

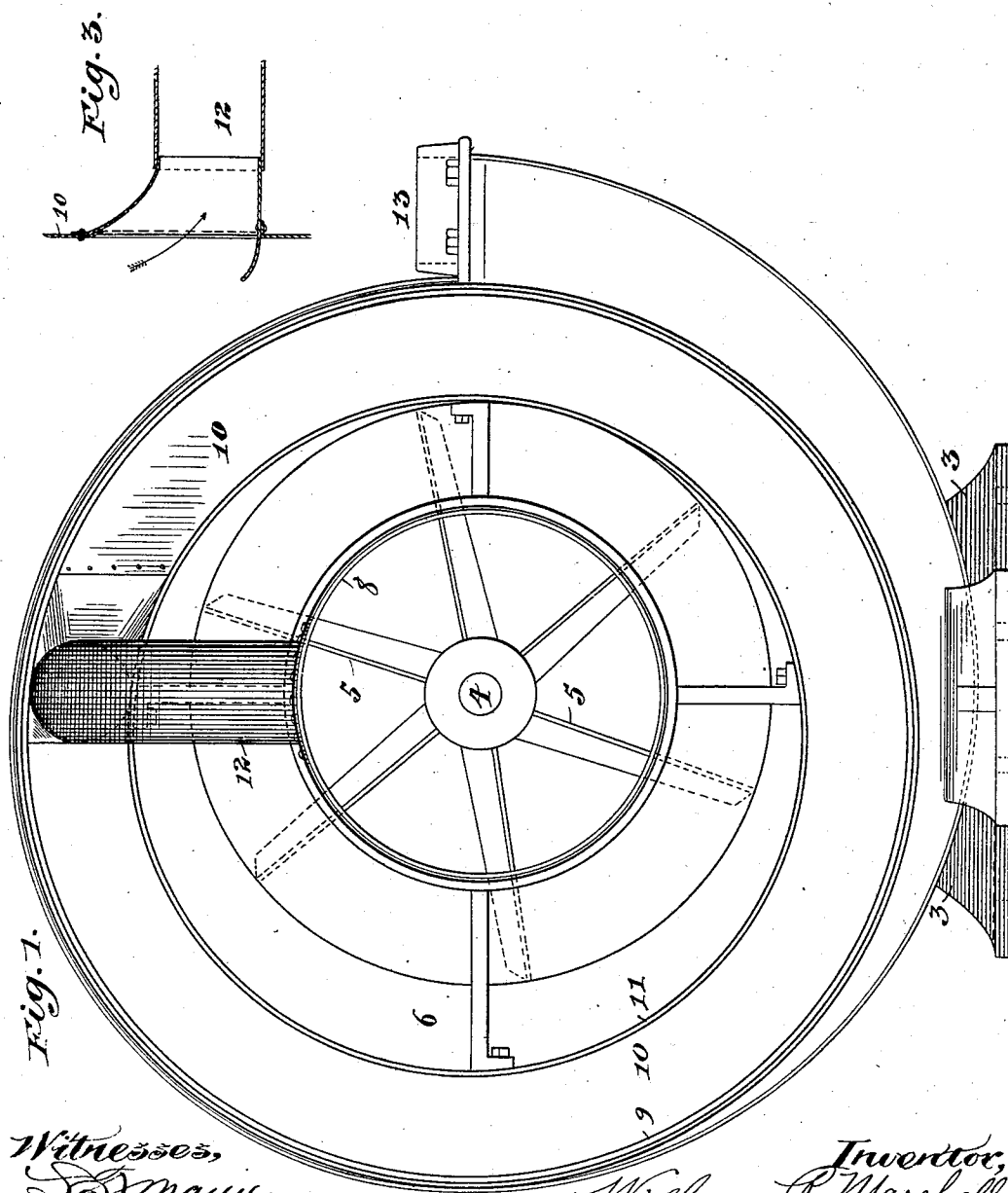
(No Model.)

W. R. MARSHALL.
FAN CONCENTRATOR.

2 Sheets—Sheet 1.

No. 566,001.

Patented Aug. 18, 1896.



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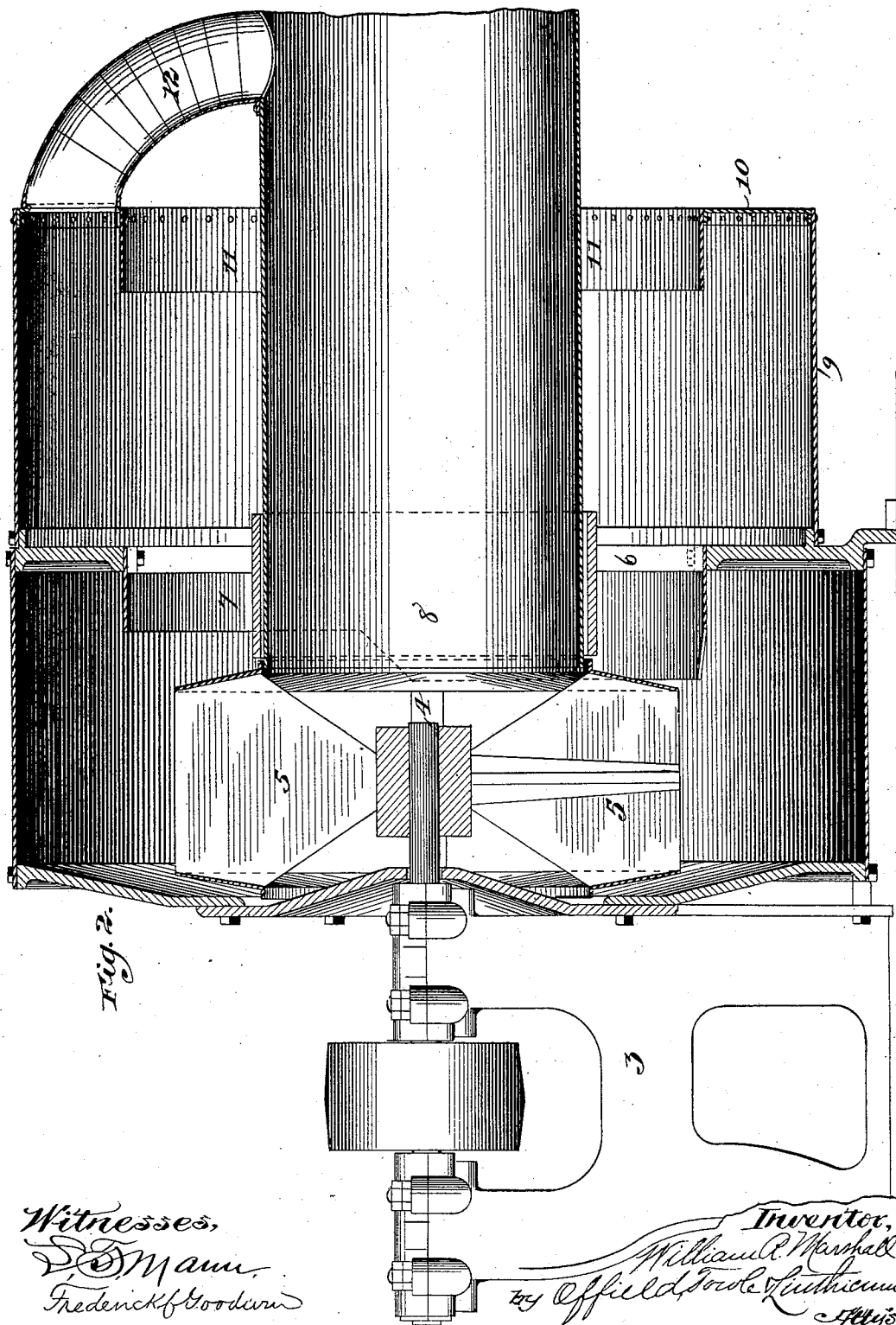
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UNITED STATES PATENT OFFICE.

WILLIAM R. MARSHALL, OF EAST SAGINAW, MICHIGAN.

FAN-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 566,001, dated August 18, 1896.

Application filed May 25, 1896. Serial No. 593,075. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. MARSHALL, of East Saginaw, Michigan, have invented certain new and useful Improvements in Fan-Concentrators, of which the following is a specification.

This invention relates to an improvement in that class of fan-concentrators which is described in my Patent No. 550,797, and the object of the invention is to improve the operation of said fan-concentrators by providing them with an additional chamber intended to catch the chips and heavier solid particles, which escape the fan by rebounding, as well as to trap the finer material which is sometimes blown off through the surplus-air outlet, and to return the same to the fan. In handling certain waste, such as that produced in the treating of certain kinds of wood, for example, dry oak, hard chips and small blocks and other particles of considerable size or weight are separated by the tool and, being delivered into the fan-concentrator by the carrying current, are whirled around therein, and striking upon the walls of the fan sometimes rebound and escape through the surplus-air outlet. In handling other materials there is sometimes a large volume of dust and larger than the fan is ordinarily required to take care of. In such cases also this supplemental arresting-chamber will be found of material assistance.

In the drawings, Figure 1 is a side elevation, the surplus-air outlet being in section. Fig. 2 is a longitudinal sectional elevation, the surplus-air outlet being broken away. Fig. 3 is a detail view.

In the drawings, let 3 represent the base or stand furnishing a bearing for the fan-shaft 4, carrying the fan-blades 5 and working within the fan-chamber, which is provided at one side with the surplus-air outlet 6, surrounded by the tubular guard 7.

8 represents the suction-pipe, which delivers at the eye of the fan, and the purified-air outlet surrounds the inlet-pipe, as described in my prior patent.

My present improvement consists in the provision of a supplemental chamber, which is joined to the side of the fan-case and which may be of approximately the same diameter

as the separating-chamber of the fan proper. As shown, said supplemental chamber is provided by the peripheral wall 9 and the end plate 10, having an outlet-aperture therein and surrounded by a tubular guard 11. This outlet is arranged in line with and is the same diameter as the surplus-air outlet of the fan proper and also surrounds the suction inlet-pipe. At one point in the side wall of this supplemental chamber, and preferably extending from the tubular guard 11 to the peripheral wall of the chamber, an opening is made, to which is connected a curved pipe 12, which leads into the suction inlet-pipe, as clearly shown in the drawings. This pipe is preferably connected in the manner shown in Fig. 3.

In the operation of this device the material is delivered to the fan through the suction inlet-pipe and a whirling motion is imparted to the air-current and the material carried therein, causing the solid particles to be thrown to the periphery of the fan-chamber and whirled around therein. A certain amount of the air is permitted to escape through the surplus-air outlet, while the condensed material and a sufficient amount of the current to carry the same is blown off through the peripheral discharge 13. In operating upon certain kinds of material heavy pieces or blocks, as well as some very fine dust, will escape with the surplus air, the heavier particles escaping because of their striking upon the side walls of the fan-case and rebounding as they are thrown from the blades of the fan, while the fine dust will be carried in suspension in the escaping air-current and will pass in spiral lines around said supplemental chamber. The larger and solid particles will be whirled around in the chamber and will be discharged through the outlet in the side wall of the case back into the suction-pipe, it being understood that the strong current of air passing through said suction-pipe will create a minus pressure therein and thus suck or draw the heavy materials into the suction-pipe. The finer dust carried in suspension in the air-current will also be drawn back into the suction-pipe and returned to the fan. Thus this supplementary separating-chamber adds considerably to the efficiency of the apparatus

with but slight additional expense for construction and maintenance.

The details of the invention may be varied, as, for example, the curved pipe may lead
5 from the peripheral wall of the supplemental chamber instead of from its side wall, and it may be connected with the suction-pipe inside of said chamber, instead of outside. Other structural details may also be varied.

10 I claim—

1. The combination with a fan-concentrator having a suction-pipe delivering to the eye of the fan, a surplus-air outlet in the side wall of the air-chamber surrounding said suction-
15 pipe, a supplemental chamber arranged adjacent to the side wall of the fan-case and communicating with the fan-chamber through said surplus-air outlet and having an opening in its side opposite the surplus-air outlet and
20 surrounding the suction-pipe and a return-pipe communicating with the interior of the

supplemental chamber and with the suction-pipe, substantially as described.

2. The combination with a fan-concentrator having a suction-pipe delivering to the eye of
25 the fan, a surplus-air outlet in the side wall of the fan-case surrounding the suction-pipe, a supplemental chamber arranged adjacent to the surplus-air outlet and communicating with the fan-chamber therethrough and hav-
30 ing an outlet surrounding the suction-pipe, tubular guards arranged in the surplus-air outlets of the fan-chamber and supplemental chamber, respectively, and a return-pipe communicating with the supplemental chamber
35 between its peripheral wall and its tubular guard, and delivering into the suction-pipe, substantially as described.

WILLIAM R. MARSHALL.

Witnesses:

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