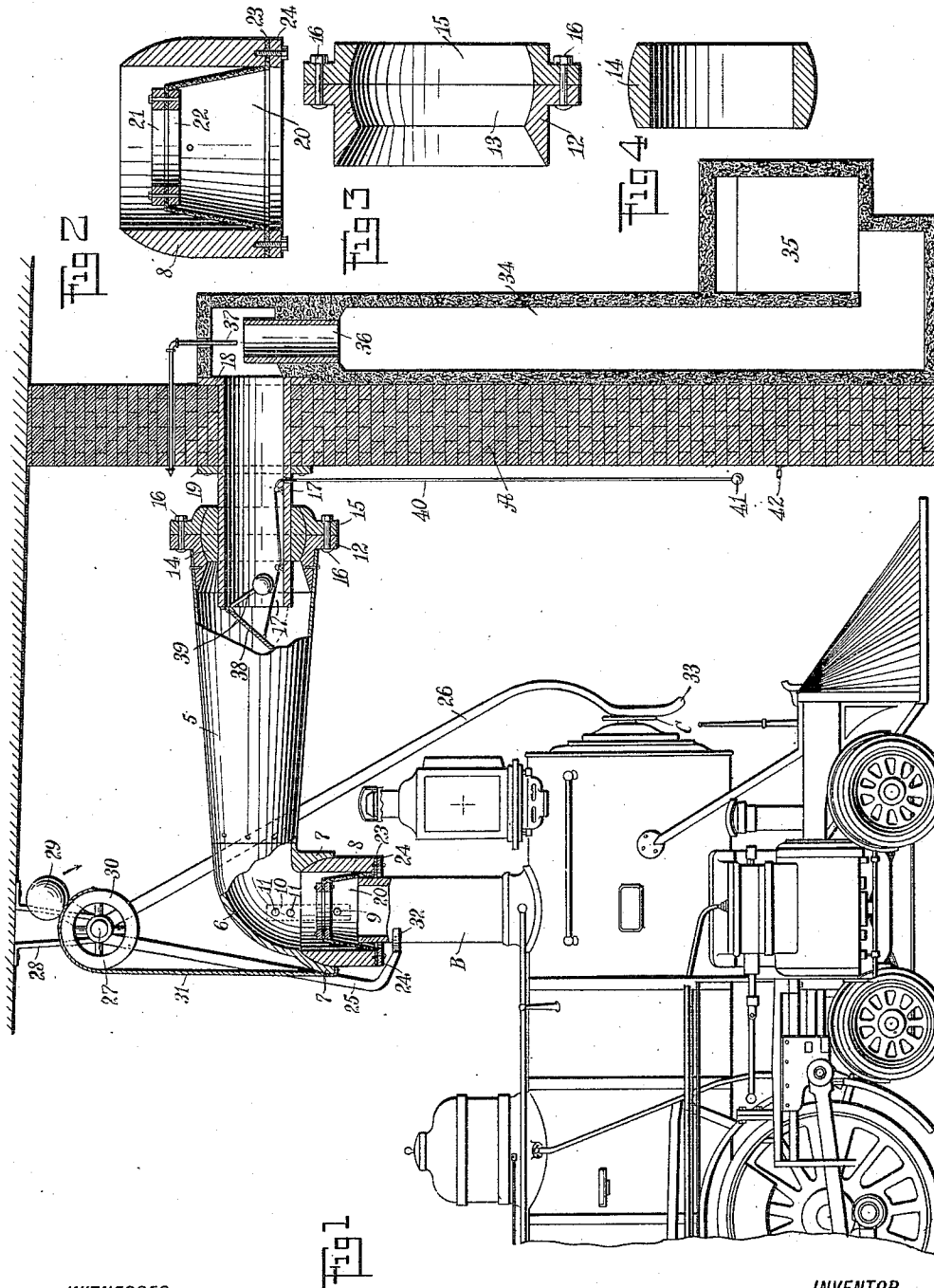


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SMOKE CONVEYER FOR LOCOMOTIVES.
APPLICATION FILED JUNE 4, 1910.

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Patented Oct. 18, 1910.



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ARTHUR LESTER BRIDGHAM, OF BOSTON, MASSACHUSETTS.

SMOKE-CONVEYER FOR LOCOMOTIVES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ARTHUR LESTER 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 Smoke-Conveyer 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 means normally disposed in round houses for locomotives, and adjacent to the berths thereof, for extracting from a conveyer way the smoke from the stacks of the said locomotives; to provide hooded conductors and operating mechanism therefor adapted to be lowered in operative position upon the smoke stack of the locomotive, and to be raised from interference therewith when the said locomotive is withdrawn; to provide an elevating and depressing mechanism for automatically adjusting the said conveyer relative to the smoke stacks; and to provide means connected with the said conveyer for exciting the draft for removing the smoke from the said smoke stacks.

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 vertical longitudinal section of a smoke conveyer constructed and arranged in accordance with the present invention; Fig. 2 is a detail view in vertical section and on an enlarged scale, of the hood provided for the conveyer; Fig. 3 is a detail view in vertical section and on an enlarged scale, of a coupling ring for the conveyer; and Fig. 4 is a detail view in vertical section and on an enlarged scale, of the universal joint provided for conveyers constructed in accordance with the present invention.

Round houses are at present constructed with pitched roofs, having a lantern opening at the apex of the roof for the passage of the accumulated smoke therein. The roof construction is costly, and in many respects inefficient for the purpose for which it is designed.

The present invention is designed for application to each individual locomotive when stored in the round house. It consists in a sheet metal flue pipe 5, provided at the forward end thereof with a light cast metal

bend 6. At the lower end of the bend 6 is formed a hollow bell mouth 7, the interior surface whereof is a section of a sphere to receive in close relation the top of a rocking hood 8. The top of the rocking hood 8 is rounded as a section of the sphere, to form a close joint with the interior surface of the bell mouth 7. The rocking hood 8 is pivoted at 9 upon straps 10, 10, which are riveted at 11, 11 to the bend 6. The straps 10, 10 are disposed on opposite sides of the hood 8, and the pivots 9, 9 are placed concentric with the curved sides of the upper section of the hood 8 and of the interior surface of the bell mouth 7. By means of this construction the hood 8 may be rotated on the pivots 9, 9 in line with the extension of the pipe 5.

At the opposite end of the pipe 5 is riveted a bell-shaped casting 12. The outwardly extended section of the casting 12 is provided with a curved annular surface 13, adapted to receive a ring 14, the outer surface of which is formed in simulation of a section of a sphere. The ring 14 is held in position between the casting 12 and a clamping ring 15. The clamping ring 15 is secured to the casting 12 by a series of securing bolts 16, 16. The interior opening of the ring 14 is adapted to snugly fit the fixed pipe extension 17. The pipe extension 17 is provided with a thimble flange 18, adapted to close the hole in the wall A through which the pipe 17 is extended. The flange 18 is bolted to a clamping ring 19, disposed on the side of the wall A opposite to that against which the flange 18 bears. By mounting the pipe 5 upon the pipe 17 in the manner described, the said pipe 5 and the hooded end thereof, may be adjusted to accommodate the position of the smoke stack of the locomotive when the same is brought to a stand in the round house.

The rocking hood 8 is provided at the lower end with an interior conical section 20. The section 20 may be constructed of any suitable material, such as asbestos cloth or asbestos board, it being deemed advisable to form the section of material yielding in character to accommodate irregularities which may be formed on the hood or top of the smoke stack of the locomotive. The section 20 is clamped at the top between rings 21 and 22, the central openings of the said rings forming a flue for the passage

of the smoke. At the lower edge of the conical section 20 is formed an out-turned flange 23, adapted to rest upon the lower edge of the hood 8, and to receive in clamping relation a ring 24. The conical section 20 forms a member which accommodates itself to the irregularities of shape, size and disposition of the smoke stack of the locomotive.

The pipe 5, and members connected therewith, as hereinbefore described, are elevated and depressed by the operation of levers 25 and 26. Both of the said levers are operatively connected with a shaft 27, which is hung in bearings supported by bracket stands 28. The shaft 27 has fixedly mounted thereon a weighted balancing ball 29, the tendency whereof is to swing in the direction indicated by the arrow in Fig. 1 of the drawings, and to normally maintain the hooded end of the pipe 5 in elevated position. Fixedly mounted upon the shaft 27 is a grooved pulley 30, in which one end of a cable 31 is fixedly mounted. The opposite end of the cable 31 is made fast to the bell mouth 7 of the hooded end of the pipe 5.

By reason of the connection of the pipe 5 with the pipe 17, through the sliding ring 14 and the ball and socket joint formed therewith, the pipe 5 may be swung on the ring 14 within certain prescribed limits in any direction, vertical or horizontal. The elevating mechanism operates to swing the pipe and parts connected therewith, in a vertical direction. When the conveyer is in position and connected with the locomotive, as shown in Fig. 1 of the drawings, it is in its lowered position. When now the locomotive is drawn back, the smoke stack B of the locomotive bears upon the yoke 32 at the end of the lever 25, and forces outward the said lever. In thus forcing outward the lever 25 the shaft 27 and the pulley 30 thereon are rotated, resulting in a lifting effect on the cable 31. The diameter of the pulley 30 being proportionately large to the diameter of the shaft 27, the movement of the cable 31 is largely in excess of the movement of the shaft 27. Due to the conical shape of the section 20 a slight vertical movement of the hood 8 clears the said section from contact with the smoke stack B. As the engine continues to back, the pressure on the lever 25 is continued, until the hood 8 is lifted considerably above the top of the stack B. Before the lever 25 moves out of the path of the stack B the ball 28 is moved to a position substantially horizontal, where it exerts its greatest force to rotate the shaft 27 until the lever 25 is lifted clear of any incoming locomotives and the stacks thereof. Also to present the cross bar 33 of the lever 26 in a substantially advanced position to receive the impact of the next incoming locomotive.

When now a locomotive is moved into the berth, the cross bar 33 is disposed in the path of, and is impinged upon by, the number plate C of the locomotive. As the lever 26 is swung into the position shown in Fig. 1 of the drawings, the shaft 27 is rotated to lower the cable 31 and the pipe 5 suspended thereby. By the time the locomotive is arrested where the stack B is directly beneath the hood 8, the hood 8 is lowered over the end of the stack B, the conical section 20 closing the opening at the upper end thereof. In this position, also, the lever 25 has been depressed to the position where the yoke 32 rests upon or in the path of the stack B.

It will be understood that for the lever 25 or 26 there may be substituted manually operated means for rotating the shaft 27 when and as desired.

To create a draft in the pipe 5 to prevent the same becoming choked with smoke from the stack B, and to aid the draft in the stack B, a smoke duct 34, structurally connected with the wall A and with a conduit 35, and is provided with a contracted throat passage 36, extended downwardly through which is a steam pipe 37. The pipe 37 is connected with any suitable source of steam supply, which, when turned on, drives a jet of steam through the throat passage 36, creating in the said passage a rarefaction after the manner of a pulsometer. The rarefaction in the throat passage 36 is supplied from the pipes 17 and 5, thereby creating an accelerated forced draft in the said pipes 17 and 5.

The ducts 34 are each connected with the conduit 35, which conduit surrounds the house and is connected with the smoke stack, or delivery for the said house.

When it is desired to suspend the operation of the draft through the pipe 17, I provide a drop gate 38, which is hinged to the upper edge of the pipe 17 and is unseated by the weighted arm 39. The gate is closed by drawing upon the cable 40. When the ball 41, at the end of the said cable is passed under the clip 42 the gate is maintained in position to close the entrance to the pipe 17.

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

1. A smoke conveyer for locomotives, comprising a horizontally extended pipe fixedly mounted on the wall of the building structure; a smoke conductor slidably mounted thereon in supported relation therewith; a pivotal joint for said conductor disposed between the supported and free ends thereof to permit the elevation and depression of said free end; a hood pivotally mounted on said conductor at the free end thereof, arranged to assume a vertical position irre-

spective of said conductor; and means attached to the free end of said conductor for elevating the same.

2. A smoke conveyer for locomotives, comprising a horizontally extended pipe fixedly mounted on the wall of the building structure; a smoke conductor slidably mounted thereon in supported relation therewith; a pivotal joint for said conductor disposed between the supported and free ends thereof to permit the elevation and depression of said free end; a hood pivotally mounted on said conductor at the free end thereof, arranged to assume a vertical position irrespective of said conductor; a cone shaped section fixedly mounted within said hood to accommodate the smoke stacks of different locomotives; and means attached to the free end of said conductor for elevating the same.

3. A smoke conveyer for locomotives, comprising a horizontally extended pipe fixedly mounted on the wall of the building structure; a smoke conductor slidably mounted thereon in supported relation therewith; a pivotal joint for said conductor disposed between the supported and free ends thereof to permit the elevation and depression of said free end; a hood pivotally mounted on said conductor at the free end thereof, arranged to assume a vertical position irrespective of said conductor; a cone-shaped lining section for said hood mounted within the same, said section formed from flexible material to accommodate the variation in shape and size of different smoke stacks, and forming rings clamped upon said lining to form a smoke passage therethrough; and means attached to the free end of said conductor for elevating the same.

4. A smoke conveyer for locomotives, comprising a horizontally extended pipe fixedly mounted on the wall of the building structure; a smoke conductor slidably mounted thereon in supported relation therewith; a pivotal joint for said conductor disposed between the supported and free ends thereof to permit the elevation and depression of said free end; a hood pivotally mounted on said conductor at the free end thereof, arranged to assume a vertical position irre-

spective of said conductor; a rotary shaft mounted above the free end of said conductor; a grooved pulley fixedly attached to said shaft; a cable connecting said pulley and said conductor; a lever fixedly attached to said shaft and extended in the path of a locomotive arranged to be deflected by said locomotive to rotate said shaft and pulley mounted thereon to depress the free end of said conductor upon the delivery end of the smoke stack of said locomotive; and a weighted lever connected with said shaft for rotating the same to lift the said free end of said conductor when and as the said locomotive is withdrawn from under said conductor.

5. A smoke conveyer for locomotives, comprising a horizontally extended pipe fixedly mounted on the wall of the building structure; a smoke conductor slidably mounted thereon in supported relation therewith; a pivotal joint for said conductor, disposed between the supported and free ends thereof to permit the elevation and depression of said free end; a hood pivotally mounted on said conductor at the free end thereof, arranged to assume a vertical position irrespective of said conductor; a rotary shaft mounted above the free end of said conductor; a grooved pulley fixedly attached to said shaft; a cable connecting said pulley and said conductor; a lever fixedly attached to said shaft and extended in the path of a locomotive arranged to be deflected by said locomotive to rotate said shaft and pulley mounted thereon to depress the free end of said conductor upon the delivery end of the smoke stack of said locomotive; and a second lever fixedly connected with the said shaft, arranged to be disposed in the retreating path of said smoke stack, and to contact therewith when the said hood infolds the said smoke stack.

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

ARTHUR LESTER BRIDGHAM.

Witnesses:

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FRANCES J. SQUIRES.