

E. PANNENBORG.  
 SUCTION NOZZLE FOR DUST AND ASH REMOVING DEVICES.  
 APPLICATION FILED MAR. 17, 1909.

952,840.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

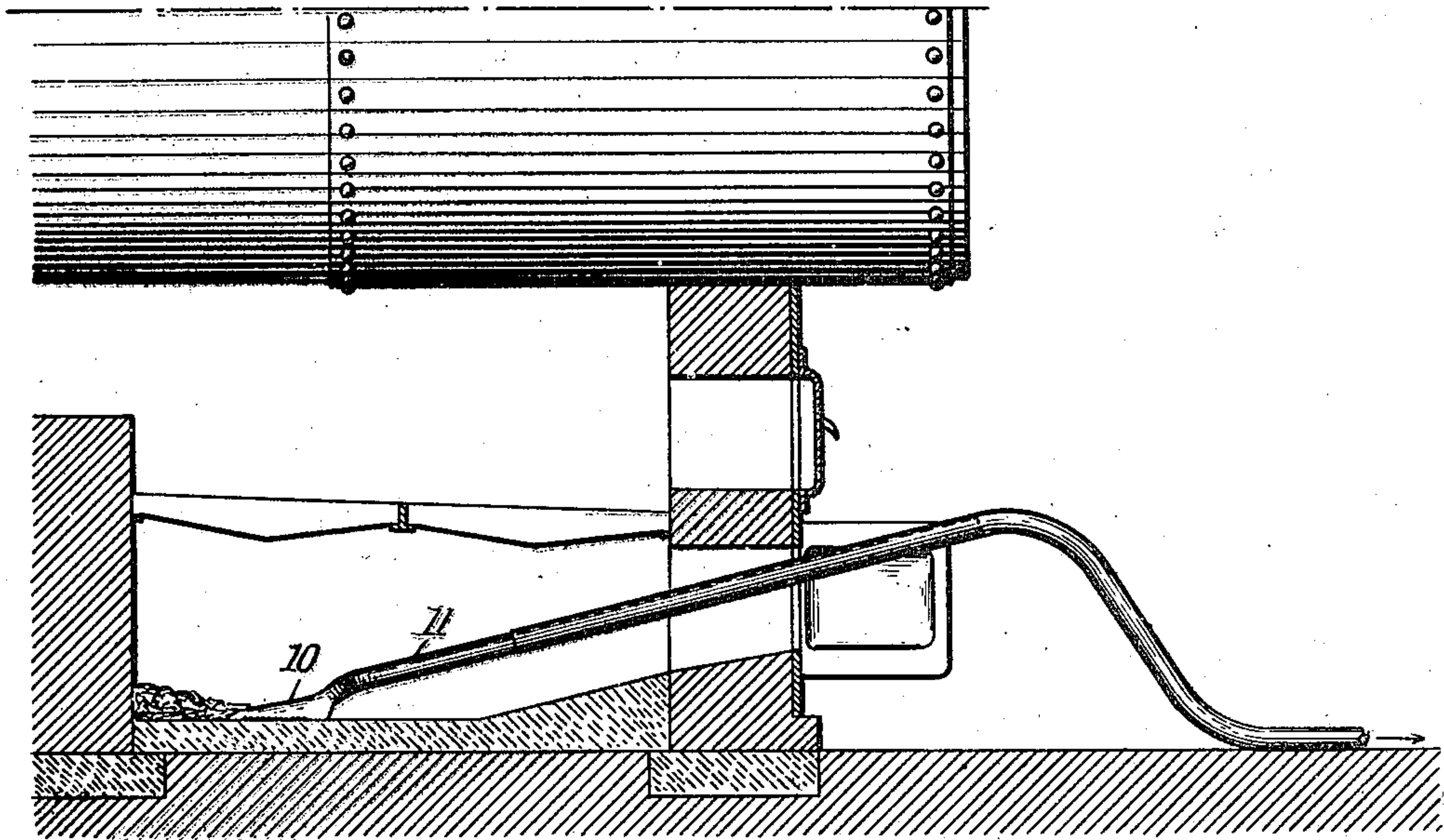
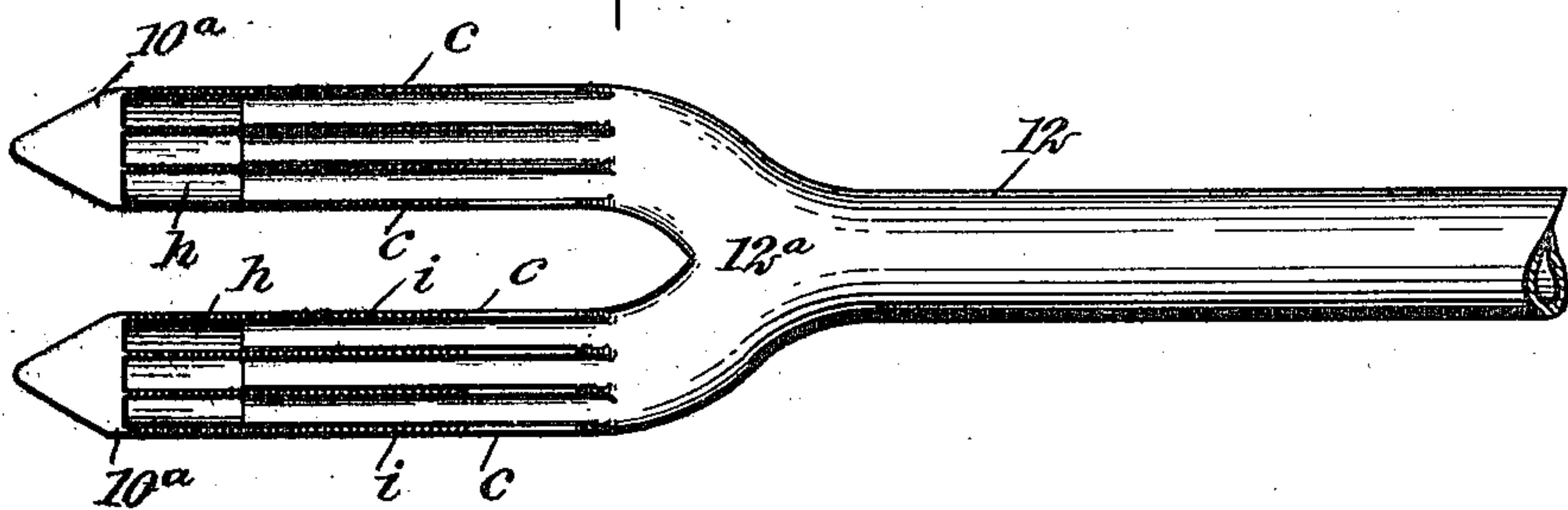


Fig. 2.



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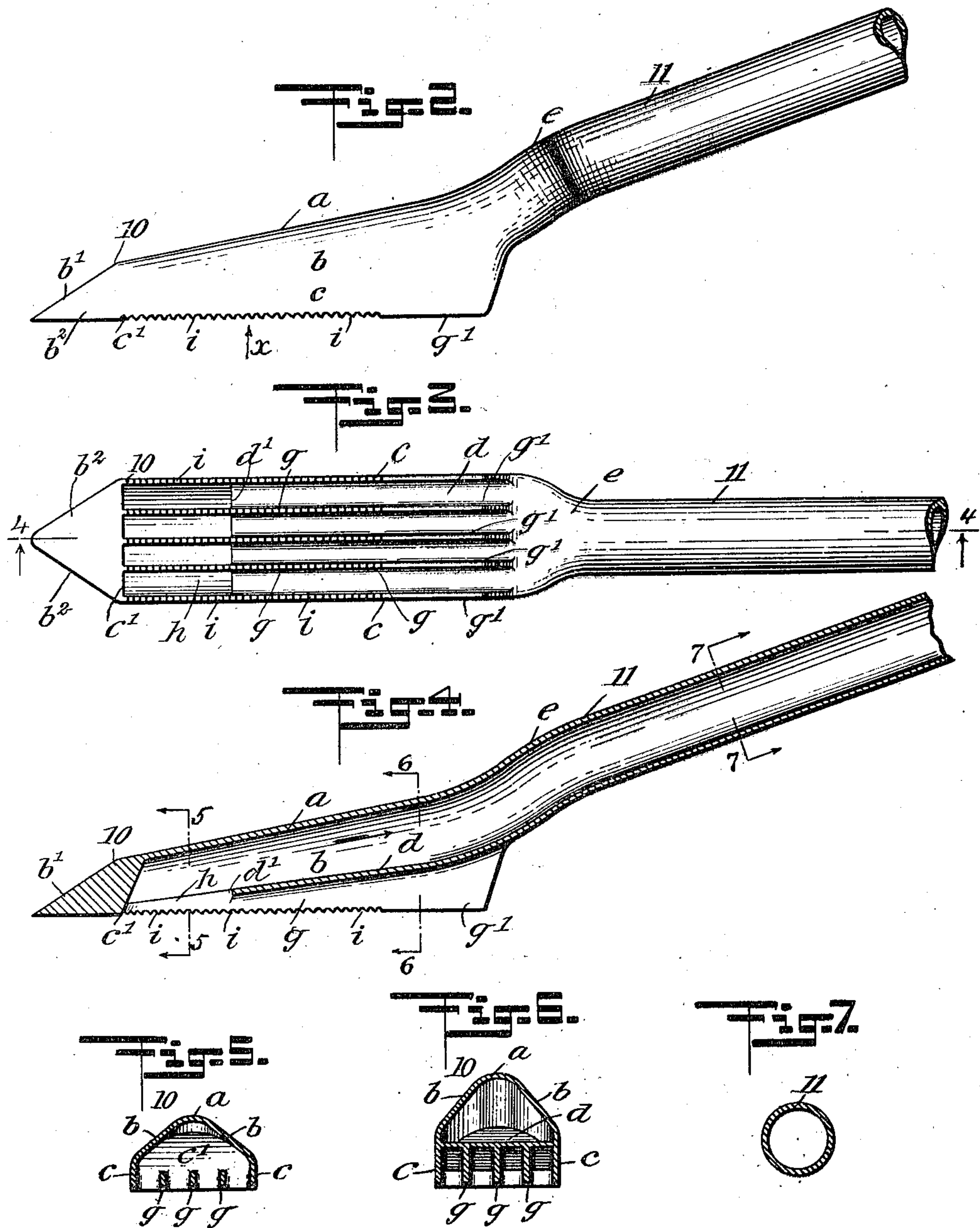
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# UNITED STATES PATENT OFFICE.

ERICH PANNENBORG, OF SYRACUSE, NEW YORK.

SUCTION-NOZZLE FOR DUST AND ASH REMOVING DEVICES.

Specification of Letters Patent. Patented Mar. 22, 1910.

952,840.

Application filed March 17, 1909. Serial No. 484,042.

To all whom it may concern:

Be it known that I, ERICH PANNENBORG, a subject of the German Emperor, and a resident of Syracuse, in the county of Onondaga and State of New York, have invented a new and Improved Suction-Nozzle for Dust and Ashes Removing Devices, of which the following is a full, clear, and exact description.

10 This invention relates to means for separating and removing fine ashes from such waste products of fuel combustion as accumulate in the ash pits of steam generators or below the fire chambers in hot air furnaces.

15 The purpose of the invention is to provide novel, simple and practical details of construction for a dust and ashes suction nozzle and its combination with air exhausting means, which enable the speedy and thorough removal of fine ashes from the ash pit of a furnace or the like, and the transfer of such material to a point of discharge.

25 The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of the improvement applied for the removal of fine ashes from the ash pit of a combustion chamber of a steam generator; Fig. 2 is an enlarged side view of the improved suction nozzle, and a pipe extended therefrom; Fig. 3 is a reversed plan view of the same, seen in the direction of the arrow *x* in Fig. 2; Fig. 4 is a sectional side view on the line 4—4 in Fig. 3; Fig. 5 is a transverse sectional view on the line 5—5 in Fig. 4; Fig. 6 is a transverse sectional view on the line 6—6 in Fig. 4; Fig. 7 is a transverse sectional view, on the line 7—7 in Fig. 4; and Fig. 8 is a reversed plan view of a slightly modified form of the improvement.

30 The body of the improved nozzle is cast or otherwise formed into shape from a suitable metal, and essentially comprises an arched top wall 10, the form of which is clearly shown in Figs. 4, 5 and 6, having a curved apex *a*, and similarly inclined sides *b*, that merge at their lower ends in the up-

right side walls *c*. The forward end *b'* of the body 10 is shown solid but may be recessed and slopes downward, this inclined wall joining a flat bottom, the sides thereof and said bottom being flattened, as appears *eo* at *b''* in Fig. 3, and the latter terminates at *c'* in an upward and rearwardly inclined wall. The rear end of the body 10 is formed integral with a tubular extension 11, and as appears in Fig. 4, a transverse partition *d* *es* extends forward from the bottom of said conduit or tubular extension, the latter preferably having an offset bend *e* at its junction with the body 10. The partition *d* engages the inner surfaces of the side walls *c*, *70* near their points of connection with the inclined sides *b*, as is clearly shown in Fig. 6, and as appears in said view, a plurality of spaced ribs *g* project downward from the partition *d*, their free lower edges *g'* being *75* level with the corresponding edges on the side walls *c*. The partition *d* terminates at *d'*, thus permitting an opening *h* to be formed between the transverse wall *c'* and the forward edge *d'* of the partition, said *80* opening being partially covered by the thin ribs *g* that extend forwardly, and at their forward ends are joined to the transverse wall *c'*. A suitable number of the spaced ribs *g* are employed, and each rib on its *85* lower edge is formed with a series of teeth *i*, said edges occupying the same horizontal plane with the lower edges of the side walls *c*, that are also serrated on their edges.

To adapt the improvement for effective *90* service, the tubular portion 11 is given sufficient length to adapt it to serve as a conduit for fine ashes, through the same to a selected point of discharge, which may be into a receptacle such as an ash can or the *95* like, an exhaust fan blower or the like (not shown) being introduced in the conduit.

In use, the pipe 11 is taken hold of as a handle, and the nozzle 10 is inserted into the ashes that may have accumulated below *100* a fire chamber of a steam boiler or hot air furnace. The operator thoroughly stirs the pile of ashes, that may be fine dust mingled with coarser particles, by pressing the handle down and then raising it, thus correspondingly moving the front end of the nozzle so as to agitate the mass of material; therefore as a current of air in the direction of the arrow in Fig. 4 is produced by the exhaust fan or other means, the fine ashes *105* *110*



will be drawn into the opening *h*, and thence conveyed through the conduit to a point of discharge therefor.

It will be seen that the ribs *g* prevent the entrance of lumps of refuse that would obstruct the passage of the fine ashes through the conduit 11, and they also facilitate the crushing of caked ashes by their impact thereon produced by proper manipulation of the nozzle, the teeth *i* serving to disintegrate the lumps or cinders that are forcibly engaged by the ribs *g*.

It will be noted that the sloped sides *b* of the arched top of the nozzle 10 permit the ashes to drop therefrom when the implement is in use.

In Fig. 8 a modified form of the device is shown. In this construction the nozzle is bifurcated, providing two similar nozzles 10<sup>a</sup>, that are joined together at their rear ends, that merge at 12<sup>a</sup> into a tubular conduit 12, each of said twin nozzles being formed similarly to the nozzle 10, hereinbefore described. The device as constructed in Fig. 8, provides a larger surface for engagement with a pile of ashes, and may be advantageously used where there is a body of ashes of considerable size to be removed from an ash pit.

It will be seen that the described nozzle can be used as a screening device for coal mixed with fine ashes, especially when anthracite coal is burned in a furnace, as by the insertion and free manipulation of the nozzle on a quantity of mingled coal and ashes, the material will be practically screened and the coal thus separated may be burned in the furnace.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A suction nozzle, comprising an elongated body having a horizontal partition extending between the sides of the body and terminating short of the front end thereof, whereby an opening is formed, and spaced ribs projecting from the partition flush with the sides of the body, said ribs extending across said opening and secured to the forward end of the nozzle.

2. A suction nozzle, comprising an elongated body having a tubular extension at its rear end, a horizontal partition extending from the bottom of the extension between the sides of the body above the lower edges of the same, said partition terminating short of the front end of the body, and spaced ribs depending from the partition flush with the sides of the body, said ribs extending to the front of the body and secured thereto.

3. In a device of the character described, the nozzle, embodying an elongated hollow body, an arched top wall thereon, a tapered front end, depending side walls, a tubular extension on the rear end of the body, a transverse partition extended forward from the lower side of the partition, the body having an opening therein between the partition at its forward end and the rear wall of the tapered front end, and a plurality of spaced ribs having serrations in their lower edges and extended from the tubular extension to the tapered front end and crossing the opening thereat.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERICH PANNENBORG.

Witnesses:

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