No. 646,218. Patented Mar. 27, 1900.

J. L. HOLLINGSWORTH.

TOBACCO CURING AND ORDERING APPARATUS.

(Application filed Aug. 25, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

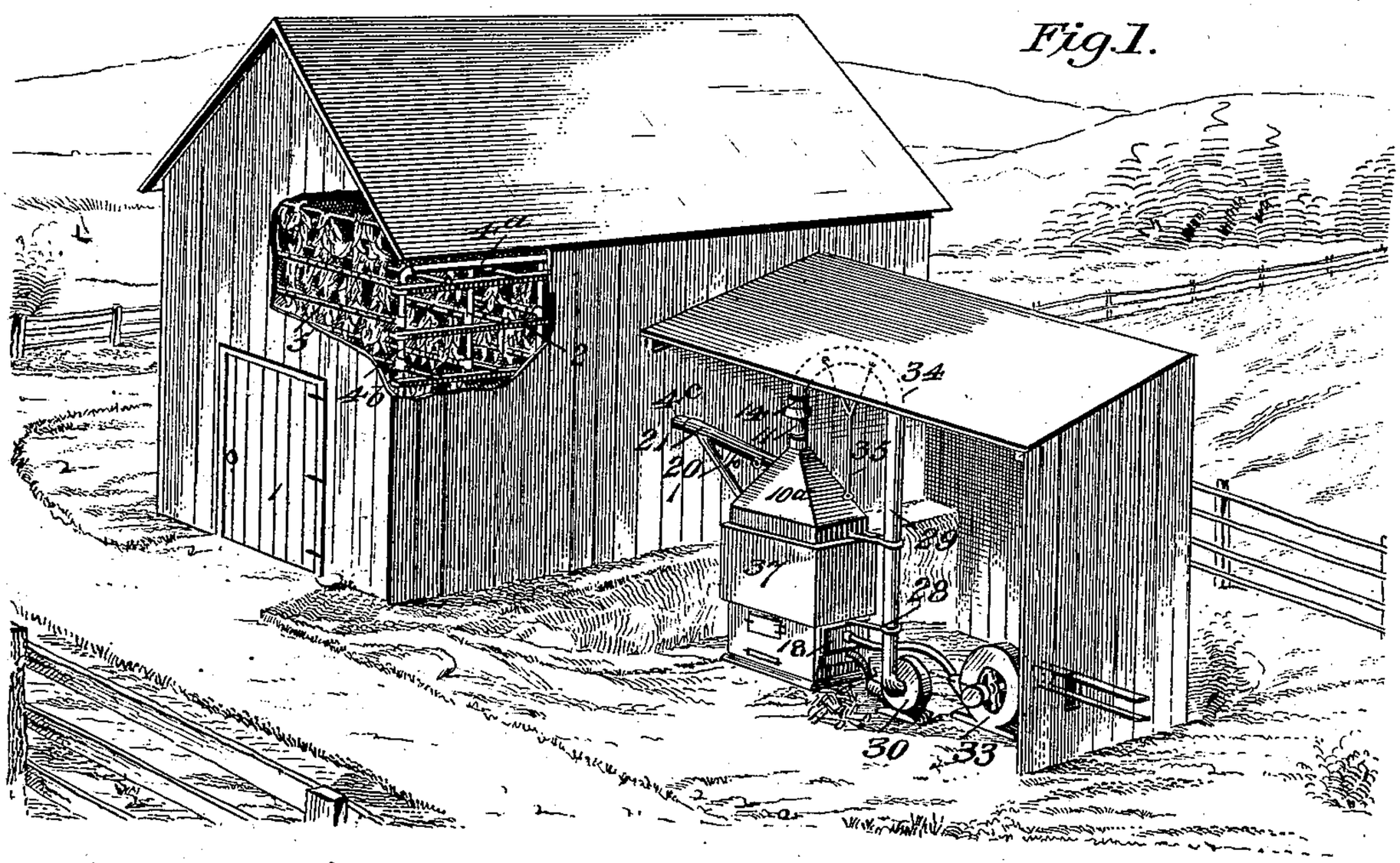

Fig. 2.

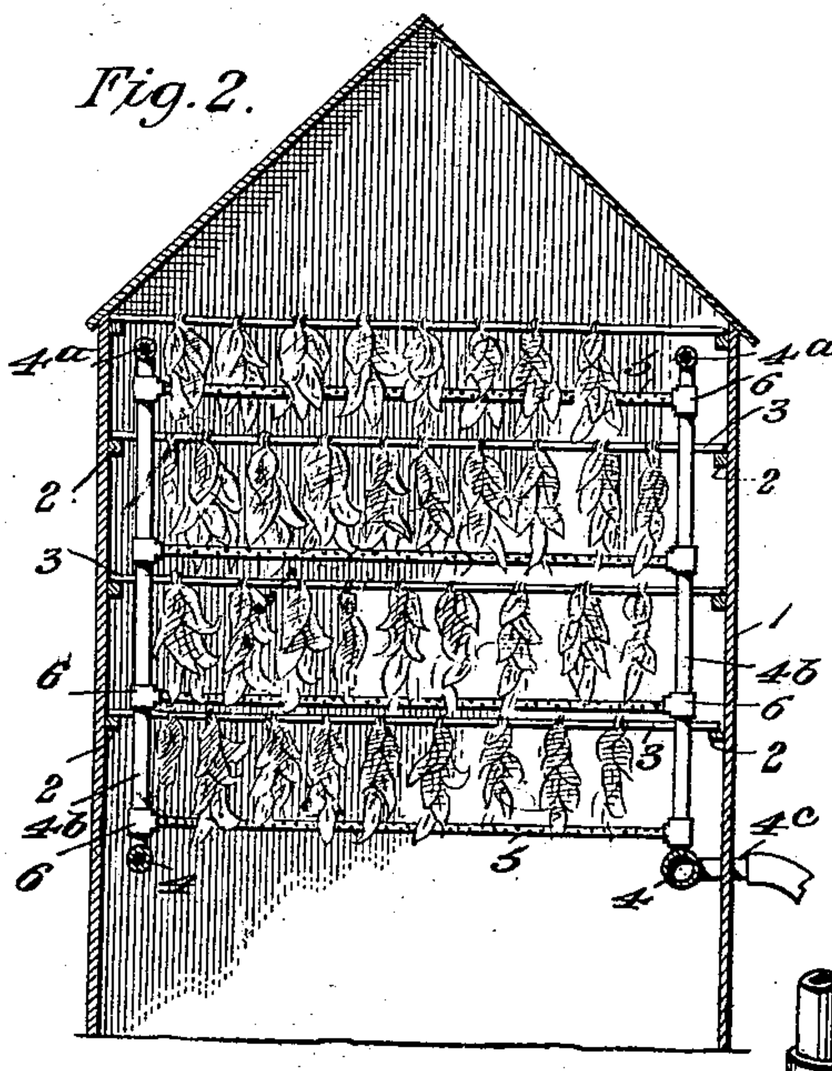

Fig. 3.

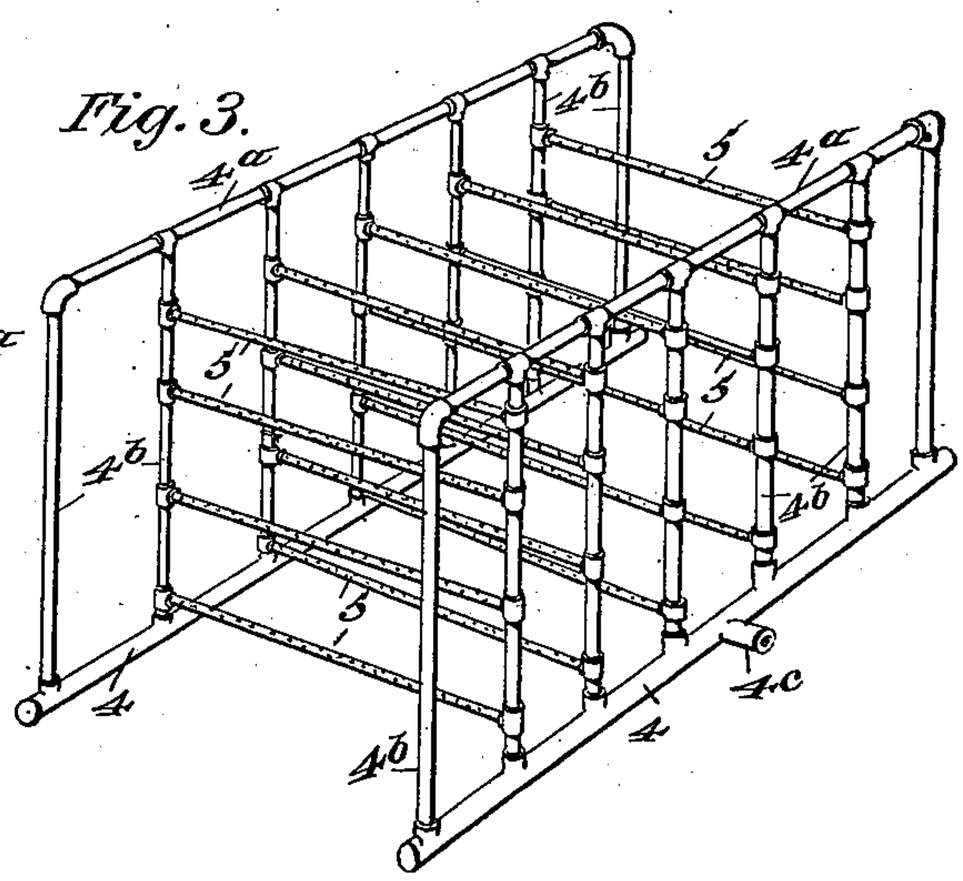

Fig. 4.

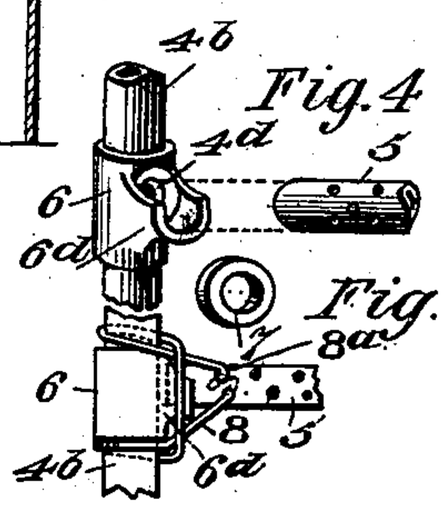

Fig. 4a.

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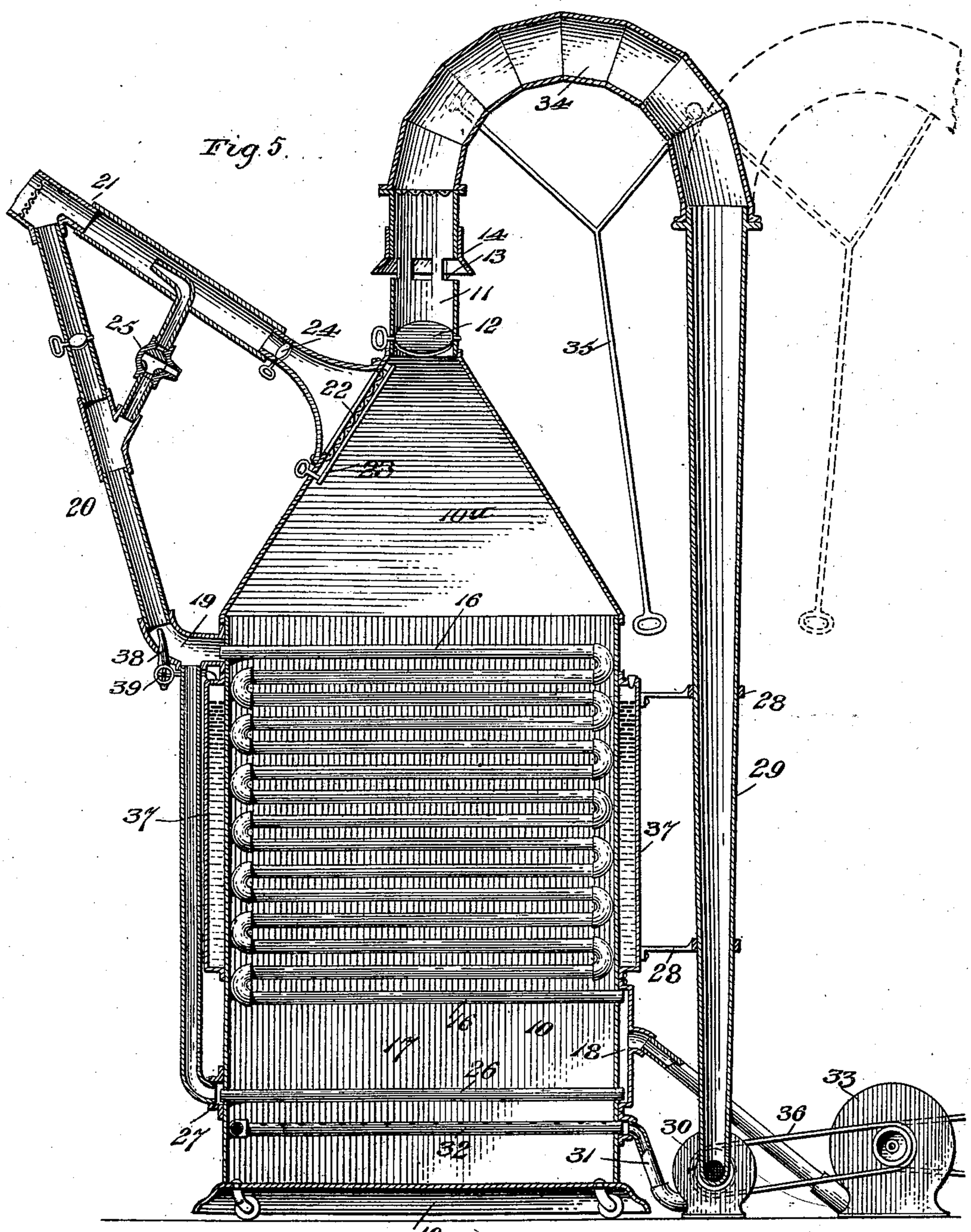
Fig. 5.



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TOBACCO CURING AND ORDERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 646,218, dated March 27, 1900.

Application filed August 25, 1899. Serial No. 728,475. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. HOLLINGSWORTH, residing at Newbern, in the county of Dyer and State of Tennessee, have invented certain new and useful Improvements in Tobacco Curing and Ordering Apparatus, of which the following is a specification.

This invention relates to tobacco treating, particularly to means for first drying the same and afterward damping or casing or ordering it; and primarily this invention seeks to provide an improved means of the character noted capable of being economically constructed and easily set up for use within or in connection with an ordinary tobacco-drying house or barn.

This invention generally comprises a novel and portable system of smoke and air disseminating pipes capable of being detachably supported within the drying house or barn and means disposed externally of the barn for feeding smoke, hot air, or both, or moist air into the disseminating-pipes, as conditions may make desirable, without necessarily disorganizing any of the component parts constituting the complete structure and without necessarily waiting for a proper humidity or dampness of the atmospheric air and without changing the position of the tobacco supported within the barn or housing when it is desired to order same by humidizing it.

Another and desirable object of my invention is to provide a novel arrangement of portable air and smoke disseminator capable of discharging the air or smoke in such directions and manner relatively to the staple hung from the poles or hangers that the drying or dampening operation can be the more expeditiously, economically, and effectively accomplished.

With these and other objects in view, which hereinafter will appear, my invention consists in certain novel features of construction and peculiar combination of parts, as will be first described and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a tobacco curing and ordering barn, illustrating a practical operation of my invention. Fig. 2 is a cross-section of the barn, illustrating the manner in which the portable smoke and air disseminating pipes are arranged relatively to the tobacco-suspending means. Fig. 3 is a view illustrating the general arrangement of a complete set of disseminating-pipes. Figs. 4 and 4ª are views illustrating the manner of detachably connecting the perforated transversely-held pipes with the vertically-disposed conveyer-pipes, and Fig. 5 is a vertical section of the generator forming a part of my complete means for curing and ordering tobacco.

Referring to the accompanying drawings, in which like numerals indicate like parts in all the figures, 1 indicates the barn or curing-house, which in its general construction may be of the conventional size and shape. The tobacco-supporting means are, however, especially arranged to provide for conveniently setting in place my improved system of piping, which is intended to be detachably held within the barn, and for this purpose the sides of the barn have a series of horizontally-disposed cleats 2, upon which the transverse hanger-rods 3 are detachably and adjustably supported, as clearly shown in Fig. 2.

The pipe system comprises a series of longitudinal sections connected by a series of transverse pipe-sections. For the ordinary size tobacco-barn but two side sections are provided, each of which, as will be readily understood by referring to Fig. 3, consists of a lower horizontal pipe 4, an upper horizontal pipe 4ª, and a series of vertical pipes 4ᵇ, joined to the upper and lower pipes 4 4ª. The two side sections are joined by a series of transverse pipes 5, arranged in clearly-defined horizontal tiers, and these pipes 5 are perforated, the pipes 4, 4ª, and 4ᵇ being imperforate for a purpose presently explained. One of the bottom pipes 4 has a lateral inlet-section 4ᶜ, which in practice projects through the side of the barn and connects with the offtake of the smoke, air, and humidizing generator, as clearly shown in Fig. 1.

In the practical construction of the disseminating-pipes the perforated pipes are divided into regular vertical as well as horizontal tiers, and the said tiers are so spaced relatively to the arrangement of the tobacco-hangers that each vertical tier of perforated pipes will discharge upward between a pair of tiers of suspended tobacco-bunches, as best

shown in Fig. 2. The correlation of the tobacco-bunches and the perforated-pipe tiers can, however, be regulated at will and the tobacco hung closely together or separated, as the condition of the staple may make desirable, by reason of the hanger-rods being loosely mounted on the cleats 2. The rods 3 are also loosely supported on the cleats for the reason that the pipe system when fitted together can be placed into the barn in its complete shape by carrying it endwise into one end of the barn, an operation that could not be done were the rods 3 fixedly secured in place, said rods 3 in practice being lifted into a proper position after the tobacco-bunches have been hung therein and after the disseminating-pipe system has been set within the barn.

The perforated pipes can be connected to the vertical or end pipes by ordinary union-couplings, as indicated in Figs. 2 and 3; but I prefer to detachably connect them to the said end pipes, because such arrangement admits of regulating the number of ejector-pipes to suit the size of the barn and the quantity and character of the staple to be treated. Under all conditions, however, the side portions of the piping are made of a fixed size, the number of the perforated pipes being increased or diminished, as desired. For this purpose suitable means are provided whereby the perforated pipes can be conveniently and quickly placed into position or detached, as desired. In Figs. 4 and 4ª I have illustrated one way of doing this and also for closing off the opening in the feeder-pipes 4ᵇ when the transverse pipe is omitted or disconnected. In said figures it will be seen that the pipe 4ᵇ has a discharge-aperture 4ᵈ, and at a point in line with such aperture said pipe carries a rotatable cuff member 6, having an opening adapted to be brought into register with the opening 4ᵈ and having a seat portion 6ᵈ to receive the end of the perforated pipe 5. To connect the pipe 5 to pipe 4ᵇ, it is only necessary to rotate the member 6 to bring its opening into register with pipe 4ᵇ to seat the end of pipe on said member 6, with its end close against the aperture 4ᵈ. To make the joint tight, an asbestos washer 7 is inserted between the pipe 5 and member 6 and the said pipe held fast against said washer by clamping devices, a simple form of such devices being shown, which consists of a spring-wire 8 looped about pipe 4ᵇ and about itself and having its ends 8ª hooked into the perforations of pipe 5. By providing a joint such as described it is obvious that when the pipe-section is removed the opening 4ᵈ can be readily closed by properly turning the cuff 6.

By arranging the perforated pipes as described they will discharge up between the bunches as also down over them and sidewise, the upper and lower sections dominating to such an extent as to provide for a more positive penetration of the discharges from the pipes between the bunches. This result is attained to a high degree on account of the pipes forming the sides being imperforate, such arrangement also providing for the more uniform dissemination of the discharges both as to volume and condition for the reason that were the side members perforated the discharges from the transverse pipes, especially those at the top, would be materially decreased and of less effect than the discharges through the lowermost tiers of pipes.

So far as described the operation is as follows: Smoke or hot air, or a mixture of both, passing into the disseminator escapes only through the perforated transversely-disposed pipes and in such manner as to cause a quick, uniform, and effective drying of the staple. After the staple is dried as desired the same can be immediately ordered or humidized without in the slightest rearranging the parts within the barn or shifting the tobacco from its position, such operation being effected by forcing moist atmosphere through the disseminating-pipes. While this latter result may be obtained by connecting a special humidizing means with the inlet to the disseminator, yet I prefer to employ a generating means which can be almost instantly adjusted to discharge dry air or smoke, or both, at the same time, or a moist air, without requiring a secondary or supplemental means other than the generator, having a single offtake connecting with the disseminator.

The generator in its general construction—that is, as a means for creating and discharging smoke, dry hot air, or both, or moist air—forms an essential feature of my present case. I shall, however, to render its operation and advantages clear, describe the same in detail.

The generator shown in detail in Fig. 5 comprises a body formed, preferably, of sheet metal and mounted on casters to facilitate its movement. The body 10 terminates in a conical top 10ª, with which the natural offtake-pipe 11 is connected. This pipe has a cut-off valve 12 and at a point above said valve it has air-inlets 13, the area of which can be readily increased or diminished by a proper shifting of the sliding hood 14, as shown.

16 indicates one set of a series of coil-pipes, the lowermost members or legs of which form a crown part of the fire-space 17, the end of said pipes as well as all of the other like series of pipes (not shown) opening into a collecting-space 18 common to the lower end of all the coiled pipes. The upper ends of all the pipe-coils discharge into a collecting-space 19, having a single offtake 20, that discharges into a smoke-outlet 21, that opens into the conical top of the body 1, its entrant end having a spark-arrester 22 and an agitator 23 for clearing it. The pipe or outlet 21 has a cut-off damper 24, as has the offtake 20, said offtake 20 also having a valved branch pipe 25, that injects air into the pipe 21.

The grate portion of the fire-pot is formed of a series of tubular pipes 26, that communi-

cate at one end with the air-space 18 and at the other end discharge into a space 27, which in turn discharges into the space 19.

28 indicates brackets projected from one side of the generator-body, on which is supported a suction-pipe 29, that discharges at the lower end into a fan-chamber 30, that has its outlet-discharge into a space 31, with which a series of jet-pipes 32 communicate and which are disposed below the grate-pipes and discharge up between them.

33 indicates a blower operated by electric or other power, which has its blowpipe held to discharge into the space 18.

34 indicates an elbow-pipe section pivotally supported in the pipe 29 to turn in a horizontal plane, said section having an attached handle 35, whereby it can be conveniently manipulated. The elbow-pipe is so arranged that it can be swung over the draft-flue 11 and form, as it were, together with the suction-fan, a means for creating an increased draft and also for consuming the smoke or products of combustion. The blower may be driven in any well-known manner, for example, by belting it with the main-blast fan-shaft. In the latter case by shifting the belt 36 the suction-fan can be held at rest and the generator operated by its natural draft.

37 indicates a water-jacket surrounding the heating-space of the generator. This provides a simple means for generating moisture.

The water-space has a suitable feed at one point and a blow-off 38, which has also a way-valve 39, that can be set to discharge into atmosphere or into the air-offtake flue-pipe 20.

In practice the generator is located adjacent the barn under a shed or other housing. When it is desired to smoke-dry the tobacco, the means for creating an air-blast are held at rest and the pipe 20 closed and the damper in the pipe 11 also closed. This will cause the smoke to pass out into the single offtake 21 into the disseminating-pipes within the barn, danger of fire being reduced to the minimum by reason of the spark-arrester at the entrant end of the offtake 21 and the fact that the discharge-pipes in the barn have very small outlets. Should it be desired to create an increased draft, the valve in pipe 21 and in its injector-section may be slightly opened or the draft may be regulated by opening the door in the ash-pit of the heater. Now should it be desired to discharge both hot air and smoke it is only necessary to open the valve in the pipe 20 full and set the blast-fan running to feed the air under pressure, if desired. To feed air only, the smoke-pipe is closed and the smoke allowed to pass out the natural offtake 11. Should it be desired to humidize the tobacco after being dried, this can be done by opening the valve in the discharge from the fluid-space to allow the steam to pass out with the warm air. Thus it will be seen I can begin to humidize the tobacco almost instantly after it has been dried. I can dry it by smoke alone, hot-air alone, or both hot air and smoke, and after it is dry I can disseminate moisture to properly cure or order the tobacco, the several operations of treating the tobacco being accomplished without shifting the tobacco-bunches after they have been hung.

While I have described and illustrated my invention as especially adapted for treating tobacco, it is obvious it can be used for other drying and humidizing purposes.

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

1. A tobacco-treating apparatus, comprising a suitable barn or housing means for detachably suspending the tobacco-bunches in clearly-defined horizontal and vertical rows; a disseminator for discharging air, smoke or moisture into the barn, said disseminator comprising a series of portable pipes consisting of longitudinal imperforated side sections and perforated transverse pipes, connecting the side sections; one of the side sections having an inlet and a generator, having means for alternately forcing hot, or moist air into the disseminator, substantially as shown and for the purpose described.

2. In a tobacco-treating apparatus, the combination with the barn; the means for distributing the smoke or air into the staple and means for suspending the staple substantially as described; of a generator having its discharge connected with the disseminator, comprising a heater provided with air-circulating pipes, said heater having a water-jacket connected with the air-offtake, and a smoke-offtake connected with the air-offtake, said air and smoke offtakes and the water-jacket offtake, having valves whereby to govern the flow of air, smoke or moisture, all being arranged substantially as shown and described.

3. An apparatus for the purposes described, comprising a barn or housing, having means for detachably and adjustably supporting the tobacco-bunches in clearly-defined rows; of a portable means for discharging the air or vapor in clearly-defined directions relatively to the suspended bunches, said means comprising a pair of side frames formed of pipe-tubing 4^a 4^b, one of said frames having an inlet 4^c, said tubing having its vertical members 4^b, formed with outlets, combined cuff and coupling members rotatably mounted over the outlets in said members 4^b, said coupling members having openings adapted to register with the outlets about which they rotate; a series of perforated tubular pipes having their ends adapted to seat in the rotatable cuff members; means for holding the said pipes secured to such members and means for forcing air, smoke or vapor into the disseminating-pipes, for the purposes specified.

4. As an improvement in treating tobacco, the combination with the barn or housing having a series of longitudinal cleats 2, on its inner sides; the disseminator adapted to be moved into the barn in its complete form, said

disseminator comprising the side members composed of the imperforated pipes 4 4^a and 4^b; the perforated transverse pipes; means for detachably securing the said pipes to the pipes 4^b, of the side sections; one of the pipes 4, having an inlet 4^c, adapted to project through the side of the barn; the rods 3, detachably and adjustably held on the side cleats 2, and means for charging hot, or moist air into the inlet 4^c, all being arranged substantially as shown and described.

JAMES L. HOLLINGSWORTH.

Witnesses:
Mrs. J. L. HOLLINGSWORTH,
FRED G. DIETERICH.