No. 775,804. PATENTED NOV. 22, 1904.

D. S. EASTWOOD.

DRAWING-OFF DEVICE FOR CARDING ENGINES.

APPLICATION FILED NOV. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

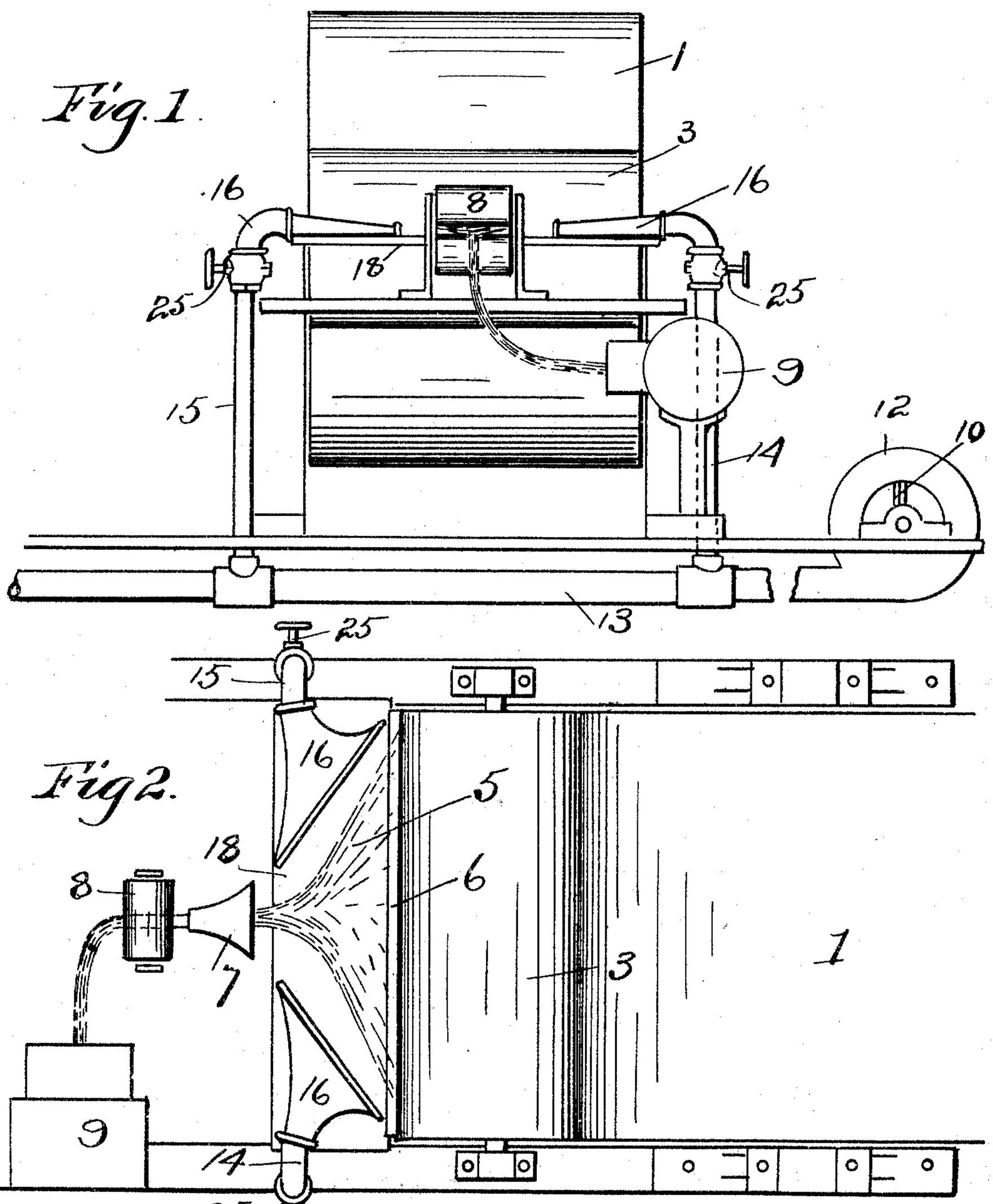

Fig 2.

Fig. 5.

Witnesses

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NO MODEL. 2 SHEETS—SHEET 2.

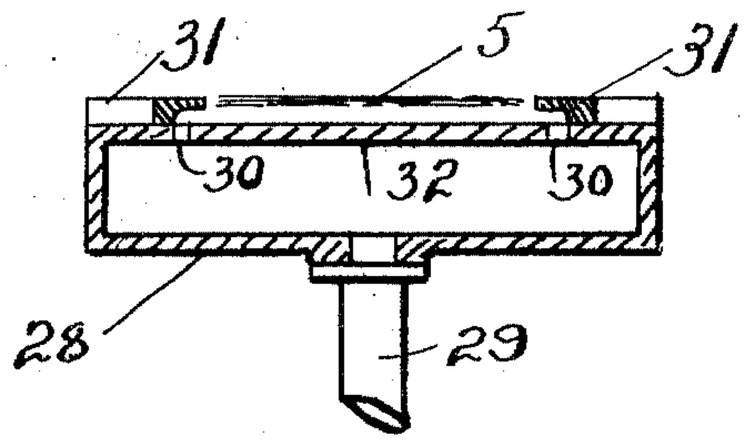


Fig. 6.

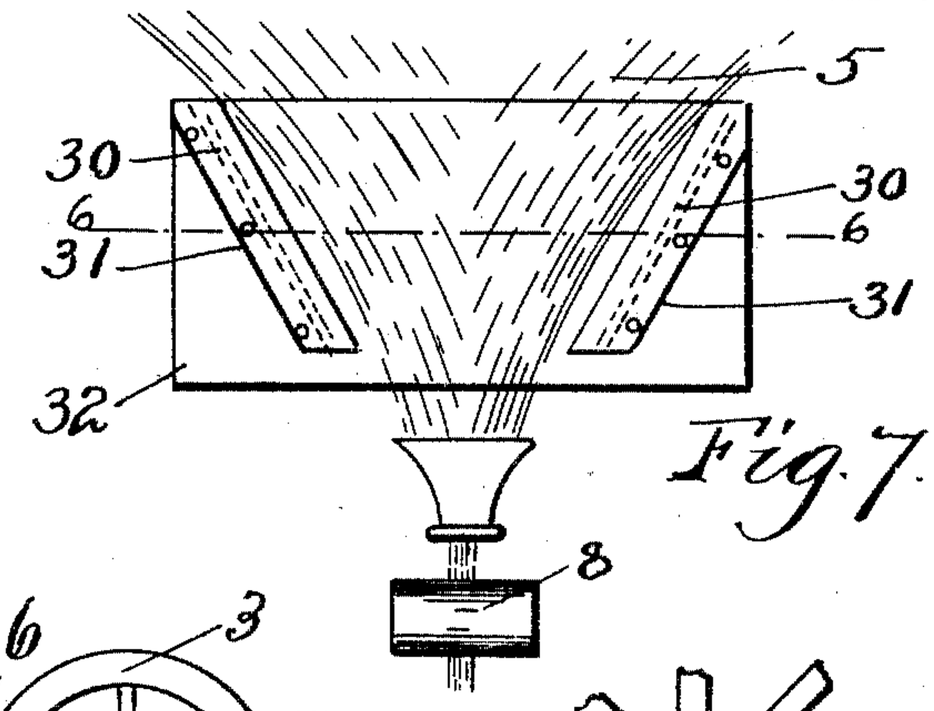
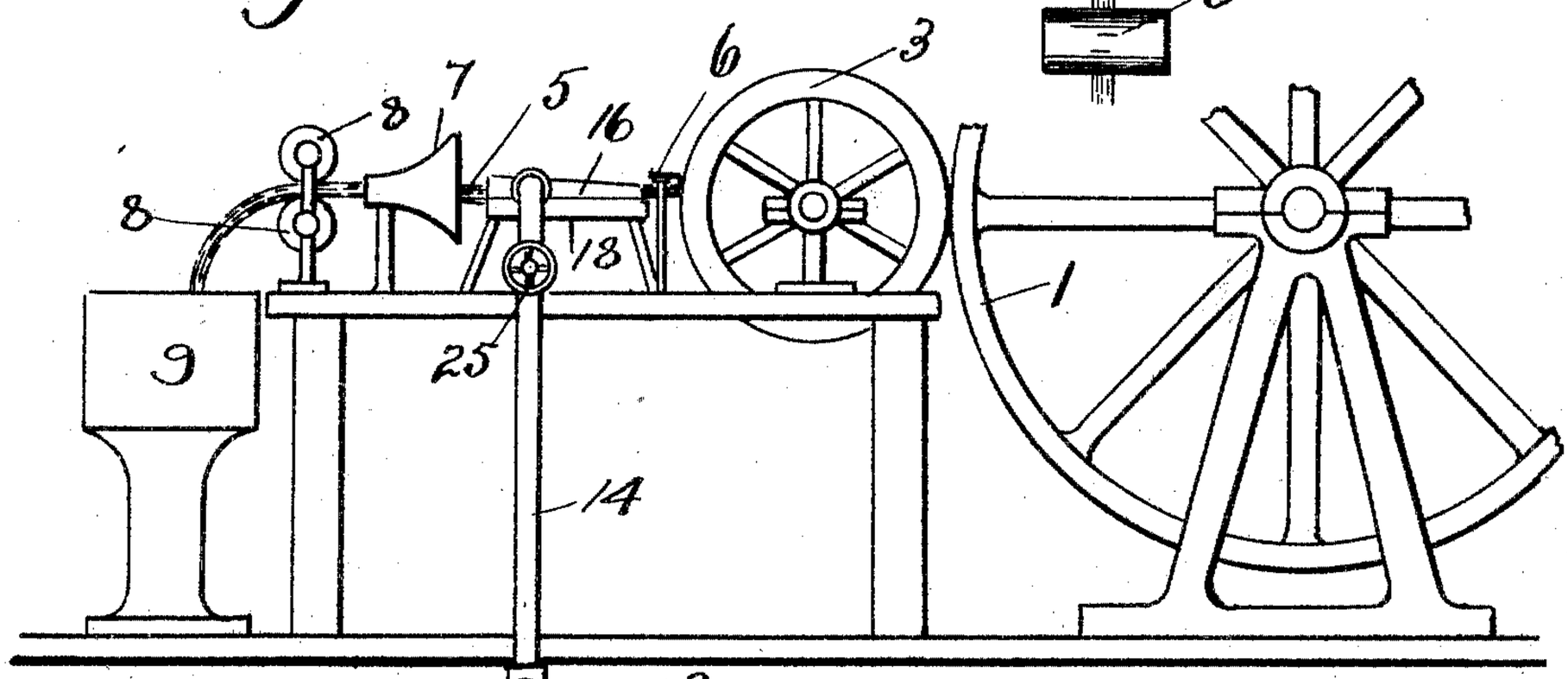


Fig. 7.



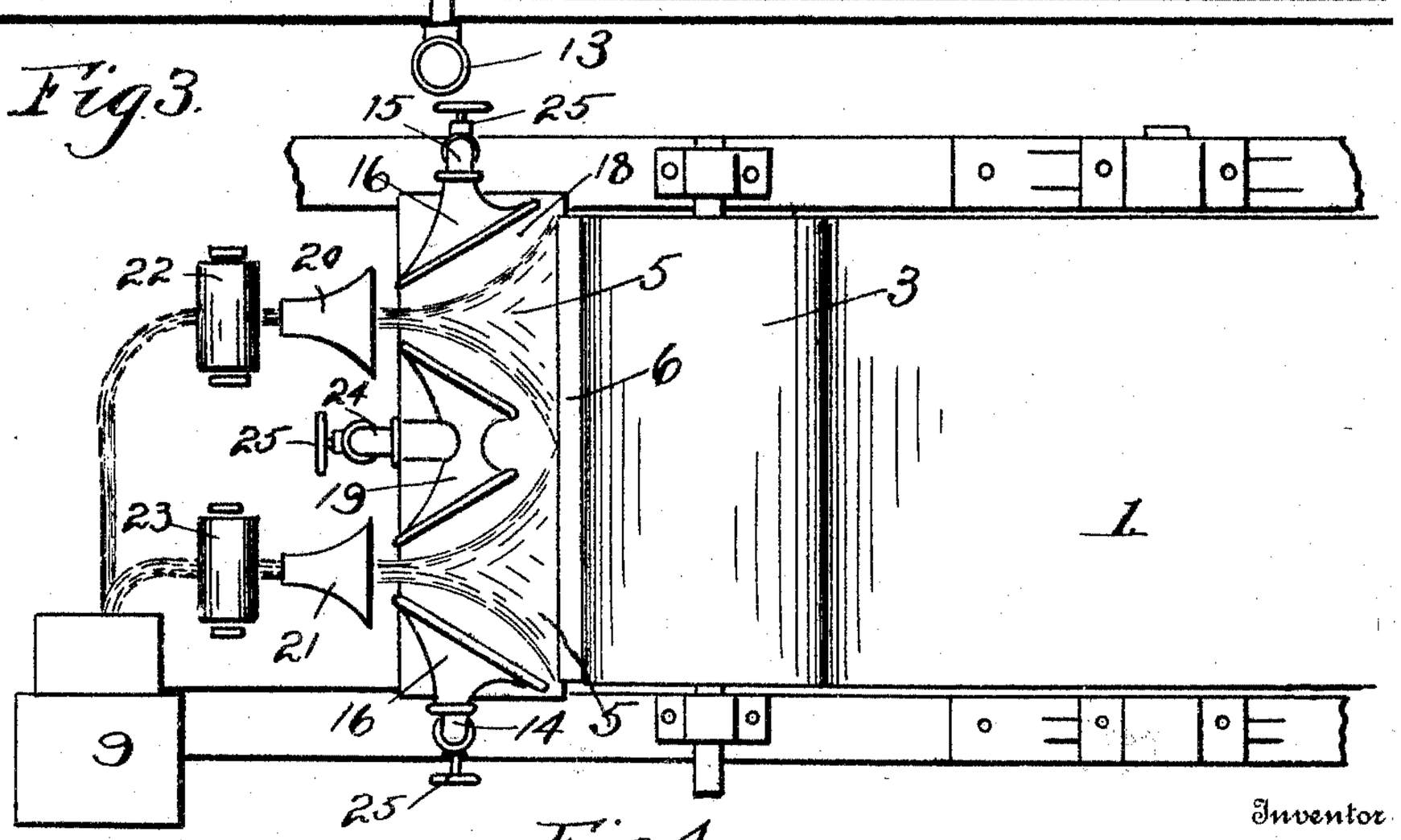


Fig 3.

Fig 4.

Witnesses

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No. 775,804. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

DAVID S. EASTWOOD, OF MILBURY, MASSACHUSETTS, ASSIGNOR TO THE UNITED STATES LINEN COMPANY, OF MILBURY, MASSACHUSETTS, A CORPORATION.

DRAWING-OFF DEVICE FOR CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 775,804, dated November 22, 1904.

Application filed November 19, 1903. Serial No. 181,814. (No model.)

To all whom it may concern:

Be it known that I, DAVID S. EASTWOOD, a resident of Milbury, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Drawing-Off Devices for Carding-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in carding-machines.

The object of the invention is to provide an attachment for carding-machines, whereby the fleece after being removed from the doffer will all be caught and carried into the funnel and fed to the condensing-rolls by means of air-blasts.

A further object is to provide an attachment of this character which will be simple in construction, reliable and efficient in operation, and which may be readily applied to carding-machines now in use without altering the construction of the same.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation of a portion of a carding-machine, showing the application of the invention. Fig. 2 is a top plan view thereof. Fig. 3 is a side elevation of the same. Fig. 4 is a top plan view showing a modified arrangement of the parts. Fig. 5 is a detail perspective view of one of the air-nozzles. Fig. 6 is a section on line 6 6 of Fig. 7, illustrating a modification or simple form of construction for injecting air beneath the web of carded material. Fig. 7 is a plan view of the mechanism illustrated in Fig. 6.

Referring to the drawings more particularly, 1 denotes the carding cylinder or roll on which are arranged carding-teeth. Mounted in front of the carding-cylinder is a doffer cylinder or roll 3, also having teeth. The cylinders 1 and 3 are adapted to be driven in opposite directions, so that the teeth on the doffer-roll will pass between the teeth on the carding-cylinder and remove from the same and onto itself the fleece of hemp, cotton, or other fibers 5 which has been collected thereon. This fleece from the carding-roll is carried around by the doffer to a doffing comb or knife 6, by which it is removed from the doffer in the form of a sheet or ribbon, the end of which is directed or fed into a funnel 7 and from thence to a pair of condensing-rolls 8, after which it is passed to the coiler 9. These parts may be of the usual or any suitable construction.

It has been found in practice that when carding short flax fiber, which is heavier than cotton fiber, some means is necessary to collect and force the same into position and shape and to direct it into the funnel of the condensing-rolls. After considerable experimenting it has been ascertained that blasts of air properly applied is the most satisfactory agency for the accomplishment of this purpose.

The invention in this case lies in the introduction of air-blasts and suitable means for applying the same to produce the desired results—to wit, the concentration of the short heavier grades of flax or other fiber and the directing of the same into the funnel of the machine. With this end in view a means for producing an air-supply is provided. This means may be of any suitable character, but is here shown as a rotary fan 10, which is mounted in a casing 12 and driven by any suitable power. (Not shown.) From the fan-casing 12 extends a main air-supply pipe 13, which is preferably located beneath the floor, so as to be out of the way. From this main pipe 13 any number of carding-machines may be supplied with air. In the drawings, however, only so much of one machine is shown as is necessary to illustrate the application of the invention.

From the main air-supply pipe 13 two service-pipes 14 and 15 project upwardly through the floor, one at each front corner of the machine, as shown. On the upper ends of the service-pipes 14 and 15 are connected horizontally-disposed nozzles 16, which are at about the level of the funnel 7.

The nozzles 16 are preferably formed as shown in Fig. 5, the delivery end of the same being flattened and being provided with a long narrow or contracted mouth 17. The nozzles are preferably arranged at an angle to the doffer 3, so as to direct the air-blast diagonally upon the fleece as it is disengaged from the doffer by the doffing-comb 6.

Immediately below the doffing-comb 6 and about in line with the funnel 7 is arranged a horizontally-disposed plate or shelf 18, which serves to catch the fleece as it is being acted on by the air-blast, which concentrates and directs it into the mouth of the funnel.

In Fig. 4 of the drawings is shown a slightly-modified arrangement of the parts. In this view is illustrated a double form of machine in which four air-discharging nozzles are shown, two being arranged one at each side of the machine, as before, and midway between the same is arranged a double nozzle 19, having two discharge-openings projecting in opposite directions and separating the fleece into two ribbons and for the reception of which two funnels 20 and 21 are provided, which conduct said ribbons to two sets of condensing-rolls 22 and 23 and from which they are conducted to a common coiler, as shown.

The central double discharge-nozzle 19 is connected to a central service-pipe 24, which projects up from the main supply-pipe 13 in the same manner as the end service-pipes. In each of the service-pipes is arranged a cut-off valve 25, by which the supply of air to the nozzles may be regulated or entirely cut off.

In the construction illustrated in Figs. 6 and 7, 28 is a thin box of rectangular shape, into which the air is forced through the feed-pipe 29. Slots 30 30 are cut through the top of said box on each side of the thin web of material 5, (see Fig. 7,) which passes over its top plate 32, which plate serves to answer the purpose of the plate 18 shown in the other constructions. The deflecting-plates 31 31 are secured to the top of plate 32 of the receptacle, each having a lip extending out over the slot 30. These plates are for the purpose of directing the currents of air beneath the web 5 as they come through said slots of material. This construction is very simple and effective.

While the invention has been described for use particularly in connection with the carding of flax fiber, it has also been found very advantageous in carding cheap grades of cotton fiber.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a carding-machine, the combination of the doffing-roll, the calender-rolls, and means whereby a blast of air is forced beneath the web of carded material to support the same as it is being drawn from one roll to the other.

2. In a carding-machine in combination the doffing-roll, the calender-rolls, means for producing a cushion of air beneath the web of carded material over which said web may be drawn or floated from said doffing-roll to said calender-rolls.

3. In a carding-machine, in combination the doffer, the calender-rolls, means for forcing air beneath the web of carded material as it is being drawn from said doffer to said calender-rolls and means for concentrating said web.

4. In a carding-machine, means for applying an air-blast to concentrate and direct the web of fiber collected by said machine and a suitable condensing mechanism to receive said fiber after being concentrated.

5. In a carding-machine, the combination of the doffer and the funnel of the same, of means for applying an air-blast to concentrate and direct the web of fiber from said doffer to said funnel.

6. In a carding-machine, in combination the doffing-roll, the calender-rolls, means for forcing jets of air toward each other and beneath the web of carded material from each edge thereof forming a cushion of air for supporting the web and over which it may be drawn while passing from said doffing-roll into said calender-rolls.

7. In a carding-machine, in combination, the doffing-roll, the calender-rolls, means for forcing air beneath the web of carded material from each edge thereof forming a cushion of air to support said web as it is being carried from said doffer to said calender-rolls.

8. In a carding-machine, the combination of the doffer and the funnel of the same, of pipes and nozzles arranged in position to apply blasts of air to concentrate and direct the web of fiber from said doffer to said funnel.

9. In a carding-machine, the combination of the doffer and the funnel of the same, of pipes having flat, elongated discharge-nozzles arranged in position to apply blasts of air to concentrate and direct the web of fiber from said doffer to said funnel and means for supplying air to said pipes.

10. In a carding-machine, means for forcing air beneath the web of carded material, including a bell-shaped mouth or head on each

side of the card and located near each edge of said web, through which heads air is forced for the purpose of supporting the web and preventing it from breaking down.

11. In a carding-machine, the combination of the doffer and the funnel of the same, of a shelf arranged in front of said doffer, horizontally-disposed nozzles arranged above said shelf to apply blasts of air to concentrate and direct the web of fiber across said shelf from said doffer to said funnel, valved service-pipes connected to said nozzles, a main supply-pipe connected to said service-pipes and means for forcing air through said pipes and nozzles.

In testimony whereof I have hereunto set my hand this 7th day of November, A. D. 1903.

DAVID S. EASTWOOD.

In presence of—

HOWARD E. BARLOW,
E. I. OGDEN.