

(No Model.)

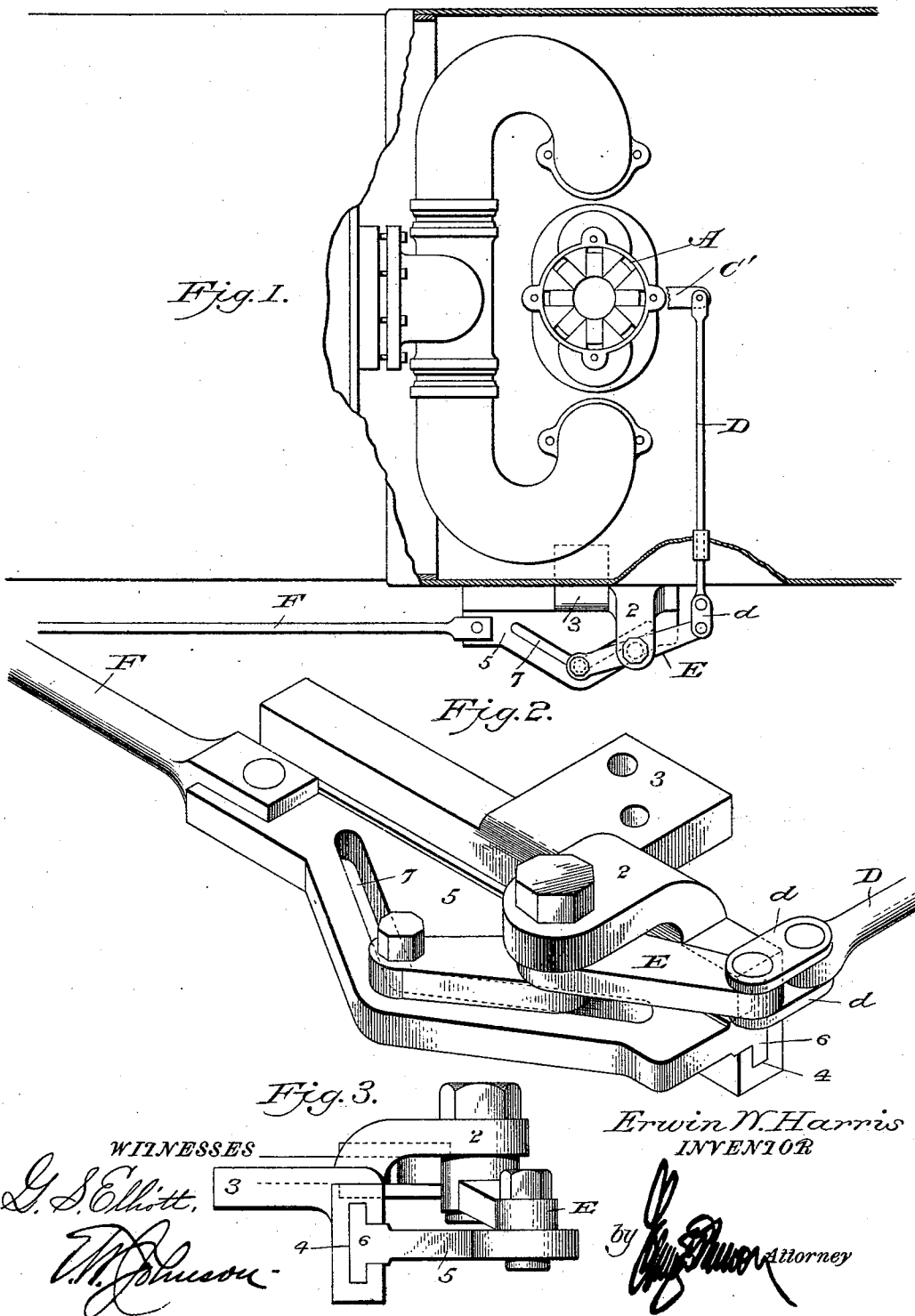
2 Sheets—Sheet 1.

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MECHANISM FOR OPERATING EXHAUST NOZZLES.

No. 536,874.

Patented Apr. 2, 1895.



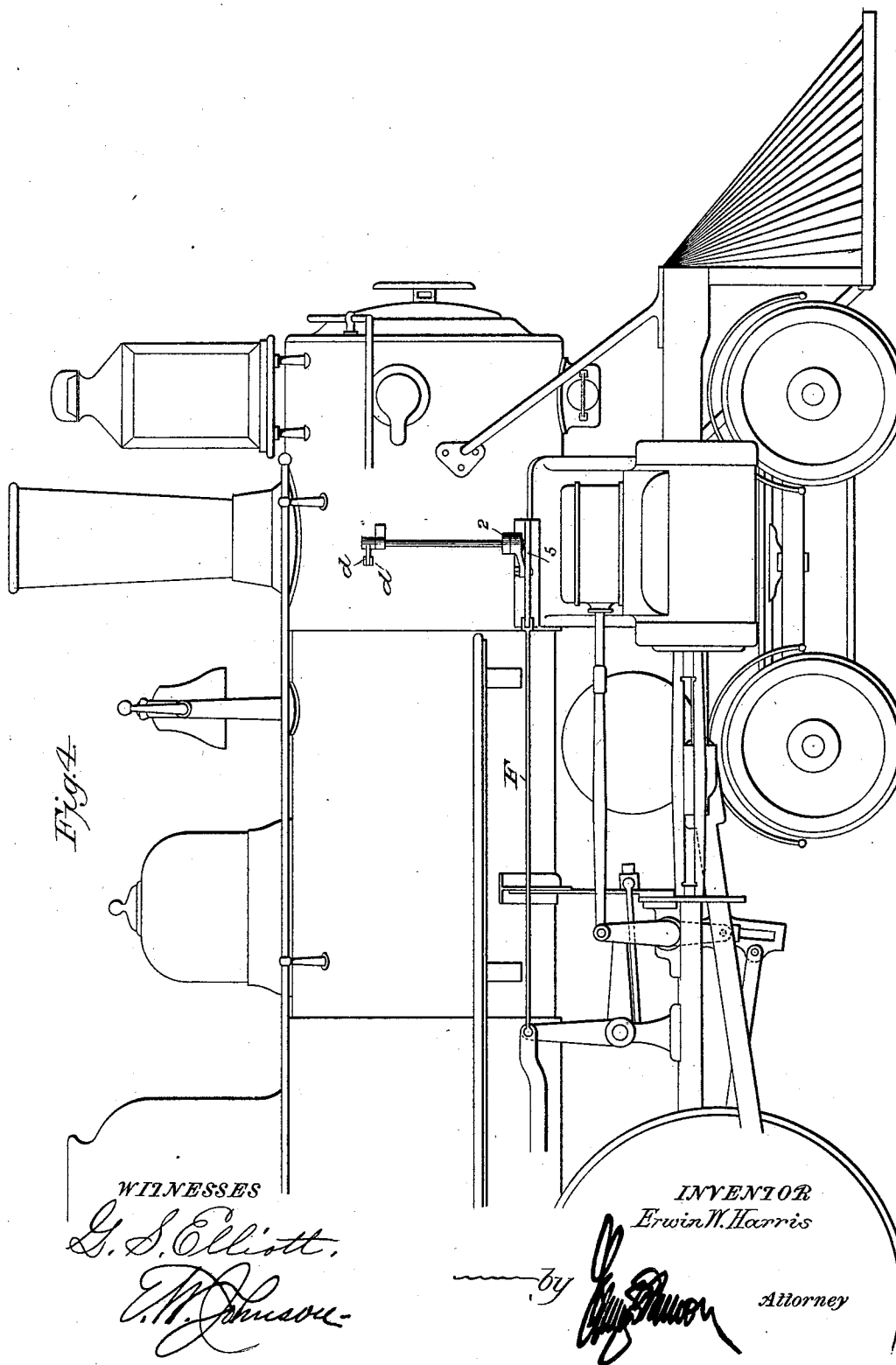
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UNITED STATES PATENT OFFICE.

ERWIN W. HARRIS, OF PALISADE, NEVADA.

MECHANISM FOR OPERATING EXHAUST-NOZZLES.

SPECIFICATION forming part of Letters Patent No. 536,874, dated April 2, 1895.

Application filed December 6, 1894. Serial No. 530,983. (No model.)

To all whom it may concern:

Be it known that I, ERWIN W. HARRIS, a citizen of the United States of America, residing at Palisade, in the county of Eureka and State of Nevada, have invented certain new and useful Improvements in Mechanism for Operating Exhaust-Nozzles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

The object of this invention is to provide improved mechanism for operating exhaust nozzles of locomotives which is connected to the connecting-rod of the reverse-lever or to the tumbling-shaft arm so that the exhaust nozzle will be operated by the movement of the reverse-lever when said lever is moved in either direction, the exhaust nozzle being preferably of the construction shown in my Patent No. 513,923, dated January 30, 1894.

The present invention consists in the construction and combination of the parts, as will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view showing the application of my invention. Fig. 2 is a perspective view. Fig. 3 is an end elevation, and Fig. 4 is a side elevation of the forward part of a locomotive, having a high exhaust, with my invention applied thereto.

The exhaust nozzle A has a projecting arm C' with which a connecting-rod D engages, said rod passing through the shell of the locomotive and being connected at its outer end to links *d d* which are also connected to one end of a lever E pivoted upon a pin carried by a bracket or fixture 1 bolted to the locomotive. The pivot-pin for the lever E is carried by a projecting arm 2 of the bracket, and said bracket is also provided with a projection 3 by means of which it is bolted to the locomotive. The main parts of the bracket or fixture 1 is provided with a longitudinal T-shaped groove 4 within which is placed a slide 5, the part of said slide which engages the groove having flanges 6 for retaining the same in connection with the bracket. The

slide 5 is provided with a slot or groove 7 which extends in two directions from its center the ends of the same being adjacent to the part which is connected to the bracket, and with this slot engages a pin or bolt, which may have a friction-roller thereon, said pin or bolt being carried by the end of the lever E opposite the one to which the links *d d* are connected.

From the foregoing description it will be readily understood that when the slide 5 is moved in either direction the rock lever E will be moved to reciprocate the rod D and turn that part of the exhaust nozzle having the projecting arm C', so that the nozzle will be either opened or closed according to the position of the rock-lever.

The slide 5 is connected at one end to a rod F which is also connected to the reach-rod or to the arm of the tumbling-shaft of the locomotive.

It will be readily noted that by the mechanism hereinbefore described the adjustment of the variable exhaust is governed entirely by the movement of the reverse-lever, and that no matter what may be the position of the reverse-lever the exhaust is adjusted in accordance with such position. According to the position of the reverse-lever the position of the pin or bolt of the rock-lever which is in engagement with the slot or groove in the slide will be changed when the lever is moved to propel the locomotive either backward or forward, as the movement of the reverse-lever in either direction will cause a corresponding movement of the rock-lever E. Consequently the operation of the exhaust-nozzle will not require the attention of the engineer.

The device can be adapted to different types of locomotive-engines which may have either a high or low exhaust.

I am aware that prior to my invention it was not broadly new to provide a plate or other mechanical structure with an angular slot for causing the movement of a pin and mechanism carrying the pin to convert motion or change the direction thereof, and I do not claim such a device broadly.

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

1. In combination with an exhaust-nozzle

for locomotives, a fixture suitably supported and provided with a longitudinal T-shaped groove and a projecting arm, a rock-lever pivoted to the projecting arm and connected at one end to the exhaust-nozzle, a slide in engagement with the longitudinal groove in the fixture, said slide having a slot or groove with which the other end of the rock-lever engages, the slot or groove extending in two directions from its center as shown, and means substantially as described for manipulating the slide so as to actuate the variable exhaust from the reverse-lever of the locomotive.

2. In combination with the reverse-lever of a locomotive and means for connecting the same with a slide, of the slide having a slot or groove extending in two directions from its center, a fixture carried by the locomotive and provided with a T-shaped groove with which the slide engages, and an oscillating lever which engages with the slot or groove in the slide and with connections which extend to the exhaust-nozzle, the parts being organized substantially as shown and for the purpose set forth.

3. The combination with the exhaust nozzle of a locomotive having a projecting arm C', a fixture or casting having a longitudinal T-shaped groove and outwardly-projecting arm, a bell-crank lever pivotally attached to the arm one member of said lever being con-

nected to the projecting arm of the exhaust nozzle and the other member having a depending pin which engages with a slot extending in two directions, the slot being formed in a slide which is carried by the stationary grooved fixture, and a rod F reciprocating the slide, substantially as set forth.

4. In combination with the exhaust nozzle of a locomotive, a fixture adapted to be rigidly secured to the frame of the locomotive at a point substantially on a line with the exhaust nozzle, said fixture having a lug with bolt-holes, a longitudinal portion with a T-shaped groove and an arm which extends outwardly beyond the groove and has an opening for the reception of a pin; a slide having a V-shaped slot; a rod connected to said slide, and a rock-lever E pivoted to the arm, one member of the rock-lever having a depending pin which engages with the V-shaped slot the other member engaging with the rod which leads to a projecting arm for operating the slides of the exhaust nozzle, the parts being organized substantially as shown and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ERWIN W. HARRIS.

Witnesses:

CHARLES H. RAND,
JOHN F. PRATT.