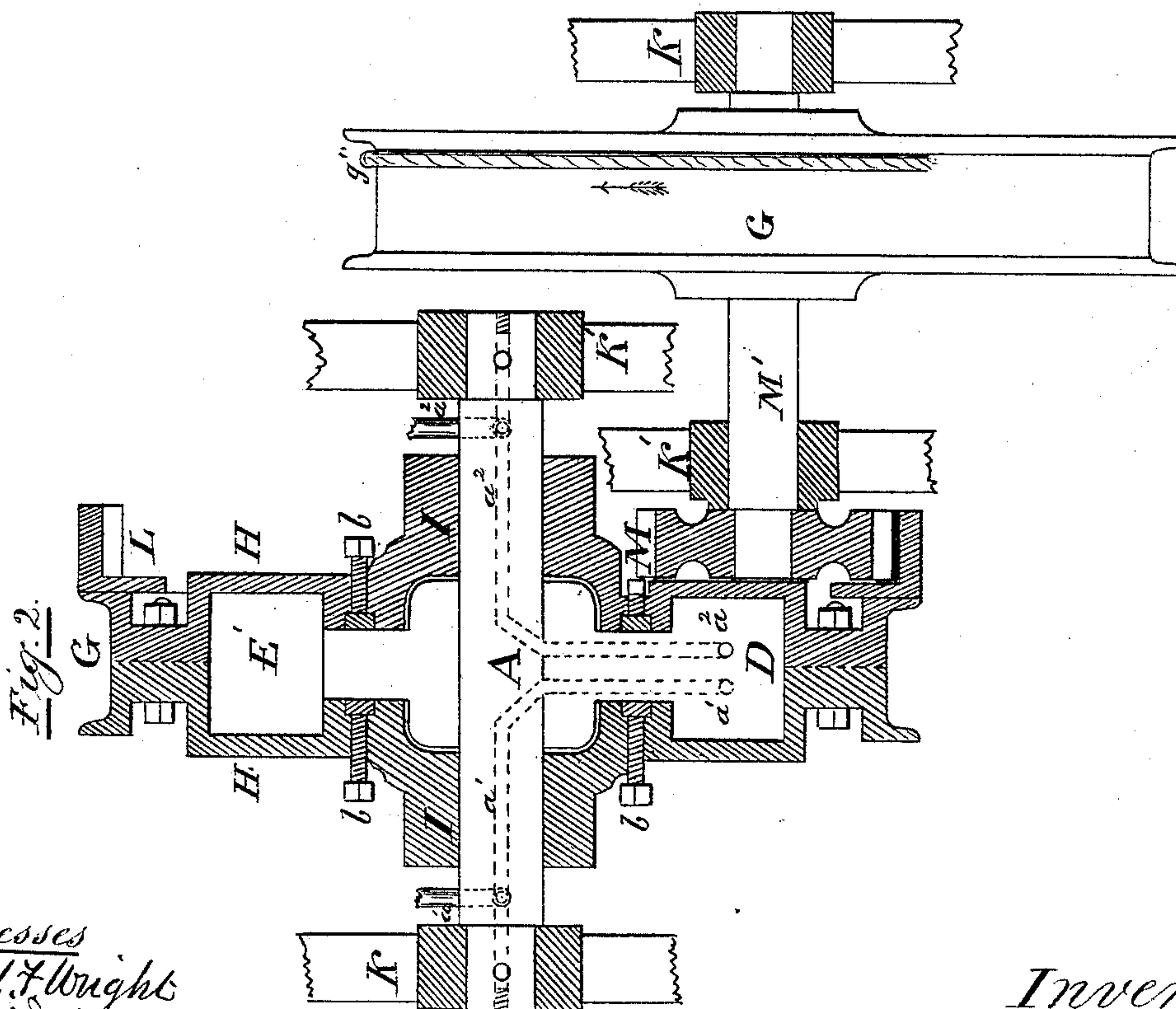
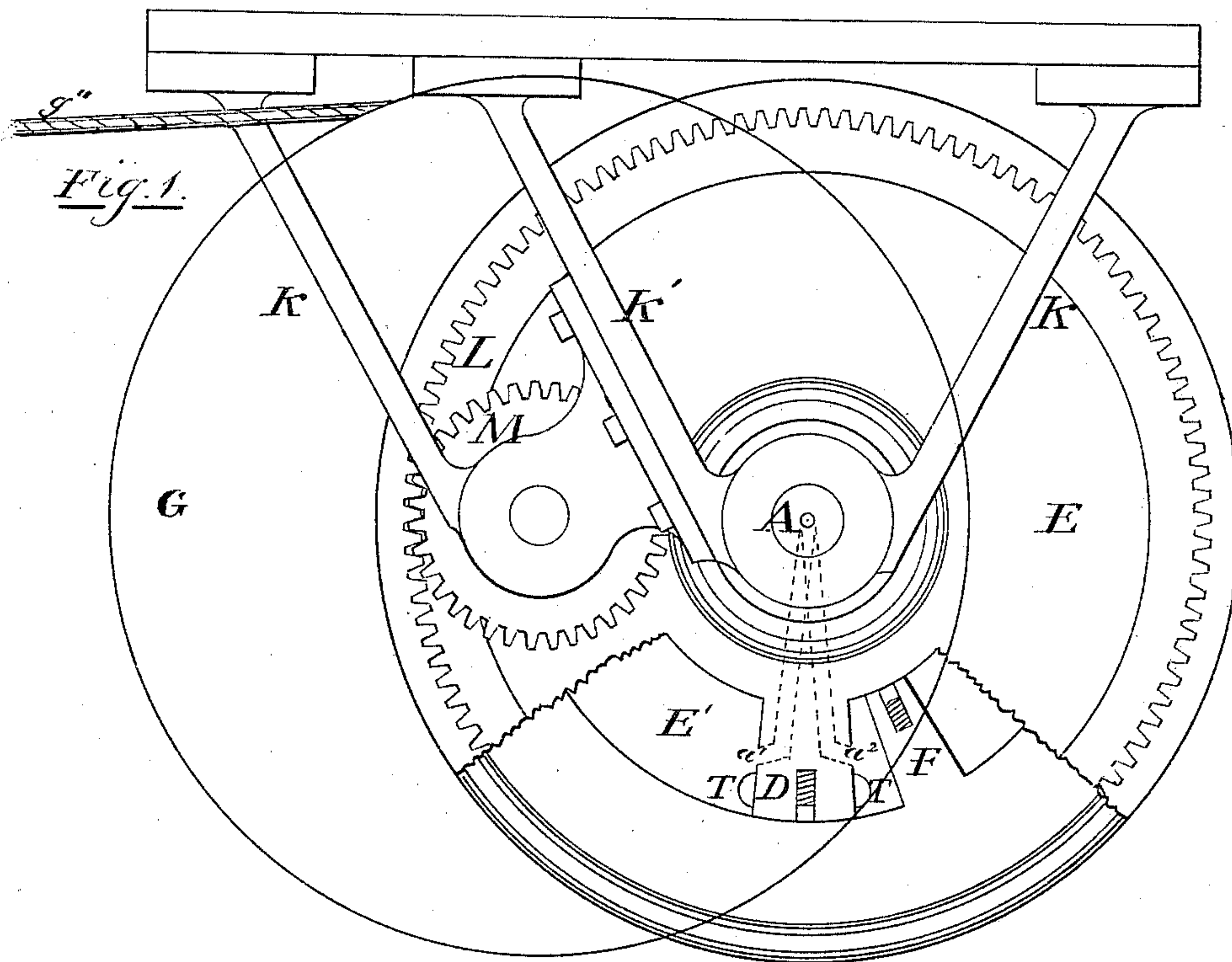


(No Model.)

2 Sheets--Sheet 1.

W. GILL.
Brakes for Railway Cars.
No. 232,812.
Patented Oct. 5, 1880.



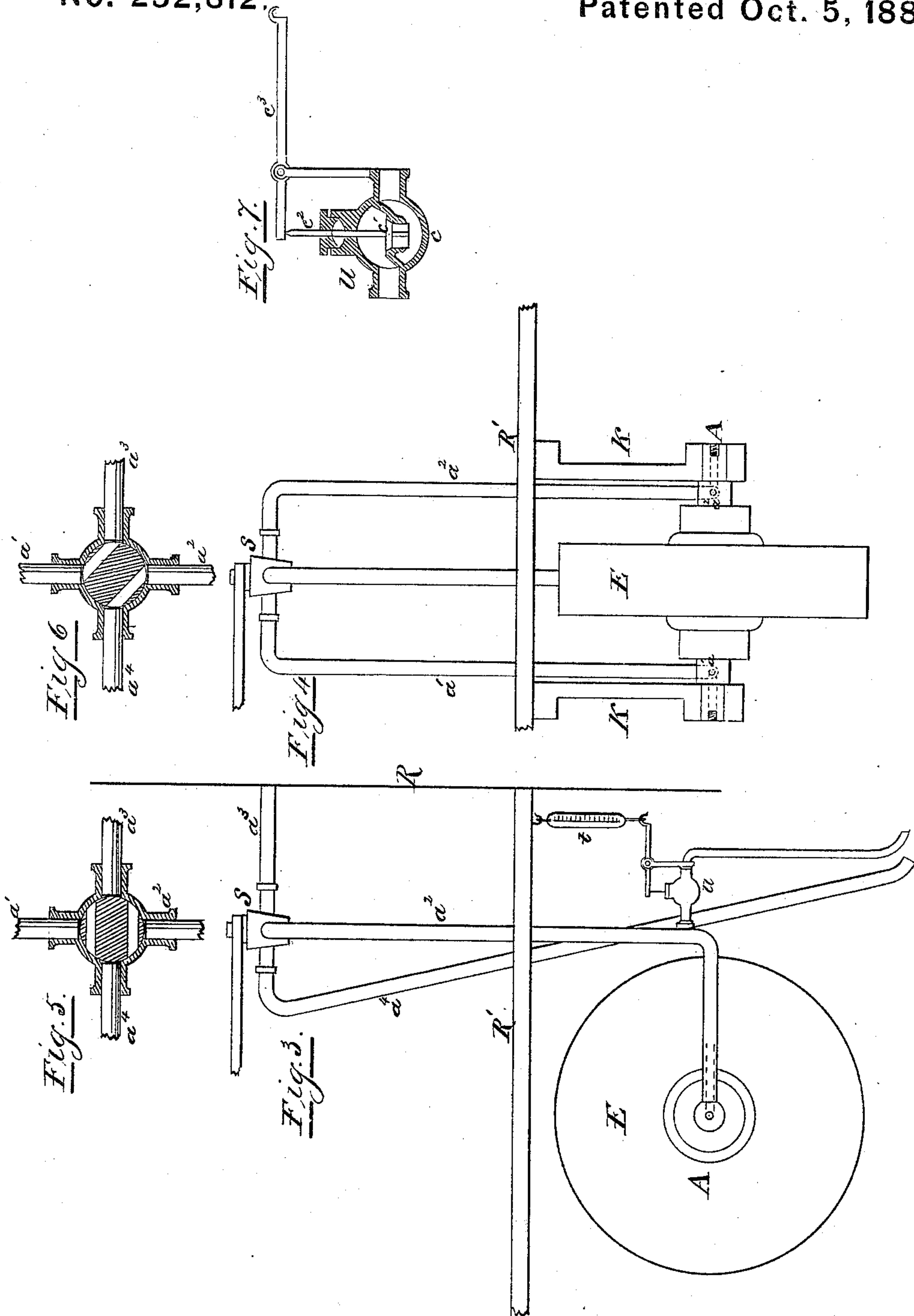
Witnesses
Alfred F. Wright
Harry Wells

Inventor
William Gill

(No Model.)

2 Sheets--Sheet 2.

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UNITED STATES PATENT OFFICE.

WILLIAM GILL, OF TORONTO, ONTARIO, CANADA.

BRAKE FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 232,812, dated October 5, 1880.

Application filed August 18, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GILL, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented
5 certain new and useful Improvements in Brakes for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its object the operation of those brakes which are attached to the
10 several cars of a railway-train, and is adapted to operate such brakes as comprise a number of cars to be acted upon by the said brakes so as thoroughly to control the large and
15 heavy freight-trains without the brakemen going on the top of the cars for this purpose, as is the usual practice, which is the cause of numerous accidents, destruction of property, and loss of life.

My invention consists, in the first place, of
20 a stationary piston placed transversely on the periphery of a circular disk, which disk is turned truly and accurately on its periphery and on its sides, and its center forms a hub,
25 which is keyed upon a stationary axle, so that the piston, disk, hub, and axle are all stationary.

It consists, in the second place, of a rotating
30 steam-cylinder having a square or other form of circuitous cavity which embraces the piston hereinbefore referred to. This cylinder is constructed with sides which embrace closely the sides of the disk aforesaid and inclose the
35 hub of the said disk and terminate in journal-boxes, one on each side, which fit closely upon the stationary axle and rotate upon the same.

When my motor is to be used with a winding capacity for slack chain of six feet of chain
40 and under, I construct the cylinder in the form of a flanged pulley on its periphery, on which the brake-chain is wound, which construction of cylinder obviates the necessity of applying a pair of spur-wheels and a separate pulley, and consequently is less expensive than the
45 latter mode of construction; and when my motor is to be used on large and heavy freight-trains with a winding capacity up to eighteen feet of slack chain, I construct my cylinder with an internal-toothed spur-wheel cast upon
50 one of its sides, which drives a pinion of a proportion of about one to three of the wheel, and have a chain-pulley on the pinion-axle for

winding up the chain, by which mode of construction I am enabled to increase the winding capacity of my motor up to eighteen feet,
55 which is the largest possible amount of slack that will be experienced on the largest freight-train.

The stationary axle of my motor is hollow, and is utilized as steam and exhaust passages,
60 for the admission and exhaust of steam to and from the steam-cylinder.

My invention also consists in a safety-cushion so placed as to stop the motion of the cylinder before its propeller can come in contact
65 with the stationary piston, which occurrence, in the event of a chain breaking, would probably result in some damage being done to these parts of the device. This cushion may be either inside or outside of the steam-cylinder.

It also consists in the application of a pressure-valve to the steam-pipes leading to the
70 cylinder, one on each pipe, by which the gross amount of steam-pressure upon the propeller will be limited to a pressure under the tested
75 strength of the brake-chain, so that by ordinary fair usage and attention no such damage as a chain breaking should occur.

In the accompanying drawings the same letters of reference indicate the same parts as in
80 this specification.

Sheet 1: Figure 1 is a sectional side view, showing stationary axle A, with steam-passages $a' a^2$, stationary disk B, with hub C, a
85 stationary piston, D, with steam passages and ports $a' a^2$, revolving cylinder E, with circuitous cavity E' , propeller F, chain-pulley G, internal-toothed spur-wheel, L, and spur-pinion M, brackets K K' K'', and chain g'' .

Fig. 2 is a longitudinal and sectional plan
90 of my device, showing stationary axle A, with steam-passages $a' a^2$, stationary disk B, with hub C, stationary piston D, with steam passages and ports $a' a^2$, revolving cylinder E, with circuitous cavity E' , and chain-pulley G,
95 constructed and forming a part of steam-cylinder E, showing also the sides of cylinder H and journal-boxes I I, brackets K K' K'', internal-toothed spur-wheel L, and pinion M.

Sheet 2: Fig. 3 is a side elevation, showing
100 the application and attachment of my device to a locomotive-engine, in which the brackets K, supporting the cylinder E, are bolted to the under side of the foot-board R', the front of the

boiler being represented by the heavy black line R. S is an ordinary four-way cock for regulating and admitting the steam from boiler R to cylinder E, and by which it is admitted to either side of the propeller F by the pipes a' a^2 and liberated therefrom by the exhaust-pipe a^4 . There is also shown a common spring-balance, t , and pressure-valve u , for limiting the pressure on the propeller to a pressure within the strength of the brake-chain.

Fig. 4 is a front elevation of my device as shown attached to a locomotive-engine, in which is shown the cylinder E, axle A, steam-pipes a' a^2 , and exhaust-pipe a^4 , also four-way cock S.

Fig. 5 is a plan of the ordinary four-way cock, showing the steam entirely shut off from the cylinder E.

Fig. 6 is a plan of the four-way cock, showing the steam in the boiler R in connection with cylinder E through the main pipe a^3 and the side pipe, a' .

Fig. 7 is a vertical section of the pressure-valve for limiting the steam-pressure on the propeller F to a force within the tested strength of the main brake-chain, showing chamber c , valve c' , stem c'' , and lever c^3 .

In operating my device steam is admitted from the steam-boiler, by means of the four-way cock S, to the circuitous cavity E' in cylinder E, through the steam-pipe a^2 , entering at the port a^2 , thence passing along the hollow axle A and through the disk B and hub C and piston D, and issuing from the piston D to the space between the said piston D and the propeller F, thence moving the propeller F and cylinder E around on the stationary axle A until the propeller F is brought to a stop by the cushion T on the opposite side of the piston, should the propeller have been required to travel thus far, and during such revolution or part of a revolution the brakes will have been effectively applied.

To loosen the brakes it may occasionally be found necessary to turn the cock S and admit steam through the steam-pipe a' . The propeller will then bring back the cylinder to its normal position and be ready for again applying the brakes.

The propeller F is shown in the position as if it had just wound up the brake-chain and not commenced to return to its normal position.

From this description it will be observed that when opening the steam-passage a' for the admission of steam to one side of the propeller the opposite pipe, a^2 , will be open to the atmosphere, and on opening the pipe a^2 for the admission of steam to the other side of the propeller the opposite pipe, a' , will be open to the atmosphere. In other words, when the steam is acting on one side of the propeller it is being exhausted from the opposite side thereof.

I am aware that motors for brakes of railway-cars with a stationary cylinder and circuitous cavity forming a part thereof, with a movable piston therein, are not new, and that a single cushion has been used with a movable piston.

I am also aware that a reciprocating cylinder with hollow axle utilized as steam-passages is not new.

I am further aware that a four-way cock and pressure-valve are neither of them new; but I am not aware of a revolving or partially-revolving cylinder with a stationary piston, and stationary hollow axle with steam-passages therein, and said cylinder constructed with a flanged pulley on its periphery for winding up the brake-chain, and also constructed with an internal-toothed spur-wheel cast upon the side of the said steam-cylinder, ever having been before known or used. I therefore believe this to be new and desire to secure Letters Patent for the same.

Having thus described my invention, I claim—

1. The rotating cylinder E, with circuitous cavity E', sides H H, journal-boxes I I, propeller F, chain-pulley G, cast on and forming a part of cylinder E or placed on a separate axle, M', as required for short and long trains of cars, internal-toothed wheel L, and pinion M, disk B, hub C, piston D, stationary axle A, with steam-passages a' a^2 , the whole as shown and described, and for the purposes set forth.

2. The combination, with the cylinder E, stationary axle A, and stationary piston, of the common packing-rings b b , brackets K K' K, cushions T T, pressure-valve u , four-way cock S, and pipes a' a^2 a^3 a^4 , for the purposes set forth.

WILLIAM GILL.

Witnesses:

ALFRED F. WRIGHT,
HARRY WELLS.