A. CONNISON.

Car Spring.

No. 2,395. Patented Dec. 23, 1841.

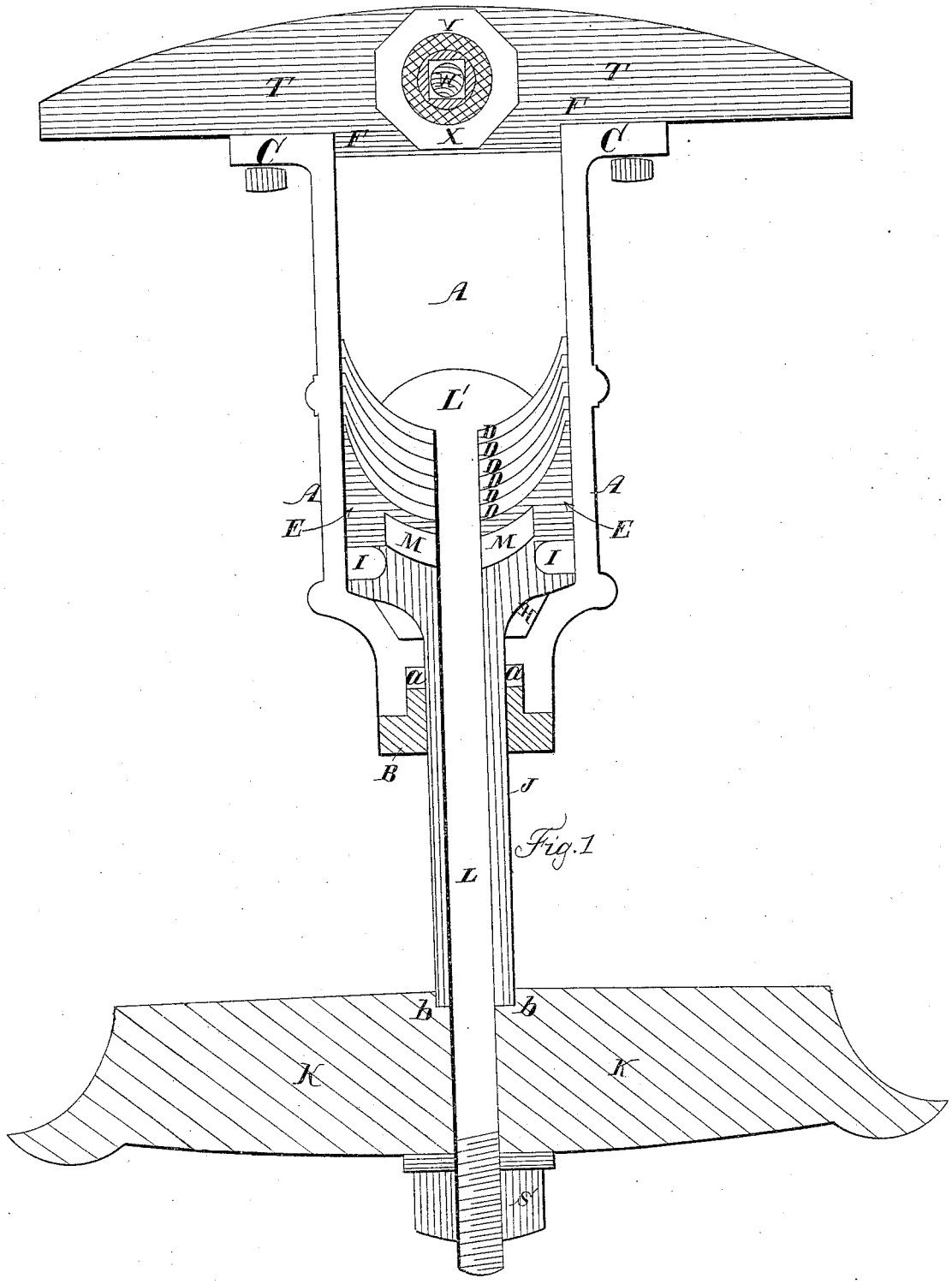

Fig. 1

UNITED STATES PATENT OFFICE.

ALEXANDER CONNISON, OF BELLEVILLE, NEW JERSEY.

MANNER OF CONSTRUCTING THE PISTONS OF PNEUMATIC SPRINGS TO BE APPLIED TO RAILROAD-CARS AND OTHER CARRIAGES OR TO OPERATE AS BUMPERS OR DRAFT-SPRINGS.

Specification of Letters Patent No. 2,395, dated December 23, 1841; Antedated December 20, 1841.

To all whom it may concern:

Be it known that I, ALEXANDER CONNISON, of Belleville, in the county of Essex and State of New Jersey, have invented a new and useful improvement in the manner of constructing a pneumatic-spring cylinder and piston to be applied to railroad-cars and other vehicles requiring the use of springs either for the purpose of sustaining such cars or carriages or to operate as bumpers or as draft-springs; and I do hereby declare that the following is a full and exact description thereof.

The spring which I use is dependent for its action upon the elasticity of atmospheric air, or of any other permanently elastic fluid; and in employing it I confine the air within a cylinder, to which I adapt a piston so constructed and packed as to act freely within said cylinder and effectually to prevent the escape of the air. I am aware that a cylinder containing air, and furnished with a piston capable of moving within it has already been applied to cars, or carriages to operate as a spring, but I have made certain improvements in the manner of constructing and packing the piston, and in its appendages, by which its efficiency and the facility with which it is regulated are greatly increased.

In the accompanying drawing Figure 1 represents a vertical section of my cylinder and piston through the middle thereof.

A, A, is the cylinder of brass, or other metal, and this is closed at its lower end by a stuffing box, B, there being some elastic material at *a*, *a*, through which slides a tubular piston rod J. The upper part H, of the tubular rod J, is enlarged, as shown in the drawing, and forms a part of the piston; and the piece of metal E, E, constitutes another part of said piston.

I, I, is the space for receiving hemp, or other suitable packing between the parts H, and E. The upper part of the segment H, of the piston is received within the recess M, M, in the lower part of the segment E, E, and when these two parts are pressed together, and the upper part of H, is made to slide into the cavity M, the packing in I, I, will be thereby tightened. The main packing of this piston, however consists in a series of hemispherical cups of leather, D, D, D, which fit into a hemispherical concavity in the upper side of the segment E, E, of the piston, while thin edges bear against the sides of the cylinder. The leather cups D, D, are held in place and forced against the cylinder by means of the bolt L, L, which passes through apertures made in the middle of the leathers and through the tubular rod J. The head L, of this bolt presses upon the leather by its convex under side, and forces them out. The lower end of the tubular piston rod J, is sustained at *b*, *b*, by the cross head K, K, or by any other suitable bearing or fixture on the frame work of the car, or other carriage. The screw nut S, under this cross head serves to draw down the bolt L, L, and in doing so, the packing at I, I, is tightened, as are also the leather cups D, D. The lower part of this apparatus may be differently arranged, and affixed, and the same effect be produced; the lower end of the bolts L, L, may for example be sustained in any convenient manner, and a nut upon it be made to bear against the lower end of the tubular piston J; the effect of which will be to tighten the packing by producing the same action upon it as that above described. The upper end of the cylinder A, is closed by a cap, or cover F, F, resting on its flanch C, C, and attached to it by suitable screws, said cap being rendered air tight by grinding, or by washers of leather or other suitable substance.

T, T, represents one of the sides of a metallic trough, or saddle, rising from the cap, or cover F, F, and by which to attach the cylinder to the car, or carriage body. This part may be made in any form by which it will be adapted to the intended purpose.

Into the cylinder A A, air is to be forced by means of a condensing syringe. For this purpose an aperture is made through the cap of the cylinder, and this aperture is closed by a valve, which is kept tight by the elasticity of the contained air. Various kinds of valves may be employed, but I have used a ball valve, as shown at W; this arrangement is more distinctly represented in Fig. 2, which is a section made through the cap in a direction at right angles to that ex-

hibited in Fig. 1. In this figure C, C, are the flanches of the cylinder, and F, F, the cover, or cap, with its raised sides T, T. The ball valve is shown at W, and an aperture *c*, leading from it into the cylinder.

V is a screw within the projecting piece X by which a condensing syringe may be attached, and which may at other times be closed by a tight fitting screw stopper.

In the foregoing description I have contemplated the action of my pneumatic spring cylinder and piston in its application to the sustaining the bodies of cars and of other carriages, it not being necessary to point out any particular arrangement for employing it as a bumper, or as a draft spring, as every competent machinist can do this without requiring any instruction for that purpse, an air cylinder being substituted for one containing a spiral spring, such as has been sometimes used in the forming of bumper and draft springs.

Having thus fully described the manner in which I construct and arrange the respective parts of my improved pneumatic spring, cylinder, and piston, what I claim therein as new, and desire to secure by Letters Patent, is—

The combining of the tubular piston rod J, and its enlargement, at H, with the segment E, E, the hemispherical leathers D, D, and the bolt L, L so that they shall cooperate with each other in tightening the packing of the piston, substantially as hereing set forth, and this I claim whether the above described pneumatic spring be used as a sustaining spring for cars, or other carriages, or as a bumper or draft spring, as a substitute for the spiral or other springs which have been used for those purposes.

And I do hereby declare that I do not intend to limit or confine myself to the particular form, or construction of the individual parts of the instrument as herein represented, but to vary these as I may find convenient while the general combination and action thereof remain unchanged.

ALEXANDER CONNISON.

Witnesses:
WILLIAM LEE,
GEORGE H. LEE.