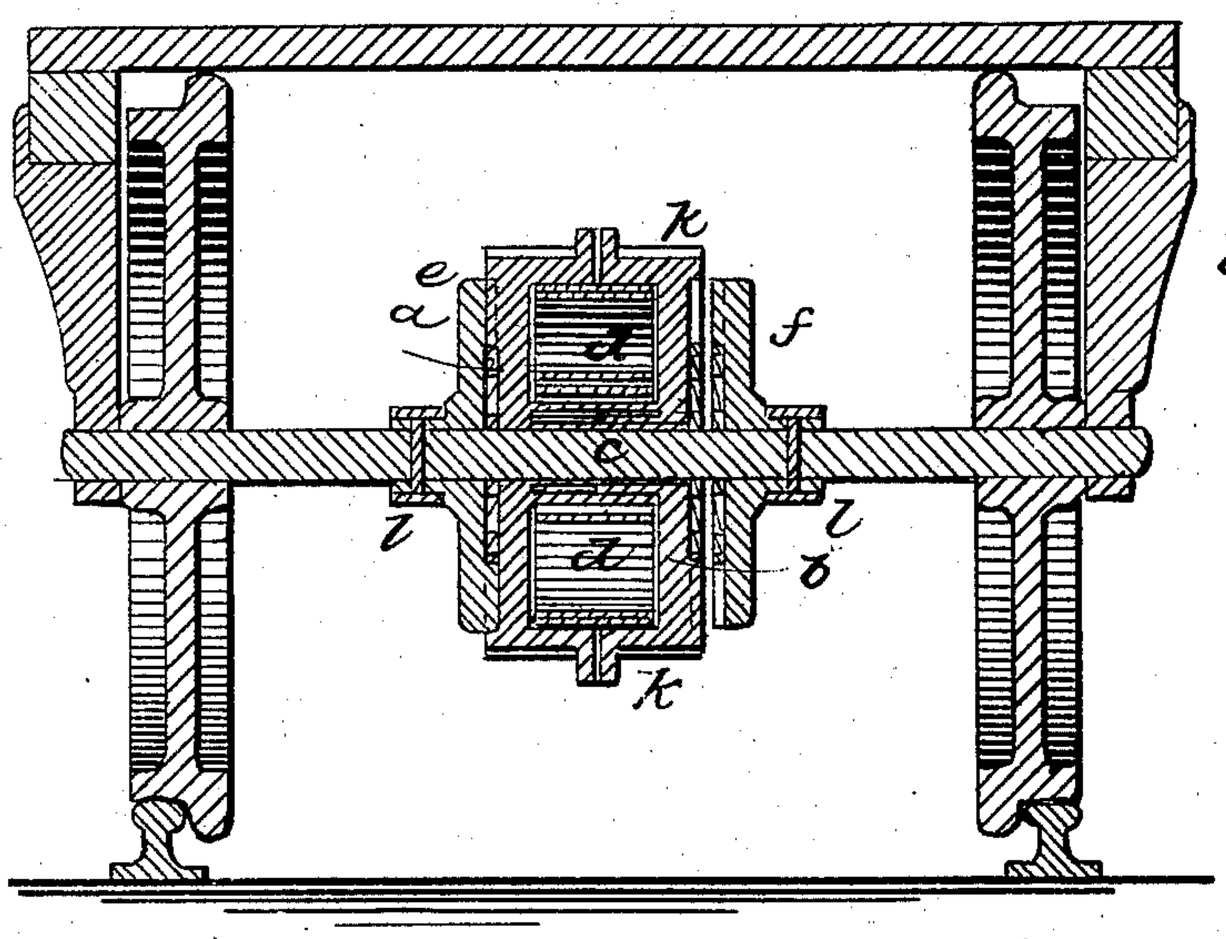


Fig. 4

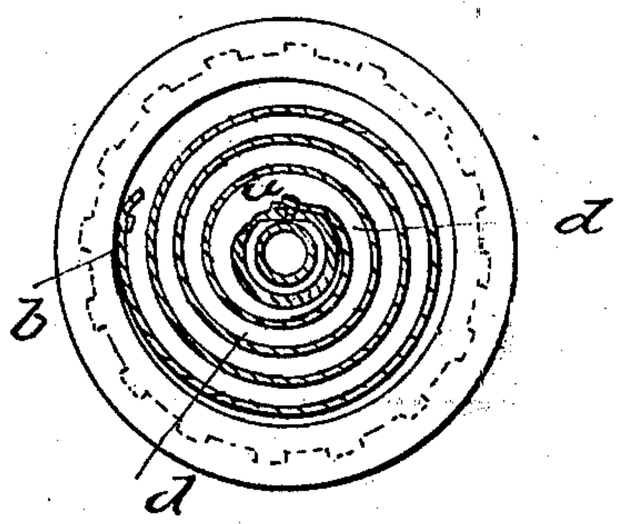


Fig. 2

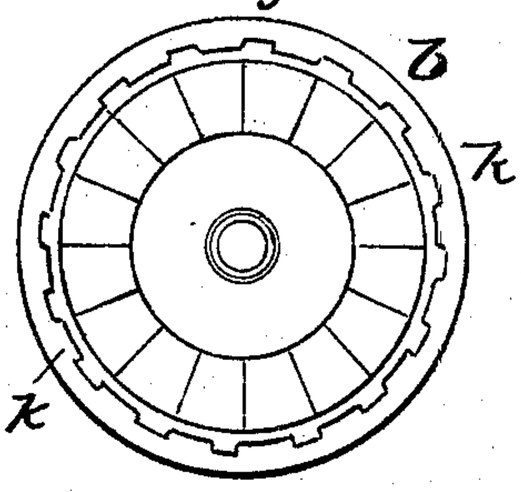
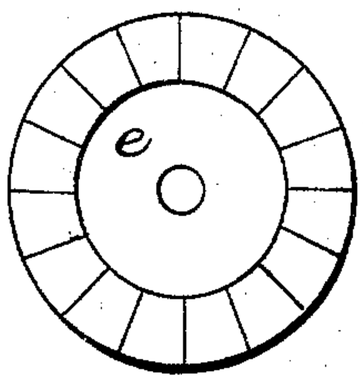
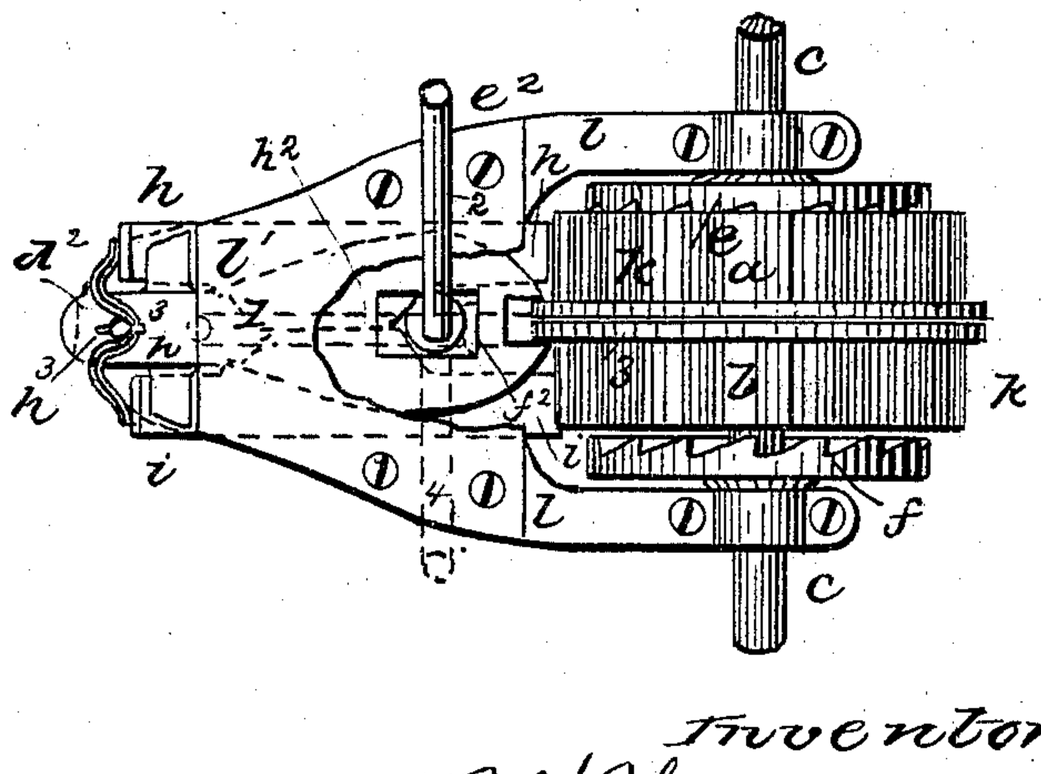


Fig. 3





Witnesses

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RALPH R. CARPENTER, OF TIPPECANOE, OHIO.

Letters Patent No. 88,447, *dated March* 30, 1869.

IMPROVED RAILWAY-CAR BRAKE AND 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 I, RALPH R. CARPENTER, of Tippecanoe, in the county of Miami, and State of Ohio, have invented and made a new and useful Improvement in Stopping and Starting Railroad-Cars; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1 is a vertical section of the apparatus;

Figure 2 is a side view of one of the spring-barrels;

Figure 3 shows the face of one of the ratchet-disks;

Figure 4 is a section of the spring-barrel, transversely of the axle; and

Figure 5 is a plan of the spring-barrel, and parts connected therewith, the plate *l'* being partially removed.

Similar marks of reference denote the same parts.

The object of this invention is to operate the mechanism, when the car is stopped, by the action of a spring that is wound up by the rotation of the wheels, and then exerts its force to start the wheels, when the car is to be moved forward again.

I make use of two half-spring barrels, or shells, *a* and *b*, set loosely on the shaft, or wheel-axle *c*.

These shells are set face to face, and between them is a coiled spring, *d*, which may also be formed as a volute to press the shells apart.

The inner end of the spring is attached to the hub-portion of the shell *a*, and the outer end to the inside of the shell *b*.

I employ a hook at the inner end of the spring *d*, as at *d'*, taking a lip on the hub of the shell *a*, which hook is inclined at its end so as to slide over the lip, and prevent injury to the spring, if the movement tends to uncoil said spring.

Upon the axle *c* are disks, *e* and *f*, that have ratchet-teeth, facing the ratchet-teeth on the sides of the respective spring-boxes, *a* and *b*, and these disks are firmly fastened upon the axle *c*.

It is now to be understood that the disks *e f*, and spring-boxes *a b*, are free to revolve with the axle *c*, and are not operative in any manner when the car is running.

I also remark, that this apparatus is brought into action when the car is going in either direction.

When it is desired to stop the car, a pawl, or bolt, *h*, or *i*, operated by a lever, or otherwise, is projected in between the teeth *k*, on the periphery of one of the spring-barrels, said pawl being on a frame, *l*, that is suspended at one end from the car, or truck, and, at the other end, grasps the axle *c*.

The said pawl causes the barrel *a* or *b* to remain stationary. The other barrel, or wheel, is revolved by the disk and ratchet-teeth, and winds up the spring, and finally stops the further rotation of the wheels.

The other pawl, *h* or *i*, is then thrown into the teeth of its barrel, to prevent the car receiving a backward motion, and when the car is to be started, the first pawl is withdrawn, and that barrel, being rotated, gives motion to the disk and shaft *c* in the direction to propel the car forward.

The ratchet-teeth of the disk, at the side of the spring-barrel that is being held stationary, run over the teeth of that spring-barrel, the spring-barrel having an endwise motion on the axle, sufficient to allow the same.

As the coil of the spring will be wound up when the car is going in one direction, if the barrel *a* is stopped, so it will be wound up when the car is going in the other direction, if the barrel *b* is stopped.

The bolts, or pawls *h i* are fitted to slide longitudinally between the frame *l* and plate *l'*. Their ends, nearest the barrels *a* and *b*, are bevelled in opposite directions, that they may easily catch into the teeth *k*, and they are kept toward the ratchet-teeth *k* by the spring d^2.

Upon the crank-shaft e^2 is an eccentric, f^2, shown in fig. 5. This eccentric is between the plates *l l'*, and acts upon shoulders on the pawls *h* and *i*, and when the eccentric and crank are turned to the position 1, shown by red lines, the eccentric pushes both pawls *h i* back away from the barrels *a b*, so that they revolve freely with the shaft.

When in the position 2, the eccentric allows the pawl *i* to hold the shell *b*, and keeps the pawl *h* withdrawn, so as to wind up the spring on stopping.

When the crank, with its eccentric, is turned to the position 3, both pawls are operative to hold the shells *a* and *b*.

When the car has been stopped, and when the crank is turned to the position 4, the pawl *i* is withdrawn, and the pawl *p* still holds the shell *a*, so as to apply the rotative power of the spring to start the car, and, when under way, the crank e^2 is turned again to the position 1, to liberate all the parts.

Thus, the turning of the handle e^2 one revolution, in quarter-circle pauses, performs the entire operations; and I make the same movement shift the barrels, or shells *a b* endwise on the axle *c*, so as to avoid the wear that there otherwise would be on the teeth of the ratchets *e f*.

This I accomplish by the fork-plate h^2, that takes the centre flanges of the shells *a b*, and said plate is attached by the bolt h^3, and is swung by the eccentric f^2, moving in a longitudinal slot in said plate h^2, so that the spring-barrel is shifted to connect and disconnect the respective ratchets *e f*, on stopping and starting, simultaneously with the movement of the pawls *h i*.

The shaft and crank-handle e^2 may be located at one end of the car, where the driver stands, in those

cars that only go one end first, but where the car is intended to go either end first, the shaft may be connected by gearing, or chains. to both ends

What I claim, and desire to secure by Letters Patent, is—

1. The pawls or bolts *h i*, actuated by the eccentric, in combination with the shells *a b*, and spring, constructed and operating substantially as set forth.

2. The forked shifting-plate h^2, in combination with the shells *a b*, and ratchet-disks *e f*, all constructed and operated in the manner and for the purposes set forth.

In witness whereof, I have hereunto set my signature, this 20th day of February, A. D. 1869.

RALPH R. CARPENTER.

Witnesses:

CHAS. H. SMITH,

GEO. T. PINCKNEY.