Dec. 20, 1938. T. B. SMITH 2,140,973

SOOT TRAP

Filed Jan. 27, 1938

Fig. 1.

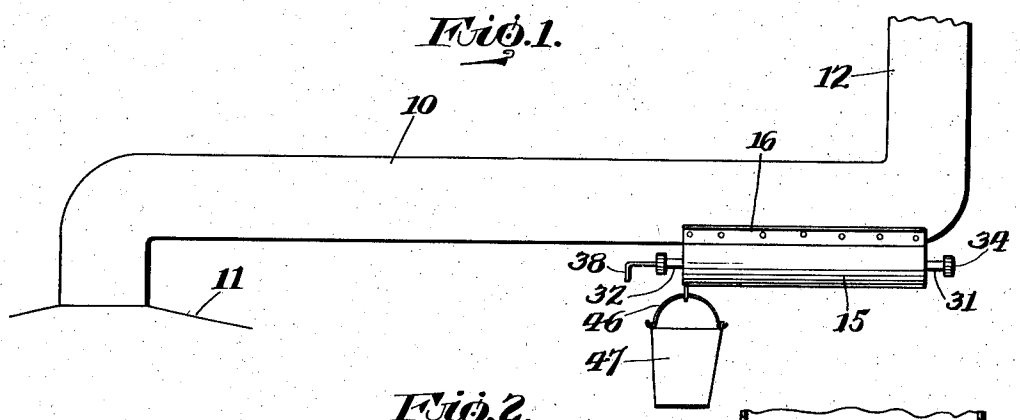


Fig. 2.

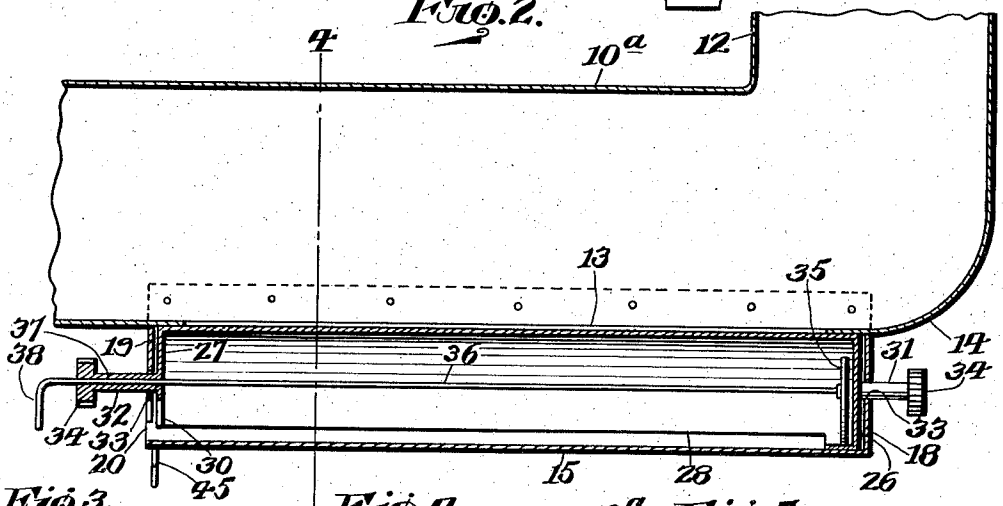


Fig. 3.

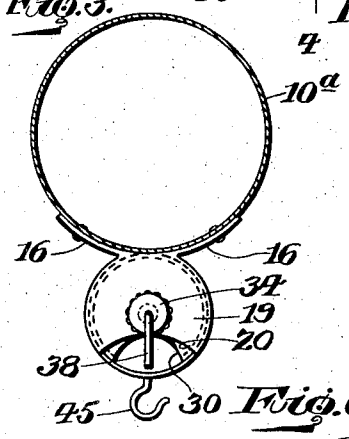


Fig. 4.

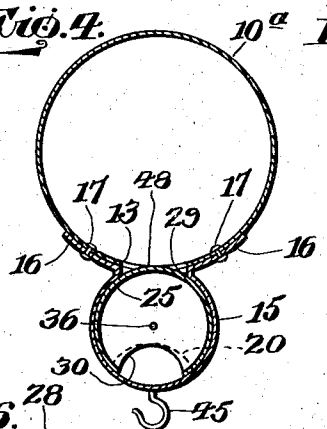


Fig. 5.

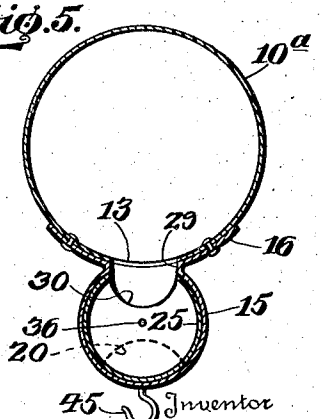


Fig. 6.

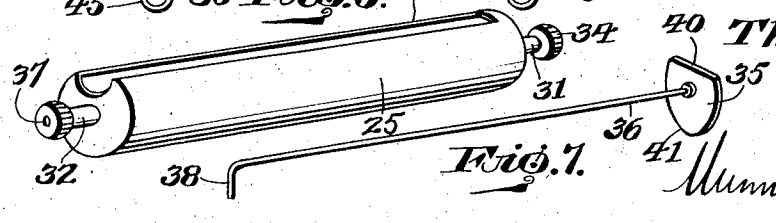


Fig. 7.

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SOOT TRAP

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Application January 27, 1938, Serial No. 187,282

4 Claims. (Cl. 126—280)

This invention relates to a device for collecting foreign matter deposited from the hot gases of a furnace or stove.

An object of the invention is the provision of a device for collecting foreign matter which is deposited from the hot gases passing through the pipe in which the device will remain closed at all times so that the gases cannot escape to the atmosphere or that the draft in the pipe will not be diminished.

Another object of the invention is the provision of a device which is adapted to be attached to that portion of a stove pipe where soot or other foreign matter readily collects, a flue pipe being provided with an elongated opening through which the soot is adapted to fall and be collected in a casing which closes the flue pipe to the atmosphere at all times, said casing adapted to be revolved for not only closing the elongated opening in the flue pipe but for placing an opening in the casing in a position where the soot may be forced from said casing and discharged into a container supported adjacent the discharge opening of the casing.

A further object of the invention is the provision of a device for collecting soot which is deposited in a section of a flue in which a housing is directly connected to the pipe and to the flue and is provided with an elongated opening aligning with a similar opening in the flue, a casing being rotatably mounted within the housing which also has an elongated opening adapted to be aligned with the opening in the flue whereby the soot or ashes deposited from the hot gases will drop into the casing, means being employed for rotating the casing within the housing for not only closing the elongated opening in the flue but for placing a discharge opening in the casing in alignment with a discharge opening in the housing, a scraper being mounted for reciprocation within the casing for removing foreign matter collected therein through the aligned discharge opening in the casing and the housing.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawing forming a part of the specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modification as define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:

Figure 1 is a longitudinal side view of a flue pipe showing my soot collector attached thereto,

Figure 2 is a fragmentary vertical section through a section of the flue pipe and the soot collector,

Figure 3 is an end view of the soot collector and a section of the flue pipe,

Figure 4 is a transverse vertical section taken on the line 4—4 of Figure 2 showing a soot collecting casing in position for the discharge of the soot,

Figure 5 is a section taken along the same line showing the casing in a position which is 180° from that shown in Fig. 4,

Figure 6 is a view in perspective of a soot collecting casing in detached relation, and

Figure 7 is a view in perspective of a scraper which is reciprocably mounted within the casing.

Referring more particularly to the drawing, 10 designates a flue pipe which is usually made up of a plurality of sections and has one end connected to a furnace or stove 11 while the opposite end is extended upwardly, as shown at 12, and this end is adapted to be connected to a chimney in a well known manner. The pipe 10, however, may be directly connected with the chimney without the vertical sections 12 so that the usual horizontal extension will project into the chimney.

It is a well known fact that the hot gases from a furnace deposit sediment in the flue pipe at points which are remote from a furnace due to the fact that the gases become gradually cooled after they travel through the exposed pipe and as they get farther away from the furnace. It is at such a point or section of the flue pipe that the soot collector is applied, as shown more particularly in Fig. 1.

A section 10*a* of the flue pipe 10, as shown in Fig. 2, is provided with an elongated opening 13 in the bottom thereof and this opening is sufficiently wide to permit the foreign matter from the hot gases to fall through the opening so that very little of this foreign matter is deposited in the section 10*a*. If desirable, the opening 13 may be extended to include the entire elbow 14 which is located at the bottom of the vertical portion 12.

A housing 15 is cylindrical in shape and is provided with curved flanges 16 which are riveted or bolted at 17 to the bottom wall of the pipe section 10*a*. The opposite ends of the housing, as shown at 18 and 19, are closed except for a discharge opening 20.

A cylindrical casing, generally designated by the numeral 25, is neatly fitted within the housing 15 and has its opposite ends closed, as shown

at 26 and 27. The upper portion of the casing is cut away to provide an elongated opening 28 which is adapted to align with the opening 13 formed in the section 10a and an opening 29 formed at the upper portion of the housing 15. The end wall 27 of the casing 25 is provided with a discharge opening 30 adapted to be aligned with the opening 20, as shown in Fig. 4, when the elongated opening 28 of the casing 25 has been moved to approximately 180° away from the openings 13 and 29.

A pair of operating handles or shafts 31 and 32 are secured to the end walls 26 and 27, respectively, of the casing 25 and project through openings 33 in the end walls of the housing 15. These rods are provided with manipulating knobs 34 which when rotated will cause rotation of the casing 25.

A scraper blade 35 is mounted for reciprocation within the casing 25 and is connected to an operating rod 36 which extends the length of the casing and passes through a longitudinal passage 37 formed in the handle 32. The outer projecting end of the rod has a bent portion 38 which is adapted to be grasped by the hand for reciprocating the rod 36.

The scraper blade 35 is sheared off at the top, as shown at 40, and is tapered so that it will move through the elongated opening 28 when it is in its lowermost position.

The housing 15 adjacent the end where the rod or shaft 32 is located is provided with a hook 45 adapted to receive a handle which supports a bucket or container 47 so that when the soot or other foreign matter is withdrawn through the aligned openings 20 and 30 the container 47 will collect the soot as it is discharged.

It will be seen by this construction that the opening 13 in the bottom of the flue section 10a is closed at all times to the atmosphere. When the casing 25 has been revolved so that the elongated opening 28 will align with the openings 29 and 13, the end wall 27 of said casing will close the discharge opening in the housing 15. On the other hand when the casing has been revolved through approximately 180° so that when the elongated opening 28 and the discharge opening 30 in the casing 25 will be aligned with the opening 20, the bottom portion 48 of the casing 25 will close the openings 29 and 13. By this construction the flue pipe 10a is always closed to the atmosphere so that gases from the flue pipe cannot pass to the atmosphere nor can the intake of air check the draft through the flue 10. Therefore no matter how careless the operator may be the flue pipe is always closed to the atmosphere.

At intervals the scraper blade 35 may be operated by the reciprocation of the rod 36 through the center of the shaft 32 and knob 37 forcing the soot in the casing 25 through the aligned discharge openings 30 and 20, respectively, in the casing 25 and the housing 15.

An important feature of this device resides in the fact that the fire risk or hazard is entirely eliminated because the soot trap closes the opening 13 in the pipe 10 at all times so that at no time, smoke, burning soot or sparks can escape from the pipe 10 to ignite the inflammable material on the floor of the room in which the furnace is located.

Furthermore, the soot can be removed at all times even where the furnace is in operation because the opening 13 is closed when the opening 30 is aligned with the opening 20 for the removal of soot.

I claim:

1. A soot trap comprising a length of flue pipe having an elongated opening in the bottom thereof, a housing connected to the pipe and provided with an opening aligning with the opening in the pipe, a casing rotatable in the housing and having an opening adapted to be aligned with the opening in the housing, said housing having a discharge opening in one end, the casing having a discharge opening in line with the opening therein and adapted to be aligned with the discharge opening in the housing when the casing has been rotated through approximately an arc of 180° and means for forcing foreign matter from the casing through the aligned discharge openings.

2. A soot trap comprising a length of flue pipe having an elongated opening in the bottom thereof, a housing connected to the pipe and provided with an opening aligning with the opening in the pipe, a casing rotatably mounted in the housing beneath the opening thereof and having an elongated opening adapted to be aligned with the opening in the housing, said casing closing the pipe to the atmosphere at all times, the casing having a discharge opening, means for closing the discharge opening when the elongated openings are aligned, said casing adapted to be rotated through an arc of approximately 180° whereby the casing will close the opening in the pipe and the discharge opening will be moved away from the closing means, and means for forcing foreign matter collected in the casing through the discharge opening.

3. A soot trap comprising a length of flue pipe having an elongated opening in the bottom thereof, a housing connected to the bottom of the pipe, a casing rotatably mounted in the housing, the housing and casing having elongated openings in alignment with the opening in the pipe, said casing and housing having discharge openings, the discharge opening in the casing being normally closed when the elongated openings are in alignment, means for rotating the casing to cause the discharge openings to align and close the elongated openings in the housing and pipe, means for forcing soot from the casing through the aligned discharge openings, and means for supporting a soot collector from the housing adjacent the discharge opening.

4. A soot trap comprising a length of flue pipe having an elongated opening in the bottom thereof, a housing connected to the pipe and provided with an opening aligning with the opening in the pipe, a casing rotatable in the housing and having an opening adapted to be aligned with the opening in the housing, said housing having a discharge opening in one end, the casing having a discharge opening in line with the opening therein and adapted to be aligned with the discharge opening in the housing when the casing has been rotated through approximately an arc of 180°, a handle for rotating the casing, a scraper in the casing, and a rod connected to the scraper and passing through the handle for reciprocating the scraper to remove soot from the casing.

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