

A. GNADT.  
 COMBINED DRYING AND CONVEYING SYSTEM.  
 APPLICATION FILED MAR. 31, 1911.

1,008,256.

Patented Nov. 7, 1911.

2 SHEETS—SHEET 1.

Fig. 1

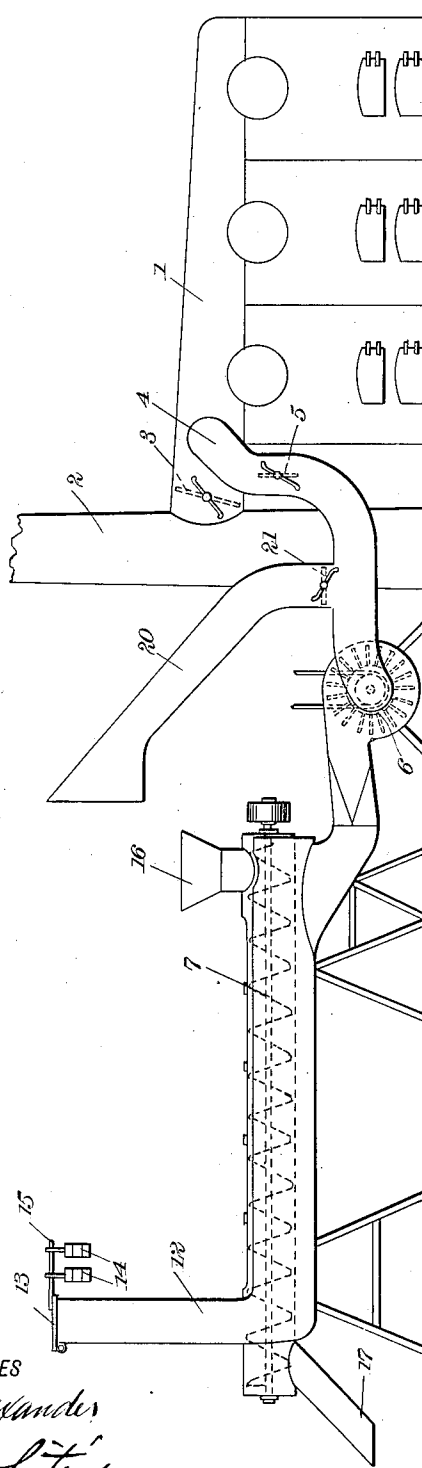
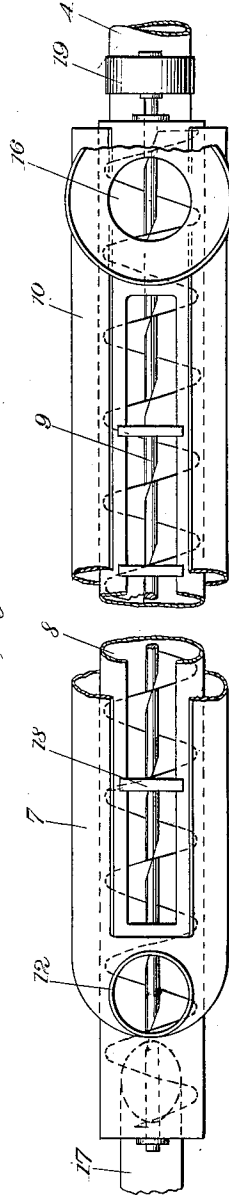


Fig. 2



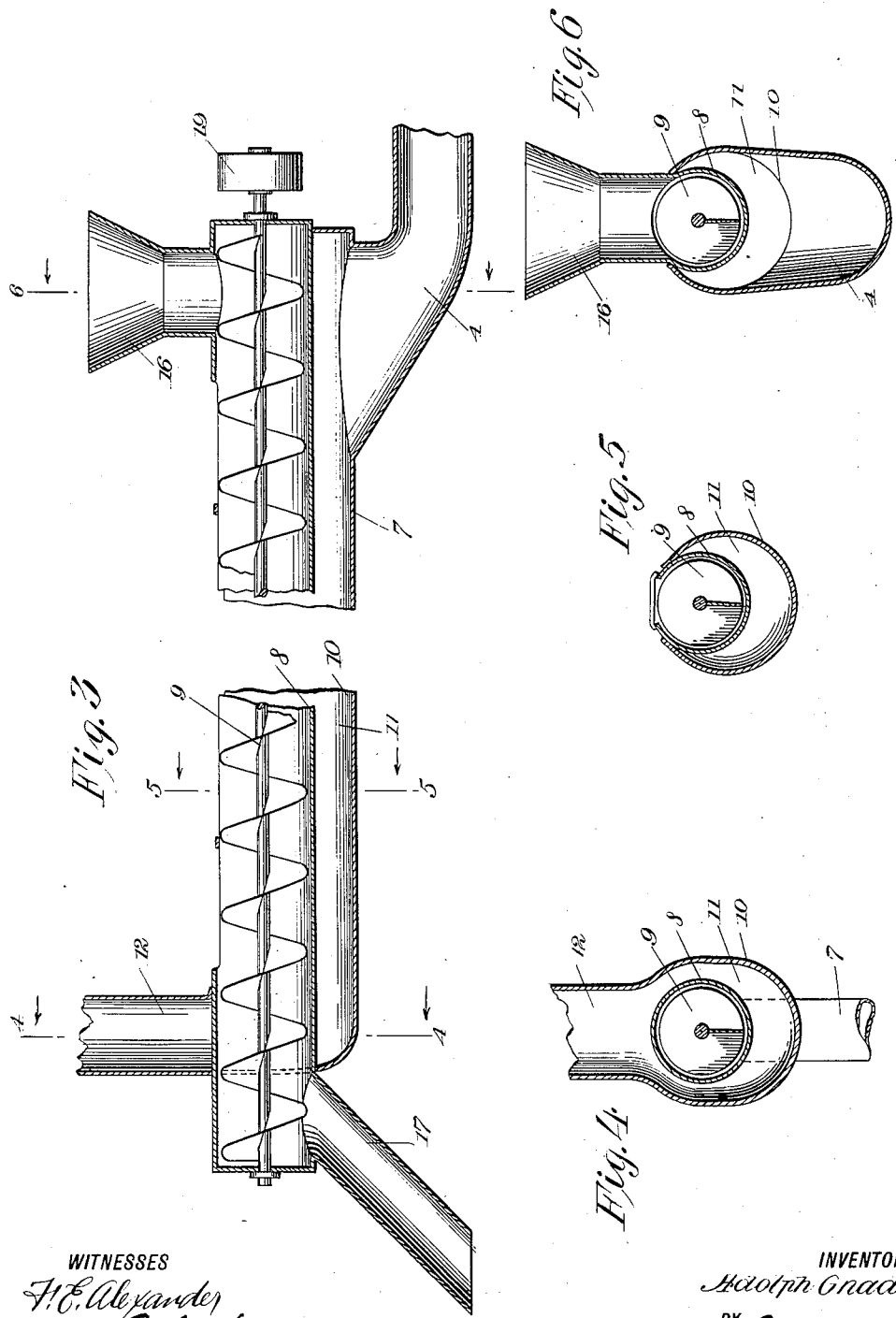
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WITNESSES  
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# UNITED STATES PATENT OFFICE.

ADOLPH GNADT, OF ST. LOUIS, MISSOURI.

COMBINED DRYING AND CONVEYING SYSTEM.

1,008,256.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed March 31, 1911. Serial No. 618,149.

*To all whom it may concern:*

Be it known that I, ADOLPH GNADT, a citizen of the United States, and a resident of St. Louis, in the State of Missouri, have invented a new and Improved Combined Drying and Conveying System, of which the following is a full, clear, and exact description.

This invention relates to a new and improved system for utilizing the waste heat from a battery of boilers or the like, in drying any material, such as salt, saw-dust, or the like, while conveying it from one point to another.

An object of this invention is to provide a system which will be simple in construction, comparatively inexpensive to manufacture, readily accessible for the purpose of cleaning and manipulation, and efficient in its operation.

A further object of this invention is to provide means for conducting the waste heat from a heat-generating system, around a conveying member, and out of contact with the material being conveyed, so as to dry the material being conveyed, in a thorough and efficient manner.

These and further objects, together with the construction and combination of parts, will be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a diagrammatic view in side elevation; Fig. 2 is a contracted top plan view; Fig. 3 is a vertical longitudinal section; Fig. 4 is a transverse section on the line 4—4 of Fig. 3; Fig. 5 is a vertical section on the line 5—5 of Fig. 3; and Fig. 6 is a vertical section on the line 6—6 of Fig. 3.

Referring more particularly to the separate parts of this invention as embodied in the form shown in the drawings, 1 indicates a heat-generating system, which may be of any suitable structure, such as the battery of boilers shown. Instead of permitting the waste heat to pass directly up into the chimney 2, there is provided a damper 3, whereby the gases may be utilized in the drying system, by diverting them into a conduit 4. The supply of hot gases to the conduit 4 may be regulated by any suitable means,

such as a damper 5. The hot gases are drawn into the conduit 4 by any suitable fan, indicated at 6, from whence they are supplied to the outer casing of a drier 7. The particular form of this drier will be seen by reference to Figs. 2 to 6. From these figures, it will be seen that there is provided an inner conveying casing 8, in which is located a conveyer 9, which may be of any suitable type, but is shown in the form of a spiral screw conveyer.

Spaced apart from the casing 8, at the sides and bottom thereof, and connected adjacent the top thereof, there is provided a circumjacent casing 10, which forms, with the casing 8, a gas passage 11, through which the gases blown in by the fan 6 may pass to an outlet or up-take 12. The outlet for the up-take 12 is normally closed by a gate 13, which is held in its closed position by means of one or more weights 14, adapted to be suspended at varying distances along an extension rod 15, whereby the pressure on the gate 13 may be regulated so as to vary the pressure at which it will rise due to the gases in the passage 11. By this means, the heat of the drier 7 can be regulated.

The material to be dried is fed into a hopper 16 at one end of the conveying casing 8, and passes out from the conveying casing 8 at the opposite end, through any suitable means, such as a chute 17, which may carry it to any desired point. It will be noted that the conveying casing 8 is preferably open at the top, so as to permit the moisture driven off by the heat to pass from the material being dried. The conveying casing may be open its entire length at the top, or at suitable spaced intervals, and in the case of the former, the sides may be tied together by suitable reinforcements, indicated at 18. The conveyer may be driven in any suitable manner, as by means of a belt connected by a belt pulley 19 on the shaft of the screw-conveyer.

It may be desired at times to dilute the hot gases coming from the heat unit 1, so as to cool them somewhat before permitting them to enter the drier 7. For this purpose, I provide an auxiliary intake 20, into which cold air may be drawn, and the quantity of which may be regulated by a damper 21 at the junction of the intake 20 with the conduit 4.

The utility of the device will be readily understood when taken in connection with the

above description. The material to be dried is supplied to the hopper 16 in any suitable manner, where it will come into the conveying casing 8, and under the sphere of influence of the screw-conveyer 9. This screw conveyer is being constantly rotated, so that the material will be constantly turned and shifted as it is fed from one end of the drier to the other, thereby subjecting every portion of the material to the drying influence of the hot gases passing through the passage 11 circumjacent the conveying casing 8. These gases may be drawn in any amounts from the heat unit 1 by the fan 6 by regulating the speed of drive of the fan, and also by regulating the amounts which the dampers 3 and 5 are opened. The pressure at which the gases remain in the passage 11 can be regulated by regulating the position of the weights 14. If by any change the gases were hotter than necessary for the proper drying of the material, the damper 21 could be opened a greater or less degree, drawing in cool air, with which these gases would be diluted. The material, after being constantly turned and subjected to the drying action, will pass out of the drier through the outlet 17, where it may be delivered to any suitable point.

While I have shown one embodiment of my invention, I do not wish to be limited to the specific details thereof, but desire to be protected in various changes, alterations and modifications which may come within the scope of the appended claims.

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

1. The combination with a heat-generating unit, of a drier, and a conduit for connecting said heat-generating unit with said drier and adapted to carry hot gases from said heat-generating unit to said drier, said

drier comprising an inner conveying casing, a conveyer operating in said casing, an outer casing circumjacent said first-mentioned casing and spaced apart therefrom so as to form a passage through which the gases from said heat unit may pass and impart heat to the contents of said conveying casing, an up-take for said passage, a gate closing the outlet to said up-take, an extension on said gate, and weights on said extension for varying the pressure at which said gate will open, and thereby varying the pressure in said passage.

2. The combination with a heat-generating unit, of a drier, a conduit for carrying waste heat gases from said heat-generating unit to said drier, a fan connected to said conduit, for drawing said gases from said heat-generating unit and supplying them to said drier, an air intake located intermediate said fan and said heat-generating unit and adapted to supply air to dilute the heat gases supplied to said drier, a damper for controlling the supply of gases from said heat-generator to said conduit, and a damper for controlling the supply of air from said intake to said conduit, said drier comprising an inner conveying casing open at the top, a hopper for said casing, an outer conveying casing contacting with said inner casing along the top and spaced apart therefrom along the sides and bottom to form a passage communicating with said conduit, an up-take for said outer casing, a gate for said up-take, and an outlet chute for said inner casing.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADOLPH GNADT.

Witnesses:

H. WHITING,

PHILIP D. ROLLHAUS.