

F. H. CUMMER.
 DRYING APPARATUS.
 APPLICATION FILED DEC. 1, 1910.

1,009,225.

Patented Nov. 21, 1911.

2 SHEETS—SHEET 1.

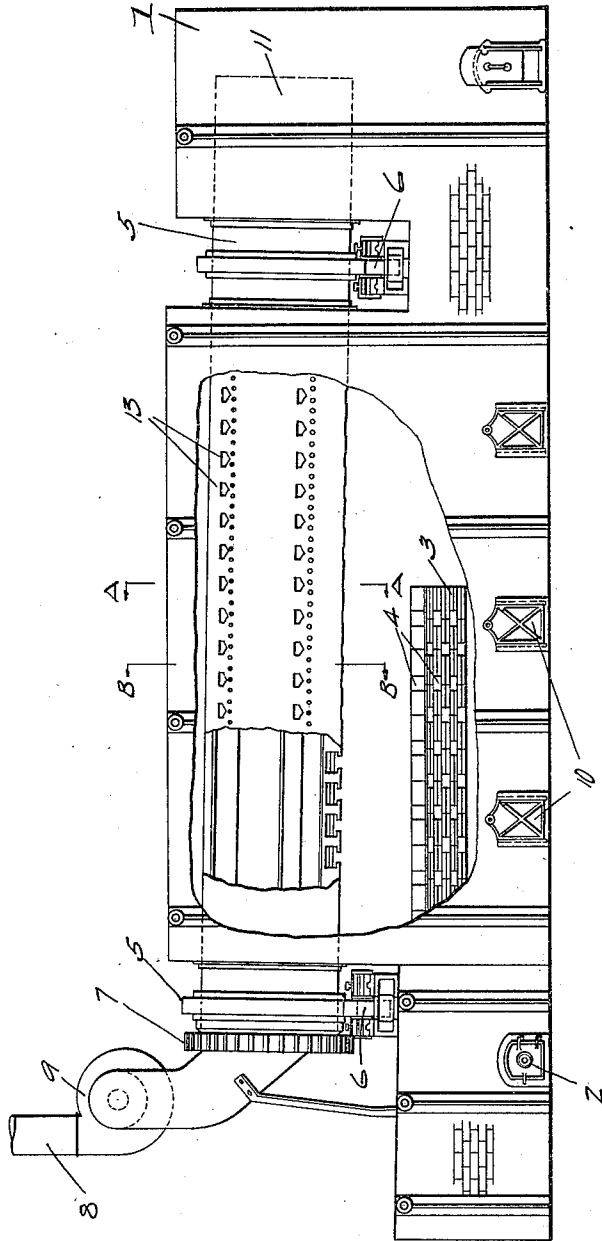


FIG. 1.

WITNESSES:
[Signature]
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INVENTOR
 Frederick H. Cumermer
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 J. B. Fay
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2 SHEETS-SHEET 2.

FIG. 2.

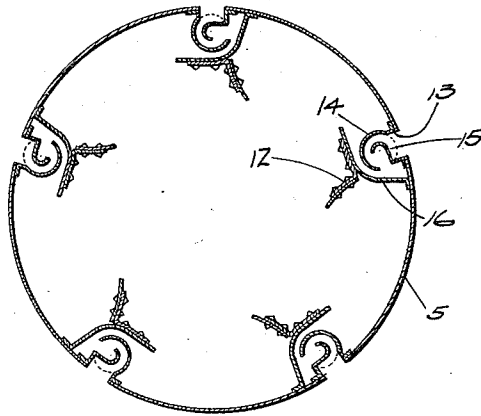


FIG. 3.

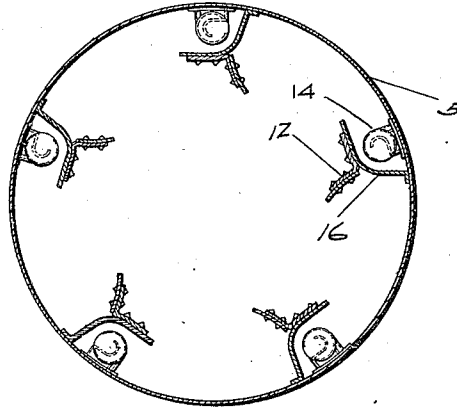
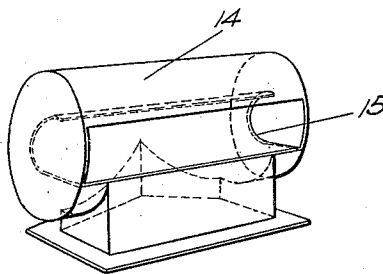


FIG. 4.



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UNITED STATES PATENT OFFICE.

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DRYING APPARATUS.

1,009,225.

Specification of Letters Patent. Patented Nov. 21, 1911.

Application filed December 1, 1910. Serial No. 595,054.

To all whom it may concern:

Be it known that I, FREDERICK H. CUMMER, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Drying Apparatus, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to drying apparatus of the type generally known as mechanical driers.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings: Figure 1 is a side elevation, partly broken away, of a machine embodying my invention; Fig. 2 is a section of the drying cylinder on the line A A in Fig. 1; Fig. 3 is a section of the cylinder on the line B B in Fig. 1; and Fig. 4 is a perspective view of a hood forming part of the invention.

In constructing a machine embodying the present invention, suitable brick-work 1, is constructed, in which is built a furnace 2, and rearwardly from the furnace extends an arch 3, having openings 4. The drying cylinder 5, is rotatably mounted within the brick-work 1, above the arch 3, and may be mounted in any convenient manner, as on rollers 6, and will be provided with driving means such as gear 7. The cylinder 5 is open at both ends, and at its front end there will be provided a feed-spout, and a suction fan or other draft mechanism 9 connected with an exhaust pipe 8. In the side of the brick-work 1, below the arch 3, openings 10, are provided, and by means of doors these openings may be made to allow any desired tempering of the gases within the brick-work.

The present invention relates more specifically to the construction of the cylinder 5. This cylinder is formed with a plurality of openings 13, in its peripheral wall, and interiorly of the cylinder, each opening 13 is guarded by a hood. Each hood comprises a substantially cylindrical shell 14, closed at its ends, but open along one side. Within the shell 14, is a guard 15, which extends in-

wardly from the edge of the opening along the side of the shell in a plane substantially parallel to the opening 13 in the cylinder, while at its inner end, the guard 15, is curved concentrically with the shell 14. A shield 16, is secured to the interior wall of the cylinder 5, and extends across the opening in the side of the shell 14, and thence across the inner side of the shell. A lifting-blade 12, is secured to the shield 16. The shield 16 and blades 12 will preferably be co-extensive in length with the cylinder 5, and hence will cooperate with a number of longitudinally alined hoods.

In operation, the hot products of combustion pass rearwardly from the furnace, and some of these gases rise through the perforated arch, and some are conducted to the rear end 11 of the cylinder. The suction fan is creating a draft forwardly, through the cylinder, while the material to be dried is progressing rearwardly through the cylinder, its progress being aided by the inclination of the cylinder and by the lifting-blades inside of the cylinder. All the hot products of combustion do not find their way to the rear end of the cylinder, but some of these products enter the openings in the wall of the cylinder, and thus not only greatly increase the capacity of a given machine, but enable such machine to effectively dry materials which could not otherwise be dried. In order to allow the entrance of products of combustion through these openings, and at the same time to prevent the exit of material, I have provided hoods and shields which have been described above. As the machine shown in Fig. 2 is rotated clockwise, the material is tumbled and showered within the cylinder, but it is impossible for any of the material to find its way outwardly through the tortuous passage provided by the shield and shell and guard. The invention therefore provides an extremely efficient machine which allows entrance of the products of combustion into the cylinder at numerous points along its length, but which obviously prevents the accidental discharge of material from the cylinder.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed provided the means stated by any of the fol-

riorly of the cylinder, each hood comprising a shell open along its side and a guard within the shell extending across the opening in the cylinder; and a shield extending across the opening in the shell and over the inner side of said shell. 70

8. In apparatus of the class described, the combination with a drying cylinder open at its ends and having inlet openings through its sides; of hoods over said openings interiorly of the cylinder, each hood comprising a shell open along its side and a guard within the shell extending across the opening in the cylinder; a shield extending across the opening in the shell and over the inner side of said shell; and a blade secured to said shield.

9. In apparatus of the class described, the combination with a drying cylinder having inlet openings through the side of the cylinder; of hoods over said openings interiorly of the cylinder, each hood comprising a substantially cylindrical shell open along its side and a guard within the shell extending from the edge of the opening in the shell across the opening in the cylinder.

10. In apparatus of the class described, the combination with a drying cylinder having inlet openings through the side of the cylinder; of hoods over said openings interiorly of the cylinder, each hood comprising a substantially cylindrical shell open along its side and a guard within the shell, said guard extending from the edge of the opening in the shell substantially in a plane across the opening in the cylinder and being curved at its inner end substantially concentrically with said shell.

11. In apparatus of the class described, the combination with a drying cylinder having inlet openings through the side of the cylinder; of hoods over said openings interiorly of the cylinder, each hood comprising a substantially cylindrical shell open along its side and a guard within the shell, said guard extending from the edge of the opening in the shell substantially in a plane across the opening in the cylinder and being curved at its inner end substantially concentrically with said shell; and a shield extending across the opening in the shell.

12. In apparatus of the class described, the combination with a drying cylinder having inlet openings through the side of the cylinder; of hoods over said openings interiorly of the cylinder, each hood comprising a substantially cylindrical shell open along its side and a guard within the shell, said guard extending from the edge of the opening in the shell substantially in a plane across the opening in the cylinder and being curved at its inner end substantially concentrically with said shell; and a shield extending across the opening in the shell and over the inner side of said shell.

the inner side of said shell. 139

THE INNER SIDE OF SAID SHEET.

7. In apparatus of the class described, the combination with a drying cylinder open at its ends and having inlet openings through its sides; of hoods over said openings inte-

13. In apparatus of the class described,
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with said shell; a shield extending across the
opening in the shell and over the inner side
of said shell; and a blade secured to said
shield.

Signed by me this 29th day of November,
1910.

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FREDERICK H. CUMMER.

Attested by—

ROBERT M. SEE,
I. FREEMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."