

A. L. BRIDGHAM.
DRAFT EXCITER FOR LOCOMOTIVES.
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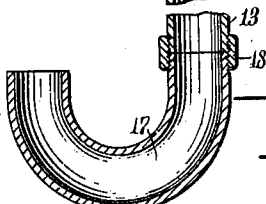
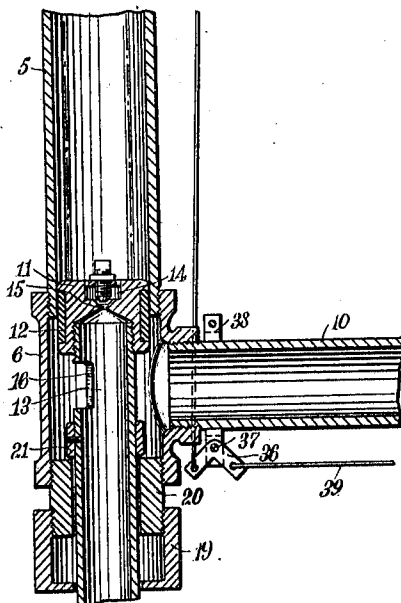
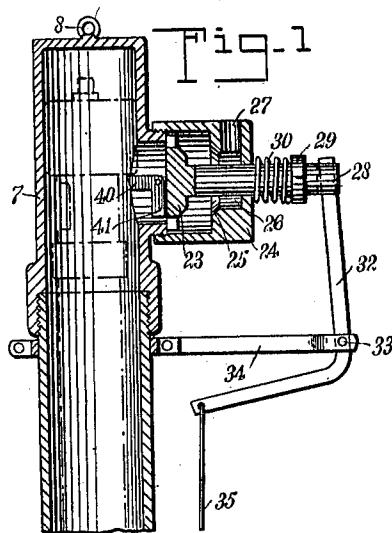
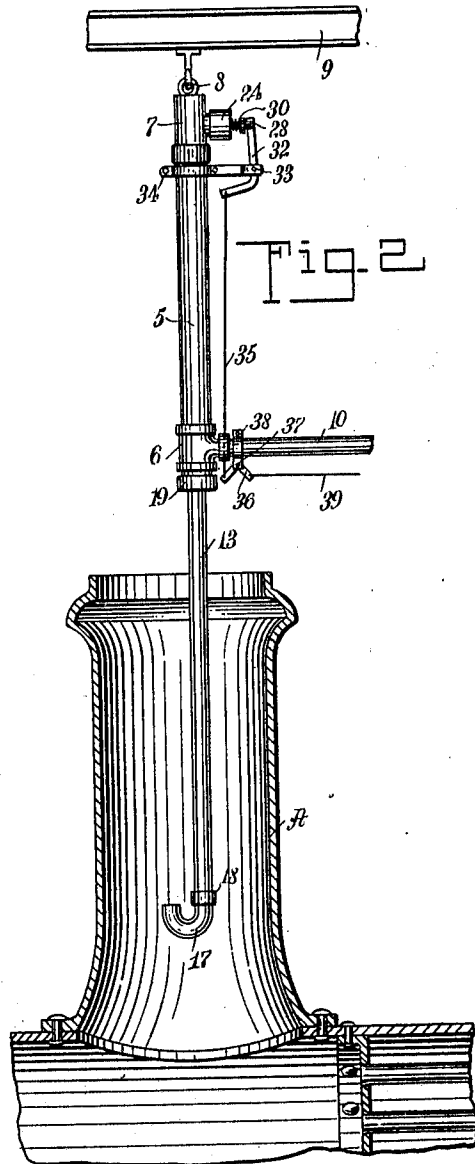
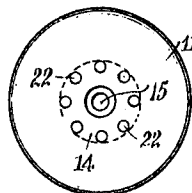
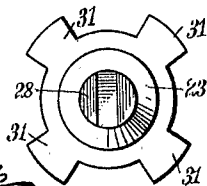


Fig. 3 Fig. 4



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DRAFT-EXCITER FOR LOCOMOTIVES.

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To all whom it may concern:

Be it known that I, ARTHUR L. BRIDGHAM, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Draft-Exciter for Locomotives, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: To provide an apparatus disposed in a roundhouse for accelerating the draft in locomotives for limiting the time for starting the fire; to provide means whereby an apparatus of the character described may be installed in operative position and raised therefrom; to provide means whereby the apparatus may be maintained in elevated position to provide the needed head room in the roundhouse; and to provide a simple, efficient and durable mechanism for accomplishing these purposes.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a longitudinal vertical section of an apparatus constructed and arranged in accordance with the present invention; Fig. 2 is a side elevation of the same, shown on a smaller scale, and in operative relation to a locomotive; Fig. 3 is a detail view, on an enlarged scale, showing the cutoff valve, and viewed from the rear thereof; Figure 4 is a detail view, on an enlarged scale and in plan, showing the top plate of an operating piston.

The apparatus consists primarily of a tubular body portion 5, the ends whereof are suitably threaded to receive at the lower end a T-union 6 and at the upper end a similar union 7. The head of the union 7 differs from the union 6 in that it is closed, and is provided with an eyelet 8. The eyelet 8 is provided to suspend the apparatus upon suitable or convenient stringers 9 provided in the roundhouse structure.

The apparatus are disposed in a roundhouse, one each suspended over the berth of each of the locomotives for which the house is designed. The various apparatus are connected with the main steam supply pipe by leaders 10. The leaders 10 are connected with the unions 6 in the manner shown in the drawings, and at suitable position thereon

are provided with steam control valves. The said valves are provided with drip outlets designed to pass the water of condensation formed in the said pipe and apparatus. 60

Mounted within the body portion 5 is a piston head 11. The head 11 is extended and provided with a packing ring 12. The body of the piston 11 is bored and tapped to receive in holding relation a steam delivery pipe 13. The body of the piston 11 is further bored to form a recess 14 in the upper wall, the said steam pipe and recess being connected by a small passage 15. The side of the steam pipe 13 is provided with one or more openings 16 for the free admission of the steam from the leader 10 into and through the pipe 13. The pipe 13 is of any suitable length, and is provided at the lower end with a curved U-shaped spout 17. The spout 17 is connected with the pipe 13 by means of a coupling 18. To form a packing gland or guide for the pipe 13 there is provided a cup 19, having a head formed thereon suitably perforated to pass the pipe 13. The upper or open end of the cup 19 is tapped to receive a coupling nipple 20, the ends whereof are threaded for engagement with the cup 19 and the union 6. Between the end of the coupling 20 and the top of the cup 19 may be inserted any suitable compressible packing. The nipple 20 forms a support for the pipe 13, the latter being provided with a collar 21 fixedly attached on the said pipe to rest on the upper end of the said nipple 20. In this position the pipe 13 is extended to its full length, and when in operative relation with a locomotive the spout 17 is extended to within the barrel of the stack A of the locomotive. The pipe 13, and parts connected therewith, are lifted from this position by the pressure of the steam entering from the leader 10. 85 90 95

When in operation the steam from the leader 10 passes upward through the piston 11 and through the passages 15 and 22 formed in the top thereof, into the body portion 5. The body portion 5 is at this time closed so that the steam pressure above the piston is equal to the pressure below the piston. The body portion is thus closed by a valve 23, which is mounted in a cap 24, the forward end whereof is tapped for engagement with the lateral extension of the union 7. In the head of the cap 24 is formed a valve seat 25, and a chamber 26 at the outer side of the said seat. Extending from the 100 105 110

chamber 26 is a relief channel 27. A valve stem 28 is provided with a collar 29 fixedly mounted on the said stem to form a head to receive a spring 30, which is coiled about the said stem between the collar 29 and the head of the cap 24. The tension of the spring 30 normally operates to draw outward the valve 23 to hold the same on the seat 25.

The valve is provided with guide extensions 31, 31 between which and the sides of the cap 24 are formed passages for the exit of the steam from the body portion 5 through the said cap 24 and channel 27 formed therein. The operating mechanism for unseating the valve 23 consists in a lever 32, which is pivoted at 33 on an extension rod 34, which is bolted to the body portion 5 in the manner as shown. The lower arm of the lever 32 is extended horizontally, and is connected with a cable 35. The cable 35 is connected with a horizontally disposed arm of the bell crank 36, which is pivotally mounted at 37 in a clamp ring 38 mounted on the leader 10. Extended from the bell crank 36, and suitably guided and supported, to an operating station, is a cable 39. By pulling on the cable 39 the operator may, at any time, through the transmission devices connected therewith, force the valve 23 from the seat 25 to the position as shown in Fig. 1 of the drawings. In this position the passages opening the body portion 5 to the atmosphere of the channel 27 are free, and the steam contained in the said body portion is immediately voided therethrough, until the pressure of the atmosphere and the remaining steam in the body portion equalizes. This results immediately in producing an excess pressure below the piston 11, which, being sufficient to lift the pipe 13 and parts connected therewith, thus operates, the piston 11 and pipe 13 being forced upward in the body portion 5 until the said piston is arrested at the top of the said body portion. Mounted in the lateral extension of the union 7 is a latch 40. The latch 40 is extended in the path of the piston 11, and is provided with a tail piece 41 depended from the pivotal mounting of the said latch, and adapted to impinge upon the face of the valve 23. The valve 23 thus holds the latch 40 in supporting relation to the piston 11. The latch is normally maintained in position by the cable 39, being anchored to maintain the valve 23 in the unseated position. It will be understood that when the apparatus is thus raised out of the way the steam is cut off from the leader 10 and the apparatus remains thus in inoperative position. When now the locomotive is moved under the apparatus, and in the course of time it is desired to start a fire in the furnace of the locomotive, or to rebuild the same by creating a draft therein by artificial means, the pipe 13 and spout 17 are permitted to drop

into the smoke stack A of the locomotive, this being accomplished by the operator releasing the cable 39. With the release of the cable 39 the spring 30 operates to draw outward the valve 23 and to dispose the same on the seat 25. In thus moving the valve 23 the latch 40 is permitted to swing on its pivot, and thus release the piston 11 and pipe 13 connected therewith. At the same time the steam is admitted to the leader 10, and from the said leader into the pipe 13 through the opening 16 therein. The steam thus admitted into the pipe 13 passes through the top of the piston above the same into the body portion 5. The pressure below the piston prevents the fall of the same when released by the latch 40 except as the pressure above the piston becomes equalized with the pressure below. The effect of this arrangement is that the pipe 13, and parts connected therewith, settle slowly to the operative position as shown in Fig. 2 of the drawings.

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

1. A draft exciter for locomotives, comprising a delivery system; a cylinder connected at the lower end with said system and having at the upper end a valve closed opening; a plug piston having suitable packing to close the passage between said cylinder and said piston, and having a central opening forming a passage between the upper and lower space divided by said piston; a regulating device for varying the size of said opening; a steam delivery pipe supported on said piston, having a passage communicating with said cylinder; and means for opening and closing said valve passage.

2. A draft exciter for locomotives, comprising a delivery system; a vertically disposed end closed steam containing cylinder connected with said delivery system at the lower end thereof, and having a valve controlled opening at near the upper end thereof; a plug piston having suitable packing to close the passage between said cylinder and said piston, and having a central opening forming a passage between the upper and lower space divided by said piston; a regulating device for varying the size of said opening; a steam delivery pipe supported on said piston, having a passage communicating with said cylinder; a spring actuated valve adapted to normally close the said valve controlled opening; a transmission mechanism for unseating said valve adapted to be operated from a distance; and means for maintaining the said piston and said delivery pipe connected therewith in raised position.

3. A draft exciter for locomotives, comprising a delivery system; a vertically disposed end closed steam containing cylinder connected with said delivery system at the

lower end thereof, and having a valve controlled opening at near the upper end thereof; a plug piston having suitable packing to close the passage between said cylinder
5 and said piston, and having a central opening forming a passage between the upper and lower space divided by said piston; a regulating device for varying the size of said opening; a steam delivery pipe supported
10 on said piston, having a passage communicating with said cylinder; a spring actuated valve adapted to normally close the said valve controlled opening; a transmission

mechanism for unseating said valve adapted to be operated from a distance; and a latch 15 disposed in the path of said piston to support the same in raised position at the upper end of said cylinder; said latch being held in operative position by the said valve.

In testimony whereof I have signed this 20 specification in the presence of two subscribing witnesses.

ARTHUR L. BRIDGHAM.

Witnesses:

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