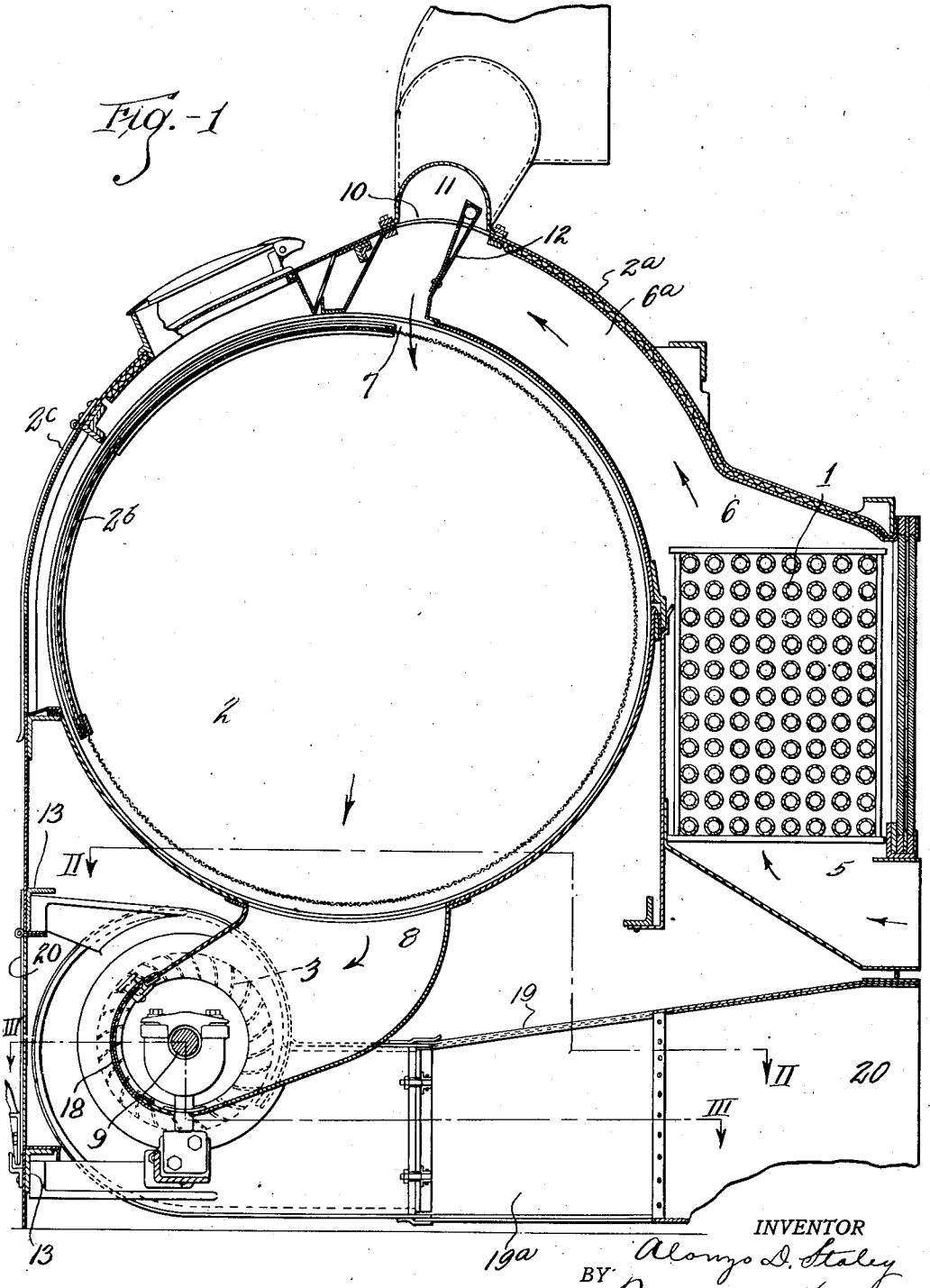
June 24, 1930. A. D. STALEY 1,765,628

DRYING MACHINE

Filed Nov. 2, 1925 4 Sheets-Sheet 1

Fig. 1



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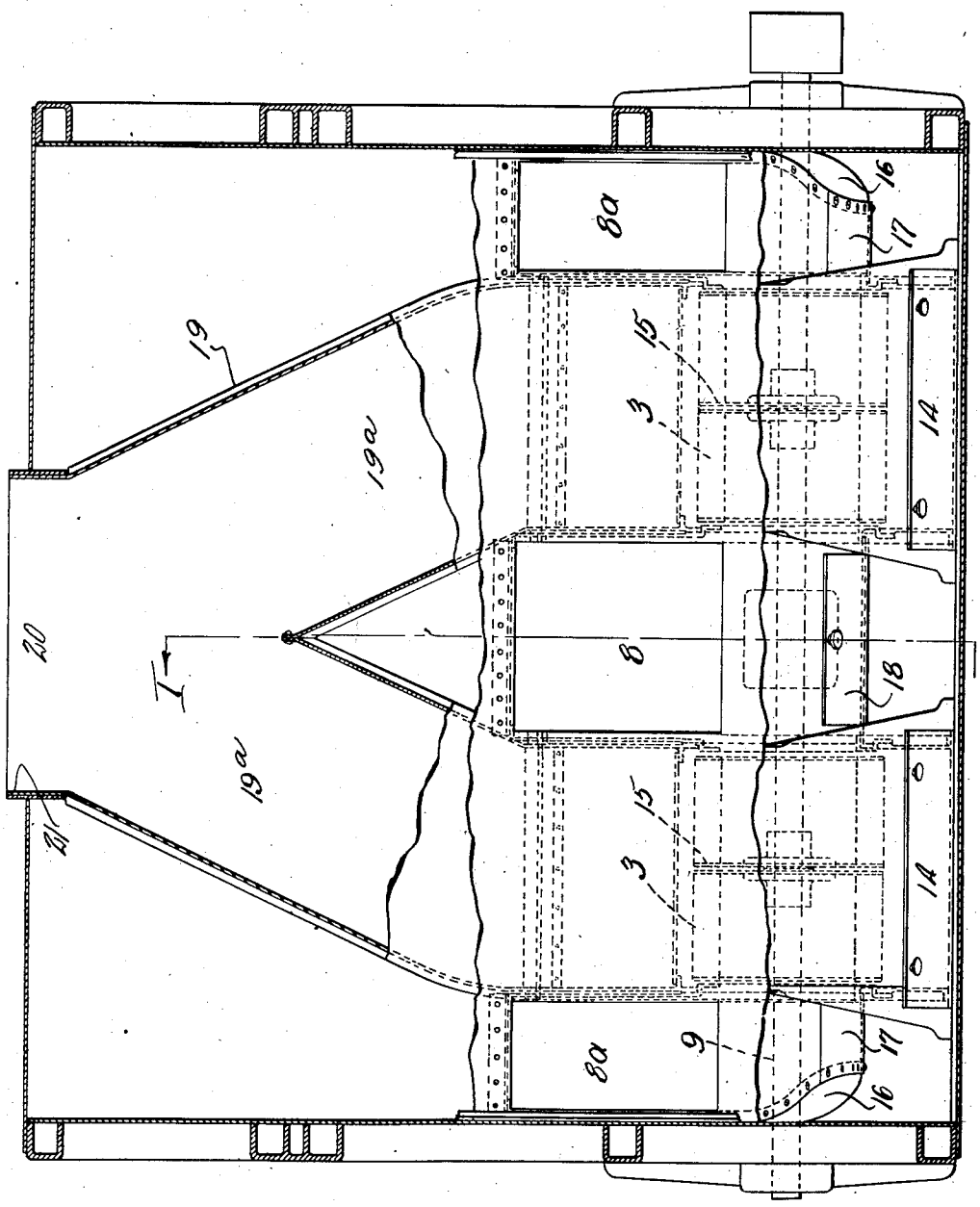

Fig. 2

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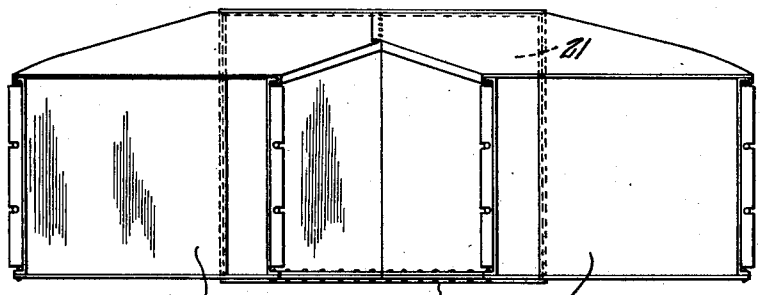

Fig. -4

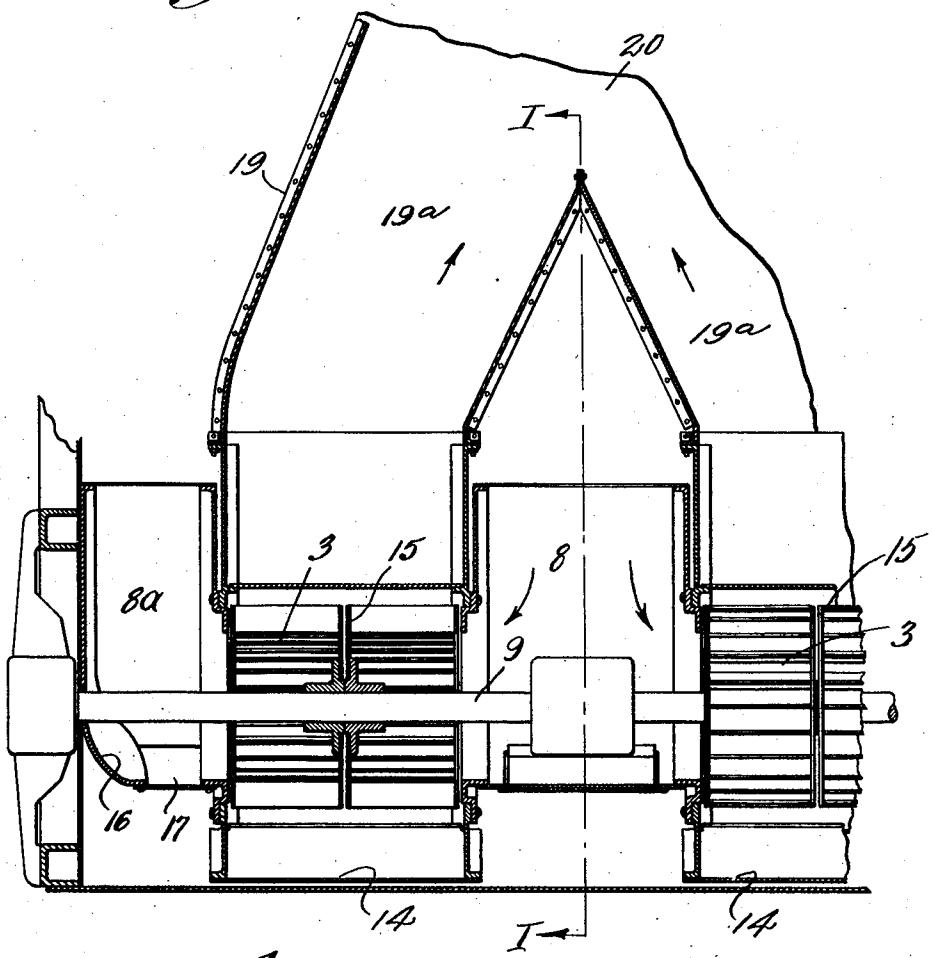

Fig. -3

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Filed Nov. 2, 1925 4 Sheets-Sheet 4

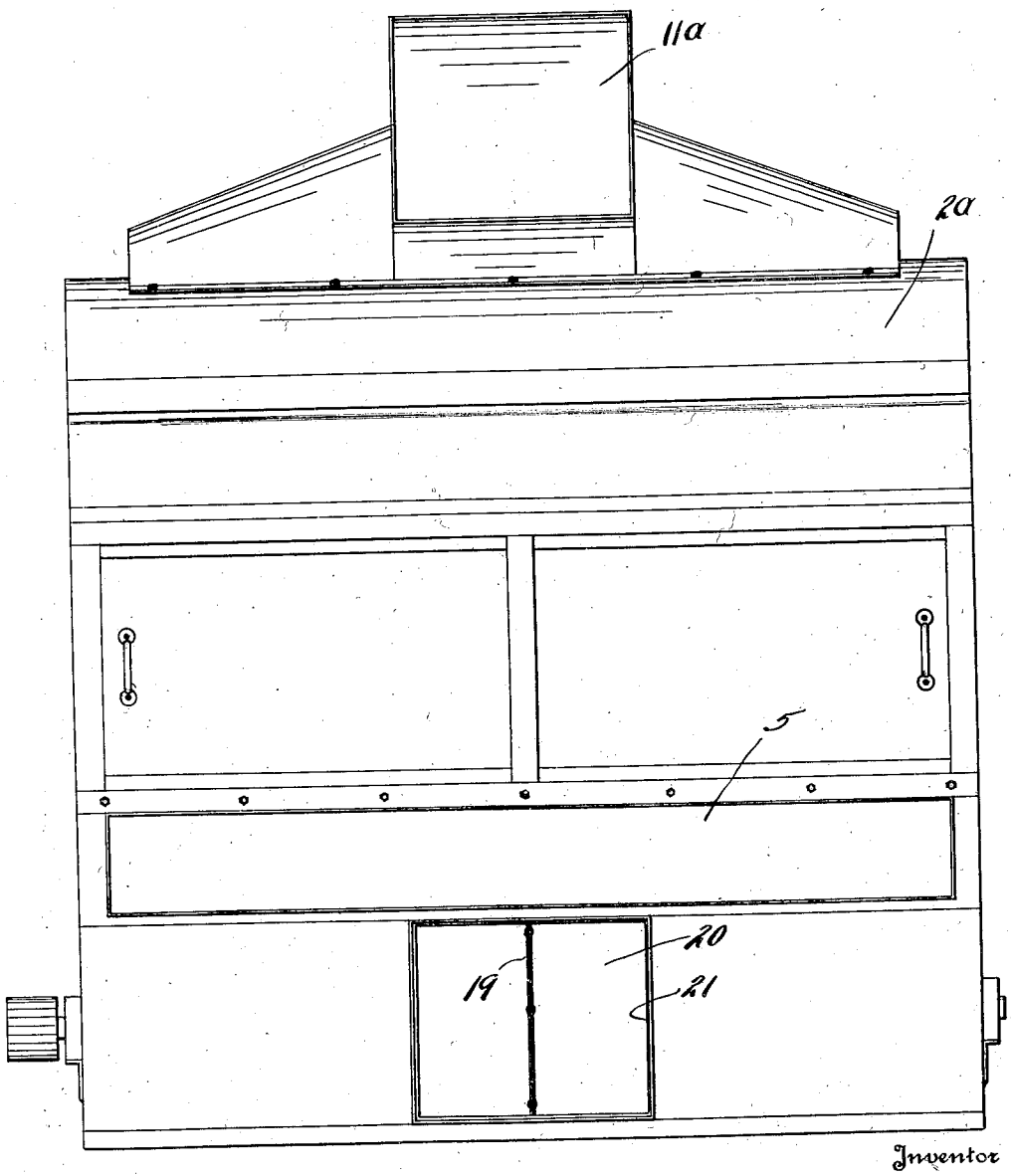

FIG. - 5

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UNITED STATES PATENT OFFICE

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DRYING MACHINE

Application filed November 2, 1925. Serial No. 66,251.

This invention relates to drying apparatus of that type wherein fabric articles, such as of apparel, which have been subjected to immersion in liquid cleaning solvents, are placed within a cylindrical container of foraminated surface, through which warm air is caused to pass while the container is rotated.

The objects of my invention are improvements in such apparatus, resulting in increased ease of installation and maintenance, and increased efficiency of operation, and withal embodying a structural superiority over what has heretofore been the practice in the art.

By way of illustration I have chosen to show my invention incorporated in a machine especially adaptable for drying and deodorizing clothing previously cleaned with gasoline or similar inflammable volatile liquid producing highly explosive vapors. For such service the drying air is heated but is not re-circulated as in some other instances. Provision is made for supplying fresh cold air only when desired, and the air circulating means is placed after instead of before the cylindrical container so that the container and most of the air passages and chambers are maintained somewhat below rather than above atmospheric pressure.

Referring to this typical apparatus shown in the drawings, Fig. 1 is a sectional elevation along the plane of lines I—I of Figs. 2 and 3, which are horizontal sections along the planes of lines II—II and III—III respectively of Fig. 1; Fig. 4 is an end view of the outlet member of the apparatus; and Fig. 5 is a rear view of the apparatus.

The principal components of such a drier are a heating element consisting of a baffle of steam pipe coils 1, a cylindrical container 2 of foraminated circumference, a centrifugal type suction unit 3, and a suitable casing 2^a surrounding these components and including the required partitions to form the necessary air passages.

The heating coils 1 are placed within a heating chamber 6 which communicates at its lower end with an air inlet 5 at the rear of the apparatus and communicates at its upper end with an air passage 6^a leading to an inlet opening 7 at the top of the work receiving cylinder 2. The inlet opening 5, the heating chamber 6, the air passage 6^a and the inlet opening 7 are all substantially the same length as the cylinder 2 so that the air passes through opening 7 in substantially the form of a sheet distributed throughout the length of the drying cylinder, thereby enabling increased drying effects to be obtained.

The cylinder 2 is arranged to be rotated or oscillated about its axis by outside power, and is provided with a loading opening which may be brought to register with a corresponding opening in the closely surrounding casing, both of these openings being normally closed by suitable doors 2^b, 2^c, respectively.

Diametrically opposite the inlet opening 7 is a series of outlet passages 8, 8^a leading directly to a number of fans 3, which are mounted in suitable spaced relation upon a shaft 9 extending parallel with the cylinder. It is evident that rotation of the fan shaft will create an air flow over the heating coils, vertically downward across the diameter of the cylinder, through the outlet passages 8, 8^a within which the fans 3 are arranged, and out of the drier through whatever passageway or passageways are provided upon the discharge side of the fans; the cylinder being rotated or oscillated meanwhile as desired, for the purpose of agitating the contents.

As above mentioned the opening 7 extends substantially the full length of the cylinder so that an even distribution of air supply is assured to all of the cylinder contents. Above the opening 7 leading to the cylinder is a corresponding full length opening 10 extending along the outer casing and communicating with a longitudinal air passage or distributing chamber 11 having an opening 11^a to receive air from an outside source. Axially mounted within the opening 10 is a full length valve or damper 12 operable from without the drier whereby the source of air supplied to the cylinder may be controlled; in the position shown cold out-

side air only will enter; whereas if the valve be rotated clockwise as far as possible (Fig. 1) air warmed by passing over the heating coils will enter. Intermediate positions of the valve will give intermediate combinations of air.

Laterally extending across the front of the drier and suitably secured to the outer casing 2^a thereof are two vertically spaced angle irons 13 upon which the fans are mounted, the door portion 20 of the casing between the angle irons being hinged at the top as shown in Fig. 1. At the front side of the fan portions of the volute casing are cut away and the openings thus formed are closed by removable hand covers 14.

Each fan proper is divided intermediate its end by transversely extending partitions 15 and is provided with air from passages 8, 8^a, one at each side, so that while air is drawn in axially from each side of the fan, it is discharged from the apparatus through a single discharge or delivery passage. As has already been shown these passages 8, 8^a lead directly from suitably spaced openings below the cylinder 2 to the fans, the passages being formed to correspond with the inner blade diameter of the fans.

The end passages 8^a are provided with a formed curved casing section 16 which conforms with the direction of air flow therein to prevent eddy currents and air pockets, thus reducing danger from explosion and increasing the pneumatic efficiency. Adjacent the fans said passages are provided with removable casing sections 17 secured by screws whereby access to the interior of said passages may be had.

Between the fans is provided a bearing for the single fan shaft, adjacent fan portions being supplied with air from the middle passage 8 within which this bearing is arranged. To provide the highly necessary access to this bearing, the front portion 18 of the casing is formed as an easily removable cover, as shown in Figs. 1 and 2.

By the arrangement shown, the fans, their housings, and the delivery and discharge air passages therefor may be preassembled and permanently mounted upon the angle irons 13 to form a rigid unit, capable of being handled by itself during shipment and erection of the drier.

Connected with the two discharge passages 19^a leading from the fans is a smooth walled outlet manifold member 19 which unites the air passages and presents a single discharge or outlet passage 20 leading to an opening 21 at the rear of the drier. By the arrangement described, it is possible to completely fabricate this discharge manifold member 19 before assembling the drier, and in erecting the apparatus to merely connect the fan unit and outlet manifold unit by means of clamp screws, obviously resulting in saving of labor.

From the foregoing it is apparent that I have made provision for easy access to every moving part, as well as to the interior of those parts most liable to collect or be impaired by an accumulation of lint or small inflammable particles; and at the same time by adding an intermediate bearing, formed sections, and provision for preassembled and permanently assembled units, I have greatly improved the drier structurally.

While I have described in detail my invention as applied to but one type of drying apparatus, it is apparent that the scope of my invention is not confined to the single example selected, but I wish to be limited only to the spirit thereof, and therefore make the following claims.

What I claim is:

1. In a machine of the character described, a casing having a drying chamber provided with air inlet means at the top thereof and with air outlet means at the bottom thereof, said outlet means comprising an opening at substantially each end of said chamber and an intermediate opening at substantially the middle thereof, two fans one located between each end opening and the intermediate opening, each fan having its inlet communicating with said intermediate opening and with one end opening, and a conduit discharge means communicating with the outlet of each of said fans and leading to a point outside of said casing.

2. In a machine of the character described, a casing having a drying chamber provided with a slot-like air inlet and an opposed air outlet and with a heating chamber having an atmospheric air inlet and an air outlet, a conduit connecting said heating and drying chambers, said drying chamber inlet, said conduit, and said heating chamber and its inlet and outlet being coextensive in length with the drying chamber, whereby a sheet-like body of air, heated uniformly throughout its length, and of full drying chamber length enters and passes through the drying chamber, said drying chamber outlet including portions open at both ends and at the middle of the chamber and symmetrically disposed about its middle, and air flow producing means communicating therewith and discharging to the atmosphere and effective uniformly upon the entire area of all of said open portions.

In testimony whereof I hereby affix my signature.

ALONZO D. STALEY.