

No. 640,028.

Patented Dec. 26, 1899.

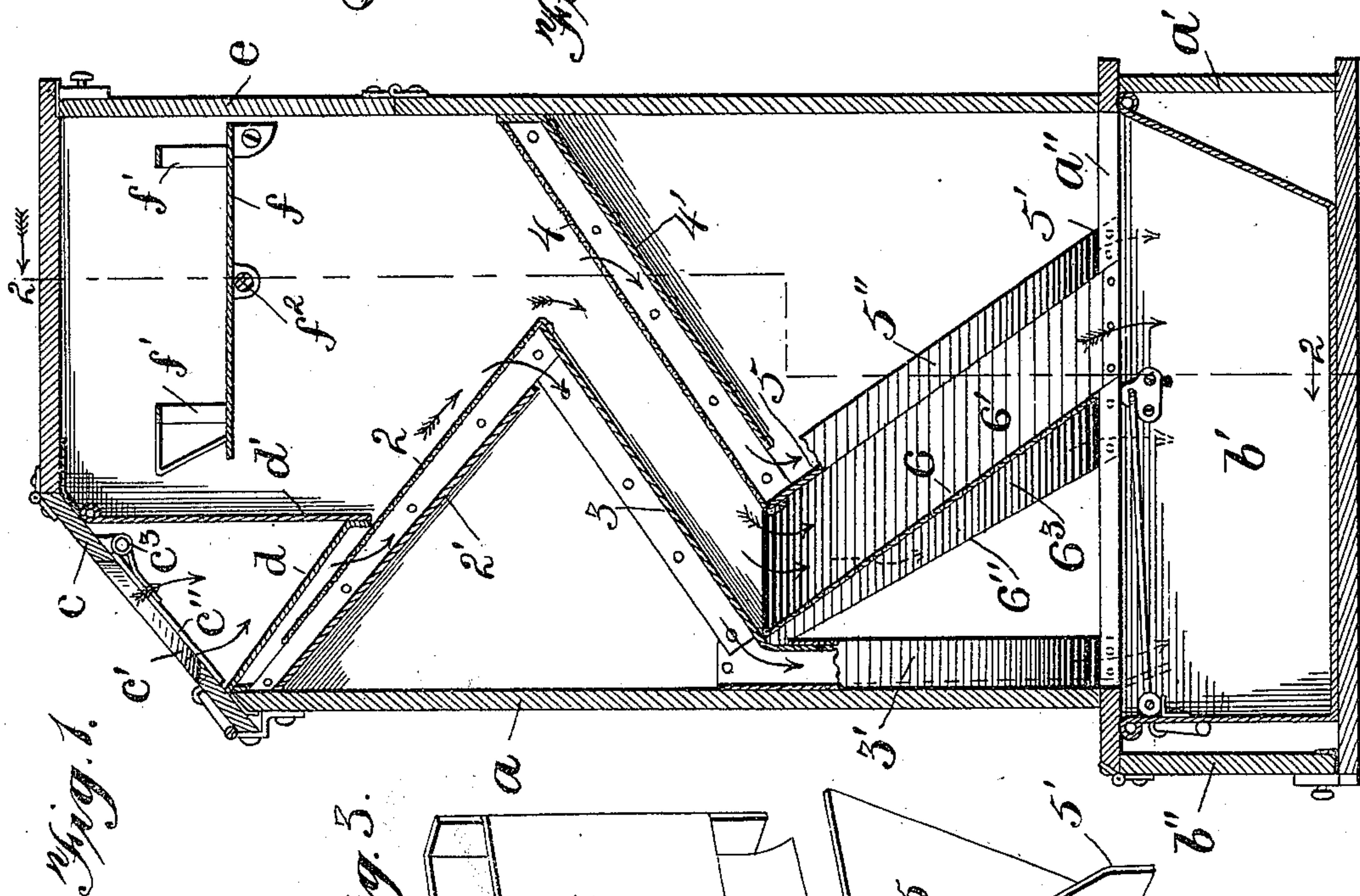
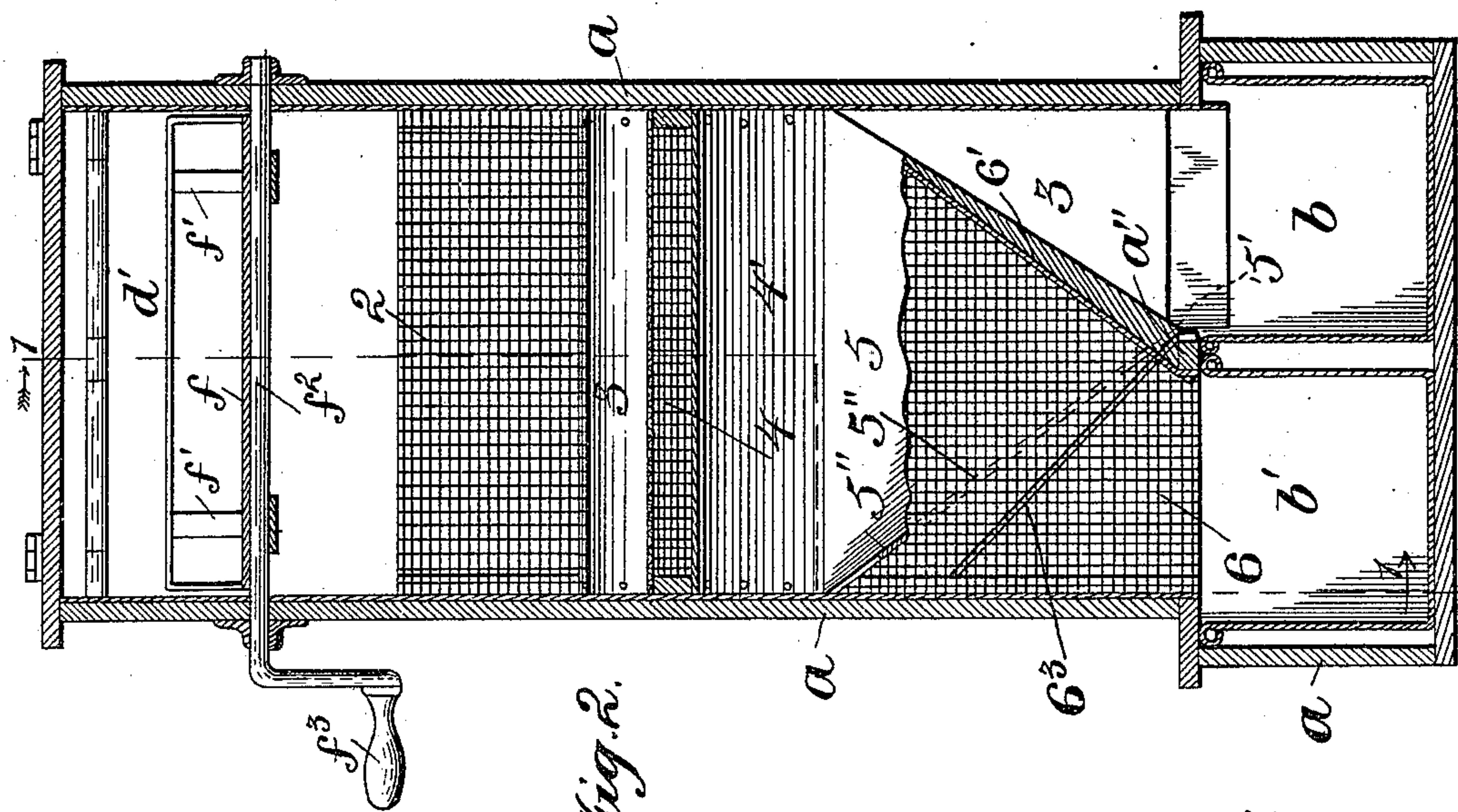
H. R. REYNOLDS.

ASH SIFTER.

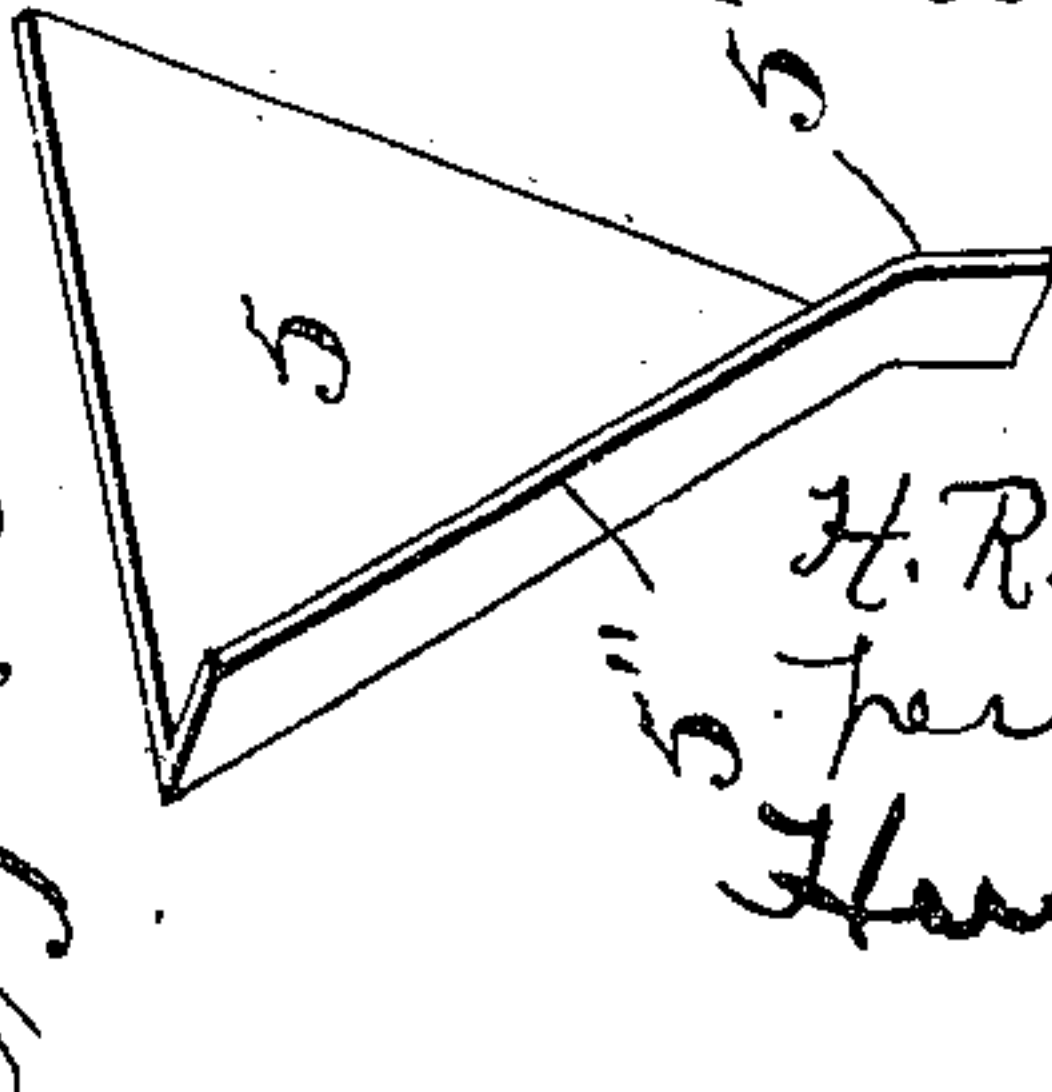
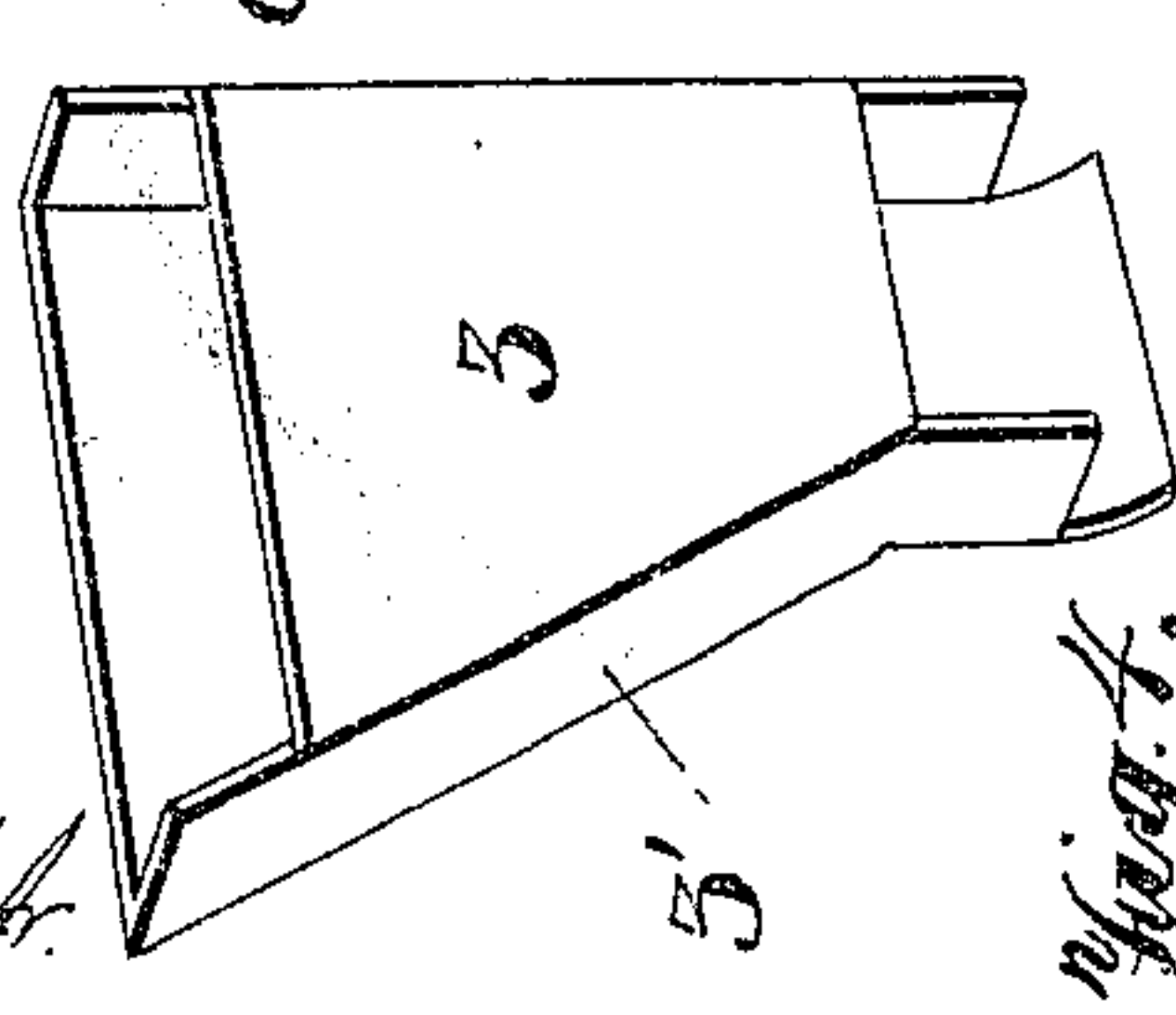
(Application filed Mar. 10, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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ASH SIFTER.

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(No Model.)

2 Sheets—Sheet 2.

Fig. 5.

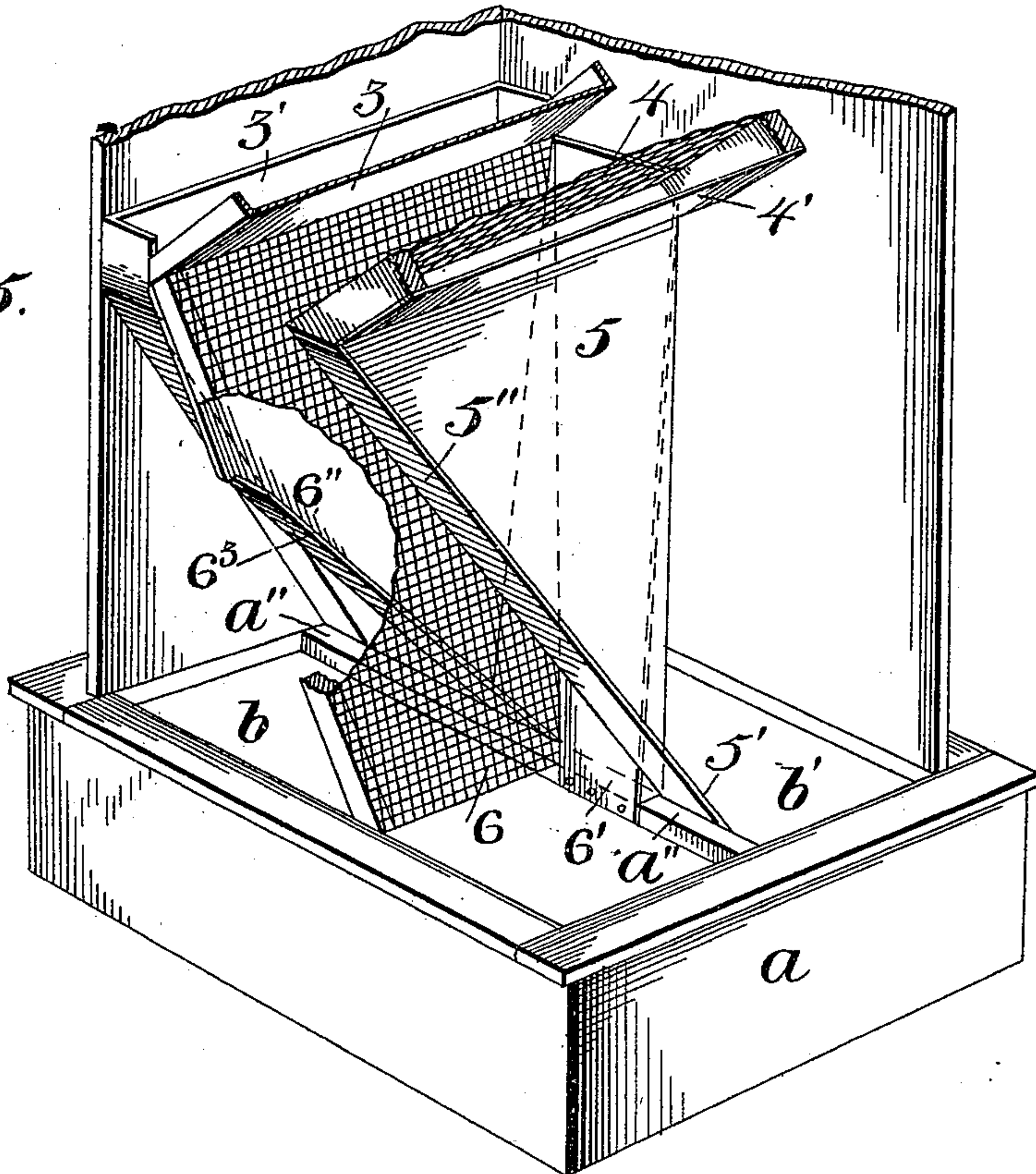
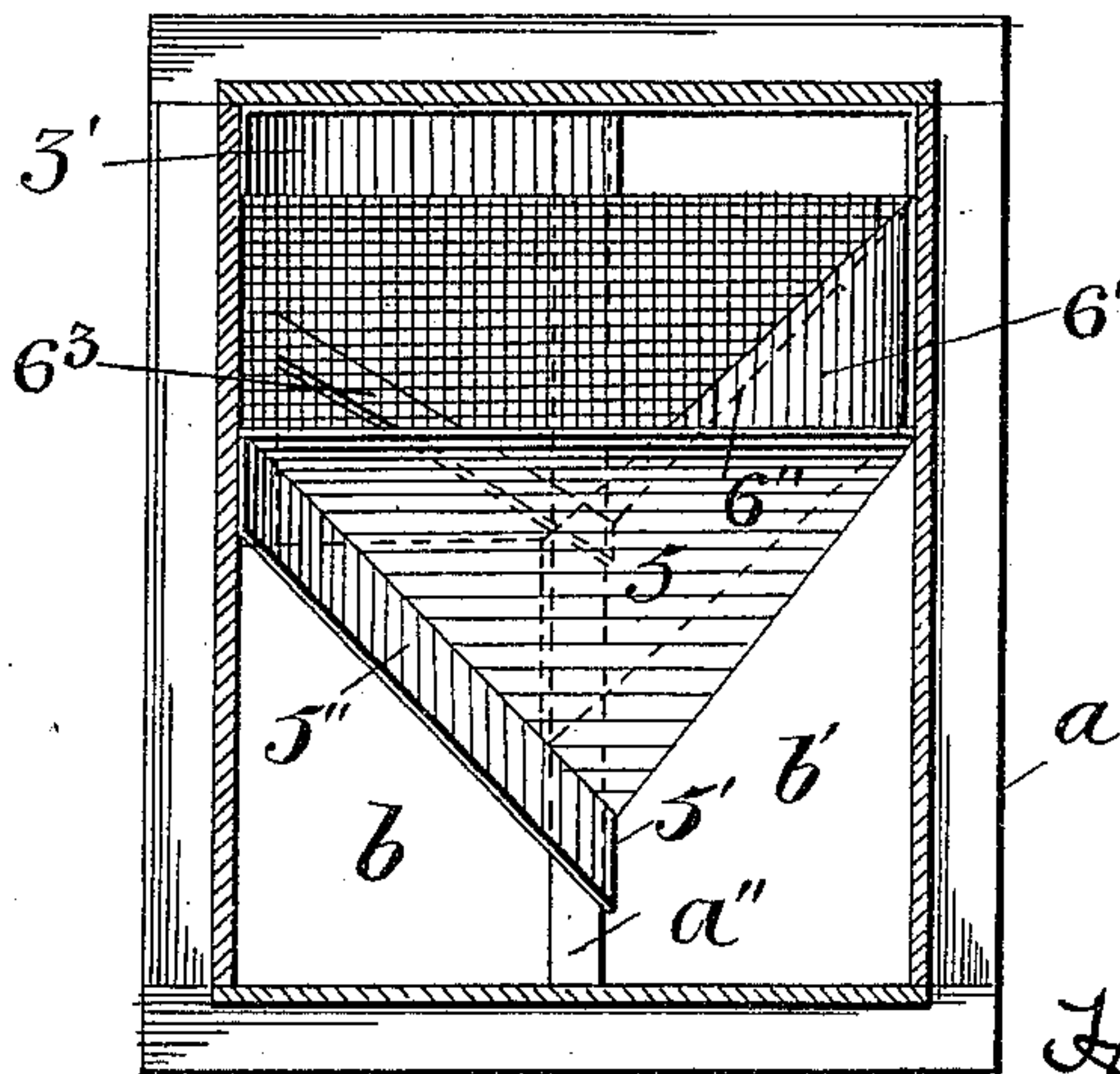


Fig. 6.



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UNITED STATES PATENT OFFICE.

HIRAM R. REYNOLDS, OF STOUFFVILLE, CANADA, ASSIGNOR OF ONE-HALF
TO MAURICE BRENT AND JOHN FRANCIS LENNOX, OF SAME PLACE.

ASH-SIFTER.

SPECIFICATION forming part of Letters Patent No. 640,028, dated December 26, 1899.

Application filed March 10, 1898. Serial No. 673,399. (No model.)

To all whom it may concern:

Be it known that I, HIRAM RANDALL REYNOLDS, of the village of Stouffville, in the county of York, Province of Ontario, Canada, have invented certain new and useful Improvements in Automatic Dustless Coal and Ash Sifters, of which the following is a specification.

This invention relates to certain improvements in household ash-sifters; and the objects and nature of the invention will be apparent to those skilled in the art from the following description of the accompanying drawings, which illustrate what is, so far as I am at present advised, the preferred construction within the spirit and scope of my invention.

My invention consists in certain novel features of construction and in combinations and in arrangements of parts, as more fully and particularly described and pointed out hereinafter.

Referring to the accompanying drawings, Figure 1 is a vertical section taken through the ash-sifter in the plane of the line 1 1, Fig. 2. Fig. 2 is a vertical section of the sifter in a plane at right angles to the plane of the section of Fig. 1 and taken on the line 2 2, Fig. 1. Fig. 3 is a detail perspective of the front inclosed ash-chute. Fig. 4 is a detail perspective of the rear ash slide or chute. Fig. 5 is a detail perspective view of the lower portion of the sifter, two of the side walls being removed and the lower or final coal-screen partially broken away, the slides and screen above also being shown partially broken away. Fig. 6 is a cross-sectional view looking down, taken through the sifter on a plane at the upper end of the chute 3'.

In the drawings, *a* is an upright box or case, usually, although not necessarily, rectangular in cross-section. The casing can be suitably lined with fireproof material, such as tin or sheet metal, and is mounted on a base *a'*, which is preferably of greater length and width than the case and is provided with the central top cross bar or piece *a''*, dividing the top of the base into two passages or openings above the two boxes or drawers *b b'*, respectively, removably located in said base. The base is provided with a swinging door *b''* at

the front to tightly close the front opening into the base and through which the said boxes or receptacles can be removed or inserted. The said boxes are separate from each other and rest side by side and parallel in said base, and one is intended to receive the ashes or ash-dust and the other the coal or cinders. The said swinging door is preferably provided with fastening means and with suitable packing at its edges to prevent escape of dust when the sifter is in operation.

The interior of the casing is provided with series of screens and slides, chutes, or deflectors arranged to separate the coal or cinders from the ash-dust and deposit the coal in drawer *b* and the dust in drawer *b'*.

2 is a screen arranged transversely across the upper part of the casing and extending from the front portion thereof downwardly and rearwardly. 2' is a similarly-inclined imperforate deflector or slide arranged a short distance below said screen. This screen and slide can be secured to cleats fastened to the inner faces of the sides of the casing, the screen being secured to the upper longitudinal edges of the cleats and the deflector secured to the lower edges thereof. The screens can be composed of wire-netting of the proper mesh, and the deflectors can be composed of sheets of tin or other sheet material. The screen projects downwardly beyond the edge of the deflector. Said screen is located a distance below the top of the casing, said casing having a closed top. The front corners of the upper ends of the sides of the casing are cut off at an angle, and a vertically-swinging door *c* is at its upper edge hinged to the front edge of the casing-top, so that the door swings down at an angle on the said inclined edges and the top edge of the front of the casing, and thereby tightly closes the opening beneath the door. Said door can be swung up onto the top of the casing to permit entrance of ashes into the screen 2, which is below the opening closed by said door. The door can be provided with suitable packing and also with a fastening.

The door is formed with an opening *c'* there-through, said opening being normally closed by a spring-flap *c''*. This spring-flap is located at the under side of the door *c* and at

its upper edge is hinged to said door *c*, and a spring *c*³ is provided, yieldingly holding said flap to the under side of the main door *c* to tightly close said opening *c'* and prevent escape of dust. The main door *c* when closed is located at the front upper portion of the casing and inclines downwardly and forwardly, and hence a coal-scuttle can be easily lifted and its nose or discharge-nozzle rested on said door at the lower portion of the opening *c'*. The scuttle can then be pressed inwardly and its nose will swing the flap downwardly and inwardly and permit discharge of the contents of the scuttle into the casing, while the flap pressing against the nozzle of the scuttle will limit the escape of dust to a minimum in conjunction with the mechanisms hereinafter referred to. As soon as the scuttle is removed the said flap will at once spring back to its normal position, tightly closing said opening.

A partition *d* extends from the upper edge of the front of the casing downwardly a distance along the screen 2, and a swinging valve *d'* normally closes the interior of the casing from the opening closed by the door *c*. This valve is suitably hinged along its upper edge to the top of the casing or a part rigid therewith, and its lower free edge closes against the rear lower edge of said partition *d* when the said valve is in its normal closed and approximately vertical position. This valve maintains its normal closed position by gravity, so that the weight of the ashes passed into the casing-opening will slide down partition *d* and swing back the valve and permit passage of the ashes onto the screen 2. The valve automatically closes as soon as the ashes have passed from beneath it, and hence egress of dust is prevented.

When it is desired to use a shovel in depositing the ashes in the sifter, the door *c* can be swung open and the ashes dropped into the opening, the valve closing the casing after the passage of each mass of ashes. This valve also acts in conjunction with the flap in preventing egress of dust when the door *c* is closed and the opening *c'* is being utilized for a scuttle or other receptacle.

In the upper portion of the interior of the casing, above screen 2 and in rear of valve *d'*, if desired, an ash-pan receiving and dumping mechanism can be provided. This mechanism is constructed to receive an ash-pan and dump the same without permitting the ash-pan to drop, and after dumping to return the pan to its upright position, so that it can be removed through an opening in the casing. The casing is provided with a suitable opening, allowing access to this pan-dumping device, which opening in the example shown in the drawings is at the rear upper end of the casing. A drop-door *e* is provided to close the opening, and said door is preferably provided with a suitable lock or fastening device and is provided with suitable packing to prevent escape of dust when the door is closed. This dumping mechanism consists of a platform *f*,

normally arranged in a horizontal position; so that the ash-pan can be placed thereon through said rear opening. Suitable confining stops and guides *f'* are rigid with the edges of the platform and extend upwardly and over the same, so that the pan slides onto the platform between the upright portions of said stops and beneath the upper horizontal connecting portions thereof, which constitute retainers or holders, the said dumping mechanism being so formed as to receive ash-pans of greatly-varied dimensions.

The platform is rigidly secured to a transverse rock-shaft *f*², mounted in suitable bearings in the sides of the casing and at one end provided with a crank-operating handle *f*³ at the exterior of the casing. The said shaft is arranged about centrally of the platform, so that the same is approximately balanced on the shaft.

The holder is so arranged with respect to the screen 2 and the valve *d'* that by means of the crank-handle said holder can be rotated to reverse the ash-pan above the screen 2, and thereby decant or empty the contents thereof onto the screen. When the platform and the pan are so reversed, the pan rests on and is upheld by the retainers or stops, before described, which also prevent the pan sliding off the front edge of the platform as the same is being tilted.

3 is an imperforate deflector extending downwardly and forwardly from the lower edge of the screen 2 and a distance below the lower edge of the deflector 2'. This deflector or slide 3 is rigidly secured to the inner faces of the sides of the casing and extends down to the open mouth of the chute 3', arranged vertically just within the front wall of the casing and inclined laterally and downwardly at one edge with its lower open end discharging into the front of the dust box or drawer *b'*. At its upper end the vertical chute 3' extends across the full width of the casing, and from its upper end the said chute tapers down on one side with the contracted discharge at the open end of said dust-box. This chute is preferably closed at the front and rear and both side edges and can be formed of tin or other sheet metal. The deflectors or slides 2' and 3 and chute 3' thus dispose of the dust falling through screen 2.

4 is a screen arranged approximately at right angles to the upper or top screen 2 and arranged to receive the material falling from the lower edge of said screen 2. This screen 4 is secured to the upper longitudinal edges of wooden or other material cleats or strips secured along the inner faces of the sides of the casing. The said screen 4 extends from the rear wall of the casing downwardly and forwardly a proper distance below the lower edge of screen 2 to prevent clogging of the material between said screens.

4' is an imperforate sheet-metal slide or deflector secured along the under edges of said cleats carrying screen 4, and said deflector is

arranged beneath and designed to catch all the dust falling through said screen 4, and its lower edge is arranged above the lower edge of screen 4 to afford a passage for the dust from deflector 4' to the upper part of chute or deflector 5. This chute 5 is composed of imperforate sheet metal and extends from the lower edge of screen 4 downwardly and rearwardly and at its lower edge is secured to the cross-bar a'' at a point intermediate the length thereof. This chute 5 is V-shaped with the inclined discharge edge 5' over the dust-box b' and the inclined deflector or flanged edge 5'' over the coal-box b to prevent the dust falling from chute 5 into the coal-box and deflecting the same, so as to fall into the dust-box.

The second screen 4 discharges the coal and other material passing down the same onto a third and final screen 6, extending downwardly and rearwardly from the lower edge of slide 3 a distance beneath and in front of the V-shaped slide 5 and discharging into the coal-box b , above the open top of which the lower edge of said screen is arranged. At one edge this screen 6 is secured to a cleat or strip secured to the inner face of one side of the casing. The opposite edge of the screen is inclined downwardly and laterally to the coal-box and is provided with an inclined deflector 6', closing the space between said screen 6 and the slide 5, and thereby preventing escape of the coal from screen 6 into the dust-box and assuring its proper discharge into the coal-box.

6'' is a V-shaped imperforate sheet or slide arranged beneath the third or final screen 6 and at its lower or pointed end secured to the cross-bar a'' and having the discharge edge over the dust-box and the inclined edge over the coal-box guarded by flange 6³ to prevent the dust passing into the coal-box and deflecting the same into the dust-box. This slide 6'' is practically the same in shape as slide 5, which receives the dust from the second screen in the series. It will thus be noted that however the debris is discharged into the sifter it is passed automatically by gravity from screen to screen until the thoroughly-cleansed coal or cinders are discharged from the final screen into the coal-box. The coal rolls down screen after screen and is jarred and shaken to free the dust therefrom by falling from screen to screen. The dust from the first screen is conveyed into the front chute, which contracts downwardly and discharges the same into the dust-box. The dust from the second and third screens is discharged into separate chutes, respectively, which deflect the same laterally into the dust-

box. The dust and coal are thus kept separately in their respective boxes and can be conveniently removed.

What I claim is—

1. An ash-sifter comprising an upright casing, inclined screens therein, the casing provided with an opening therethrough above a screen, an inclined partition below the opening and above said screen, the vertically-swinging valve above said screen and cooperating with said partition, a flap hinged at its upper edge to swing inwardly, said door arranged behind said opening, and a spring device yieldingly holding the flap inwardly to tightly close said opening, whereby the nozzle of a scuttle rested on the lower edge surrounding the opening can press said flap inwardly and permit discharge of its contents onto the screen, substantially as described.

2. An ash-sifter comprising the upright closed casing, inclined screens and deflectors therein, two receptacles in the base of the casing to receive the coal and dust, respectively, means to deflect the coal and dust to their respective receptacles, the casing having an opening above the top screen, a swinging door to close said opening, said door having an opening therethrough, a spring-controlled flap hinged to said swinging door and normally closing said opening in the swinging door, and a vertically-swinging upright valve hinged at its upper edge in the casing above said top screen and arranged to normally close the interior of the casing from the opening closed by said door, substantially as described.

3. The ash-sifter comprising the vertical casing having a top door and a base provided with a door, the dust and coal drawers arranged side by side in said base, a cross-bar a'' , above the adjoining sides of said drawers, the oppositely-arranged and inclined coal-screens in a vertical series in the casing, a guide on the lower or final screen deflecting the material thereon into the coal-drawer, dust-slides under the upper screens, dust-chutes 3', 5, receiving the dust from said slides, said chutes having inclined side guides deflecting the dust into the dust-drawer and secured at their lower ends to said cross-bar, and the dust-chute 6'', beneath said final screen and secured to the cross-bar and having the side guide, substantially as described.

Signed at Toronto, in the county of York and Province of Ontario, Canada, this 3d day of March, 1898.

H. R. REYNOLDS.

In presence of—

FRANCIS HORE,
F. E. ARTHUR.