

No. 704,037.

Patented July 8, 1902.

J. C. HOOPER.  
LOCOMOTIVE SANDING DEVICE.

(Application filed Mar. 6, 1902.)

(No Model.)

Fig. 1.

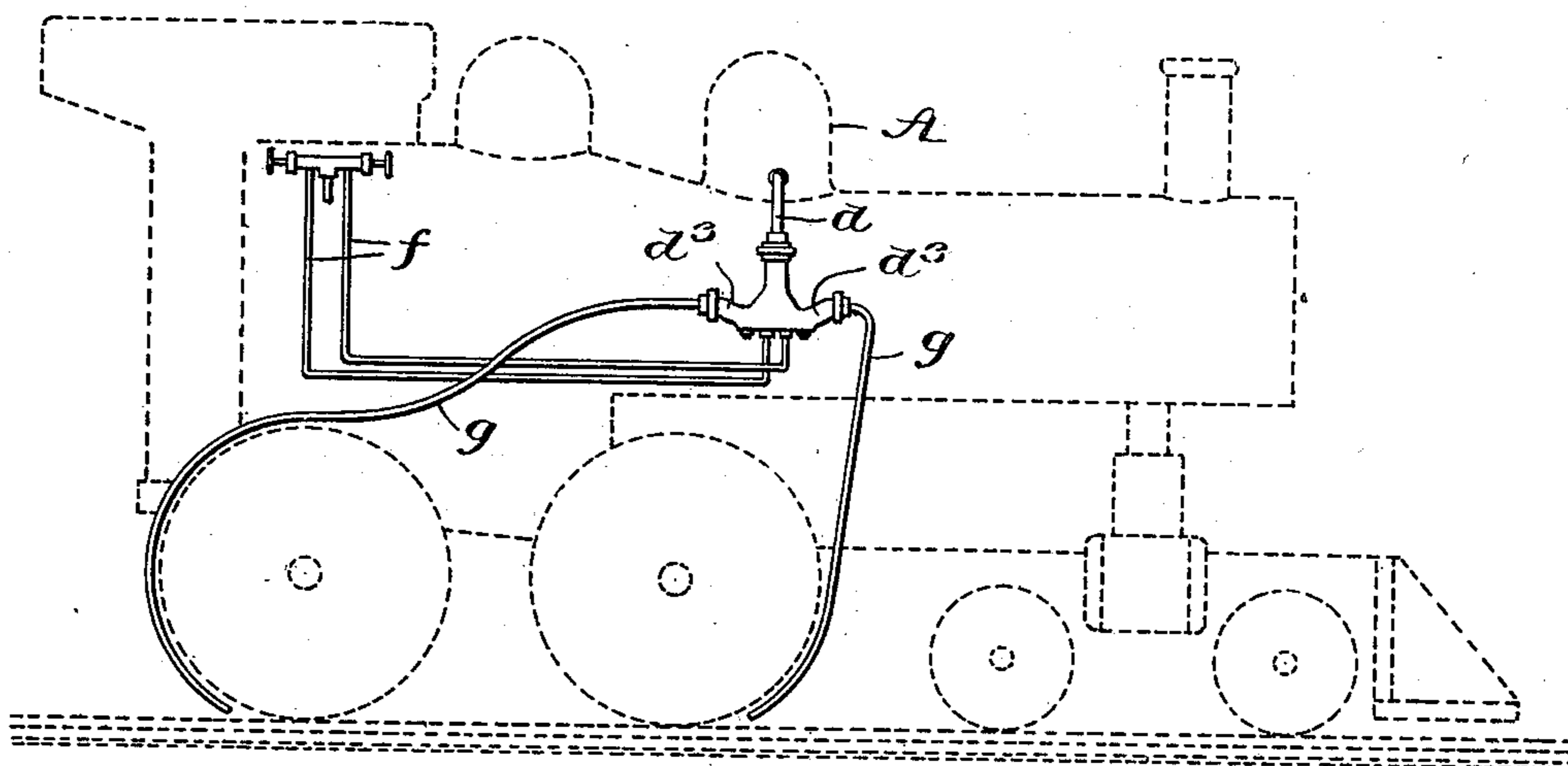
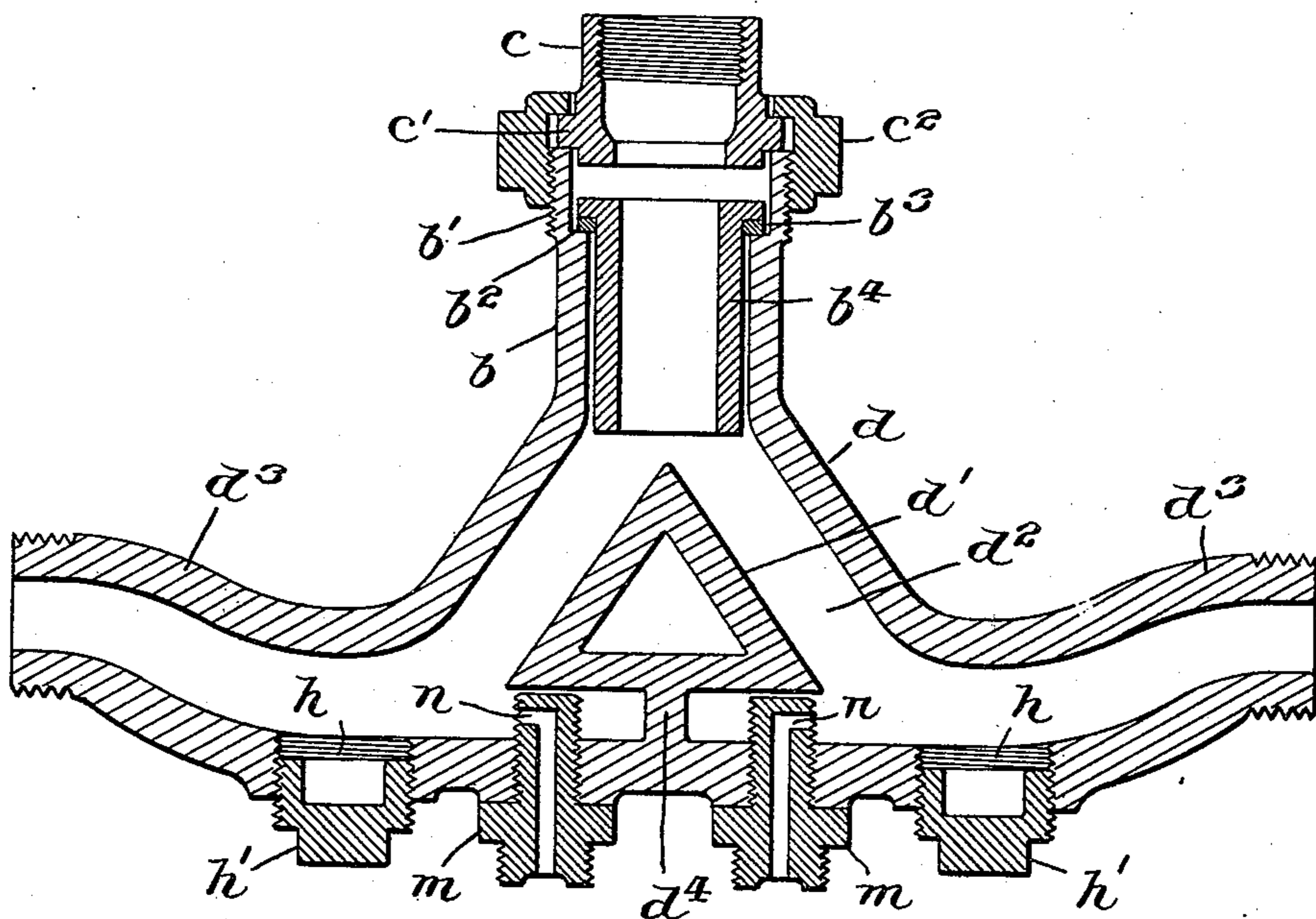


Fig. 2.



WITNESSES:

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## LOCOMOTIVE SANDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 704,037, dated July 8, 1902.

Application filed March 6, 1902. Serial No. 96,888. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN CAMPER HOOPER, a citizen of the United States, residing in the city of Baltimore, State of Maryland, have  
5 invented certain new and useful Improvements in Locomotive Sanding Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this  
10 specification.

My invention relates to locomotive sanding devices and is designed to provide a track-sanding device for locomotives, adapted to be supported on the side of the engine and out-  
15 side the sand-dome instead of inside the latter, as usual; and although it embodies the fundamental principle of construction of the inside sanding device patented to me by Letters Patent of the United States No. 652,212,  
20 dated June 19, 1900, it is a different embodiment of that principle and contains novel features of construction distinctively its own. As in my former device, described in said patent, the ultimate objects sought to be at-  
25 tained by my present invention are the regulating and control of the quantity of sand to be discharged by the air-blast at each operation of the blast and the prevention of clogging of the sand-discharge valves and pas-  
30 sages.

To these ends my present invention consists of the several elements and in their combination and arrangement to adapt them to be supported and operate outside the sand-dome  
35 and to regulate the discharge of sand therefrom by the air-blast to the track.

In the drawings, to which reference is made, Figure 1 is a side elevation of an engine, its sand-dome, the sand-pipe leading therefrom  
40 to the sander, the sand-delivery pipes leading therefrom to the track, the air-blast pipes leading to the sander, and my improved sanding device in its relation to these several parts; and Fig. 2 is an enlarged sectional  
45 view, taken longitudinally, of my improved sanding device.

The sand-dome or containing receptacle for sand usually employed on a locomotive-engine is indicated at A, and *a a* are the sand-pipes  
50 leading therefrom to my sanding device. *f f*

are the air-blast pipes leading to the sanding device from the cab of the engine, the supply of air-pressure being under the control of the engineer through the usual medium of an attached cock or valve. (Not shown in  
55 the drawings, because well known.) Sand-delivery pipes *g g* lead from the sanding device around the wheels, as usual, to the track-rails. Ordinarily these valvular sanding devices are placed within the sand-dome A; but  
60 it is to be observed that my present sanding device is located entirely outside of the dome and is secured upon the side of the boiler or frame of the locomotive-engine.

Referring now to Fig. 2, the upper portion  
65 or receiving end *b* of the sander is tubular and has an exteriorly-screw-threaded end *b'*, while interiorly said end is of relatively enlarged diameter, providing an annular supporting-ledge *b<sup>2</sup>*, upon which is placed a  
70 washer *b<sup>3</sup>* and upon it a sleeve *b<sup>4</sup>*. A screw-threaded pipe-nut *c*, provided with an exterior annular flange *c'*, rests upon the end of the tubular portion *b'* and is secured in place thereon by the flanged locking screw-ring *c<sup>2</sup>*.  
75 The sand-pipe *a*, leading from the dome A, couples with the said pipe-nut *c*. The function of the removable sleeve *b<sup>4</sup>* or of any other like sleeve of different internal diameter is to regulate the quantity of sand delivered  
80 through the same to the air-chambers of the sander. The central body *d* of the sander is substantially of the form of a hollow frustum of a cone, at the base of which is a solid conical body *d'*, so that the hollow pas-  
85 sage-way therein for sand is an inclined tubular passage *d<sup>2</sup>*. Proceeding from the base of the central body *d* of the sander, on opposite sides thereof, are tubular arms *d<sup>3</sup>*, these being slightly curved longitudinally and  
90 screw-threaded at the end to couple with the sand-discharge pipes *g g*. At the base of the sander, at or about the junction of the passage *d<sup>3</sup>* with the passage *d<sup>2</sup>*, are provided openings *h h*, serving as hand-holes and  
95 closed by screw-caps *h' h'*. At the central base of the sander openings are provided, into which are screwed air-blast nipple-tubes *m m*, and to the projecting ends of these are coupled the blast-pipes *f f*, leading to the cab  
100

and controlled by the engineer's valve, as before stated. These nipple-tubes  $m\ m$  have a passage  $n$ , the outlet or discharge end of which is preferably at right angles to the inlet end, as shown, and is necessarily and required to be in line with the longitudinal direction of the tubular arms  $d^3$ . It is preferably located beneath the outer edge of the base of the solid conical body  $d'$  within the interior of the body of the sander and is necessarily and required to be at the base of the inclined passage  $d^2$  and at the rear of and in alinement with the tubular and slightly-curved passage  $d^3$ . In the drawings my device is shown as a double sander—that is to say, with two opposite discharge-passages  $d^3\ d^3$  and with duplicated air-nozzles  $n$  on each side of the partition-wall  $d^4$  of the shield; but it is obvious that the device can be made single instead of double.

The functions of the several parts and the utility of the device as a whole may be briefly described from the following statement of the mode of operation—namely, an outside sander is provided, every interior part of which is at all times readily accessible, and clogging with stones or other foreign matter is for that reason, as well as by reason of the character of the sand-passages, wholly avoided. The tubular receiving end of the sander is readily adjusted as to size by the adjustable sleeve, whereby the quantity or volume of flow of sand, which falls by gravity from the dome, is controlled. The inclined passage-way  $d^2$  is at all times practically free from air-blast pressure and readily delivers the falling sand to the air-chamber proper, which is the tubular discharge ends  $d^3\ d^3$ , and these being upwardly curved toward their ends constitute a measuring-chamber, because it is obvious that by reason of such end curvature the flow of sand by gravity will be held in check when said tubular chamber  $d^3$  becomes filled with sand. The location and arrangement described of the air-blast nipple-tubes  $m\ m$ , with their discharge-openings  $n$  at the base of the chamber, with the superposed shield therefor formed by the base of the conical body  $d'$ , never interferes with but rather accelerates the downward flow of sand by gravity through the inclined passage  $d^2$ , because I believe the described relative arrangement of the parts creates a suction at the base of said inclined passage, and said discharge-nozzle  $n$  being at the rear of the tubular discharge-passage  $d^3$  and in alinement therewith readily and completely causes the volume of sand deposited as aforesaid in said tubular chamber  $d^3$  to be blown out by the application of the blast through pipes  $g\ g$  discharging through the blast-nipples  $m\ m$ , or either of them, of the sander.

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

1. A sanding device consisting essentially of an integral casing containing an initial

vertically - arranged tubular inlet - passage, having an enlarged diameter at its mouth end, an adjustable sleeve in said passage supported between the two diameters thereof, a tubular coupling-nut and an annular coupling-ring, a downwardly-inclined passage leading from the base of the inlet-passage, an air-blast nozzle below the same, in the base of the casing, a shield over the same, and a substantially horizontal tubular discharge-passage communicating with the inclined passage at its lower end, and arranged in alinement with the direction of discharge from the air-nozzle.

2. A sanding device consisting essentially of an integral casing containing an initial vertically-arranged tubular inlet-passage, a downwardly-inclined passage leading therefrom, an air-blast nozzle below the same, in the base of the casing, a shield over the same, and a tubular discharge-passage communicating with the inclined passage at its lower end and slightly curved upward, said air-nozzle being arranged to discharge an air-blast in the direction of the flow of sand through the curved discharge-passage.

3. A sanding device consisting essentially of an integral casing containing an initial vertically-arranged tubular inlet-passage, means to connect sand-delivery tubes therewith, means to adjustably change the size of the passage, a downwardly-inclined passage leading from said initial inlet, an air-blast nozzle below the inclined passage in the base of the casing, a shield over the same, and a tubular discharge-passage slightly curved upward communicating with the inclined passage at its lower end, and arranged in substantial alinement with the direction of discharge from the air-nozzle.

4. In combination with a sand-dome having a discharge-pipe, of a sanding device into which sand is fed by gravity, said sanding device consisting essentially of a vertical tubular inlet and downwardly-inclined passage leading therefrom, a horizontally-disposed tubular discharge-passage leading from the base of the inclined passage and slightly curved upward toward its discharge end, an air-blast nozzle arranged and adapted to discharge at the rear of and in alinement with the tubular discharge-chamber, and a shield over said air-blast nozzle adapted to deflect therefrom the flow of sand through the inclined passage and direct it wholly against the body of sand in the discharge-chamber.

5. A sanding device consisting essentially of a hollow casing having at top an initial tubular sand-inlet, and at base a horizontally-disposed tubular sand-discharge passage, a wall at the interior base of the casing, and a shield supported thereon, said shield having a flat base and a vertically-inclined side at the top thereof in alinement with the sand-inlet, forming by such construction and combination of said elements an inclined sand-passage leading from the sand-inlet to the sand-discharge, and also forming thereby

an air-chamber in alinement with said sand-discharge; and an air-nozzle within said chamber discharging outwardly; substantially as described.

- 5 6. A sanding device consisting essentially of an integral hollow casing having at top an initial vertically-arranged tubular inlet-passage for sand, and two oppositely-disposed tubular sand-discharge passages leading from  
10 the base of the casing, a shield having a flat base and opposite inclined sides centrally disposed within the casing and with its apex in alinement with the initial sand-passage, thereby forming two oppositely-disposed inclined  
15 passages leading from the initial sand-inlet

to the respective sand-discharge passages, a partition-wall supporting said shield above the base of the casing in such manner as to form separate chambers, and an air-blast nipple in each of said chambers arranged to discharge in alinement with the adjacent tubular sand-discharge passage of the casing; substantially as described. 20

In testimony whereof I have hereunto affixed my signature this 28th day of February, 25  
A. D. 1902.

JOHN C. HOOPER.

Witnesses:

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