

W. SOMERVILLE, Jr.

Car Brake.

No. 29,725.

Patented Aug. 21, 1860.

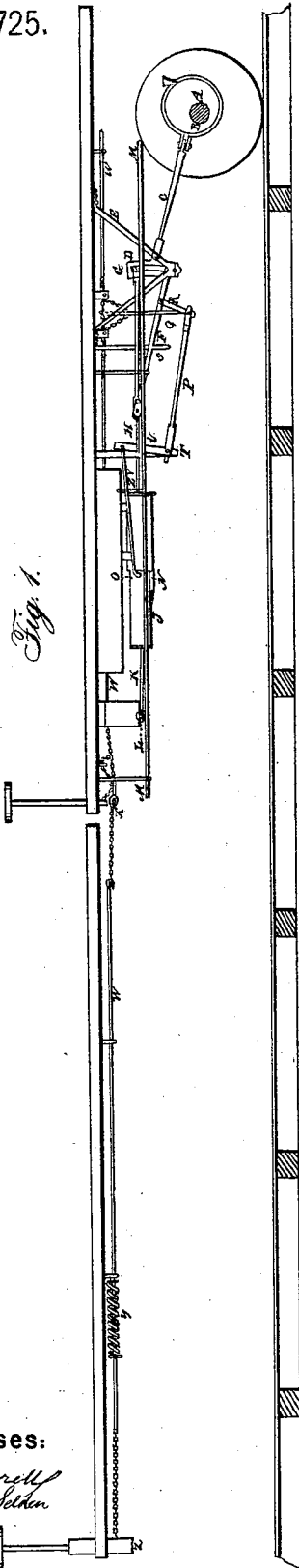


Fig. 1.

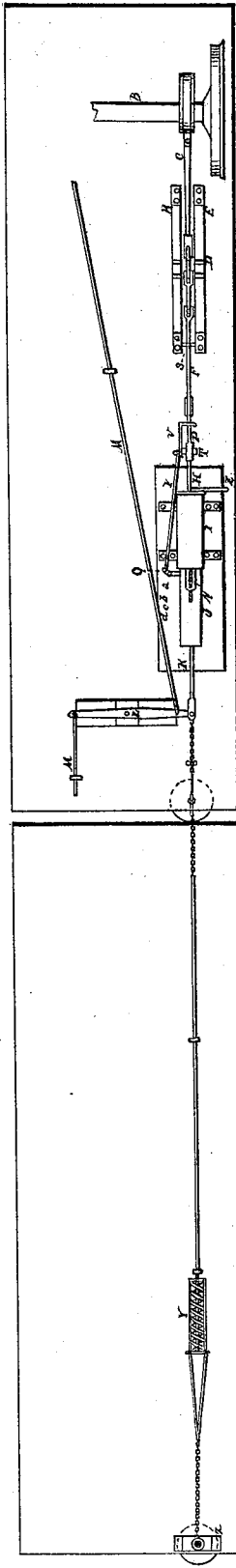


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

WALTER SOMERVILLE, JR., OF MITCHELL'S STATION, VIRGINIA.

IMPROVED RAILROAD-CAR BRAKE.

Specification forming part of Letters Patent No. 29,725, dated August 21, 1860.

To all whom it may concern:

Be it known that I, WALTER SOMERVILLE, Jr., of Mitchell's Station, Culpeper county, and State of Virginia, have invented a new and useful Machine for Applying the Brakes upon Railroad-Cars, called "Somerville's Pneumatic Brake;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side elevation, and Fig. 2 a bottom view.

A is an eccentric located upon one of the axles B of the car.

C is the eccentric-rod connecting the eccentric with the link D, which is suspended from the bottom of the car by the two hangers E E.

F is a connecting-rod which grasps by means of a jaw and pivot at the one end, the square block G in the link, and which slides up and down in the same, and by a jaw and pivot at the other end the extremity of the piston-rod H of the air-pump I. The air-pump I is of ordinary construction, having a valve in the piston-head opening inwardly, and a valve also in the partition which separates its cavity from that of the cylinder J, in which the air is condensed by injections from the air-pump.

K is a piston-rod attached by one end to the piston-head within the cylinder J by either a knuckle or universal joint, and with the other it grasps the end of the common lever L.

M M are the two rods which form a connection between the common lever L and the two brake-levers which stand in immediate connection with the brakes, one upon the front and the other upon the rear truck.

N is a safety-valve which closes an orifice in the air-pump. It may be of any desirable construction. In the plan submitted I have adopted the following:

a is a cone-shaped piece of metal closing the orifice of the air-pump. It is compressed by the spiral spring b. A biped piece of iron c bestrides the spring and keeps it in position. A screw d perforates that portion of the aforementioned piece of iron which connects its legs together, which when turned presses a washer which is upon its end next the spring against the spring, producing the desired

pressure. The function of this valve is to allow the air to escape whenever the pressure in the pump reaches the degree beyond which it is not desirable that it should go.

O is a cock whose office is to discharge the compressed air within the cylinder J after sufficient pressure shall have been exerted upon the brakes, so as to allow the piston to be driven backward in the cylinder to its first position by the resilience of the springs upon the brakes, or by a spring or weight attached to one end of the common lever L. Especially to effect this object should the reaction of the springs upon the brakes be insufficient.

P, Q, R, and S together compose a "tumbling shaft" or apparatus for elevating and lowering the link end of the connecting-rod F, thereby throwing the pump in and out of action at will, P being merely a horizontal bar grasped at one end by the jaws and pivot of the lower end of the guide T and at the other end by the two ends of the yoke-shaped piece of iron Q, secured by a pivot.

R is a short vertical shaft, the base of which is grasped by the jaw and pivot at the end of the horizontal shaft P, and its apex by its jaw and pivot grasps the neck of the connecting-rod F.

Q is a yoke-shaped piece of iron or other material, taking hold, as described, of the jaws of the horizontal shaft P and having the chain of the continuous rod passing beneath it.

S is a piece of iron or other material in the shape of the letter L, the use of which is to prevent the horizontal bar P, with its appendages, from being elevated higher than a fixed point.

U is a lever resembling the human arm and hand, grasping by its "hand" the horizontal bar P, and having attached to its upper end one end of the rod V, the other end of which is attached to the cock O by a pivot. The elbow of the lever is secured to the side of the jaw on the foot of the guide T by the same pivot which secures the horizontal bar P at this point.

T is a vertical shaft, perforated so as to serve as a guide to the piston-rod H.

W is a rod extending along the bottom of the car, whose continuity is interrupted

wherever there is need of flexibility by the substitution of a chain, as at the point where it dips beneath the yoke Q and at the space between the cars, except where a self-coupler is used, which will render flexibility in the latter locality unnecessary. By connecting these rods together by any simple coupling arrangement one rod extending the length of the train is produced.

The coupling X in the accompanying drawings is designed to be composed of one hook-shaped spring, whose flexibility will allow it to yield and disconnect in event of the breakage of a car-coupling. This hook retains the link within its grasp by means of a slight spring-guard which yields readily for the admission of the link.

Y is a spiral spring incorporated into the rod at some point beneath the tender of the engine, so as to prevent by its elasticity the breakage of the rod when subjected to great strain, or this feature might be modified by giving to each section of the continuous rod a short spiral spring or a spring made of any elastic substance, such as india-rubber. This continuous rod is fastened at its forward termination to the windlass Z, or to a lever of any desirable shape located at any favorable point. In the plan submitted it is upon the forward part of the tender. The brake-windlass upon each car is also connected with the continuous rod by its chain, as seen in Fig. 1, thus establishing a communication between each car and the continuous rod.

The mouth of the air-pump is closed by a simple covering Z², made of canvas, wood, or any other suitable material. This cover is perforated by one end of the tube Z', the other end of which opens at some suitable point on the side of the car, either on the inside or outside. The design of this arrangement is to exclude dust and cinders from the pump and to secure a supply of pure air. Both the air-pump I and the cylinder J are provided

(though not so shown) with oil-cups for lubrication. Each car should be thus equipped.

The following is a description of its operation: When the train is in motion, the eccentric A, connecting-rod C, and link D are necessarily in motion, the remaining parts being out of motion, except when placed in proper attitude for action. When it is desired to apply the brakes, the engineer or brakeman exerts traction upon the continuous rod by rotating the windlass Z. This elevates the connecting-rod F from its lower position, where it is at rest, to its upper position, where the vibrations of the link D are imparted to it, throwing the air-pump into action. This movement simultaneously causes a closure of the cock O, which prevents the escape of the air from the cylinder J, the expansive power of which thrusts the piston K forward and, acting upon the common lever L, applies the brakes. When the tension upon the continuous rod is relaxed, the connecting-rod F, with its appendages, drops to its lower position and the air-pump ceases to act. The same movement opens the cock O, allowing the air to escape from the cylinder J, the piston K to return to its first position, and the brakes to be relieved from pressure.

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

1. The arrangement for compressing air upon cars, in combination with the brakes for the purpose of operating them, whether applied to one car or to a train of cars, substantially as described.

2. The arrangement of the cover Z² for the purpose of excluding dust and cinders and of admitting pure air into said pump, in combination with the tube Z', substantially as described.

WALTER SOMERVILLE, JR.

Witnesses:

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W. CROSSFIELD.