Dec. 15, 1953 LE ROY S. DE MART 2,662,241

SOOT BLOWER OF THE SHORT-TRAVEL RETRACTING TYPE

Filed Aug. 5, 1947 3 Sheets-Sheet 1

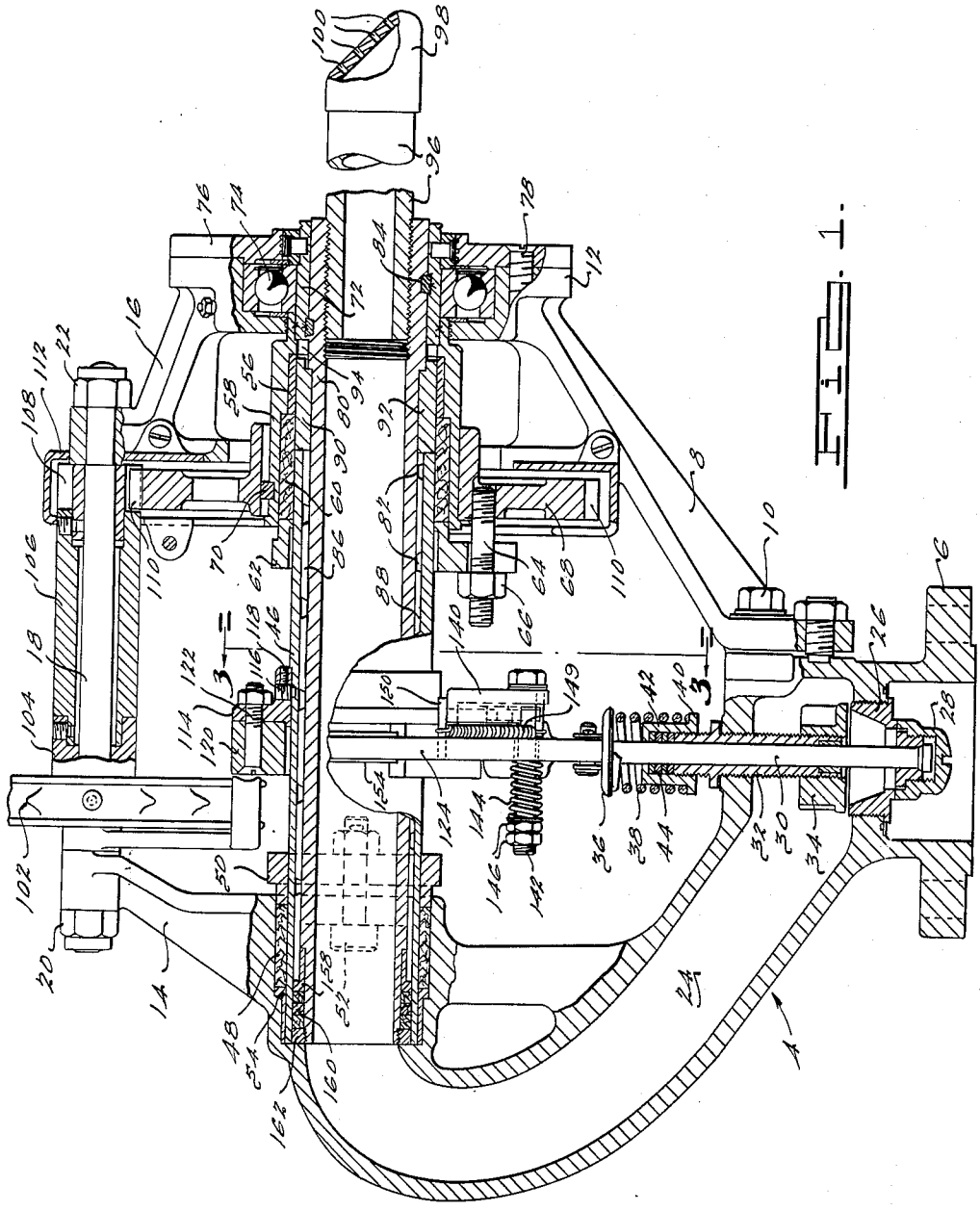


Fig. 1.

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Fig. 2.

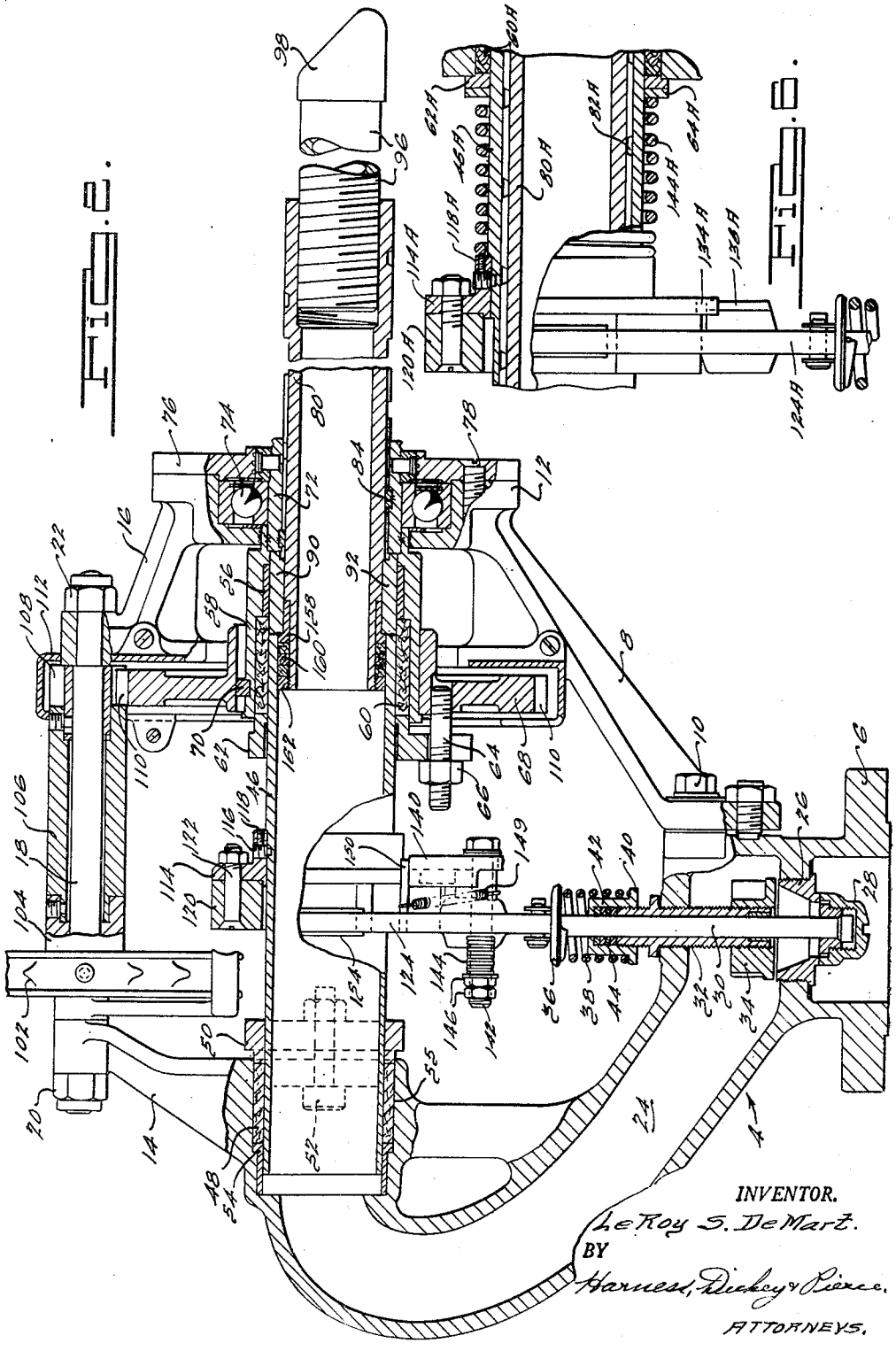


Fig. 1.

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Fig. 5.

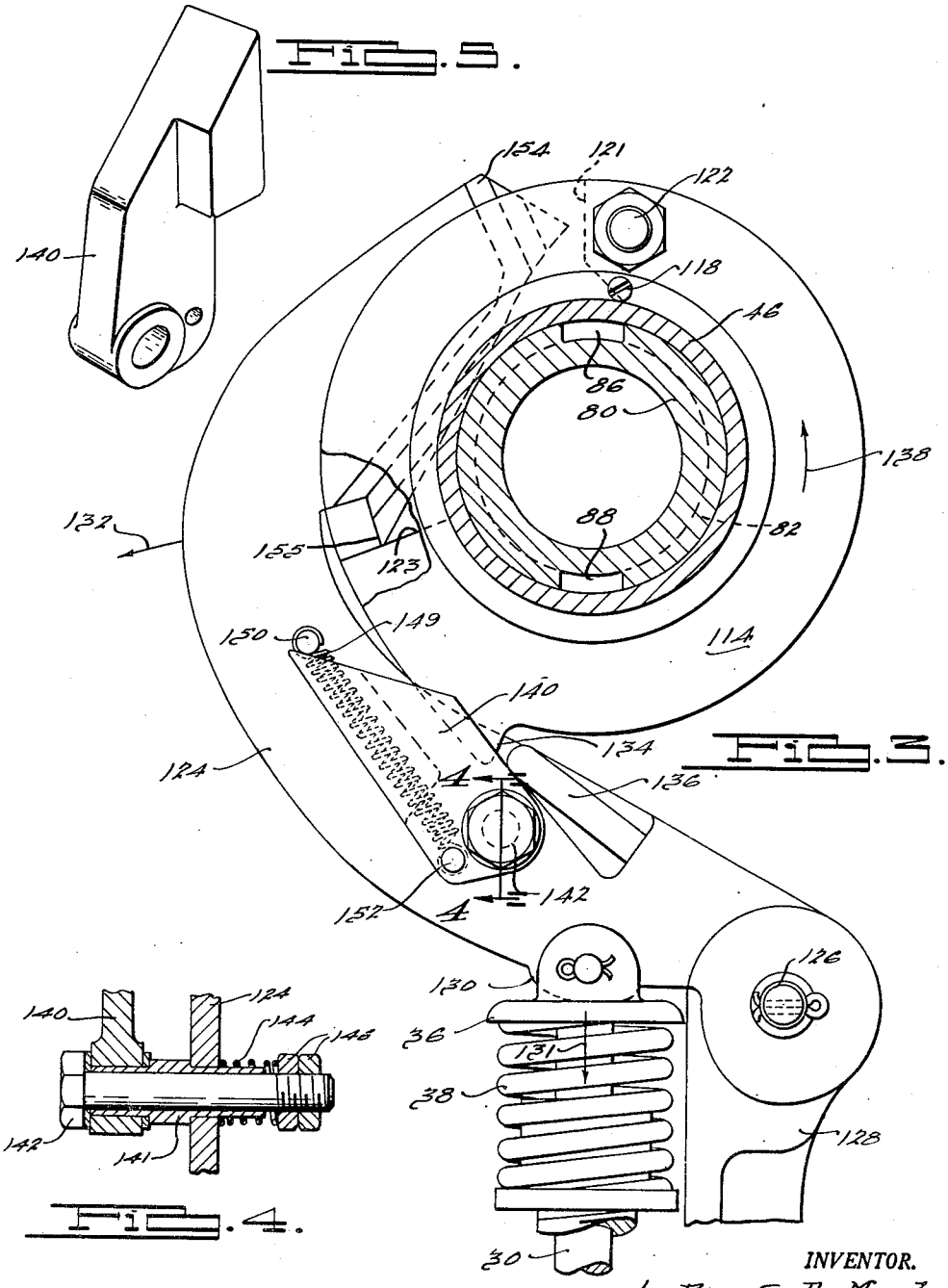


Fig. 3.

Fig. 4.

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Patented Dec. 15, 1953 2,662,241

UNITED STATES PATENT OFFICE

2,662,241

SOOT BLOWER OF THE SHORT-TRAVEL RETRACTING TYPE

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Application August 5, 1947, Serial No. 766,183

25 Claims. (Cl. 15—317)

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This invention relates to soot blowers which are projected into the boiler during the blowing operation and are retracted to a protected position during the intervals between blowing operations.

The main objects of this invention are to provide a soot blower incorporating an improved retractable blower tube which is protected from dust and dirt particularly during its non-use between blowing operations; to provide a soot blower construction in which the tube carrying the cleaning fluid is very rigidly mounted and securely held during the blowing operation; to provide an improved soot blower construction in which leakage of the cleaning fluid during the blowing operation is held to a minimum; to provide a soot blower construction in which the various packings and packing glands are more readily accessible for adjustment and replacement than in presently known constructions; to provide a soot blower of the projecting and retracting tube type which is compact in overall size and which utilizes a standard part made in large production for its supporting frame and to provide a soot blower construction in which it is assured that the cleaning fluid control valve will not be opened until the cleaning nozzle is in a fully projected position.

The present invention constitutes a further development of that disclosed in the copending application of Harry E. Brelsford, Serial No. 643,055, filed January 24, 1946, now Patent No. 2,486,585, issued November 1, 1949, and assigned to the assignee hereof.

An illustrative embodiment of this invention is shown in the accompanying drawings in which,

Fig. 1 is a view partly in vertical longitudinal section and partly in side elevation, showing a blower head and associated mechanism constructed in accordance with the present invention, with the blower tube in retracted position and some of the parts broken away;

Fig. 2 is a view similar to Fig. 1 but showing the position of the parts when the blower tube is in fully extended position;

Fig. 3 is a fragmentary transverse vertical sectional view taken substantially on the line 3—3 of Fig. 1 and looking in the direction indicated by the arrows;

Fig. 4 is a thin sectional detail taken substantially on the line 4—4 of Fig. 3 and looking in the direction indicated by the arrows;

Fig. 5 is a perspective view of the latch piece; and

Fig. 6 is a fragmentary longitudinal sectional view of a modified construction.

In the construction shown in Figs. 1–5 of the drawings, a supporting frame for the structure comprises a "gooseneck" casting generally designated 4 which also serves as a fluid inlet conduit and which extends upwardly from an annular

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flange 6 by which the structure is bolted to a pipe or other source of cleaning fluid.

A bracket 8 is secured by cap screws 10 to the casting 4 and extends upwardly and terminates in a vertically disposed annular head 12 which is in spaced horizontal alignment with the upper end of the "gooseneck" 4. The structure is tied together with great rigidity by means of an integrally formed bracket 14 extending angularly upwardly from the "gooseneck" 4 and a corresponding bracket 16 integrally formed on the head 12, the upper ends of which brackets are rigidly tied together by a horizontally disposed tie rod 18 having nuts 20 and 22 threaded on opposite ends thereof. The rod 18 is reduced adjacent its ends to form suitable shoulders against which the upper ends of the brackets 14 and 16 are rigidly held by the nuts 20 and 22, respectively.

The "gooseneck" 4 is of hollow construction to form a conduit 24 for cleaning fluid introduced thereinto through a valve seat 26 controlled by a valve 28. Valve 28 is mounted on the lower end of valve stem 30 which is axially slidable through an exteriorly threaded valve guide 32 which is mounted through the upper wall of the casing 4 in axial alignment with the valve seat 26. A restricting disc 34 is adjustably threaded on the lower end of the valve guide 32 for controlling the amount of cleaning fluid passing through the valve seat. The upper end of the valve stem 30 is provided with a mushroom cap 36 in the usual manner against the underside of which bears the top end of a helical compression spring 38, the lower end of which bears against an out-turned radial flange 40 integrally formed on an inverted cup 42 which houses a plurality of packings 44 for sealing the valve stem against the escape of cleaning fluid. The spring 38 performs the function of holding the valve 28 closed on its seat 26.

The upper end of the "gooseneck" 4 having conduit 24 therethrough terminates in a horizontally disposed socket 55, opening toward and in alignment with the axis of annular flange 12 of bracket 8 and this socket is counterbored to receive a pair of concentric tubes, the outer of which, 46, is sealed at its left end as viewed in Fig. 1 by packing 48 normally held compressed by packing gland 50 secured by bolts 52 positioned at diametrically opposite sides thereof. The inner end of the packing 48 abuts against a bearing sleeve 54 which journals the left-hand end of the outer tube 46 so as to permit both rotation and limited axial movement of the tubes. The right-hand end of the tube 46, or inner end, as it is generally referred to, is journaled in a bearing sleeve 56 which is mounted in a sleeve 58 with a packing 60 compressed by packing gland 62 interposed between the sleeve 58 and the exterior surface of the tube 46. The packing gland

62 is held by a plurality of threaded studs 64 having nuts 66 on their outer ends and being threaded into the axial face of a drive gear 68 which is mounted on the exterior surface of the sleeve 58 and secured against relative rotation with respect thereto by a key 70.

The sleeve 58 at its right-hand end is rigidly secured as by welding to a driving nut 72 which is journaled in an anti-friction bearing 74 mounted in a counterbored recess formed concentrically in the face of the annular head 12. A bearing retaining plate 76 is secured against the outer face of the head 12 by a plurality of screws 78 having their heads countersunk in the plate 76 so as to be flush with the outer surface thereof.

The nut 72 is rotatably and slidably fitted upon an inner tube 80, with which it is threadedly interengaged by means of a helical key 84 interiorly fastened to and projecting inwardly from the nut 72 and engaging in a helical groove 82 formed in the exterior surface of the tube 80. The outer surface of the inner tube 80 at diametrically opposite points is provided with axially extending keyways 86 and 88 for receiving keys 90 and 92, respectively, which are passed through slots (undesignated) formed in the inner end of the outer tube 46 and rigidly secured thereto as by welding. The length of the tube 46 is such that when the parts are in the positioning shown in Fig. 1 of the drawings, tube 46 is in spaced relation to the nut 72, as shown at 94, the space 94 determining the amount of axial movement of the tube 46 in its supporting sleeve bearings 54 and 56. The inner tube 80 is held against turning with respect to tube 46 by the key and slot connecting means 90—86 and 92—88, while the tube 80 is longitudinally actuatable by turning the nut 72, as will be apparent.

The right-hand end of the inner tube 80 is interiorly threaded to receive one end of an exteriorly threaded blower tube 96, the opposite or outer end of which is provided with a blower nozzle 98 having a plurality of discharge orifices 100 therein as is usual in constructions of this general character.

Means are provided for rotating the gear wheel 68, sleeve 58 and nut 72 for projecting and retracting the inner tube 80. The rotating means comprises a chain sprocket wheel 102 journaled on one end of the tie rod 18 and having its hub 104 fast with respect to one end of the sleeve 106, the opposite end of which is connected to a pinion 108 which meshes with teeth 110 of a gear wheel 68. The pinion 108 is journaled on the shaft 18 at the end thereof opposite to the sprocket wheel 102 and the pinion and gear are partially covered and protected by a housing cover 112 in the usual manner.

The outer tube 46 has a radially extending mounting flange 114 rigidly secured thereon by abutting against a shoulder integrally formed on the exterior of the tube and secured by set screw 116 which, in turn, is secured by set screw 118, the inner end of the screw 116 being of reduced diameter and extending into a shallow socket formed in the exterior surface of the tube 46 in appropriately spaced relation to the shoulder thereon against which the hub of the flange 114 abuts. The flange 114 has a cam 120 rigidly secured thereto by one or more bolts as 122. The cam 120 is generally annular in shape with a portion thereof cut out as is usual in constructions of this character and coacts with and is adapted to operate the upper end of a trigger 124, the lower end of which is pivotally mounted by a pin 126 on

the upper end of a bracket 128 which is integrally formed on the base portion of the casting 4. Trigger 124 near its lower end is provided with an integrally formed lobe 130 which is adapted to rest upon cap 36 and force the same downward as shown by the arrow 131 in Fig. 3 when the upper end of the trigger 124 is swung outwardly or to the left as indicated by the arrow 132. The outside diameter of the cam 120 is substantially the same as that of its mounting flange 114 and the flange 114 at one point thereof is provided with an integrally formed outwardly extending shoulder 134 which is normally in position to abut against a stop 136 welded to the side of the trigger 124 and which restrains the flange 114 from rotation in the direction of the arrow 138.

Yielding means are provided for normally urging the flange 114 and connected tube 46 to the left, as viewed in Figs. 1 and 2 of the drawings. This means comprises a latch member 140 having a portion which normally overlaps and bears axially against the side of shoulder 134 as shown in Fig. 3 and which is mounted on one end of a bolt 142. The bolt 142 is horizontally and axially slidable through the trigger 124, in which it is supported by a bushing 141. The end of the bolt opposite to the latch 140 projects from the opposite face of the trigger and carries a helical compression spring 144 one end of which abuts and bears against the face of the trigger 124 and the other end of which bears against a washer adjustably secured in an appropriate position by a nut and lock nut 146 which are threaded on the end of the bolt 142.

The latch 140 is also yieldably urged clockwise, as viewed in Fig. 3, to the position shown in full lines in that view, by a helical tension spring 149, one end of which is anchored to a pin 150 rigidly mounted on the side of the trigger 124 and the other end of which is secured to the latch 140 at a point corresponding to the axis of an anchor pin 152 located in spaced relation to the axis of the bolt 142 so as to tend to rotate the latch 140 in a clockwise direction as viewed in Fig. 3 but permitting the same to swing outwardly in anticlockwise direction against the action of the spring 149. Pin 150 also serves as a stop to limit clockwise rotation of latch 140.

The upper end of the trigger 124 is provided with a shoe 154 which is of slightly greater width than the trigger 124 and which serves as a bearing for contacting cam 120. It is to be noted that the width of the shoe 154 and of the cam 120 is such that the shoe bears against the outer peripheral surface of the cam 120 at all times regardless of the position of the cam and outer tube. In other words, the outer tube may be shifted to the right to the extent of the clearance space 94 and the shoe 154 is maintained in bearing contact on the outer surface of the cam 120 as shown in Fig. 2 of the drawings.

The left end of the inner tube 80 as viewed in Figs. 1 and 2 of the drawings is of reduced outside diameter to form a shoulder against which abuts the base leg of a combined packing follower and bearing 158 of L-shaped cross section.

The peripheral face of the vertical leg of the member 158 slidably fits the inside diameter of the outer tube 46 and its axial face wall abuts against a plurality of packing rings 160. The packing rings 160 are retained by an internally threaded ring 162 screwed on the exteriorly threaded end of tube 80, and locked thereto by suitable means. The peripheral surface of the ring 162 also has a sliding fit within the interior

of the outer tube 46 and also serves as a bearing between the tubes.

In the operation of this device the chain sprocket 102 is rotated either manually or by a power motor thus imparting rotation to the pinion 108 through the sleeve 106. Pinion 108 meshes with and drives the gear wheel 68 which through the key 70 rotates the sleeve 58 and nut 72 which is journaled in the ball bearing 74. Rotation of the nut 72 causes, in accordance with the direction of its rotation, projection or retraction of the inner tube 80 by moving the same axially, as will be apparent. During such axial movement, tube 80 is prevented from turning by the keys 90 and 92 which prevent relative rotation between the inner tube 80 and the outer tube 46. The outer tube 46 is, in turn, restrained from rotation by engagement of the shoulder 134 of flange 114 against the stop 136, which is rigidly mounted on the side of trigger 124. As the tube 80 completes its projecting movement to the right preparatory to a blowing operation, the packing follower 158 engages the left ends of the keys 90 and 92 and thereupon shifts the keys, and the outer tube 46 to which the keys are attached, axially to the right from the position shown in Fig. 1 to the position shown in Fig. 2, whereupon the keys and the end of the outer tube 46 abut against the rotating nut 72. This shifting to the right carries the latch 140 to the right against the action of compression spring 144 (because latch 140 overlaps the boiler side of lug 134 on flange 114, which is fast upon outer tube 46, see Figs. 2 and 3). The amount of axial movement is such that the shoulder 134 of flange 114 is disengaged from the stop 136 on trigger 124, whereupon rotation of the outer tube 46 is permitted. Continued rotation resulting from the continuing actuation of the chain wheel causes the toe portion 121 of cam 120 to swing the upper end of the trigger 124 outwardly and downwardly as indicated by the arrow 132 in Fig. 3, whereupon the lobe 130 depresses the valve stem 30 thus opening the valve 28 by moving it from its seat 26 and permitting cleaning fluid to flow through the conduit 24, tubes 46 and 80 into tube 96 and thus out of the nozzle 98 through the orifices 100. The stop 136 and the tooth 134 now lie in different planes and do not interfere with the aforesaid valve actuation. When the lug 134 moves out from beneath latchpiece 140, spring 144 moves the latchpiece back to its normal position close to the trigger as shown in Fig. 1. Engagement of the packing follower 158 against the keys 90 and 92 also tends to cause compression of the packing 160, thus effecting a tight seal during the blowing operation and effectively preventing the cleaning fluid from escaping through the sliding joint between the inner and outer tubes, while by virtue of this arrangement it is not necessary to fit the packing so tightly as to impose undue friction, as would otherwise be necessary. The packing follower 158 also serves as a rigid support for the end of the inner tube 80 and the outer tube being well supported at its opposite ends in the bearing sleeves 54 and 56, the entire rotating structure is rigidly supported during the blowing operation. It will be understood that the operator may continue to turn the chain wheel in the same direction as long as desired to insure proper cleaning, and the cam 120 will open the valve for the predetermined portion of each revolution which its angular extent dictates.

Upon reversal of the direction of rotation of the chain and chain wheel, and so of the nut 72, for retracting the tube 80, the inner and outer tubes may rotate together with the inner tube remaining projected until, as the toe portion 121 of the cam 120, turning clockwise as viewed in Fig. 3, clears the outer end of trigger shoe 154, the trigger again moves inwardly toward the tube axis to the position shown in Fig. 3. The lower end of the shoe 154 is provided with an abrupt or sharp portion 155 which at this time moves into the relieved or cut out portion of the cam and overlies a radially disposed heel portion 123 of the cam to block further clockwise rotation (as viewed in Fig. 3) of the cam and of the tubes 46, 80. Continued rotation of the sprocket and nut in the same (reverse) direction thereafter drives tube 80 in a return movement back into tube 46. As tube 80 completes its retracting movement, the ends of slots 86, 88 engage keys 90, 92 and move them and the tube 46 to the left to its extreme position shown in Fig. 1. Tooth 134 may then project beside and overlap the side of the thinner web portion of latchpiece 140 farther from the boiler, as before, but it will be seen that if the sloping back (outer) face of the tooth engages the latchpiece during the counterrotation of the cam and flange assembly and before tube 46 has moved all the way to the left, latchpiece 140 may swing out of the way, simply turning counterclockwise on its pivot pin 142 and stretching spring 149. The parts are thus restored to their initial positioning depicted in Figures 1 and 3.

In the modified construction shown in Fig. 6 parts analogous to those already described are identified by like reference numerals distinguished by the addition of the letter "A" to each. In this construction the latchpiece 140 is eliminated and the return spring 144A which replaces the spring 144 is in the form of a helical compression spring encircling the outer tube 46A and reacting at one extremity against the collar 118A and at the other extremity against packing gland 62A, a washer as 64A being interposed between the spring and gland. The gland is constantly urged by the spring against the packing material 60A.

The cam plate 114A is provided with a radially project abutment portion 134A adapted to bear against a lug portion 136A carried by the trigger 124A, the tube assembly being thereby held against rotation when the outer tube is at the leftward extremity of its movement, as shown in Fig. 6. It will be noted that the spring 144A constantly urges the parts to and yieldably maintains them in this position under normal conditions. When with the outer tube held against rotation in the manner indicated the actuating nut is turned to project the inner tube 80A, the action of the parts will correspond to that of the embodiment first described, and in like fashion, when the inner tube reaches the end of its movement, it pulls the outer tube to the right, disengaging the abutment 134A from the lug 136A, as the cam 114A moves to the right with the outer tube 46A. Thereafter the two tubes may rotate in unison, as in the previous embodiment, and the blowing action may take place during the entire or any desired portion of the rotary movement of the fully projected tube assembly, as will be apparent.

When, with either of the above described embodiments, the actuating means is operated in the reverse direction to tend to retract the inner tube, the two tubes may tend to rotate in unison,

depending upon the friction between the parts, but it will be noted that the trigger (124, 124A) cannot move inwardly toward the axis of the tube assembly until the cam (120, 120A) is in such position as to permit the nose of the trigger to move thereinto in a manner analogous to that depicted in Fig. 3. It will be noted that the cam never rides off the trigger, so that jamming of the cam and trigger against one another sidewise cannot occur. At the time the trigger moves in, the abutment portion (134, 134A) is in such position that it cannot strike the side of the lug (136, 136A) carried by the trigger because of the arresting of cam abutment 123 by heel portion 155 of trigger 124), although spring 144A provides a yielding action in any event. Thus the direction of rotation of the actuating means may be reversed at any time during projection, retraction or blowing, and it will be apparent that it is never possible to jam the parts, regardless of the direction of linear motion of the tubes or of the direction of rotation. During reverse rotation the sloping back of the abutment portion 134A may act as a ratchet tooth to cam the trigger down.

What is claimed is:

1. In a soot blower, a supporting frame, an outer tube rotatably mounted on said frame, an inner tube axially slidable within said outer tube, said tubes being non-rotatable with respect to each other, means for moving said inner tube axially to project the same from said outer tube, means for restraining said outer tube against rotation during the projection of said inner tube, means responsive to movement of the inner tube to a final stage of projection for releasing said restraining means whereby both tubes may be rotated in unison and means for supplying a cleaning fluid to said tubes.

2. In a soot blower, a supporting frame, an outer tube rotatably mounted on said frame, an inner tube axially slidable within said outer tube, said tubes being non-rotatable with respect to each other, means including an actuating nut carried by the frame for moving said inner tube axially to project the same from said outer tube, means for restraining said outer tube against rotation during the projection of said inner tube, means responsive to movement of the inner tube to a final stage of projection for releasing said restraining means whereby both tubes may be rotated in unison by said nut and means for supplying a cleaning fluid to said tubes.

3. In a soot blower, a supporting frame, an outer tube rotatably mounted on said frame, an inner tube axially slidable within said outer tube, said tubes being non-rotatable with respect to each other, a rotatable actuator for moving said inner tube axially to project the same from said outer tube, means for restraining said outer tube against rotation during the projection of said inner tube, and means responsive to movement of the inner tube to a final stage of projection for releasing said restraining means whereby both tubes may be rotated in unison.

4. In a soot blower, a supporting frame, an outer tube rotatably mounted on said frame, said tube being mounted to have limted axial movement, an inner tube axially slidable within said outer tube, said tubes being keyed together for preventing relative rotation therebetween, means for moving said inner tube axially to project the same from said outer tube, means releasable by axial movement of said outer tube for restraining said outer tube against rotation during the projection of the inner tube, means responsive to movement of the inner tube to a final stage of projection for moving said outer tube axially and thereby releasing said restraining means whereby both tubes may be rotated in unison and means for supplying cleaning fluid to said tubes.

5. In a soot blower, a supporting frame, an outer tube rotatably mounted on said frame, said tube being mounted to have limited axial movement, an inner tube axially slidable within said outer tube, said tubes being keyed together for preventing relative rotation therebetween, means for moving said inner tube axially to project the same from said outer tube, a shoulder carried by said outer tube, an abutment carried by said frame for normally engaging said shoulder to restrain said outer tube against rotation during the projection of said inner tube, means responsive to movement of the inner tube to a final stage of projection for moving said outer tube and shoulder axially and thereby releasing said shoulder from engagement with said abutment whereby both tubes may be rotated in unison, and means for supplying cleaning fluid to said tubes.

6. In a soot blower, a supporting frame including a conduit for cleaning fluid, a tube mounted on said frame for both rotative and axial movement, said tube communicating with said conduit, the exterior of said tube being provided with a helical groove forming a coarse thread, a nut surrounding said tube and threadably engaging said groove, said nut being journaled in a fixed axial position, an outer tube journaled on said frame in position to surround and normally cover said threaded tube, a shoulder carried by said outer tube, a stop carried by said frame for engaging said shoulder to restrain said outer tube from rotation, keying means preventing rotation of the inner tube relative to the outer tube, yielding means for maintaining said shoulder and stop in engagement, means for rotating said nut to project said threaded tube axially from said outer tube, means responsive to movement of the inner tube to a final stage of said projection for overcoming said yielding means and thereby releasing said shoulder and stop from engagement whereby said outer tube is free to rotate with said inner tube and means for introducing cleaning fluid to said conduit and tubes.

7. In a soot blower, a supporting frame including a conduit for cleaning fluid, a tube mounted on said frame for both rotative and axial movement, said tube communicating with said conduit, the exterior of said tube being provided with a helical groove forming a coarse thread, a nut surrounding said tube and threadably engaging said groove, said nut being journaled in a fixed axial position, an outer tube journaled on said frame in position to surround and normally cover said threaded tube, a key acting between said inner and outer tubes for preventing relative rotation therebetween while permitting relative axial movement therebetween, a shoulder carried by said outer tube, a stop carried by said frame for engaging said shoulder to restrain said outer tube from rotation, keying means preventing rotation of the inner tube relative to the outer tube, yielding means for maintaining said shoulder and stop in engagement, means for rotating said nut to project said threaded tube axially from said outer tube, means responsive to movement of the inner tube to a final stage

of said projection for overcoming said yielding means and thereby releasing said shoulder and stop from engagement whereby said outer tube is free to rotate with said inner tube and means controlled by the rotation of said outer tube for introducing cleaning fluid to said conduit and tubes.

8. In a soot blower, a supporting frame including a conduit for cleaning fluid, a tube mounted on said frame for both rotative and axial movement, said tube communicating with said conduit, the exterior of said tube being provided with a helical groove forming a coarse thread, a nut surrounding said tube and threadably engaging said groove, said nut being journaled in a fixed axial position, an outer tube journaled on said frame in position to surround and normally cover said threaded tube, said outer tube being mounted to have limited axial movement, a shoulder carried by said outer tube, a stop carried by said frame for engaging said shoulder to restrain said outer tube from rotation, keying means preventing rotation of the inner tube relative to the outer tube, yielding means for maintaining said shoulder and stop in engagement, means for rotating said nut to project said threaded tube axially from said outer tube, means responsive to movement of the inner tube to a final stage of said projection for moving said outer tube axially against the action of said yielding means and thereby releasing said shoulder and stop from engagement whereby said outer tube is free to rotate with said inner tube and means controlled by the rotation of said outer tube for introducing cleaning fluid to said conduit and tubes.

9. In a soot blower, a supporting frame, a nut axially fixed and rotatably mounted on said frame, an inner tube threaded through said nut, an outer tube journaled on said frame and surrounding said inner tube and having one end portion limitedly axially movable with relation to said nut, yielding means normally maintaining said outer tube in axially spaced relation to said nut, a key on one of said tubes axially slidable in a keyway in the other of said tubes, means restraining said tubes from rotating only when said outer tube is in such spaced relation to said nut, means for rotating said nut to project said inner tube from said outer tube, means responsive to movement of the inner tube to a final stage of such projection for moving said outer tube axially against the action of said yielding means, such axial movement of said outer tube freeing said tubes for rotation and means for supplying cleaning fluid to said tubes.

10. In a soot blower, in combination with a supporting frame, a pair of telescopically interfitted tubes, including a rotatable outer tube, an inner tube longitudinally slidable to project to greater or lesser extent with respect to the outer tube, a screw threaded portion carried by a part of the inner tube which is housed within the outer tube when said inner tube is fully retracted into the outer tube, a driving element engageable with said screw threaded portion to move said inner tube longitudinally with relation to the outer tube, latching means including a releasable latching element engageable with the outer tube, slidable keying means coacting with said latching means and interconnecting said tubes for preventing unwanted relative rotation of said outer tube and inner tube during longitudinal movement of the inner tube, and an abutment portion operatively connected to said latching element and engageable by said inner tube when the latter is moved to projected position to release said latching element and thereby to permit simultaneous rotation of both tubes.

11. In a soot blower, in combination with a supporting frame, a pair of telescopically interfitted tubes including a rotatable outer tube, an inner tube longitudinally slidable to project to a greater or lesser extent with respect to the outer tube, a screw-threaded portion carried by a part of the inner tube which is housed within the outer tube when said inner tube is retracted into the outer tube, a driving element engageable with said screw-threaded portion to move said inner tube longitudinally with relation to the outer tube, means including a releasable latching element engageable with the outer tube, slidable keying means interconnecting said tubes for preventing unwanted rotation of said outer tube and inner tube during longitudinal movement of the inner tube, an abutment portion operatively connected to said latching element and engageable by said inner tube when the latter is moved to projected position to release said latching element and thereby to permit simultaneous rotation of both tubes, said outer tube being limitedly longitudinally shiftable by the inner tube as the latter approaches fully projected position, said abutment portion being carried by said outer tube and the latching element being operatively connected to the outer tube whereby such longitudinal shifting movement of the outer tube may serve to actuate said latching element.

12. In combination with means as set forth in claim 11, means for supplying cleaning fluid to said inner tube, means for controlling the fluid supply including a valve, actuating means for said valve including a cam member carried by the outer tube and a follower member engageable by the cam operatively connected to the valve to actuate the latter, the cam and follower members being of sufficient length axially of the tube so that such cam and follower may remain in engagement throughout the full range of longitudinal shifting movement of said outer tube.

13. In a soot blower, in combination with a supporting frame, a pair of telescopically interfitted tubes both of which are rotatably mounted in the frame and one of which is longitudinally slidable with respect to the other, means keying said tubes against unwanted rotation with respect to one another, nut and screw portions for moving one of said tubes longitudinally to project and retract the same, the other of said tubes being held against unwanted longitudinal movement, means for holding the tubes against unwanted rotation including an abutment portion on the other of said tubes, a latching element engageable with the abutment portion, means responsive to longitudinal movement of the projectable tube for disengaging said latching element from the abutment, and spring means yieldably urging the latching element into blocking relation with respect to said abutment, said spring means working in a direction parallel to the direction of longitudinal movement of the projectable tube.

14. A soot blower construction as defined in claim 13 wherein said spring means comprises a helical spring surrounding the outer tube.

15. A soot blower construction as defined in claim 13 including means for supplying cleaning fluid to the inner tube, the outer tube being limitedly longitudinally shiftable to actuate said latching element to and from blocking relation,

said spring means reacting upon said outer tube to yieldably oppose movement of the latching element from such blocking relation.

16. A soot blower as defined in claim 13 including means for supplying cleaning fluid to the inner tube, a valve for controlling the flow of such fluid, actuating means for the valve including a cam movable concurrently with said latching element, and a follower, said abutment being carried by said follower.

17. A soot blower as defined in claim 13 including means for supplying cleaning fluid to the inner tube, a valve for controlling the flow of such fluid, actuating means for the valve including a cam movable concurrently with said latching element, and a follower, said spring means being carried by said follower.

18. A soot blower as defined in claim 13 including means for supplying cleaning fluid to the inner tube, a valve for controlling the flow of such fluid, actuating means for the valve including a cam movable concurrently with said latching element, and a follower, and said spring means being carried by said outer tube.

19. A soot blower construction as defined in claim 13 including means for supplying cleaning fluid to the inner tube, the outer tube being limitedly longitudinally shiftable to actuate said latching element to and from blocking relation, a valve for controlling the flow of such fluid, actuating means for the valve including a cam carried by and shiftable with the outer tube, and a follower held against such shifting movement and engageable by the cam, said latching element being carried by said outer tube and said abutment being substantially fixed against such longitudinal shifting movement and against rotation with said outer tube.

20. A soot blower construction as defined in claim 13 including means for supplying cleaning fluid to the inner tube, the outer tube being limitedly longitudinally shiftable to actuate said latching element to and from blocking relation, a valve for controlling the flow of such fluid, actuating means for the valve including a cam carried by and shiftable with the outer tube, and a follower held against such shifting movement and engageable by the cam, said latching element and said spring means being carried by said outer tube and said abutment being substantially fixed against such longitudinal shifting movement and against rotation with said outer tube.

21. A soot blower construction as defined in claim 13 including means for supplying cleaning fluid to the inner tube, the outer tube being limitedly longitudinally shiftable to actuate said latching element to and from blocking relation, a valve for controlling the flow of such fluid, actuating means for the valve including a cam carried by and shiftable with the outer tube, and a follower held against such shifting movement and engageable by the cam, said latching element being carried by said outer tube, said spring means being carried by the follower, and said abutment being substantially fixed against such longitudinal shifting movement and against rotation with said outer tube.

22. In a soot blower, a supporting frame, an outer tube rotatably mounted on said frame, an inner tube axially slidable within said outer tube, said tubes being non-rotatable with respect to each other, means for moving said inner tube axially to project the same from said outer tube, means for restraining said outer tube against rotation during the projection of said inner tube, means responsive to movement of the inner tube to a final stage of projection for releasing said restraining means whereby both tubes may be rotated in unison, means for supplying a cleaning fluid to said tubes, and external bearing means rotatably supporting said outer tube near both extremities thereof.

23. In a soot blower, a supporting frame, an outer tube rotatably mounted on said frame, said tube being mounted to have limited axial movement, an inner tube axially slidable within said outer tube, said tubes being keyed together for preventing relative rotation therebetween, means for moving said inner tube axially to project the same from said outer tube, means for restraining said outer tube against rotation during the projection of the inner tube, means responsive to movement of the inner tube to a final stage of projection for moving said outer tube axially and thereby releasing said restraining means whereby both tubes may be rotated in unison, and external bearing means rotatably supporting said outer tube near both extremities thereof.

24. A soot blower as defined in claim 10 wherein said latching means includes two elements, one connected to the frame and the other to the outer tube, said keying means being carried partly by the inner tube and partly by the outer tube.

25. In a soot blower, in combination with a supporting frame, a pair of telescopically interfitted tubes, including an inner tube and an outer tube, the inner tube being longitudinally slidable with respect to the outer tube, means for sliding the inner tube to project and retract the same, means for supplying cleaning fluid to said inner tube, packing means for sealing the space between said tubes, means for tightening said packing means against the exterior of the inner tube and the interior of the outer tube in response to projection of the inner tube, including an abutment portion carried by said inner tube and movable to a position to exert pressure upon said packing means as the slidable tube reaches the projected position, said inner tube being slidable through a substantial travel, the outer tube being also limitedly slidable through a relatively slight travel, an abutment portion carried by the outer tube, the packing means being interposed between said abutment portions and compressible therebetween when the inner tube is fully projected, spring means opposing longitudinal movement of the outer tube in the direction of projecting movement of the inner tube, whereby when the inner tube is fully projected by said means for sliding the same the outer tube is also longitudinally moved by force transmitted through said abutments and packing and the resistance of the spring means is also imposed upon the packing.

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