

B. KELLOGG.

AUTOMATIC CAR BRAKE AND BRAKE GOVERNOR.

No. 446,525.

Patented Feb. 17, 1891.

Figure 7.

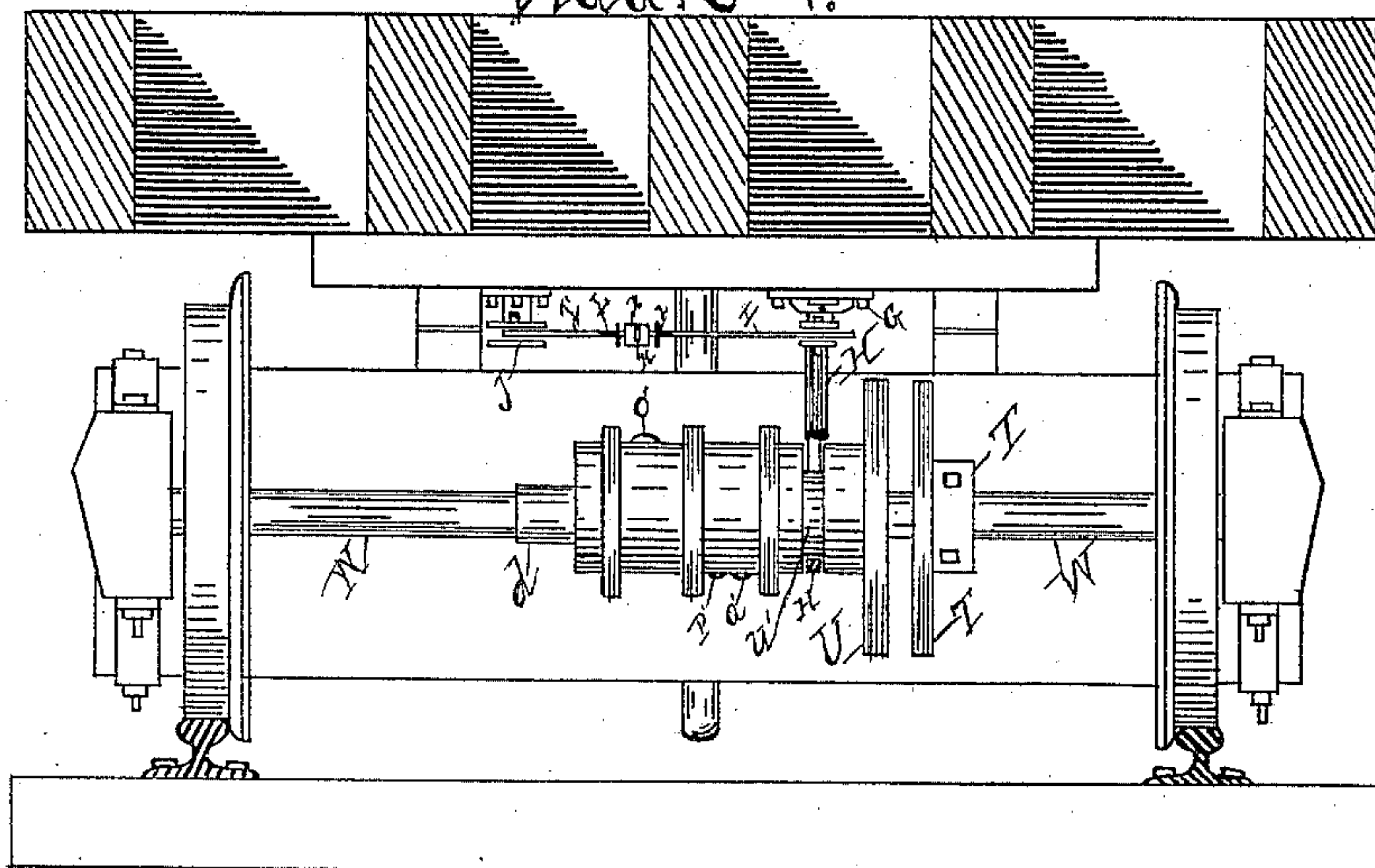


Figure 8.

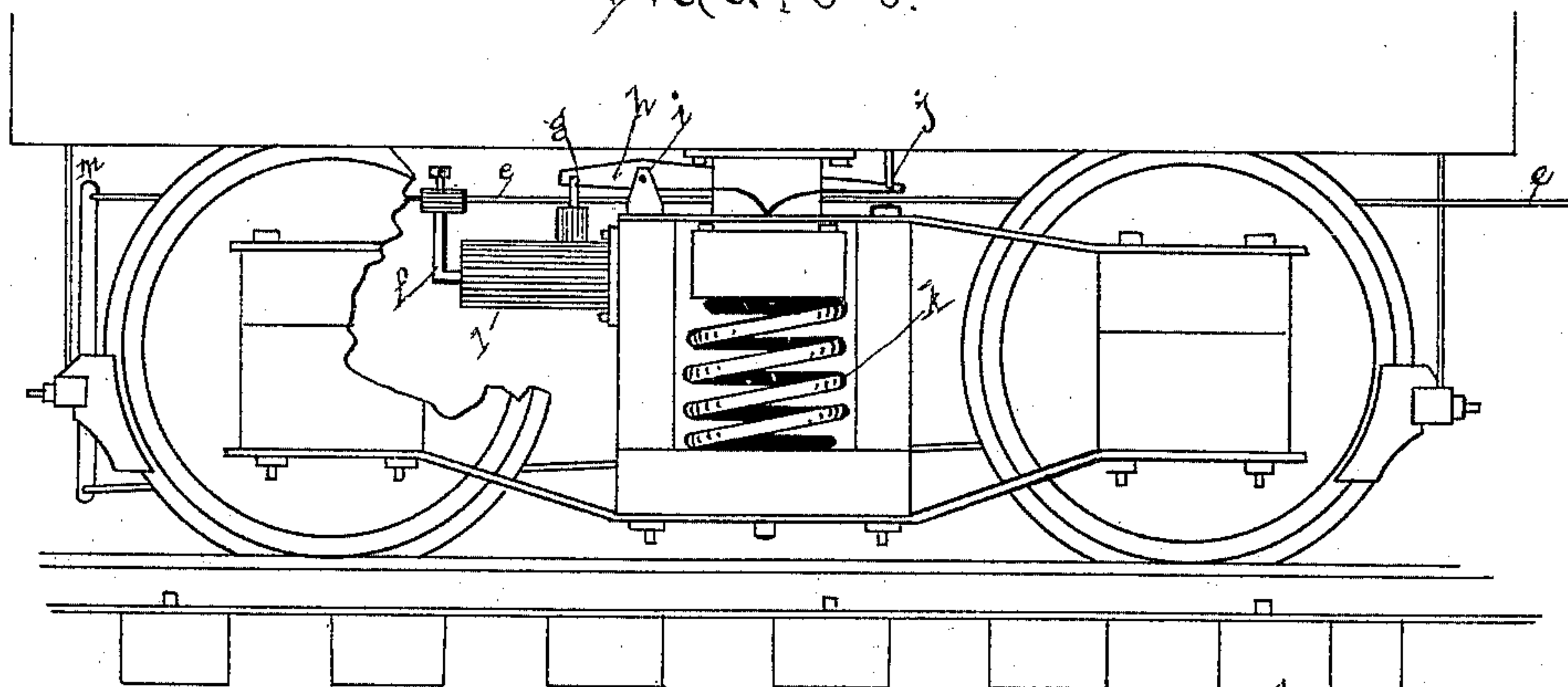


Figure 9.

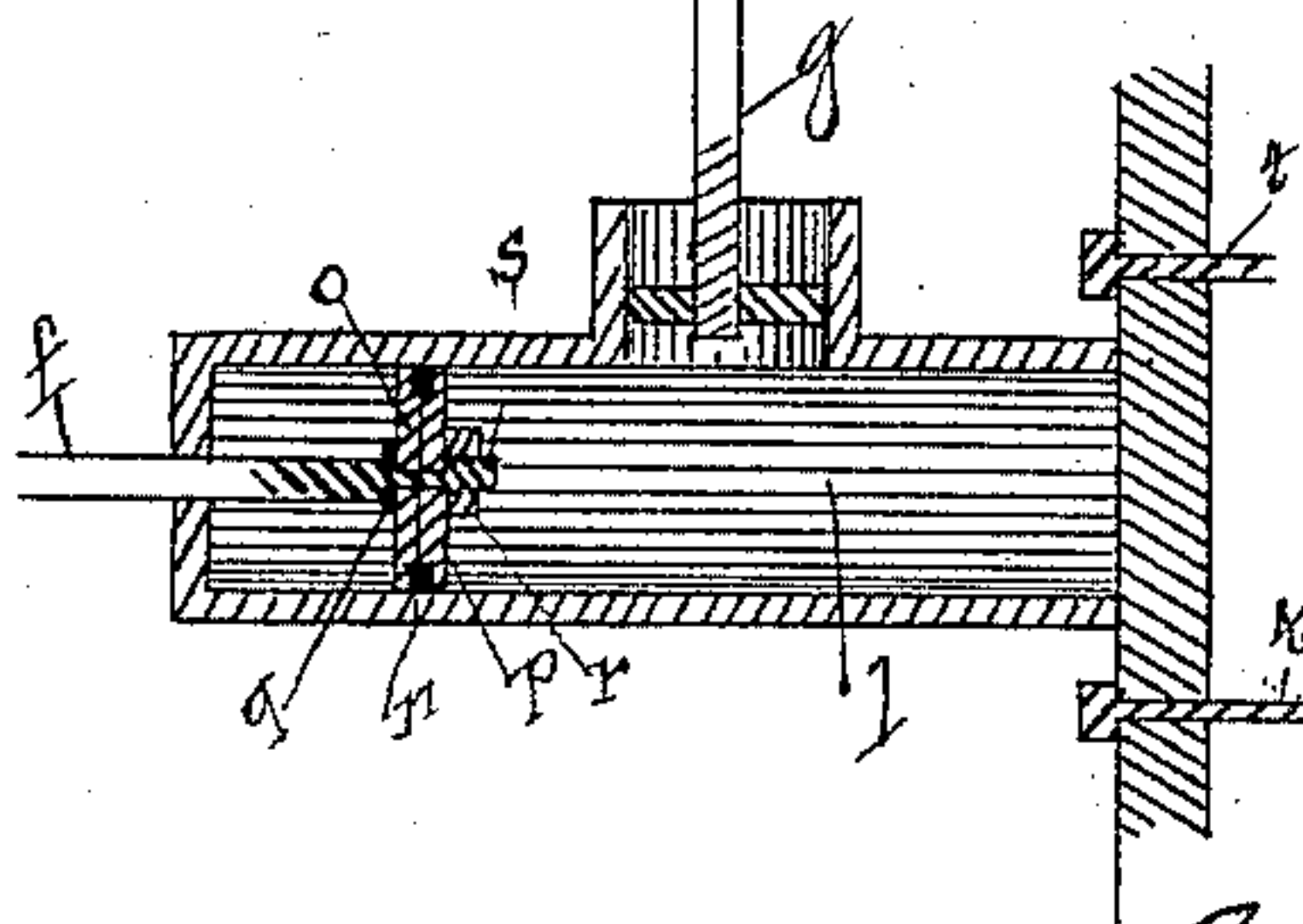
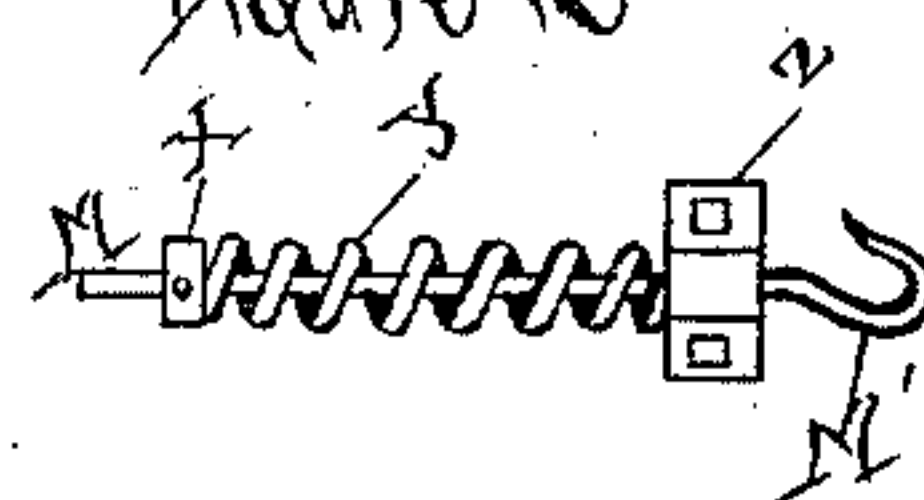


Figure 10.



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AUTOMATIC CAR-BRAKE AND BRAKE-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 446,525, dated February 17, 1891.

Application filed January 2, 1890. Serial No. 335,717. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN KELLOGG, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented a new and useful Automatic Car-Brake and Brake-Governor, of which the following is a specification.

My invention relates to an improved automatic car-brake in which a portion of a friction-clutch or a disk-clutch, which is to a certain extent its equivalent, works loosely on a car-axle apart from the portion of the same which is fastened to the car-axle when the brakes are off, and which said portion is thrown into gear or in contact with the fastened portion of the said clutch when the brakes are applied, by which means power is transmitted (from the rotating car-axle) to the various devices which are used for pressing the brake-shoes to the rims of the wheels and at the same time to the like mechanism of the adjoining cars, which causes the brakes to be applied on them at the same time, consequently to apply the brakes on all the cars so connected together automatically.

The latter portion of my invention consists of a self-adjusting brake-governor which is to control the pressure exerted upon the brake-shoes of each and every car to which it is applied, the said pressure being controlled by the weight of the load which the car is carrying.

The objects of my invention are to furnish a cheap, durable, simple, and reliable automatic brake for rail-cars. I attain these objects by the mechanism shown in the accompanying drawings, in which—

Figure 1 represents a view of the under side of and the end of a car, the point of observation being the middle of the track. Fig. 2 represents a plan view of the bottom of the car-body, showing construction and connections. Fig. 3 is a detail of the rigid lever-bracket. Fig. 4 is a side view of the mechanism shown in Fig. 1 with the right-hand car-wheel removed. Fig. 5 is a detail view of the levers and brackets and clutch-arm, by means of which the brake is thrown into gear. Fig. 6 is a detail view of clutch-arm, showing hinge. Fig. 7 is a view of friction-disk clutch as a substitute for the friction-clutch shown in Fig. 1. Fig. 8 is a side view of the car-brake

equipped with automatic brake-governor, with a portion of the car-wheel and truck removed. Fig. 9 is a detail of brake-governor, showing construction of piston and valve and their relative locations. Fig. 10 is a detail of spring used on the rods for causing them to return to their normal position when the brakes are released.

Similar letters refer to similar parts throughout.

The friction-clutch or the friction-disk (its equivalent) encircles the car-axle W, the female portion of the same T being fastened by means of its clamp construction to the car-axle W and revolves with it. The male portion of the clutch U loosely encircles the car-axle W, allowing the same to rotate without transmitting its motion to it. The clutch-arm H partially encircles the loose portion of the clutch U in the groove U', Fig. 7. The said clutch-arm H is hinged to the hanger G by means of the bolt c, Fig. 6, and the loose portion of the said clutch is thrown out of gear by means of the spring Z, Fig. 2, when the brake is released. The cog-wheel R is attached to the loose portion of the said clutch U and revolves with it, and is always in gear with the cog-wheel S, which is attached to the reel-shaft E, and imparts the motion of the said clutch U to it. The said reel-shaft E is hung from the journals D D, and is held in place by the collars F F. To the said reel-shaft E are attached the chains O P Q, which, when the same revolves, are wound upon it, causing the rods O'' P'' Q'' to be drawn toward it. The rods O'' and P'' hang underneath the bottom of the car and end in the chains, whose office will be referred to later on. The rod Q'' connects with the brake-levers on any ordinary brake mechanism.

As I make no claim for anything except the power developing and transmitting device herein shown, the ordinary brake mechanism is omitted from the drawings.

The broken levers I I' and I'' I''' are hung underneath the car-body upon the platform B by means of the bracket J, Fig. 3, and the hinged clutch-arm H, Fig. 6, and are pivoted in their respective places at their ends by means of the bolts a b and a' b', respectively. They are also joined underneath the link K by means of the bolts v v'. The link K sur-

rounds the said broken levers, as shown in Fig. 5, and is connected with the rods M M', which said rods extend to either end of car and terminate in hooks. The brake-chain X is also connected with the said rod M', so that upon the brake-spindle revolving the chain X is wound thereon, and the link K is drawn toward it. The link K is held in place on and around the broken levers I I' and I'' I''' at the center joint thereof by means of the angle-irons L.

The construction of the link K is such that upon its being drawn longitudinally toward either end of the car, one of the broken levers I I' I'' I''' will be straightened, and consequently force the hinged hanger H from the rigid hanger or bracket J and cause the clutch-arm H to force the loose portion of the clutch U into contact with the fast and rotating portion T, and consequently have its motion and power transmitted to it. The said loose portion in turn transmits this power and motion through the cog-wheels R and S to the reel-shaft E, which, revolving, tightens the chains O and P, which, on being connected with the hooks on the adjoining cars corresponding with the hooks M M', draw up the links on said adjoining cars to correspond with the link K, thus automatically applying the brakes to all the cars so connected. Upon the brakes being released on the car from whence they are applied, or, in fact from any car, the spring Z throws the clutch out of gear and releases the pressure on the rods O'' P'' and the rods M M', which are then returned to their original position by means of the spring y acting in connection with the collar x and guide-block z. (Shown in Fig. 10.)

Should it be desired to simplify the brake by eliminating the cog-wheels R S and the reel-shaft E and the collars F and the hangers D D, in order to cheapen its construction, where speed of action or increased power is a secondary consideration, the chains O P Q may be attached to the drum of the clutch, as shown by O' P' Q', respectively.

The friction-disks shown in Fig. 7 as T and U are suggested as an equivalent of the clutch shown in Fig. 1, and may be inserted in lieu thereof.

In Fig. 8 is shown the automatic governor, which governs the power applied to the brake-lever, and consequently prevents the sliding of the wheels.

To the timbers forming the spring-box or some equivalent portion of the car-truck is bolted the piston l, having two openings, one at right angles to the other. Attached to the brake-rod e, by means of a set-screw, is the arm f, which is bent at right angles and enters the end of the piston l, and has the valve consisting of the collar g, the rings o p, and the rubber ring n, and the tap r at its end. At right angles to this valve is a like valve on the rod g, which said rod g is raised and lowered by means of the lever h, which has its fulcrum at i, and is connected with the car-

body by means of the rod j, so that upon the said car-body being raised or lowered by reason of the difference of the weight of the load the said car carries, the cubical capacity of the chamber formed within said cylinder by means of the said respective differences of said valves from the center of said cylinder will be increased as the load the car is carrying increases and diminished as the load is diminished. The said chamber formed by the said valves in the double piston l is filled with oil or some other suitable liquid. The said liquid being incompressible, the valve which is connected with the moving brake-rod e can only enter the cylinder until it meets the said liquid after it has filled the chamber. Then the liquid filling the chamber will act as a cushion and not allow the valve to enter farther, and consequently the brake-rod e can travel no farther, and the brake cannot be set tighter than the liquid will allow the valve to move. The distance through which the brake-lever m travels controlling the degree to which the brake is set, and the distance through which the brake-rod e travels controlling the distance through which the brake-lever m travels, and the distance through which the brake-rod e travels being controlled by the valve acting against the liquid filling the chamber within the cylinder, it is evident that the wheels will be prevented from sliding by means of the device herein shown, and that the varying weight of the load within the car will be made to control the pressure which is exerted by the mechanism upon the brake-shoes.

It will be observed that the governor is adjustable, first, by the relative sizes of the two piston-openings; second, the position of the arm f as regards the brake-lever m, and, third, by the relative lengths of the levers h i and j i.

The oil-chamber herein mentioned is filled or emptied, as occasion requires, by means of an escape-valve screwed into its side.

I have been informed and believe that friction-clutches have been used on car-brakes before this. I consequently do not apply, broadly, for a friction-clutch as applied to car-brakes in general, but only claim its application in the connection shown herein—that is, in its generating power, which is utilized to throw the mechanism on the adjacent cars into gear at the same time power is generated to set the brakes on the car from when the brake is applied.

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

1. In combination, in a car-brake, the friction-clutch U T, the cog-wheel R, the cog-wheel S, the reel-shaft E, the collars F F, the hangers D D, and the chains, rods, and chains O P Q O'' P'' Q'', all substantially as set forth herein.

2. In combination, in a car-brake, the friction-disk clutch U T, the cog-wheel R, the cog-

wheel S, the reel-shaft E, the collars F F, the hangers D D, and the chains, rods, and chains O P Q O'' P'' Q'', Fig. 1, all substantially as set forth and described herein.

5 3. In combination, in a car-brake, the friction-clutch T U, the clutch-arm hinged hanger H G c, the rigid hanger J, the broken levers I I' I'' I''', the bolts *a b*, *a' b'*, and *v v'*, the angle-irons L, the link K, and the rods M M',
10 with the hooks and chains thereto attached, all substantially as set forth and described herein.

4. In combination, in a car-brake, the friction-disk clutch T U, the clutch-arm hinged
15 hanger H G c, the rigid hanger J, the broken levers I I' I'' I''', the bolts *a b*, *a' b'*, and *v v'*, the angle-irons L, the link K, and the rods M M', with the hooks and chains thereto attached, Fig. 1, all substantially as set forth
20 and described herein.

5. In combination, in a car-brake, the friction-clutch T U, Fig. 1, the chains O' P' Q', and the rods O'' P'' Q'', with the chains attached thereto, all substantially as set forth
25 and described herein.

6. In combination, in a car-brake, the friction-disk clutch T U, the chains O' P' Q', the rods O'' P'' Q'', and the chains thereto attached, all substantially as set forth and described
30 herein.

7. A car-brake consisting of the mechanism herein shown, being the bracket J, the levers I I' I'' I''', the hinged clutch-arm hanger G H c, the bolts *a b a' b'*, the angle-irons L, the rods
35 M M', with the hooks and chains thereto attached, the friction or disk clutch T U, the cog-wheels R S, the reel-shaft E, the collars F

F, the hangers D D, the chains O P Q, and the rods and chains O'' P'' Q'', all substantially as set forth herein.

8. A car-brake consisting of the mechanism shown herein, being the bracket J, the levers I I' I'' I''', the hinged clutch-arm hanger G H c, the bolts *a b a' b'*, the angle-irons L L, the
45 rods M M', with the hooks and chains attached thereto, the friction or disk clutch T U and the chains O P Q thereto attached, and the chains O'' P'' Q'', with the chains attached thereto, all substantially as hereinbefore set forth.

9. In the herein-described car-brake, the collar *x*, the spring *y*, and the guide-block *z*, as shown in Fig. 10, all as and for the uses and purposes hereinbefore set forth.

10. In the herein-described car-brake, the
55 spring Z, Fig. 2, in combination with the hanger H H, for the use and purpose hereinbefore set forth.

11. An automatic brake-governor consisting of the double piston *l*, the bent arm *f*,
60 with set-screw and having the valve thereto attached, the vertical acting rod, with the valve thereto attached, the lever *h*, the fulcrum-bracket *i*, and the rod *j*, attached to and working in combination with the car-trucks,
65 substantially as herein set forth.

12. The governor-valve consisting of the metal rings *o p*, the collar *q*, the rubber ring *n*, and the threaded nut *r*, combined and operating substantially as herein set forth.

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Witnesses:

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