No. 826,864. PATENTED JULY 24, 1906.

O. C. MANN.

SMOKE JACK FOR ROUNDHOUSES.

APPLICATION FILED SEPT. 5, 1902.

2 SHEETS—SHEET 1.

Fig. 1.

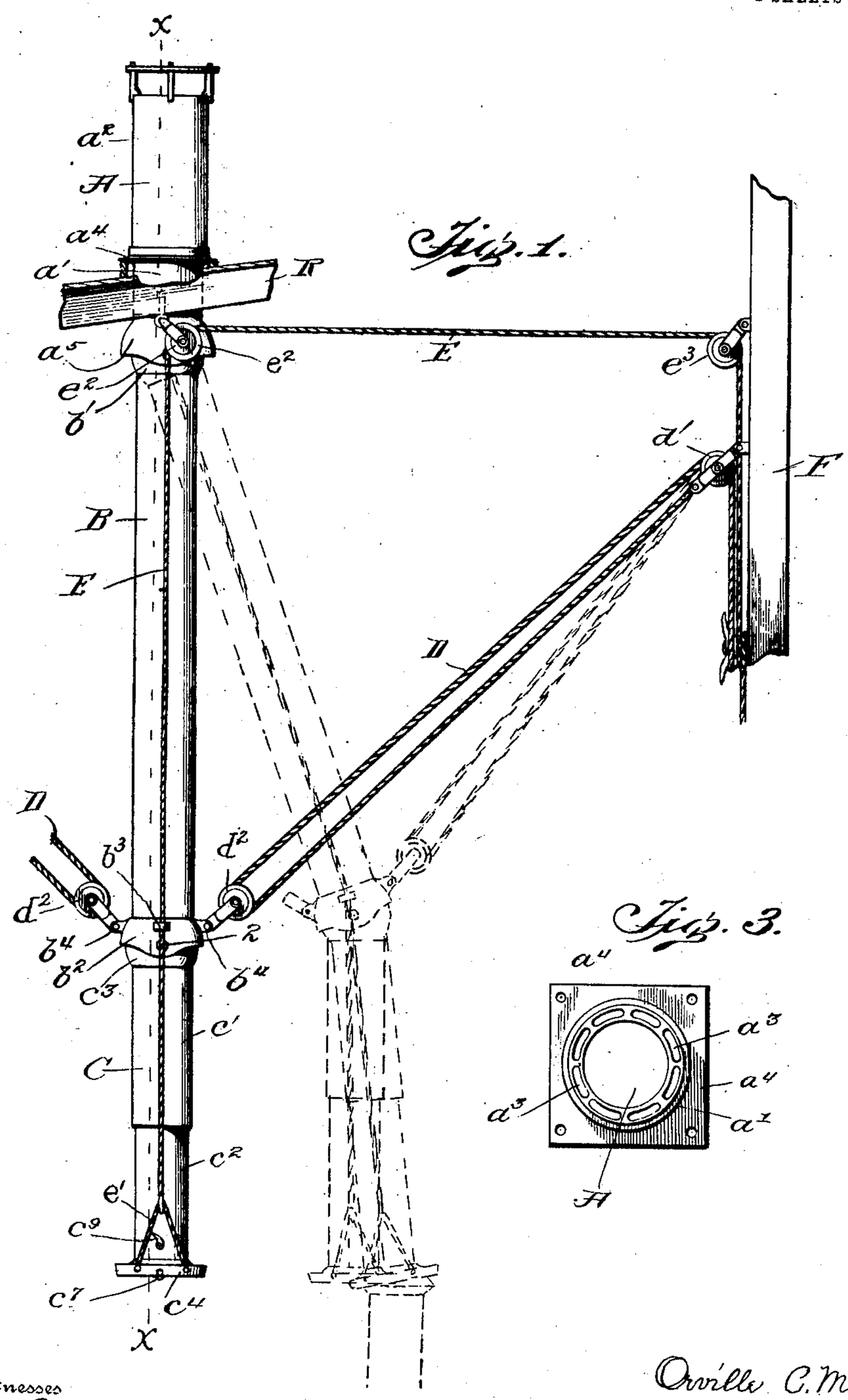


Fig. 3.




Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

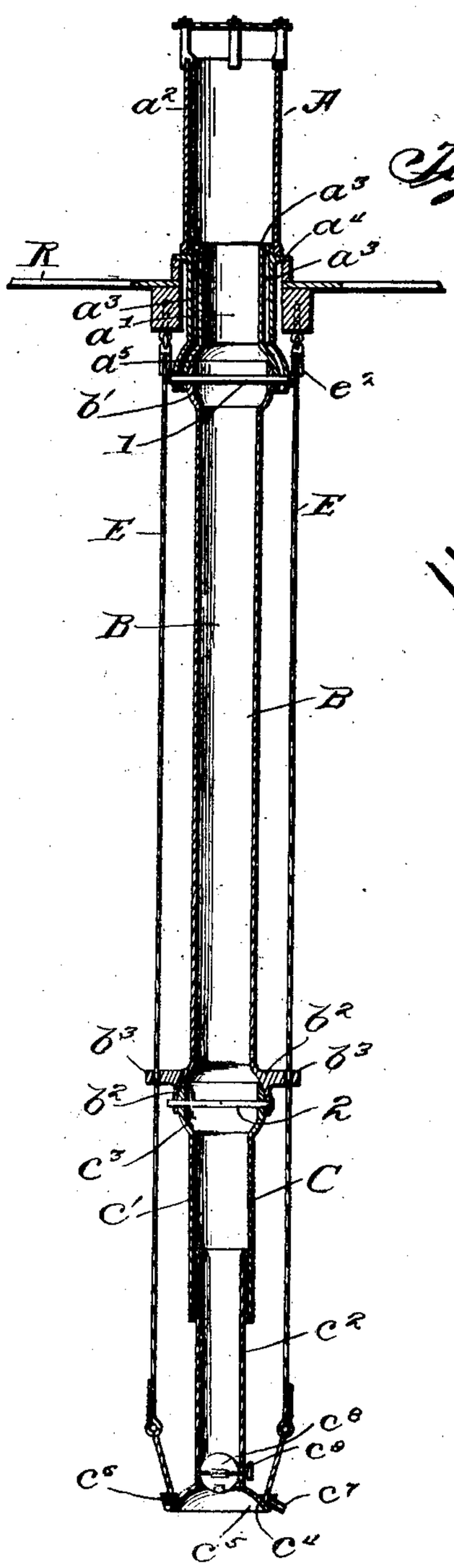
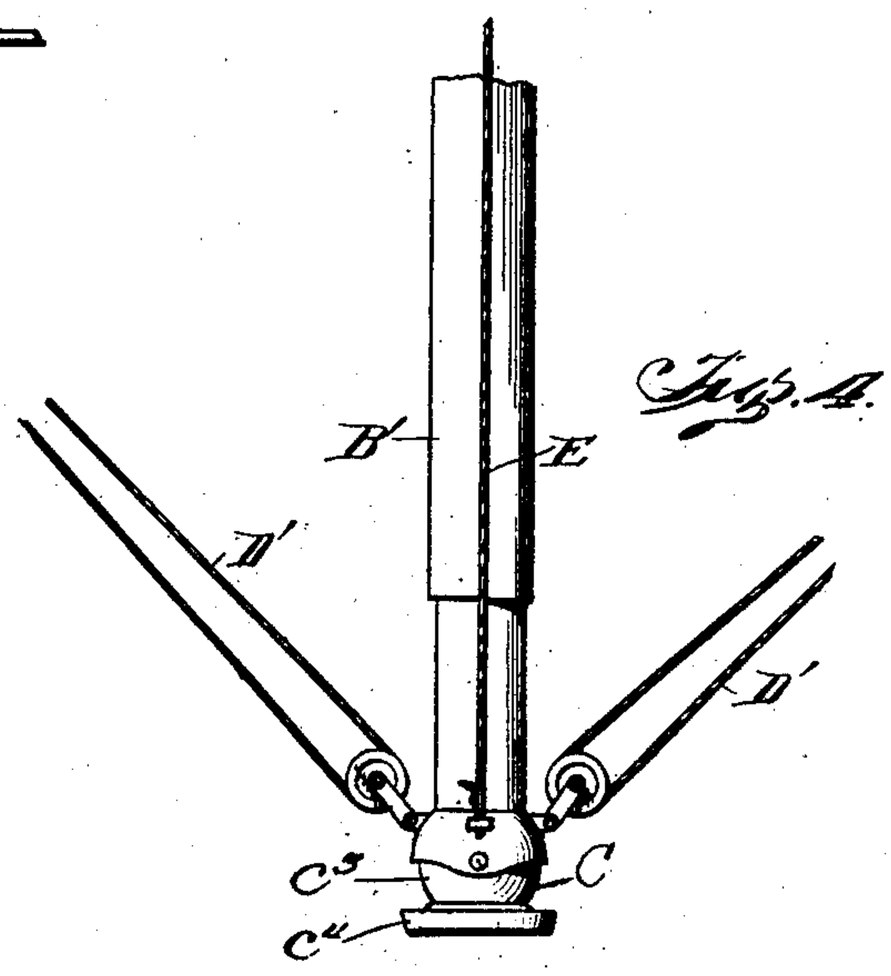



Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## SMOKE-JACK FOR ROUNDHOUSES.

No. 826,864. Specification of Letters Patent. Patented July 24, 1906.

Application filed September 5, 1902. Serial No. 122,169.

*To all whom it may concern:*

Be it known that I, ORVILLE C. MANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Smoke-Jacks for Roundhouses; 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.

My invention relates to smoke-jacks for roundhouses; and its object is to provide a smoke-jack which shall be positively adjustable to the stack of an underlying locomotive whether or not said stack is exactly beneath that part of the smoke-jack which is secured in the roof of the roundhouse.

In this art it is at present customary to employ a smoke-jack that is suspended from the roof of the roundhouse in such manner that it may be raised and lowered above the track upon which the locomotive stands. A jack of this description may be raised and lowered to and from the top of a locomotive-stack which is directly beneath it, and its pivotal construction is such that when the jack rests upon the engine-stack the engine may back away from the same without injuring the jack, the latter swinging free. It has been found necessary to use jacks having this safety feature to prevent injury to the same or to the locomotive-stacks, and to this extent such jacks may be and sometimes are said to be "adjustable." I would use that term only in connection with a jack which would be capable of actual adjustment to the position occupied by a locomotive-stack; but so far as I am aware it has never been suggested to provide a construction which would permit of the adjustment of the lower end or mouth of a jack to the top of an engine-stack which was not substantially or directly below the jack.

It is the purpose of this invention to provide a smoke-jack which will constitute a perfect connection between a locomotive-stack and the chimney upon the roof of the roundhouse, whether said stack happens to be directly beneath said chimney or is a considerable distance removed from vertical alinement therewith. It frequently occurs in practice that engines need repairing while in the roundhouse, and in such case it is necessary to move an engine upon its track and carry its stack out of alinement with the roof-chimney while the engine retains its fire and sometimes when it is newly fired and ready to go out of the house. If a jack of any of the known types is in use, the engine cannot be shifted in this manner without breaking the joint between the engine-stack and the smoke-jack, which permits the stack-gases to escape into the roundhouse.

A distinct object of this invention is to provide a smoke-jack which will reach and connect with a locomotive-stack in any of the positions which the locomotive assumes while being held or repaired in the roundhouse.

Another object or purpose of the invention is to provide a smoke-jack composed of several sections that shall preferably be pivotally connected to allow all needed flexibility, but which shall have their joints so constructed that the escape of smoke or gases between the parts shall be prevented.

Another and special object of my invention is to provide a smoke-jack that shall be capable of lateral movement and to so equip the same that it may be manipulated from the floor of the roundhouse and from that point moved or shifted from one position to another as made necessary by the changing location of the locomotive upon the stall-track.

A further special object of the invention is to improve the means for supporting a smoke-jack upon the roof of a roundhouse and to provide means which will serve the double function of permitting the escape of heated air and gases from the top of the roundhouse and promoting the draft in the smoke-jack with a view to doing away with the necessity for a blower of any character to start or maintain the fire in the locomotive.

Other objects of my invention will appear hereinafter.

My invention consists in a smoke-jack comprising a plurality of sections including a top or roof section and a bottom section, said sections being so connected that the bottom section may be moved laterally with respect to the top or roof section to connect with a locomotive-stack which is or is not in alinement with said roof-section, suitable means being also provided for thus moving said bottom section; and my invention consists, further, in a smoke-jack characterized as above and which has a top or roof section of such construction that the air and gases which rise to the roof of the roundhouse are not only discharged from the roundhouse, but are also

utilized to promote the draft or suction in the smoke-jack.

My invention also consists in various details of construction and in combinations of parts, all as hereinafter described, and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification.

I have here shown what I regard as a practical and efficient embodiment of my invention; but it is to be understood that the construction shown in this particular instance is more especially adapted to illustrate the principle and nature of my invention and not the full scope thereof and that various changes and modifications can be made in the device without departing from the spirit of my invention.

Figure 1 of the drawings is a side elevation of a smoke-jack embodying my invention, the dotted lines representing the jack in a deflected or adjusted position, also showing how the lower or bottom section is adapted to free itself when the locomotive is removed, after the manner of the ordinary jack. Fig. 2 is an enlarged sectional view of the smoke-jack on the lines $x\,x$ of Fig. 1. Fig. 3 is a detailed plan view of the lower member of the roof-sections, showing the plurality of draft-inducing tubes therein; and Fig. 4 is a partial side elevation of a modified form of the smoke-jack wherein the bottom section is composed of a single member and the intermediate section (instead of the bottom section) is composed of telescoping parts to permit the necessary vertical adjustment of the jack.

In the drawings, R represents the roof of a roundhouse from which the smoke-jack is suspended. It will be understood that the track upon which the locomotive stands is a considerable distance below the lower end of the smoke-jack.

Although my invention is capable of embodiment in other forms than here shown, I prefer that it shall take the form of an articulated tube or pipe of substantially uniform diameter throughout, the upper end thereof being secured in the roof of a roundhouse and the lower end being movable forward and back above the stall-track and also being vertically adjustable. In this form the smoke-jack is capable of adjustment to the location of the locomotive-stack beneath and is also capable of adjustment to changes in location thereof, and all necessity for correctly positioning a locomotive beneath the jack is obviated.

Referring now to the drawings, it will be seen that my smoke-jack is composed of the principal sections A, B, and C and that there is associated therewith means for adjusting the lower sections of the jack, said means comprising the pulleys and cords of the group D and the pulleys and cords of the group E. The top section A is fixed in the roof of the roundhouse, and the sections B and C are suspended therefrom. By means of the devices D, duplicated upon opposite sides of the jack, the intermediate section B of the jack may be swung back or forth, as required, to position the bottom section C directly over the stack of a locomotive standing upon the track beneath the jack. When the lower end of the jack has been thus positioned, the cord or cords E are manipulated to adjust the bottom section C vertically as required to seat its lower end upon the top of the locomotive-stack. The top or roof section A of my jack may be made in a single casting; but I prefer to make it in two parts $a'$ and $a^2$. The lower part $a'$ of the top section extends both below and above the roof R, and its upper end is formed to receive the part $a^2$, which is, in effect, a chimney extension or part of the top or roof section of the jack. The part $a'$ has thick walls. These walls contain the vertical tubes $a^3$, of which there are a large number surrounding the inner part of $a'$. These tubes open outwardly beneath the roof R, while the upper ends thereof open inwardly—that is, into the upper part $a^2$, closely adjacent to the inner walls thereof. The purpose of the tubes or vertical ducts $a^3$ will be more fully explained hereinafter. A horizontal flange $a^4$ on the part $a'$ serves to support the entire jack. The lower end of the part $a'$ is formed into a ball-socket $a^5$, containing a transverse pivot 1. The intermediate or (as I term it) the "swinging" section B of my jack is provided with a bell-shaped upper end $b'$, that is inclosed within the socket $a^5$ of the top section and is pivoted upon the pin 1. In this manner a tight joint is formed between the top and intermediate sections. At its lower end the intermediate section B is provided with a socket $b^2$, similar to the socket $a^5$, containing a pivot-pin 2.

$b^3$ $b^3$ are guide-lugs on the lower end of the section B. If desired, these may be placed upon the bottom section C; but the position shown is preferred.

$b^4$ $b^4$ are lugs on the lower end of section B at right angles to the perforated guide-lugs $b^3$. The bottom section of the jack is preferably composed of two parts $c'$ and $c^2$, the part $c^2$ being arranged to telescope within the part $c'$. The upper end of the part $c'$ has a ball $c^3$, that fits the socket $b^2$ on section B and is pivotally secured therein by the pin 2, forming a tight joint with the lower end of section B. The part $c^2$ terminates in a mouthpiece $c^4$ of peculiar form. The part $c^2$ is of slightly less diameter than a locomotive-stack, while the mouthpiece $c^4$ is of considerably greater diameter than such a stack, and the lower surface $c^5$ of the mouthpiece is concave—that is, the mouthpiece conforms to the segment of a sphere—and by reason of having such form will fit securely upon the top of a locomotive-

stack whether or not the bottom section C is in exact alinement therewith. This feature of my invention is of great importance. If desired, the mouthpiece may have an upwardly-turned flange $c^6$, which forms a drip-trough on the top of the mouthpiece.

$c^7$ is a small drain for discharging the moisture that collects in the trough $c^6$.

$c^8$ is a damper provided in the lower part of section C and so weighted that it will normally stand in open position. For closing the damper there is a small arm or cam $c^9$ on the exterior of the part $c^2$ and adapted to engage with the lower end of the part $c'$ when the mouthpiece is raised. In practice the lower part C is always lifted when the jack is not in use, and by this arrangement I am able to automatically close the lower end of the jack at such times.

The cords E, which I employ for telescoping the bottom section of the jack—that is, for adjusting the lower part $c^2$ thereof vertically—have their lower ends attached to bails $e'$ on the mouthpiece $c^4$ and extend thence upward through lugs $b^3$ on the section B. From these points the cords pass upwardly around pulley-blocks $e^2$ and thence to pulleys $e^3$ upon the adjacent wall or post F of the roundhouse. The lower ends of the cords may be connected and extend to a fastening near the floor of the roundhouse, so that the cords, and hence the mouthpiece of the jack, may be manipulated from that point. The pulleys $e^2$ are substantially opposite the upper pivot 1 of the jack, and the guide-lugs $b^3$ are opposite the lower pivot 2. Hence tension exerted upon the cords E has the same effect whether the jack is in a vertical or deflected position. Consequently movement may be imparted to the lower part $c^2$ of section C at any time by means of cords E and will not disturb the relations of the sections B and C. Correspondingly section B may be adjusted angularly without changing the relations of the parts $c'$ and $c^2$, composing the bottom section.

The cords D extend from pulley-blocks $d'$ on the walls of the roundhouse to pulleys $d^2$, that are attached to the lugs $b^4$ on the section B. The cords D extend to the floor of the roundhouse, and when one cord D is loosened and the other drawn up the lower end of the section B will be swung out of alinement with the top or roof section A, as required to position the bottom section C. In the modified form of my device shown in Fig. 4 the bottom section C comprises only a ball portion $c^{3'}$ and the mouthpiece $c^{4'}$, and the necesssary vertical adjustment is arranged for by making the section B′ in two parts that are adapted to telescope. With this arrangement it is possible to dispense with the lifting-cords E, as both the vertical and swinging adjustment may be made by means of the fore and aft cords or cables D′.

The operation of my invention is as follows: When idle, the smoke-jack usually occupies a vertical position with all of its members or sections in alinement, and at such times the lower part $c^2$ of the bottom section is drawn up against the part $c'$, the damper $c^8$ being closed. A locomotive upon entering the roundhouse is so positioned that its stack is approximately beneath the smoke-jack. The jack is then adjusted to the locomotive-stack by first swinging the intermediate section to place its lower end directly above said stack, after which the cords E are loosened to drop the mouthpiece of the jack onto the locomotive-stack. Any slight inaccuracy occurring in the positioning of the intermediate section B is corrected by the spherical mouthpiece of the jack, which will "find" its seat upon the locomotive-stack. The lowering of the mouthpiece of the jack operates to open the damper $c^8$, and from the moment that the jack is connected with the locomotive-stack it will operate as an extension thereof to conduct the smoke and gases from the locomotive through the roof of the roundhouse.

It should be observed that no damage can result to the jack or the locomotive-stack in case the locomotive is moved before the mouthpiece of the jack is lifted, the reason being that the bottom section will simply follow the stack until able to swing clear therefrom, as indicated by dotted lines in Fig. 1.

The construction of the top section of the jack, together with the plurality of vertical flues $a^3$ therein, forms an important feature of my invention, inasmuch as the same constitutes means for ridding the upper part of the roundhouse of smoke and accelerating the draft in the smoke-stack. It will be seen that the vertical flues or tubes $a^3$ at all times constitute a passage through which the hot air and gases that collect in the top of a roundhouse may escape into the top section of the smoke-jack. The flow of gases therethrough will depend upon the differences of pressure and temperature above and below the roundhouse-roof, and as the gases rise within the upper part $a^3$ of the section A the same tend to create a draft in the lower part of the smoke-jack. The draft thus formed is of great value in starting fires in the locomotives, and in practice I am able to rely upon the smoke-jack at such times and dispense with a blower, as commonly used. A further advantage of the construction explained is that when a locomotive is first connected with the jack, at which time the roundhouse is usually filled with smoke from the incoming engine, the strong upward flow of gases from the locomotive-stack creates in the tubes $a^3$ sufficient suction to markedly accelerate the exhaust of smoke from the roundhouse and quickly clear the house thereof.

My smoke-jack has a large field or radius of action and is much easier to operate than others, inasmuch as the heavy parts are pivotally supported and have no other than swinging action, the smallest and lightest parts being the only ones that it is necessary to raise and lower. Because of these facts the jack is likely to receive better attention and usage than those now in use, and many mishaps resulting from carelessness and negligence will be avoided.

As it is obvious that numerous modifications of my invention will readily suggest themselves to one skilled in the art, I do not confine my invention to the specific constructions herein shown and described.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a smoke-jack for roundhouses; a swinging section and means for suspending the same from the roof of a roundhouse; in combination with, means for swinging said section; and a bottom section pivotally suspended from the lower end of the first-mentioned section; substantially as and for the purpose specified.

2. In a smoke-jack for roundhouses; a swinging section and means for suspending the same from the roof of a roundhouse; in combination with, means for swinging said section; and a bottom section pivotally suspended from the lower end of the first-mentioned section, and having a mouthpiece at the lower end; substantially as and for the purpose specified.

3. The roof or support; in combination with, a swinging smoke-jack section suspended from said roof; a roof or chimney part above said roof; means for swinging said section below said roof; and a vertically-adjustable bottom section hanging from the lower end of said swinging section; substantially as and for the purpose specified.

4. In a smoke-jack for roundhouses; a section pivotally suspended from its upper end and adapted to swing freely at its lower end; in combination with means for swinging said section; a pendent bottom section pivotally attached to the lower end of said swinging section, having its upper end within the same; and a suitable mouthpiece on the lower end of said pendent section; substantially as and for the purpose specified.

5. In a smoke-jack for roundhouses; a swinging section and means for suspending the same from the roof of a roundhouse; in combination with means for swinging said section at will; a bottom section pivoted to the lower end of said swinging section and having its end within the same; a mouthpiece upon said bottom section; and means for adjusting said mouthpiece vertically; substantially as and for the purpose specified.

6. A smoke-jack for roundhouses; comprising, in combination, a plurality of communicating sections, including a top or roof section and a bottom section; the latter being adapted for bodily, lateral movement with respect to the top or roof section in parallel therewith, to connect with a locomotive-stack which is not in alinement with said top section; substantially as and for the purpose specified.

7. A smoke-jack for roundhouses; comprising, in combination, a plurality of communicating sections, including a top or roof section and a bottom section; said bottom section being so supported that it may be moved laterally with respect to said top or roof section and remain parallel therewith in its different positions; substantially as and for the purpose specified.

8. A smoke-jack for roundhouses; comprising, in combination, a plurality of connected, communicating sections, including a top or roof section and a bottom section; said bottom section being movable laterally with respect to the top or roof section while remaining parallel therewith; means for so moving said bottom section; and means for shortening said bottom section; substantially as and for the purpose specified.

9. In a smoke-jack for roundhouses; a swinging section and means for suspending the same from the roof of a roundhouse; in combination with means for swinging said section; a bottom section pivotally suspended from the lower end of the first-mentioned section, and provided with a mouthpiece; and draft-inducing means arranged at the upper end of said swinging section; substantially as and for the purpose specified.

10. A smoke-jack for roundhouses; comprising, in combination, a plurality of sections, communicating in series, and including a top or roof section and a bottom section; said sections being so connected that the bottom section may be moved laterally with respect to said top section while remaining parallel therewith; said bottom section having a mouthpiece; and said top section being provided with a draft-inducing means; substantially as and for the purpose specified.

11. In a smoke-jack for roundhouses; a top or roof section, having in its walls a plurality of vertical flues opening outward at the bottom and inward at the top; in combination with an intermediate section pivotally suspended from said top section; a bottom section pivotally suspended from said intermediate section; and suitable means for moving said intermediate and bottom sections; substantially as and for the purpose specified.

12. In a smoke-jack for roundhouses; a top or roof section, having its lower walls provided with a plurality of vertical tubes or flues opening outward at bottom and inward at the top; in combination with an intermediate section pivoted to the lower end of said

top section; and a bottom section having a mouthpiece and so connected with said intermediate section that it is moved bodily into or out of alinement with said top section when said intermediate section is moved, while still constituting a portion of the smoke-passage, substantially as and for the purpose specified.

13. In a smoke-jack for roundhouses; a top or roof pipe-section; in combination with a bottom pipe-section; and, an intermediate pipe-section pivotally joined to said top and bottom sections to complete the smoke-passage; substantially as and for the purpose specified.

14. In a smoke-jack for roundhouses; top; bottom, and intermediate sections, pivotally joined in series one of said sections being composed of telescopically-adjustable parts; in combination with means for swinging and telescopically adjusting said intermediate and bottom sections; substantially as and for the purpose specified.

15. In a smoke-jack for roundhouses; a top or roof section; in combination with a bottom section; means wherethrough said sections are in communication; means for moving the upper end of said bottom section out of alinement with said top section, to position the lower end of said bottom section, for the purpose specified; and said lower section being normally vertical in all positions to which it is adjusted; substantially as and for the purpose specified.

16. A smoke-jack for roundhouses; comprising a top or roof section; in combination with a swinging section, pivotally suspended at the lower end of said roof-section; a bottom section, pivotally suspended at the lower end of said swinging section; and means for adjusting said swinging and bottom sections, to position said bottom section upon the stack of a locomotive located beneath the same; substantially as and for the purpose specified.

17. A smoke-jack for roundhouses; comprising an articulated tube or pipe, composed of a top section that has a fixed vertical position; an intermediate section that is angularly adjustable; and a bottom section that is held in vertical position by gravity, said bottom section having a suitable mouthpiece; substantially as and for the purpose specified.

18. A smoke-jack for roundhouses; comprising communicating sections, as follows; a top or roof section, an intermediate, angularly-adjustable section, and a normally vertical bottom section composed of telescoping parts; in combination with means for angularly adjusting said intermediate section, to locate said lower section above a locomotive-stack; and means for telescopically operating said bottom section; substantially as and for the purpose described.

19. In a smoke-jack for roundhouses; a roof-section; in combination with a second section, pivotally suspended therefrom; a third section, pivotally suspended from said second section and composed of telescoping parts; means for swinging said second section; and a lifting-cord attached to the lower part of said third section and guided upon the lower end of the second section; substantially as and for the purposes specified.

20. A smoke-jack for roundhouses; comprising a top or roof section, having in its walls a plurality of draft-inducing flues, as described; in combination with a swinging section, pivotally suspended in the lower end of said top section; a bottom section, pivotally suspended in the lower end of said swinging section; and means for placing said lower section upon the stack of a locomotive; substantially as and for the purpose specified.

21. In a smoke-jack for roundhouses; the combination of three or more pipe-sections, pivotally connected in series, one of said sections being adjustable to vary the length thereof; with means for adjusting the said sections, and a mouthpiece carried by the lower end of the jack, said mouthpiece having the shape of a segment of a sphere the concave face of which is presented downward, substantially as and for the purpose specified.

22. In a smoke-jack for roundhouses; a supported top or roof section; in combination with a plurality of other sections depending therefrom; the abutting ends of said sections being pivotally united in series; and means guided on one of the sections for adjusting the length of the jack; substantially as and for the purpose specified.

23. In a smoke-jack for roundhouses; a top or roof section, having a ball-socket lower end; in combination with an intermediate section, having a ball-shaped upper end, to fit said socket and pivoted therein; said intermediate section having a ball-socket at its lower end; a bottom section, provided with a mouthpiece at its lower end and having a ball-shaped upper end, fitting the socket of said second section and pivoted therein; and means attached to said second section, for swinging the same, and for adjusting said bottom section and its mouthpiece; substantially as and for the purpose specified.

24. In a smoke-jack for roundhouses; a top or roof section, having means for its attachment to the top of a roundhouse and having its lower walls provided with a plurality of vertical tubes or passages opening outward at the lower end and inward at the top, said top section being also provided with a ball-socket at its lower end; in combination with an intermediate section having a ball-shaped upper end, fitting said socket and pivoted therein; said intermediate section having a ball-socket at its lower end; a

bottom section comprising telescoping parts, the upper of which is provided with a ball-shaped end, fitting the socket of said intermediate section and pivoted therein; a mouthpiece upon the lower part of said bottom section; said mouthpiece being of greater diameter than said lower part and having a concave spherical under surface; means attached to said intermediate section for swinging the same; guides at the lower end of said intermediate section and adjusting-cords attached to the lower part of said bottom section and extending upward through said guides; substantially as and for the purpose specified.

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

ORVILLE C. MANN.

Witnesses:
W. F. GROSSER,
H. H. SCHULTZ.