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(54) WOOD STOVE WITH A SUPPLY DUCT FOR LOGS

Holzofen mit einer Versorgungsleitung für Scheiten

Poêle à bois avec un conduit d'alimentation pour les bûches

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Description

Field of the invention

[0001] The invention relates to a wood stove comprising a housing containing a combustion chamber and provided with an air supply opening, a discharge opening for combustion gases, and at least two supply openings for wood present in the upper part of the housing, said stove further comprises at least two stock tubes for logs which stock tubes are open at both ends, each of which stock tubes having one end connected to one of the supply openings and extending from this supply opening in a substantially vertical direction upwards.

[0002] Because of these stock tubes one does not have to throw a log in the stove every time, but the stove can burn a relatively long time because of the wood in the stock tubes. As the logs present in the combustion chamber burn, the logs present above get down slowly. So there is an automatic supply of logs and not every time a log is burned a new log has to be inserted manually.

State of the art

[0003] Such a wood stove is known from EP 2597371 A. In the known wood stove, the heat of the fire is controlled by throttling the air supply. However, this results that the temperature of the fire goes down, that gases evaporate from the wood that does not burn completely, and that there is not sufficient oxygen present to complete combustion of the gases. Because of this the yield of a normal stove reduces much when the stove is put on a lower setting.

Summary of the invention

[0004] An object of the invention is to provide a wood stove of the type described in the preamble, in which the combustion is controlled better than in the known wood stove. For this purpose, the stove according to the invention is characterized in that the wood stove comprises a vertically movable partition plate which is present between the two stock tubes and is movable between an inactive position, in which the partition plate is present completely or substantially completely between the stock tubes, and an active position, in which the partition plate extends partly or completely in the combustion chamber and shields a part of it from the fire source. Due to the lowering of the partition plate, the portion of the combustion chamber that is present at a side of the partition plate remote from the discharge opening is withdrawn from the combustion space. The stove is thus put on a lower setting without throttling the air supply.

[0005] By making use of a vertically movable partition plate, the logs are separated from each other so that the part that is shielded by the partition plate does no longer take part in the combustion. The wood is protected so that radiation from the hot fire does no longer heats the

wood. The source of the fire is thereby reduced while there is still sufficient oxygen. The smaller fire still burns brightly, and burns completely, but the stove does not emit less heat to the surroundings because the fire source is smaller. The yield continues to be high, and the fire burns more constant. There will be no evaporation of combustible gases from the wood that uselessly would disappear through the chimney as would be the case at smothering the fire.

[0006] The stock tubes and logs contained therein are adjusted to each other such that two logs cannot be present next to each other and logs cannot fall in the stock tubes. The stock tube is preferably a long, narrow tube, and should preferably be filled with elongate logs which can be in the tube only in the longitudinal direction. Preferably, the clearance between the logs and the wall of the tube is not such large that the logs cannot get stuck when being in a tilt position.

[0007] Moreover, rising air along the outer walls of the stock tubes will cause a better cooling, so that the temperature inside the stock tubes does not rise such high that the logs in the stock tube dry too much. In case of too much drying moisture drips from the wood drips on the fire so that the combustion is adversely affected. Because the stock tubes are relatively narrow, the air in the stock tubes will not circulate or will circulate less around the logs so that the logs are heated less and less or no water drips from the logs on the fire.

[0008] The angle between the center line of the stock ducts and the vertical direction is preferably at the most 20 degrees and more preferably at the most 5 degrees.

[0009] An embodiment of the wood stove according to the invention is characterized in that the stove comprises at least three stock tubes including the said stock tubes.

[0010] In order to obtain a better circulation of air rising around the stock tubes, the stock tubes are preferably at a distance from each other and are parallel to each other.

[0011] In order to reduce the chance of clamping of logs in the tubes the stock tubes have a conical shape widening towards the bottom.

[0012] The other end of the stock tubes, preferably, are each closed by a lid which is movable between a closed position in which the lid closes this end and an open position in which the lid is directed obliquely upwards and leaves open this end, said lid is provided with a raised edge at the underside which edge is present within the walls of the stock tube in closed position of the lid and in open position of the lid, the bottom part of the lid is provided at its free end with a downwardly projecting drip edge. In open pivoted position of the lid in which the lid with the lower part of the ridge is standing on the tube and with the opposite edge is facing upwards, downwards seeping condensation will drip in the stock tube due to the presence of the drip edge along the inner side of the lid, and will not get to the outside of the tube via the bottom of the lid and seep downward along the outside of the sleeve, causing dirty stripes and creates an unpleasant odor. It is noted that such a lid can also be

applied to a wood stove with one or more stock tubes which are not provided with a movable partition plate.

[0013] Yet a further embodiment of the wood burning stove according to the invention is characterized in that the discharge opening is present in a side wall of the combustion chamber near the bottom of the combustion chamber and that furthermore, the wood stove comprises a pipe connected to the discharge opening. The pipe acts as a flame pipe. This flame pipe concentrates the flame so that all the gases are heated up to the maximum and insulates the flame so that in this stage of the combustion, heat is still not transferred to the surroundings but it is used for heating the gases to be burned.

[0014] The lower portions of the side walls of the combustion chamber are preferably tapered towards the discharge opening and the bottom of the combustion chamber preferably is sloping down towards the discharge opening. Because of this the logs are kept shut and the fire is concentrated. The flame is thus rapidly concentrated in the flame pipe, so that mixing of the flame with partly burnt gases takes place there where the temperature is highest.

Brief description of the drawings

[0015] Below, the invention will be further elucidated on the basis of an exemplary embodiment shown in the drawings of the wood stove according to the invention. In these drawings:

Figure 1 shows the wood stove in cross-section with the partition plate in the lower position;
 Figure 2 shows the wood stove with the partition plate in the upper position;
 Figure 3 shows the wood stove in side view;
 Figure 4 shows the wood stove in front view;
 Figure 5 shows the wood stove in top view;
 Figure 6 shows the wood stove in perspective view;
 Figure 7 shows a detail of the upper part of the stock tubes of the stove;
 Figure 8 is a sectional view of the upper part shown in Figure 7 of the stove; and
 Figure 9 is a detail of Figure 8 at the location of the lower part of the opened lid.

Detailed description of the drawings

[0016] In Figures 1 and 2 an embodiment of the stove according to the invention is shown in cross-section with the partition plate in lower or upper position. The wood stove 1 has a housing 3 containing a combustion chamber 5. In a side wall 7 of the combustion chamber a discharge opening 9 is provided for discharge of combustion gases. This discharge opening is provided at a small distance above the bottom 11 of the combustion chamber.

[0017] To the discharge opening 9 a pipe 13 is connected. This pipe forms a flame tube which opens into a flue gas discharge duct 15. The pipe 13 concentrates the

flame 16, see Figure 2, so that all the gases are heated up.

[0018] In the upper side 17 of the combustion chamber there are three supply openings 19 for logs. To each supply opening a stock tube 21a-c for logs 23 open at both ends is connected which extends in a vertical direction extending upwardly. As the fire burns the lower logs, the tower of logs falls down automatically and performs new fuel to the fire. It is therefore a filling system acting on the force of gravity.

[0019] The upper ends of the stock tubes are closed by removable lids 25a-c, which are displaceable between a closed position in which the lid closes the open upper end of the stock tube and an open position in which the lid is directed obliquely upwards and leaves this end open.

[0020] The wood stove has a number of slender stock tubes 21a-c and not a thick sleeve where logs are placed in random, because it is important that the logs remain as cool as possible. As the logs in the stock tubes warm up too much, water evaporates that much that the fire does not burn well. So heat transfer to the logs should be avoided. This is done by stacking the logs 23 in the stock tubes 21a-c, where the logs are enclosed all around by the stock tubes. The stock tubes ensure a cool environment. The logs 23 are not hot because they are surrounded by the cold stock tubes. Gases rising in the stock tubes do not heat the logs because the stock tubes 21a-c cool these gases.

[0021] Another advantage of separate stock tubes 21a-c is the flow of the wood. The logs 23 should remain neatly stacked and should not fall past each other, in that case they can act as a wedge and clamp themselves into the tube so that the flow would stop.

[0022] The stock tubes 21a-c are slightly tapered towards the top, one half degree withdrawable, so that clamping occurs less frequently.

[0023] Between the stock tubes 21a-c there is provided a vertically movable partition plate 27. This partition plate has a T-shaped cross-section (see Figure 5) and is movable between an inactive position (figure 2), in which the partition plate 27 is present completely or substantially completely between the stock tubes 21a-c, and an active position (Figure 1), in which the partition plate 27 extends partly into the combustion chamber 5 and shields a part of it from the fire.

[0024] Furthermore, in the side walls 29 of the combustion chamber air inlet openings 31 are present. In the wall of the housing 3 air vents 35 are present which are closable through slides 33, see Figures 3 and 4, which air vents are in communication with the air supply opening 31 in the combustion chamber 5.

[0025] The lower portions 37 of the side walls 29 of the combustion chamber are tapered towards the discharge opening 9, and the bottom 11 of the combustion chamber runs obliquely downwards towards the outlet opening 9. The bottom 9 is formed by a grate through which ash may fall down into an ash pan 39. In a side wall 41 of the

housing 3 a door 43 is present, see Figure 3, through which can be taken out the ash pan. In the housing 3 a further door 45 is present, see Figure 4, through which kindling wood can be put into the combustion chamber.

[0026] By way of illustration, in Figure 6, the wood stove 1 is shown in perspective. An arm 47 is attached to the partition plate. By means of this arm the separator plate can be pushed up and down between the supply ducts 21. The arm 47 extends between two stock tubes 21 to the outside. A comb 49 for the fastening of the arm is pivotably suspended from one of the supply ducts. By turning away the comb 49 from the gap 51 between the stock tubes, the arm 37 and thus the partition plate can be moved down. By then again rotating the comb 49 back to the vertical position, the arm 47 is fixed in a lower position between two other teeth of the comb.

[0027] Figures 7 and 8 show a detail of the upper part of the stock tubes of the stove in perspective respectively cross section, and in Figure 9 a detail of the lower part of the open lid is displayed. The lids 25a-c at the bottom are provided with a raised edge 53 that is present within the walls of the stock tubes 21a-c in the closed position of the lid, as shown in Figure 8. In the open position of the lid, wherein the lid with a edge is on the stock tube and with the opposite edge is directed upwards, the lower portion 53A of the raised edge is provided with a downwardly projecting drip edge 55 at the free end, see Figure 9. Due to the presence of the drip edge 55, downwards seeping condensation will drip along the inside of the lid into the stock tube and will not be discharged outside the tube via the bottom of the lid and trickle down the outside of the stock tube.

[0028] Although in the above the invention is elucidated with reference to the drawings, it should be noted that the invention is in no way limited to the embodiment shown in the drawings. The invention also extends to all of the embodiment shown in the drawings deviating embodiments within the context defined by the claims.

Claims

1. Wood stove (1) comprising a housing (3) containing a combustion chamber (5) and provided with an air supply opening (31), a discharge opening (9) for combustion gases, and at least two supply openings (19, 32) for wood present in the upper part (17) of the housing, said stove further comprises at least two stock tubes (21a, 21b, 21c) for logs which stock tubes are open at both ends, each of which stock tubes having one end connected to one of the supply openings and extending from this supply opening in a substantially vertical direction upwards, **characterized in that** the wood stove (1) comprises a vertically movable partition plate (27) which is present between the two stock tubes and is movable between an inactive position, in which the partition plate (27) is present completely or substantially complete-

ly between the stock tubes (21a-c), and an active position, in which the partition plate (27) extends partly or completely in the combustion chamber (5) and shields a part of it from the fire source.

2. Wood stove (1) according to claim 1, **characterized in that** the angle between the center line of the stock tubes (21a-c) and the vertical direction is a maximum of 20 degrees.
3. Wood stove (1) according to claim 2, **characterized in that** the angle between the center line of the stock tubes (21a-c) and the vertical direction is up to 5 degrees.
4. Wood stove (1) according to any one of the preceding claims, **characterized in that** the stove comprises at least three stock tubes including the said stock tubes (21a, 21b, 21c).
5. Wood stove (1) according to any one of the preceding claims, **characterized in that** the stock tubes (21a-c) are at a distance from each other and are parallel to each other.
6. Wood stove (1) according to any one of the preceding claims, **characterized in that** the stock tubes (21a-c) have a conical shape widening towards the bottom.
7. Wood stove (1) according to any one of the preceding claims, **characterized in that** the other end of the stock tubes (21a-c) are each closed by a lid (25a-c) which is movable between a closed position in which the lid closes this end and an open position in which the lid is directed obliquely upwards and leaves open this end, said lid is provided with a raised edge (53) at the underside which edge is present within the walls of the stock tube (21a-c) in closed position of the lid and in open position of the lid, the bottom part (53A) of the lid is provided at its free end with a downwardly projecting drip edge (55).
8. Wood stove (1) according to any one of the preceding claims, **characterized in that** the discharge opening (9) is present in a side wall (7) of the combustion chamber near the bottom (11) of the combustion chamber (5) and that furthermore, the wood stove comprises a pipe (13) connected to the discharge opening.
9. Wood stove (1) according to claim 8, **characterized in that** the lower portions (37) of the side walls (29) of the combustion chamber (5) are tapered towards the discharge opening (9) and the bottom (11) of the combustion chamber is sloping down towards the discharge opening (9).

Patentansprüche

1. Holzofen (1), der ein Gehäuse (3) umfasst, in dem sich eine Brennkammer (5) befindet und das mit einer Lufteinlassöffnung (31), einer Austrittsöffnung für Rauchgase (9) und mindestens zwei in der Oberseite (17) des Gehäuses vorhandenen Beschickungsöffnungen (19, 32) für Holz versehen ist, wobei der Holzofen ferner mindestens zwei auf beiden Seiten offene Vorratsschächte (21a, 21b, 21c) für Holzblöcke umfasst, von denen jeder auf einer Seite mit einer der Beschickungsöffnungen verbunden ist und sich von dieser Beschickungsöffnung in einer hauptsächlich vertikalen Richtung nach oben erstreckt, **dadurch gekennzeichnet, dass** der Holzofen (1) ein in vertikaler Richtung bewegliches Trennschott (27) umfasst, das zwischen den beiden Vorratsschächten angeordnet und zwischen einer nicht aktiven Stellung, in der das Trennschott (27) ganz oder fast ganz zwischen den Vorratsschächten (21a bis 21c) angeordnet ist, und einer aktiven Stellung verschoben werden kann, in der sich das Trennschott (27) ganz oder teilweise in die Brennkammer (5) erstreckt und diese teilweise von dem Brandherd abschirmt.
2. Holzofen (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Winkel zwischen der Mittellinie der Vorratsschächte (21a bis 21c) und der vertikalen Richtung höchstens 20 Grad beträgt.
3. Holzofen (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** der Winkel zwischen der Mittellinie der Vorratsschächte (21a bis 21c) und der vertikalen Richtung höchstens 5 Grad beträgt.
4. Holzofen (1) nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** der Holzofen mindestens drei Vorratsschächte umfasst, zu denen auch die erwähnten Vorratsschächte (21a, 21b, 21c) zählen.
5. Holzofen (1) nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** die Vorratsschächte (21a bis 21c) im Abstand zueinander und parallel zueinander angeordnet sind.
6. Holzofen (1) nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** die Vorratsschächte (21a bis 21c) eine konische, nach unten hin sich erweiternde Form aufweisen.
7. Holzofen (1) nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** jeder der Vorratsschächte (21a bis 21c) auf der anderen Seite durch einen Deckel (25a bis 25 c) verschlossen ist, der zwischen einer geschlossenen Stellung, in der das Ende von diesem Deckel verschlossen wird, und

einer offenen Stellung bewegt werden kann, in der der Deckel schräg nach oben gerichtet ist und dieses Ende offen lässt, wobei der Deckel an der Unterseite mit einer Aufkantung (53) versehen ist, die sich bei geschlossener Deckelstellung innerhalb der Wände des Vorratsschachts (21a bis 21c) befindet und deren in offener Deckelstellung unterer Bereich (53A) auf der freien Seite mit einem nach unten überstehenden Tropfrand (55) versehen ist.

8. Holzofen (1) nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, dass** die Austrittsöffnung (9) in der Nähe des Bodens (11) der Brennkammer (5) in einer Seitenwand (7) der Brennkammer angeordnet ist und dass der Holzofen ferner ein an die Austrittsöffnung angeschlossenes Rohr (13) umfasst.
9. Holzofen (1) nach Anspruch 8, **dadurch gekennzeichnet, dass** sich die unteren Bereiche (37) der Seitenwände (29) der Brennkammer (5) zu der Austrittsöffnung (9) hin verengen und der Boden (11) der Brennkammer zu der Austrittsöffnung (9) hin schräg nach unten verläuft.

Revendications

1. Poêle à bois (1) comprenant un caisson (3) ayant une chambre de combustion (5) et pourvu d'une ouverture d'arrivée d'air (31), d'une ouverture d'évacuation (9) pour les gaz de combustion, et d'au moins deux ouvertures d'approvisionnement (19, 32) pour le bois, situées sur le côté supérieur (17) du caisson, lequel poêle à bois comprend de plus au moins deux manchons de stockage (21a, 21b, 21c) ouverts en leurs deux extrémités pour les bûches de bois, qui chacun est branché en une de ses extrémités sur l'une des ouvertures d'approvisionnement et qui s'étend vers le haut depuis cette ouverture d'approvisionnement dans une direction principalement verticale, **caractérisé en ce que** le poêle à bois (1) comprend une plaque de séparation (27) mobile en direction verticale se trouvant entre les deux manchons de réserve et étant mobile entre un état non actif, où la plaque de séparation (27) se trouve complètement ou presque complètement entre les manchons de réserve (21a-c), et un état actif, où la plaque de séparation (27) s'étend partiellement ou complètement dans la chambre de combustion (5) et protège une partie de celle-ci du foyer.
2. Poêle à bois (1) selon la revendication 1, **caractérisé en ce que** l'angle entre l'axe principal des manchons de stockage (21a-c) et la direction verticale est de maximum 20 degrés.
3. Poêle à bois (1) selon la revendication 2, **caractérisé**

en ce que l'angle entre l'axe principal des manchons de stockage (21a-c) et la direction verticale est de maximum 5 degrés.

4. Poêle à bois (1) selon une des revendications précédentes, **caractérisé en ce que** le poêle à bois comprend au moins trois manchons de stockage parmi lesquels les manchons de stockage susnommés (21a, 21b, 21c). 5
- 10
5. Poêle à bois (1) selon une des revendications précédentes, **caractérisé en ce que** les manchons de stockage (21a-c) se trouvent à distance les uns des autres et sont parallèles les uns aux autres. 15
6. Poêle à bois (1) selon une des revendications précédentes, **caractérisé en ce que** les manchons de stockage (21a-c) ont une forme conique s'élargissant vers le bas. 20
7. Poêle à bois (1) selon une des revendications précédentes, **caractérisé en ce que** l'autre extrémité des manchons de stockage (21a-c) est chacune fermée par un couvercle (25a-c) qui est mobile entre un état fermé où le couvercle ferme cette extrémité et un état ouvert où le couvercle est incliné vers le haut et laisse cette extrémité ouverte, lequel couvercle est pourvu sur le dessous d'un bord surélevé (53) qui, dans l'état fermé du couvercle, se trouve à l'intérieur des parois du manchon de stockage (21a-c) et dont, dans l'état ouvert du couvercle, la partie inférieure (53A) est pourvue en son extrémité libre d'un bord pour l'égouttement (55) dépassant vers le bas (55). 25
- 30
8. Poêle à bois (1) selon une des revendications précédentes, **caractérisé en ce que** l'ouverture d'évacuation (9) près du fond (11) de la chambre de combustion (5) se trouve dans une paroi latérale (7) de la chambre de combustion **en ce que** le poêle à bois comprend de plus un tuyau (13) branché sur l'ouverture d'évacuation. 35
- 40
9. Poêle à bois (1) selon la revendication 8, **caractérisé en ce que** les parties inférieures (37) des parois (29) de la chambre de combustion (5) rétrécissent vers l'ouverture d'évacuation (9) en devenant coniques et **en ce que** le fond (11) de la chambre de combustion s'incline vers le bas vers l'ouverture d'évacuation (9). 45
- 50
- 55

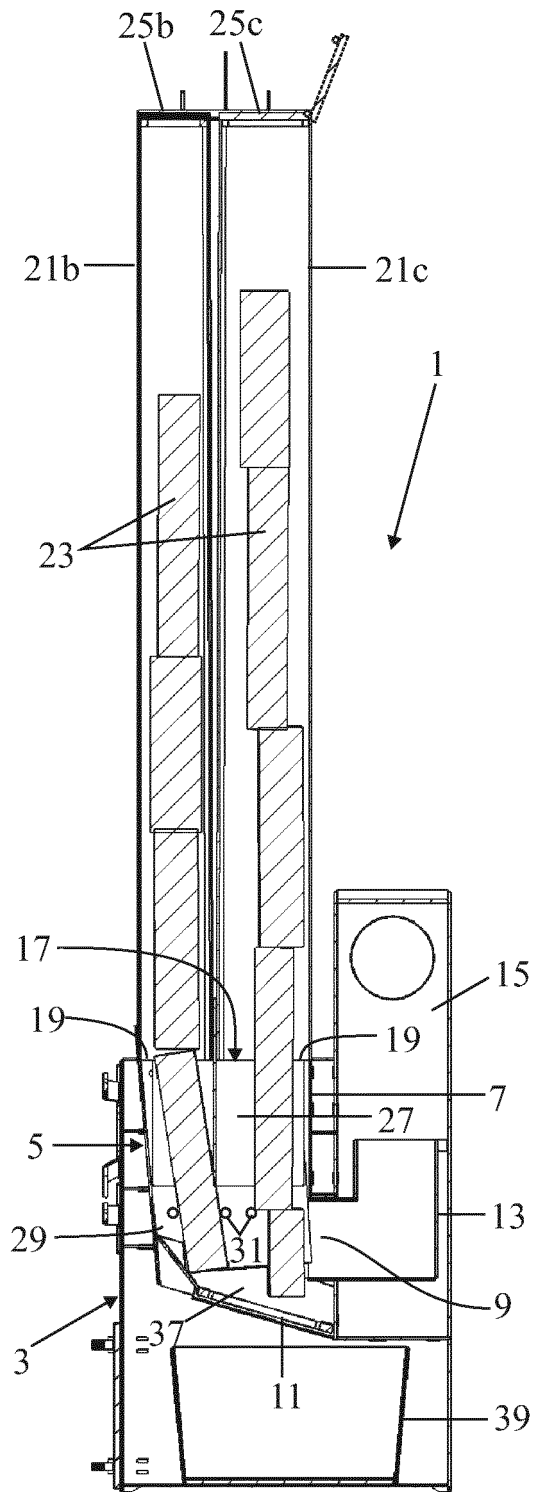


FIG. 1

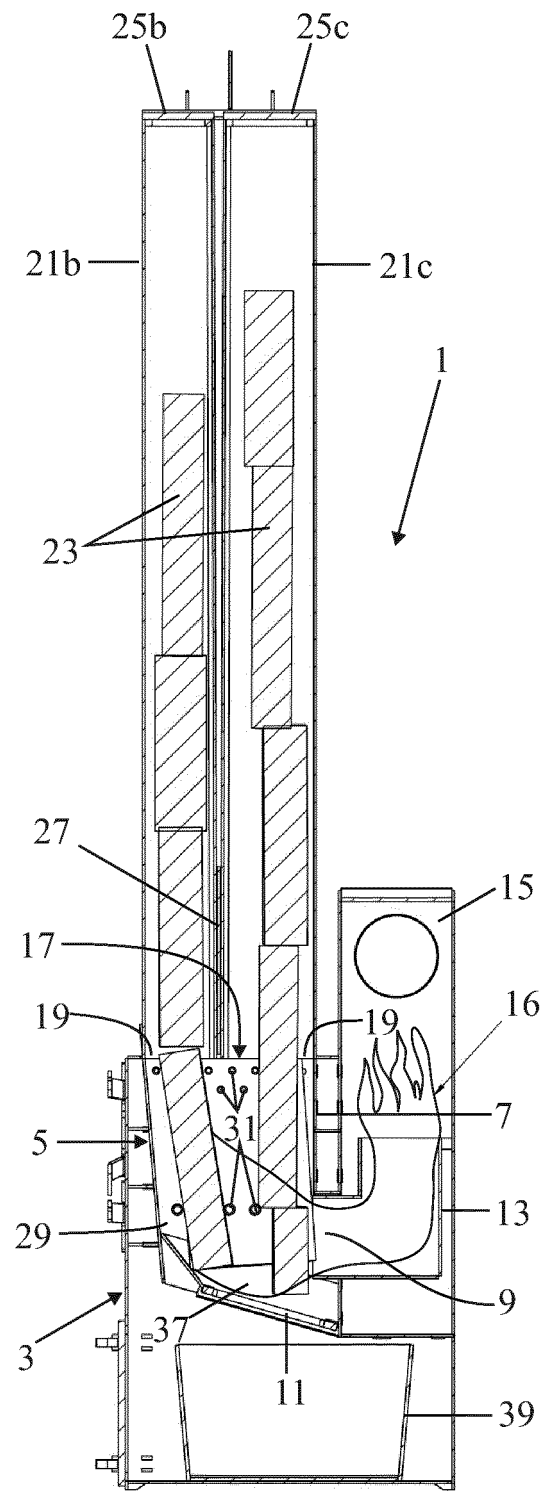


FIG. 2

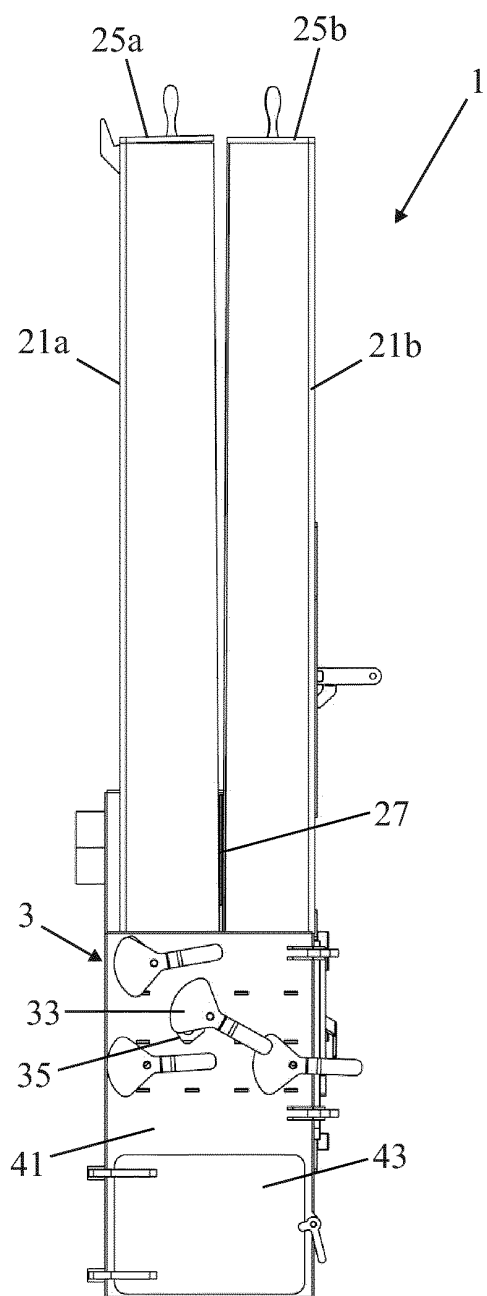


FIG. 3

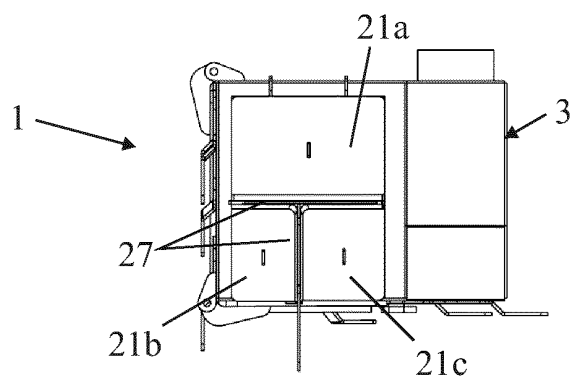


FIG. 5

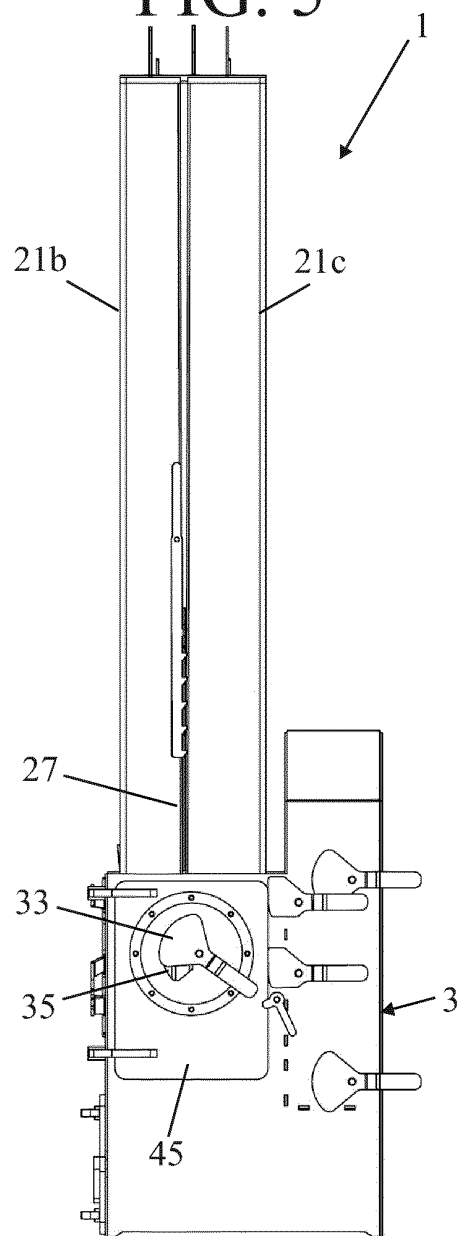


FIG. 4

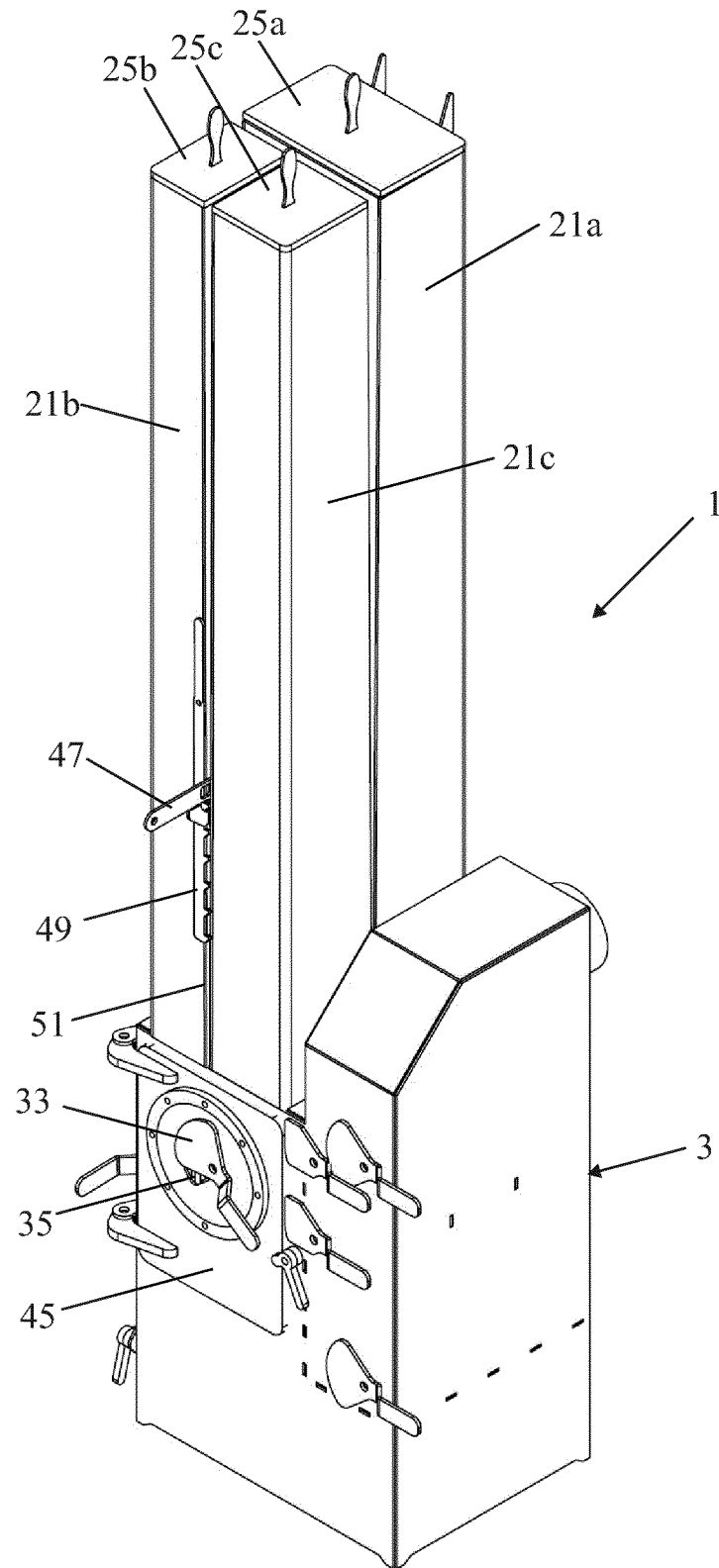
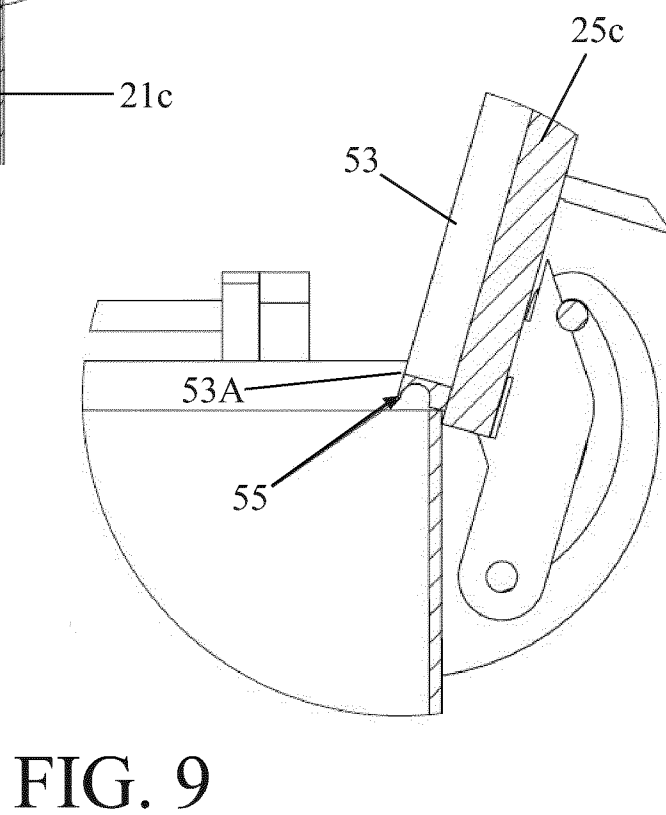
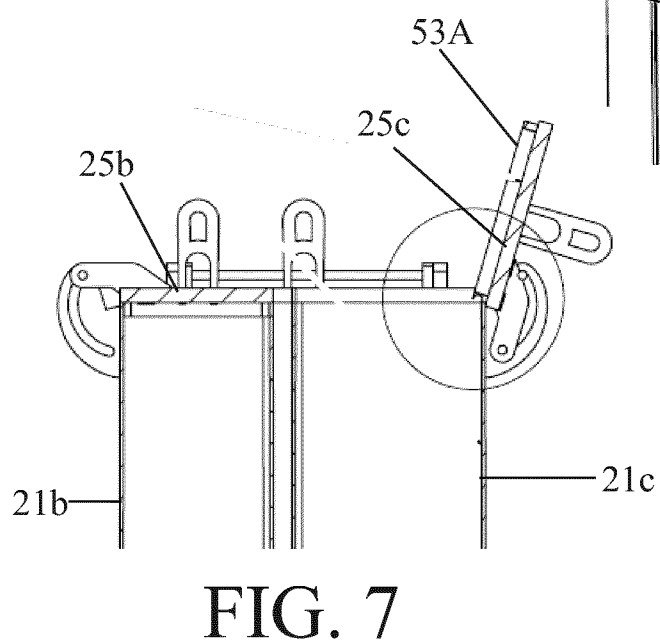
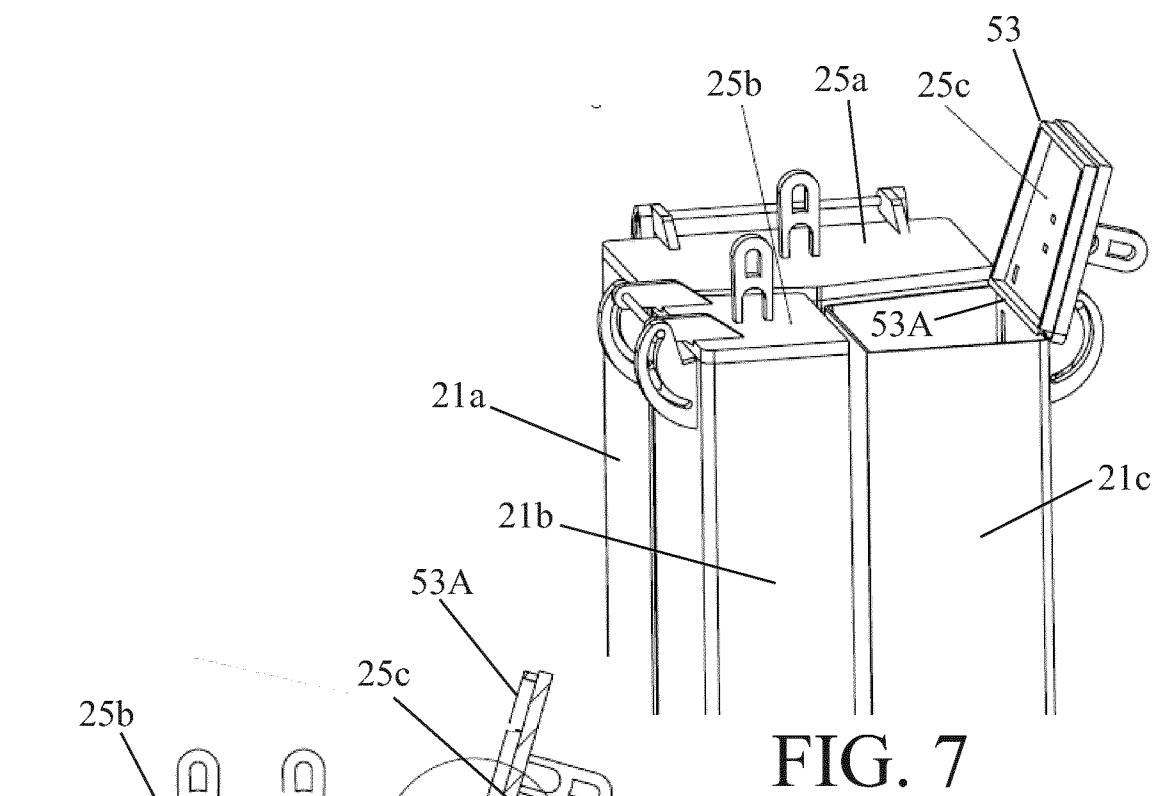


FIG. 6



REFERENCES CITED IN THE DESCRIPTION

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