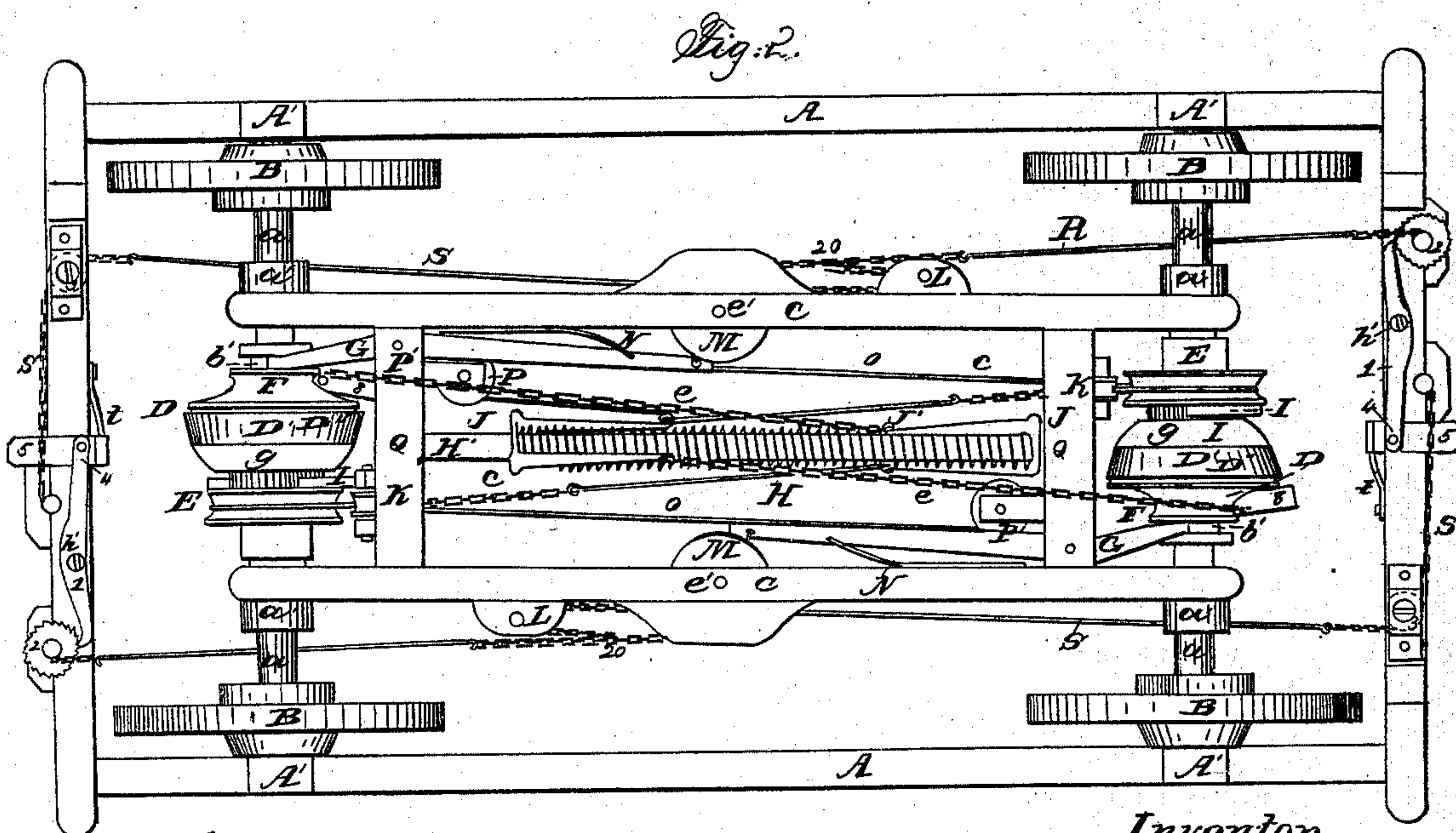
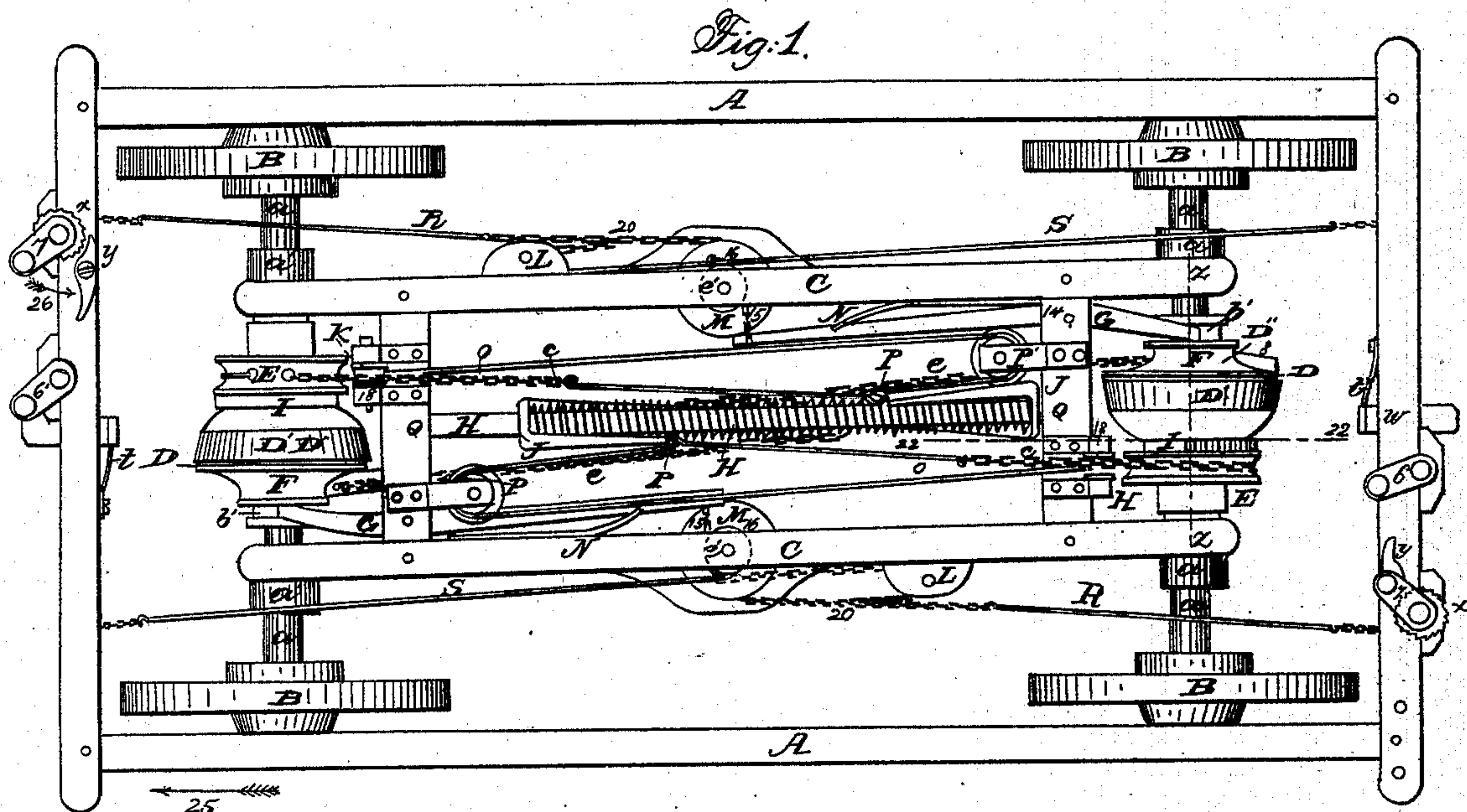


A. HIGLEY.
Car Starter.

2 Sheets—Sheet 1.

No. 62,198.

Patented Feb. 19, 1867.



Witnesses
L. M. Swamy
J. Smith.

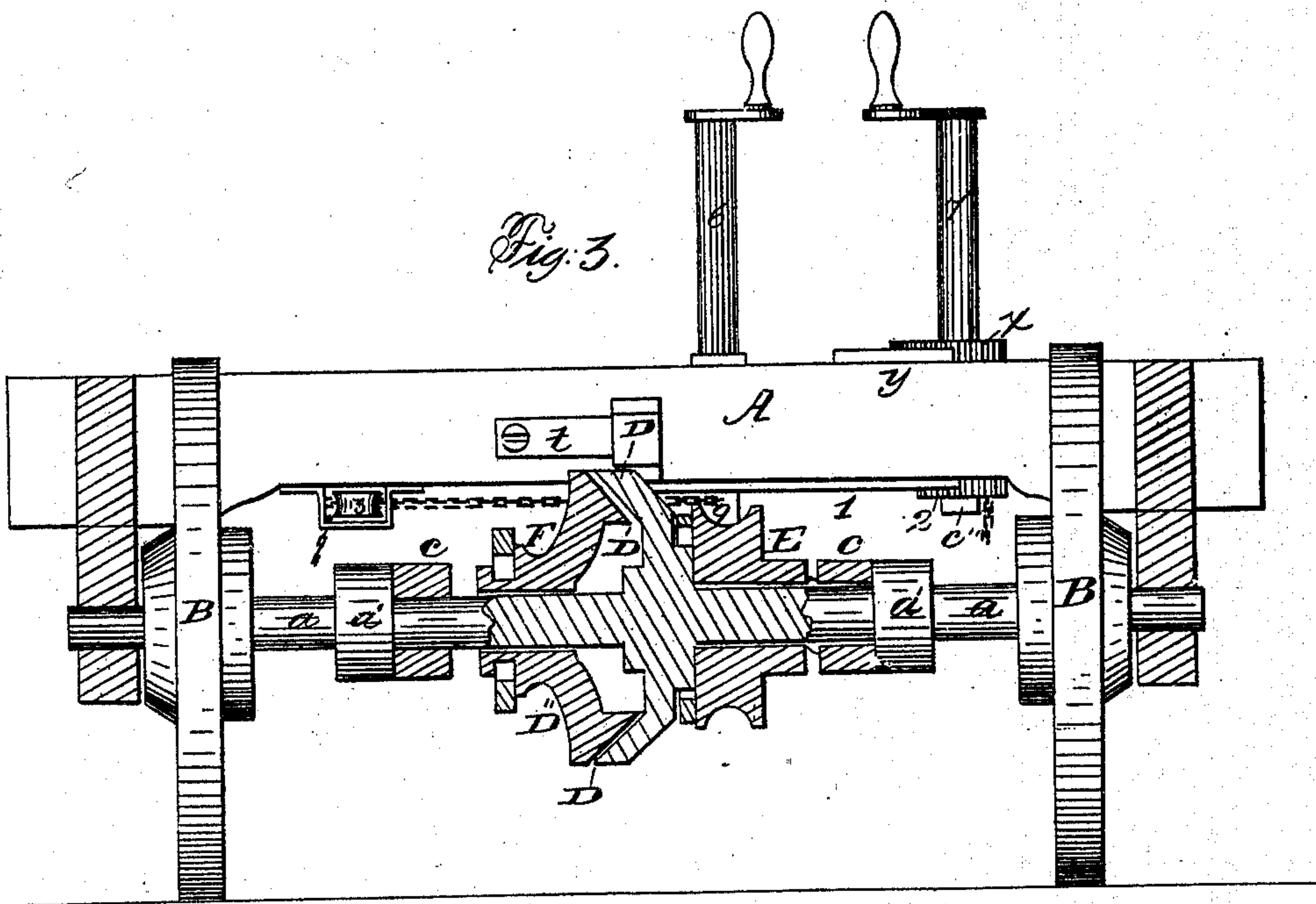
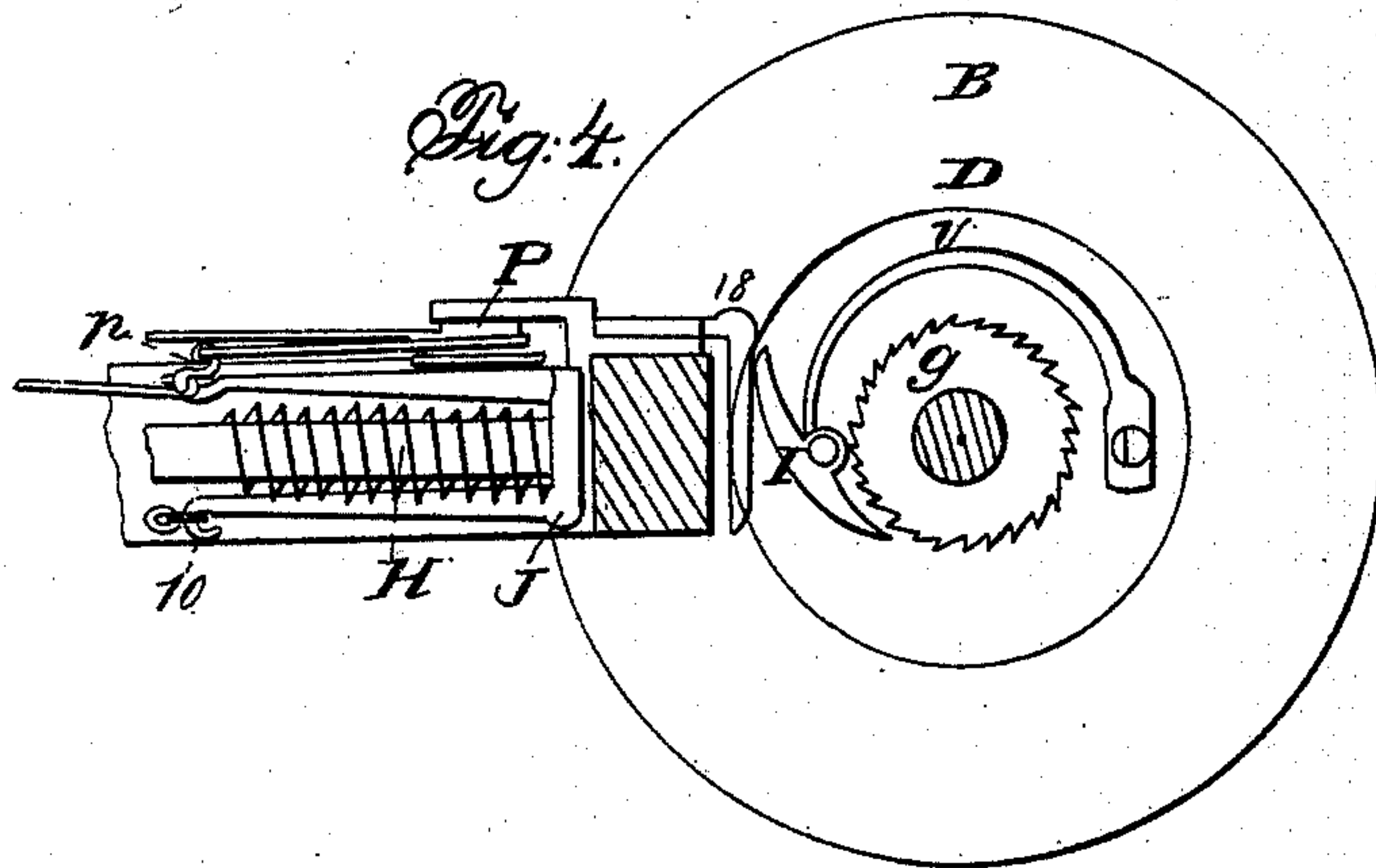
Inventor
A. Higley

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Witnesses
C. M. Swaney
J. Smith.

Inventor.
A. Higley

United States Patent Office.

AARON HIGLEY, OF SOUTH BEND, INDIANA.

Letters Patent No. 62,198, dated February 19, 1867.

IMPROVEMENT IN CAR BRAKES.

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, AARON HIGLEY, of South Bend, in the county of St. Joseph, and State of Indiana, have invented certain new and useful improvements in Railroad Car Brakes; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a top view.

Figure 2, a bottom view.

Figure 3 is a transverse vertical section, taken in the line *z*, fig. 1.

Figure 4 is a part of a longitudinal view of the truck, taken in line 2.

Like letters and figures of reference refer to like parts in the several views.

The device for the braking operation at one end of the car is substantially the same as at the other, being constructed and operated exactly alike.

In the drawings A represents the frame. C is a framework connected to the shaft of the wheels, and to which some of the apparatus for braking the car is connected, this frame being held in place on the shaft by means of the collars *a'*. On the shaft *a*, and near the centre, is a friction-clutch coupling, D, D' being the shell and D'' the cone. To the side of the shell is fastened a ratchet-wheel, *g*, the ratchet and shell being both permanently attached to the shaft *a*, and turning with it, while the cone D', and pulleys on each side, are loose on the shaft. F is a pulley, forming part of the cone, which is used to take up the chain *e*. 8 is a stop, fastened to the side of cone D', and forming part of it, so that the cone and pulley F can turn but one way. E is a pulley, close to the ratchet on the shaft *a*, to which is pivoted the dog I, and chains *c* and *o*. And when the brake is in operation, this pulley turns in the opposite direction from the pulley F and cone D', which will be more fully described hereafter in the operation. G is a clutch-lever, pivoted to the frame C at P', the end clutching around the groove *g* next to the pulley F. M is a cone-pulley, pivoted to frame C at C'. The chain 15 is fastened to the small part of the pulley M, and to the lever G. From the large part of the cone-pulley M extends the chain R to shaft C'', (fig. 3,) of windlass 7. Connected to chain R, at 20, is another chain, S, which passes around the pulley L, then around pulley 3, and is fastened to the windlass 6. N is a spring, fastened to the frame C, with one end against the lever G, to force it back from the frame. H' is a bar that rests upon or has its bearings on the frame C, at Q. Around this bar is coiled the spring H, at the end of which is the swivel J. To one end of this swivel is fastened the chain *e*, the other end of the chain being fastened to the pulley F. To the other end of the swivel J, at P, is fastened the end of chain *c*, the other end being fastened to the pulley E. Near the same place on pulley E is fastened the chain O, passing nearly around the pulley in the opposite direction, and over the pulley K, then around the pulley P, and is made fast to the swivel J. Fig. 4 shows the ratchet when the brake is not in use, the dog I being held out of the ratchet by means of the upper end of the dog hitting the strip 18. To the windlass 7 are fastened two ratchet-wheels, ratchet-wheel X having a dog to catch into it, made in the ordinary way. Dog 1, shown in fig. 2, is pivoted near the centre to the frame A, one end catching into the ratchet-wheel 2, and the other end being pivoted to a stirrup by which the car is drawn. Spring *t* forces the stirrup back when the team is not drawing, and holds the dog I in contact with the ratchet 2, which will be described hereafter, the whole being operated as follows:

When the car is going in the direction indicated by the arrow 25, and it is desired to stop it, the windlass at the arrow 26 is turned, winding the chain R around the shaft C''. This turns the cone-pulley M, thus drawing the end of the clutch-lever G, to which the chain 15 is fastened, towards the frame C. The other end being pivoted, as before stated, forces the clutch along, and this hitting against the pulley F, forces the cone D'' into the shell D' so tightly, and creating so much friction, that when the wheels and shell D' are turning, the cone D'' and pulley F of said cone turn with them, when, if it was not held so tight, it would not turn at all; but as it turns with the shell D', the chain *e*, which is attached to said pulley F, and swivel J, will wind around this pulley, and contract the spring H. The chain O being fastened to the same swivel on the other side, and passing back around the pulley P, and over the pulley K, then passing around under the pulley E up to the top and made fast, will turn the pulley E in the opposite direction from the pulley F when the swivel J and spring

H are drawn up by the pulley F. The chain *c* being fastened to the same swivel, and to the pulley E, will at the same time be wound on the pulley E in the opposite direction from the chain *c*. The dog I will catch into the ratchet *g* by the action of the spring V under the other end of the dog. The windlass being held firmly by the two dogs, and ratchets X and 2, thus the wheels are stopped, not being permitted to turn; and the power or force expended in braking contracts the spring H, which power is held in reserve, by the means described, to be applied to start or aid in starting the car again after it has been stopped. When it is desired to start the car again, the dog *y* is thrown out of the ratchet-wheel X by the driver, and the starting of the team pulls out the dog I from the ratchet 2, and this allows the windlass to turn, and the spring N, pressing against the lever G, forces it back from the frame, and moves the cone out of the shell again. This lets the chain *c* loose, and leaves all the strain of the spring H on the chain *c*, which being fast to the pulley E, and the dog I catching into the ratchet *g*, and being pivoted to the pulley E, prevents the pulley from turning without turning the shaft *a*. As the spring H expands, the shaft *a* and wheels B are turned, thus starting the car, or helping to start it. In winding up the chain *c*, the resistance of the spring H, as it is contracted, tends to stop the wheels, and in this way the braking the car is accomplished. When it is desired to stop the car without accumulating power to start again in the same direction it was going, as when the car is at the end of the road, or if it is necessary to stop very quickly to prevent an accident, the windlass 6 is used. This operates on the opposite brake from windlass 7, and as the stop 8, fastened to cone D', will hit against the frame C, and not being able to turn in the least, the car can be stopped without contracting spring H, and very quickly. The object of the ratchet X on the windlass 7 is to hold the windlass from turning if the team should start before it is desired they should, as without it they might start enough to pull out the dog I, and thus loosen the brake, and the car start and do some damage. On a down grade, either or both brakes can be used, and brake just hard enough to give the car the desired motion.

This construction of a car brake and car starter is designed as an improvement upon the one patented by me on the 14th day of August, A. D. 1866, which is simplified and cheapened by the omission of one of the pulleys shown and claimed as part of the construction therein, and a modification of the mechanism resulting therefrom.

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

In a car brake and starter for railroad cars, the combination of clutch-coupling D, pulley F, ratchet *g*, and pulley E, substantially as and for the purpose set forth.

AARON HIGLEY.

Witnesses:

S. S. FAHNESTOCK,
T. C. CONNOLLY.