May 5, 1942. J. M. SMELIK 2,282,256

SUCTION DRAFT CREATING APPARATUS

Filed Jan. 26, 1940

Fig. 1.

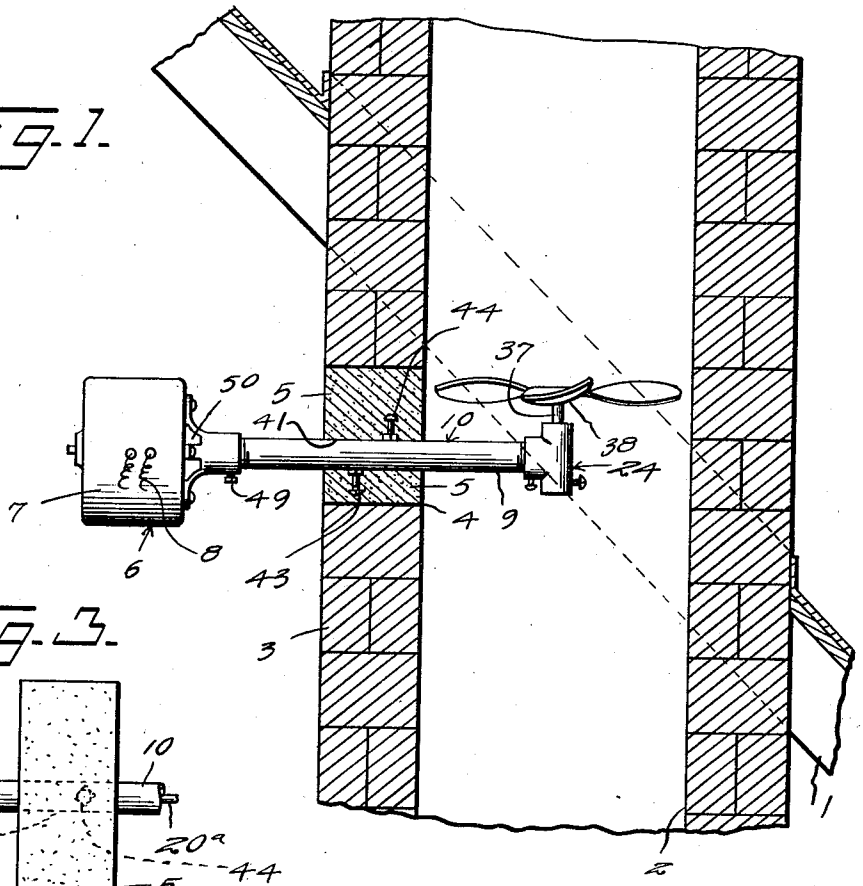
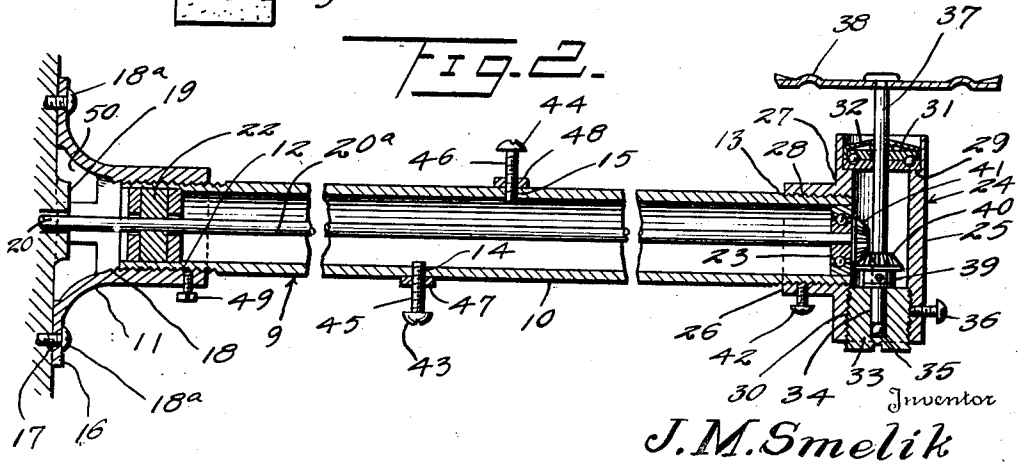


Fig. 3.

Fig. 2.



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SUCTION DRAFT CREATING APPARATUS

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3 Claims. (Cl. 230—117)

This invention relates to a suction draft creating apparatus designed primarily for use in forming a suction draft in chimneys, but it is to be understood that an apparatus, in accordance with this invention is for employment in any connection for which it may be found applicable.

The invention aims to provide, in a manner as hereinafter set forth, a controllable apparatus of the class referred to for creating a suction draft, instead of a forced draft within a chimney to thereby prevent sparks being blown through a side of the chimney and causing a fire if the chimney happens to be defective or cracked at any point below the roof; to prevent dust and smoke and other gases escaping into a building; to form a quick draft when fire or heat is wanted from any kind or size of coal or wood and on dull days when draft is poor; not retard or interfere with the regular draft when the apparatus is not in use; provide an efficient and economical heat from cheaper fuels and smaller size coal; utilize full use of its fan element, as well as capable of being used as a ventilator on hot days by sucking the excessive heat from a room up through the chimney.

The invention further aims to provide, in a manner as hereinafter set forth, an apparatus for the purpose referred to which is simple in its construction and arrangement, strong, durable, compact, readily installed with respect to a chimney, conveniently controlled, thoroughly efficient in its use, and comparatively inexpensive to manufacture.

Embodying the aims aforesaid and others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts, as will be more specifically described and illustrated in the accompanying drawing, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a fragmentary view in vertical section of a chimney showing the adaptation therewith of the apparatus, in accordance with this invention,

Figure 2 is a fragmentary view in longitudinal section of the apparatus with its suspension element removed, and

Figure 3 is a top plan view of the suspension element of the apparatus.

With reference to the drawing, 1 indicates the roof of a building and 2 a chimney extending upwardly through the roof 1. The chimney 2 at one side thereof, indicated at 3, is formed with an opening 4 by removing superimposed bricks or stones from superimposed courses of side 3. The opening 4 may be of any suitable shape, but preferably it will be rectangular and disposed lengthwise in a transverse direction with respect to side 3.

Arranged within the opening 4, as well as being suitably secured to the walls of said opening is a suspension 5 forming an element of the apparatus 6 and which will correspond in contour to that of opening 4. The suspension 5 is shown as rectangular and has its lower lengthwise edge disposed on the lower lengthwise wall of said opening 4. The suspension 5 is in the form of a reinforced cast cement block.

The apparatus 6 includes an electric motor 7 having its power circuit conductors 8 extended therefrom and controlled at a convenient point suitably remote from the motor and a carrier 9 formed of a tubular inner section 10 and a hollow flared flanged outer section 11. The section 10 is of uniform diameter, of greater length than section 11 and at the outer terminal portions of its outer periphery it is formed with groups of threads 12, 13. The section 10 intermediate its ends is provided with a pair of threaded openings 14, 15 disposed in offset relation. The section 11 is of annular cross section and formed at its outer end with a laterally extending annular flange 16 having spaced openings 17. The section 11 is provided on its inner face at its inner terminal portion with a group of threads 18. The outer end of section 10 extends into the inner end of section 11 and said sections are connected together by the correlation of the threads 12, 18.

The flange 16 of section 11 abuts the housing of the motor 7 and the latter on its inner side is formed with an annular boss 19. The section 11 of the carrier 9 is secured to the housing of the motor 7 by the passage of holdfast devices 18a through the openings 17 and engaging in the motor housing whereby the motor 7 is suspended from the outer end of the carrier 9. The shaft 20 of motor 7 is extended, as at 20a inwardly from the latter, through boss 19 and passes through carrier section 11 into and projects from the inner end of carrier section 10. Arranged within the outer end of section 10 is a pair of spaced axially apertured parallel bearings or supports 21 for motor shaft portion 20a, and between said bearings is arranged a packing 22. Positioned within the carrier section 10 and flush with the inner end edge of the latter is a bearing 23 for motor shaft portion 20a.

The apparatus 6 includes a hollow housing 24 of substantially T-form in vertical section to thereby provide it with a tubular vertically disposed leg 25 and a tubular horizontally disposed leg 26 extended at right angles to and arranged centrally with respect to leg 25. The latter is formed with an opening 27 having its wall forming a continuation of the inner face of leg 26. The said inner face of leg 26 and the wall of opening 27 are threaded throughout, as at 28.

The leg 25 in proximity to its upper end has formed on its inner face an internal annular shoulder 29 and on the lower portion of said face with a group of threads, as at 30. Arranged within leg 25 and seated on shoulder 29 is a bearing structure 31 held within said leg 25 by a resilient axially apertured retaining cap 32. That portion of the leg 25 below the leg 26 is closed by a peripherally threaded combined closure and bearing forming plug 33 engaging with the threads 30. The plug 33 is formed with an axially arranged socket 34 opening at its upper end and within and seated on the base of said socket is a bearing ball 35. A retaining screw 36 is carried by leg 25 and which binds against the plug 33.

Extending into the socket 33 and seating on bearing ball 35 is a vertically disposed rotatable fan shaft 37 of a length to extend the desired distance above the upper end of leg 25. The shaft 37 passes through the bearing structure 31 and has fixedly secured to its upper end a horizontally disposed suction draft forming fan 38. Fixed to shaft 37 and seating on the upper end of the plug 33 is the hub 39 of a bevel pinion 40 which meshes with and is driven from a bevel pinion 41 fixed on that end of motor shaft portion 20a which extends from the inner end of the carrier 9.

The leg 26 of housing 24 is positioned on the carrier section 10 and the threads 13 of the latter correlate with the threads 28 for connecting housing 24 on and in extended relation with respect to the inner end of carrier 9. A retaining screw 42 is carried by leg 26 and which binds against carrier section 10.

The carrier 9, intermediate its ends is embedded in the suspension 5. The carrier 9 is arranged below and aligns with the transverse center of suspension 5. The carrier 9 is prevented from shifting relative to the latter by a pair of offset anchoring elements 43, 44 of like form consisting of headed screws 45, 46 respectively threadedly engaging with the openings 14, 15 respectively and extended outwardly from the carrier. The screws 45, 46 of elements 43, 44 carry lock nuts 47, 48 respectively therefor which are for binding against the outer periphery of the carrier.

The carrier 9 is embedded in the suspension 5 during the moulding or casting of the latter. The motor and housing are secured to the carrier after the suspension has set.

On the operation of the motor 7, the power transmission between it and the shaft 37 will provide for the operation of the fan 38 on a vertical axis whereby a suction draft will be created upwardly through the chimney to thereby obtain the aims of the invention as aforesaid.

There is correlated with the sections 10 and 11 of the carrier 9 a set screw 49 which extends through the threads 18 and bears against the threads 12 to hold carrier section 11 from becoming loose.

The section 11 of carrier 9 is formed with openings 50 for cooling purposes.

The fan 38 may consist of two, four or six blades and the shaft 37 may be provided with two or more fans arranged in superposed spaced relation.

What I claim is:

1. In a suction draft creating apparatus for chimneys, a rectangular suspension of block-like form for securing in the chimney wall, a horizontally disposed tubular supporting structure embedded intermediate its ends in, arranged transversely of and projecting in opposite directions from opposite sides of the suspension, said suspension providing for the inner terminal portion of said structure being arranged in the chimney and the outer terminal portion of said structure being arranged exteriorly of the chimney when the suspension is secured in the chimney wall, a fan structure suspended from the inner end of said supporting structure and including a horizontally disposed fan, operating means for the fan arranged in the fan structure, and a remote controlled driving means for said operating means including a part suspended on the outer end of the supporting structure and a rotatable part leading from the said other part to and driving said operating means, said rotatable part extending through said supporting structure.

2. In a suction draft creating apparatus for chimneys, a rectangular suspension of block-like form for securing in the chimney wall, a horizontally disposed tubular supporting structure embedded intermediate its ends in, arranged transversely of and projecting in opposite directions from opposite sides of the suspension, said suspension providing for the inner terminal portion of said structure being arranged in the chimney and the outer terminal portion of said structure being arranged exteriorly of the chimney when the suspension is secured in the chimney wall, a fan structure suspended from the inner end of said supporting structure and including a horizontally disposed fan, operating means for the fan arranged in the fan structure, and a remote controlled driving means for said operating means including a part suspended on the outer end of the supporting structure and a rotatable part leading from the said other part to and driving said operating means, said rotatable part extending through said supporting structure, said tubular supporting structure being disposed below the transverse median and spaced from the upper and lower faces of the suspension.

3. In a suction draft creating apparatus for chimneys, a rectangular suspension of block-like form for securing in the chimney wall, a horizontally disposed tubular supporting structure embedded intermediate its ends in, arranged transversely of and projecting in opposite directions from opposite sides of the suspension, said suspension providing for the inner terminal portion of said structure being arranged in the chimney and the outer terminal portion of said structure being arranged exteriorly of the chimney when the suspension is secured in the chimney wall, a fan structure suspended from the inner end of said supporting structure and including a horizontally disposed fan, operating means for the fan arranged in the fan structure, a remote controlled driving means for said operating means including a part suspended on the outer end of the supporting structure and a rotatable part leading from the said other part to and driving said operating means, said rotatable part extending through said supporting structure, spaced headed stop means engaging in and extended from the body of said supporting structure, said stop means being embedded in said suspension and arresting the shifting of said supporting structure relative to the suspension, and locking means for said stop means.

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