(No Model.)

C. L. MORRISON.

SMOKE CONDUIT FOR RAILWAY TRAINS.

No. 473,769. Patented Apr. 26, 1892.

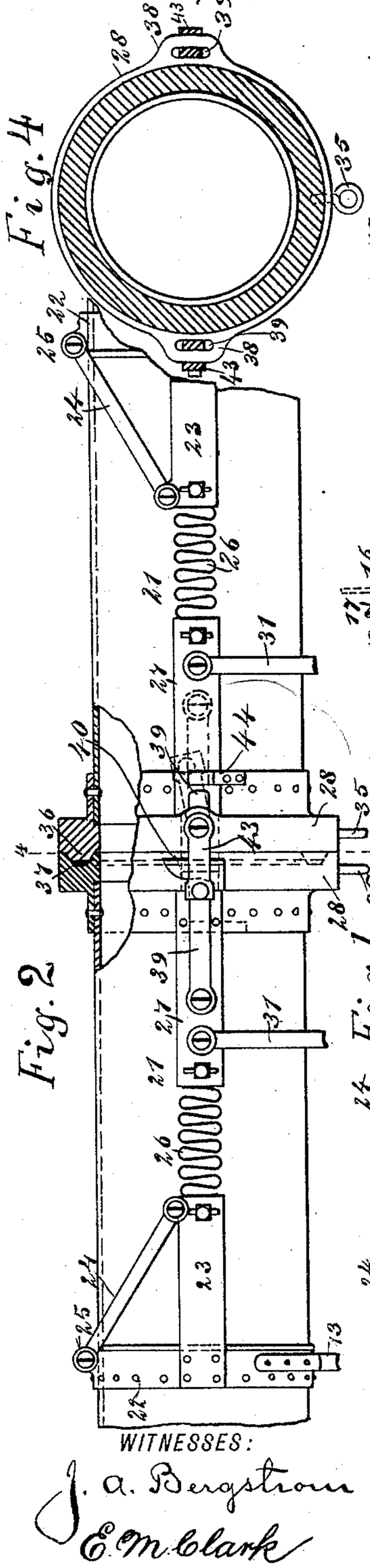

Fig. 2

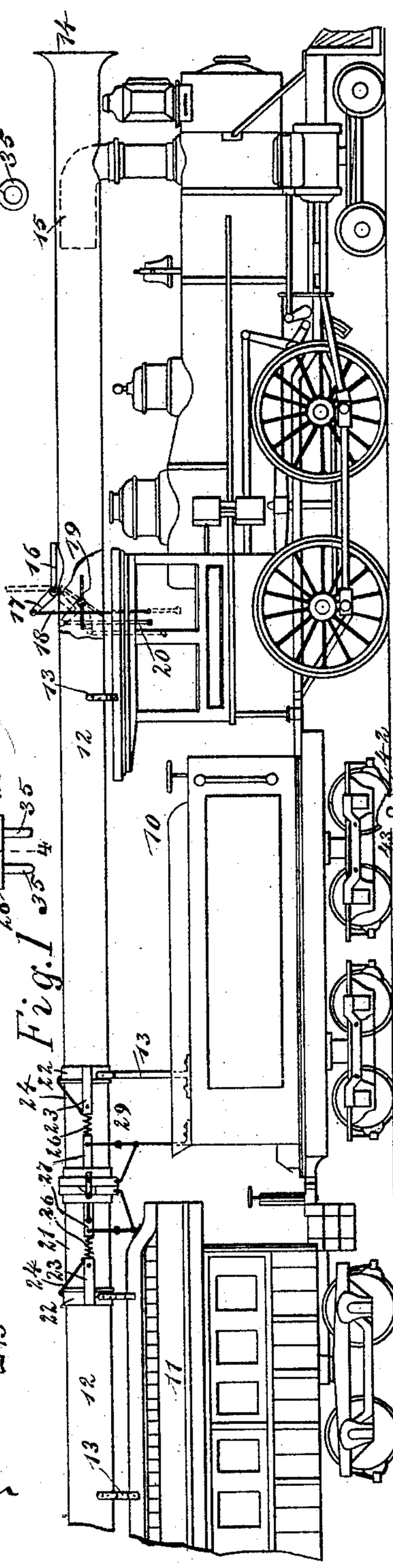

Fig. 1

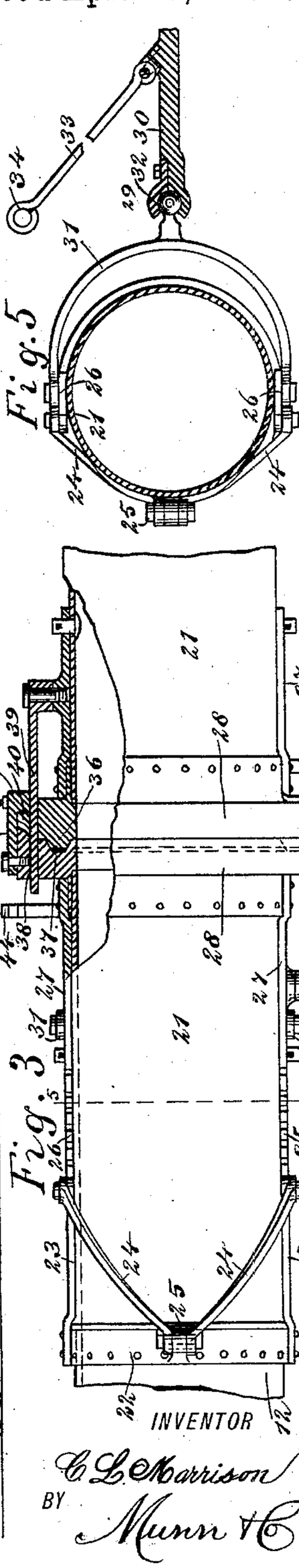

Fig. 5

Fig. 3

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CHESTER L. MORRISON, OF WEST POINT, VIRGINIA.

SMOKE-CONDUIT FOR RAILWAY-TRAINS.

SPECIFICATION forming part of Letters Patent No. 473,769, dated April 26, 1892.

Application filed September 10, 1891. Serial No. 405,277. (No model.)

To all whom it may concern:

Be it known that I, CHESTER L. MORRISON, of West Point, in the county of King William and State of Virginia, have invented a new and Improved Smoke-Conduit for Railway-Trains, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of devices which are adapted to carry away the smoke from a locomotive; and its object is to produce a simple apparatus which may be applied to the locomotives and cars without great expense and which will carry off the cinders, smoke, and other products of combustion and discharge them from the rear end of the train, thus preventing said products from entering the car-windows and annoying passengers.

A further object of my invention is to provide a simple and effective means of coupling the several sections of the conduit together so that they will be smoke-tight and will conform to the different movements of the cars.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken side elevation showing the conduit applied to a locomotive and to one car of the train. Fig. 2 is a broken enlarged side elevation, partly in section, of the conduit coupling. Fig. 3 is a broken enlarged plan, partly in section, of the same. Fig. 4 is a cross-section on the line 4 4 in Fig. 2, and Fig. 5 is an inverted cross-section on the line 5 5 in Fig. 3.

The locomotive 10 and the cars 11 of the train are provided with a conduit 12, which is made up in sections and runs the entire length of a train, the sections corresponding to the lengths of the locomotive and cars and the conduit being open at each end, so that when the train is in motion there will be a good draft of air through it. The conduit is supported on the locomotive and cars in suitable hangers 13, and the section which is mounted on the locomotive projects over and in front of the smoke-stack and terminates in a flaring mouth 14, which causes the air to easily enter the conduit and to enter it also with considerable force. A curved section of pipe 15 is secured to the top of the smoke-stack and extends rearward into the conduit, and this will cause the smoke to be discharged toward the rear end of the conduit, and the draft of air through the same will carry all the products of combustion to the rear end of the conduit.

Above the locomotive-cab is a flap-valve 16, which fits smoke-tight in an opening in the conduit-top, and this valve is provided with a crank 17, which connects with a lever 18, extending downward into the locomotive-cab. Near this valve and a little behind the same is a damper 19, adapted to close the conduit, and this damper has also a crank connection with a lever 20 running down into the locomotive-cab, and if, for any reason, it is not desired to use the conduit the damper 19 may be closed, the valve 16 opened, and the smoke may be allowed to pass out through the opening in the conduit-top. The different sections of the conduit are united at points adjacent to the ends of the cars and the end of the locomotive, and it is necessary to provide a flexible coupling, so that the joint will not be broken by the oscillations of the train. To this end each adjacent end of the conduit is provided with a flexible pipe 21, which may be made of leather, canvas, or any other suitable material, and the fixed ends of the flexible pipe are secured to the conduit-sections by means of suitable rings 22, which are rigidly secured to the conduit-sections and flexible pipe. Each flexible pipe 21 is strengthened by side braces 23, which are secured to the rings 22 and extend along the sides of the pipe 21, and these side braces are hinged to braces 24, which extend diagonally upward from the free ends of the side braces and are hinged at the top to a ring 22, as shown at 25. Each side brace 23 connects by means of a spring 26, with a supplementary side brace 27, the supplementary side braces being secured to the coupling-rings 28 at the free ends of the flexible pipes. The springs 26 are intended to provide for the recoil of the cars when they are coupled together. The free end of each flexible pipe 21 is supported in a hanger 29, which is constructed, as described below, so as to provide for the necessary lateral and vertical movement of the pipe. The

hanger 29 is secured to the car or locomotive, as the case may be, and its body portion 30 carries a yoke 31, which is swiveled to the body by means of a ball-joint 32, and the yoke has its upper ends secured to the supplementary side braces 27. The body 30 has also a brace 33 pivoted thereto, and this brace extends upward and has at its upper end an eye 34, adapted to engage a similar eye 35 on the coupling-ring 28. One coupling-ring 28 is provided with a projecting front rib 36, and the opposite coupling-ring is provided with a corresponding recess, which is adapted to receive the rib, and is provided with a suitable packing 37, in order that a smoke-tight joint may be made.

The coupling-rings are provided on opposite sides with projecting slotted lugs 38, which are adapted to receive the arms 39, as shown in Figs. 2 and 4, the said arms being pivoted to the side braces 27, and the arms when they enter the slotted lugs will cause the coupling-rings to accurately register.

In order that the coupling-rings of any two cars may always register, each coupling-pipe is provided with one arm 39, and consequently when the coupling-pipes are united the arm of one will enter the lug of the other, as best shown in Fig. 3. Each lug 38, which receives the arm, is preferably provided with a slightly-flaring mouth, so that the arm may easily enter it. Each coupling-ring is also provided on one side with a post or lug 40, which is slightly wedge-shaped and is adapted to engage the bent end 42 of a locking-latch 43 of an opposing coupling-ring, and in order that all coupling-rings may register and be easily united each ring is provided on one side with the lug 40 and on the opposite side with the swinging latch 43. A projecting arm 44 is arranged on each coupling a little below and back of the swinging latch 43, so that the latch may rest in a recess in the end of the arm when the latch is not in use.

To couple the flexible pipe 21, the rings 28 are brought together so that the arm 39 of one ring will extend through the slotted lug 38 of the opposing ring, and the locking-latches 43 are adjusted on each side of the rings, and it will thus be seen that the flexible pipe will be firmly united and the spring side braces and pivotal supports will enable the couplings to conform to the various oscillations of the cars without straining them in the least.

It will be understood that when a train is moving a strong draft of air will be created in the conduit, and the smoke and other products of combustion will pass off, so that a passenger may sit at an open car-window without danger of being blinded by smoke or burned by cinders.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A smoke-conduit for railroad-trains, adapted to extend rearward over the train-top from the locomotive smoke-stack, said conduit having flexible couplings at the rear end of the locomotive and at the ends of the cars and having said couplings supported in swinging hangers, substantially as described.

2. In a smoke-conduit for railroad-trains, the combination, with flexible pipes between the sections of the conduit, of sectional and yielding braces at the sides of the said flexible pipes, substantially as described.

3. In a smoke-conduit for railway-trains, the combination, with flexible pipes between the sections of the conduit, of sectional side braces together for the flexible pipes and springs interposed between and connecting the sectional braces, substantially as described.

4. In a smoke-conduit for railway-trains, the combination, with flexible pipes between and connecting the sections of the conduit, of sectional side braces for the flexible pipes, springs interposed between and connecting the sections of the said braces, and braces extending from the free ends of one section of the side braces and pivoted to the ends of the conduit-sections, substantially as herein shown and described.

5. The combination, with the conduit-sections arranged upon different cars, of flexible pipes secured to the ends of the conduit-sections, each pipe having its free end provided with a coupling-ring, swinging hangers to support the flexible pipe, and a locking device to secure the coupling-rings together, substantially as described.

6. The combination, with the conduit-sections, of flexible pipes secured to the ends thereof, the pipes having registering coupling-rings at their free ends, spring side braces arranged upon the sides of the flexible pipe and hinged to the tops of the conduits, swinging hangers to support the flexible pipes, and a locking device to fasten the coupling-rings together, substantially as described.

7. The combination, with the flexible coupling-pipes, of registering coupling-rings secured to the free ends of the pipes, each ring having on one side a swinging guide-arm and a locking-lug and on the opposite side a slotted lug to receive the guide-arm of an opposing ring, and a locking-latch to engage the locking-lug of an opposing ring, substantially as described.

8. The combination, with the flexible coupling-pipe having side braces thereon, of a hanger to support the pipe, said hanger comprising a rigid body portion, a yoke swivelly mounted in the body portion and adapted to connect with the side braces of the pipe, and a brace pivoted on the body portion of the hanger and connected with the free end of the coupling-pipe, substantially as described.

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