

No. 863,830.

PATENTED AUG. 20, 1907

W. ASHLEY & E. J. HULING.

DRIER.

APPLICATION FILED MAR. 22, 1907.

2 SHEETS—SHEET 1

Fig. 1.

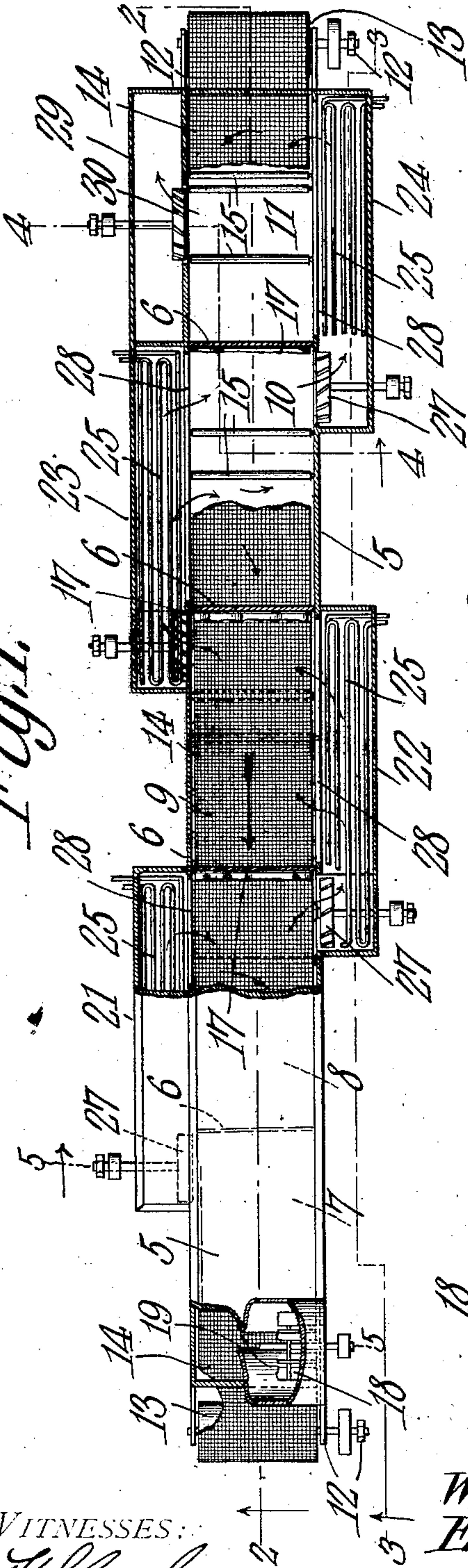


Fig. 2.

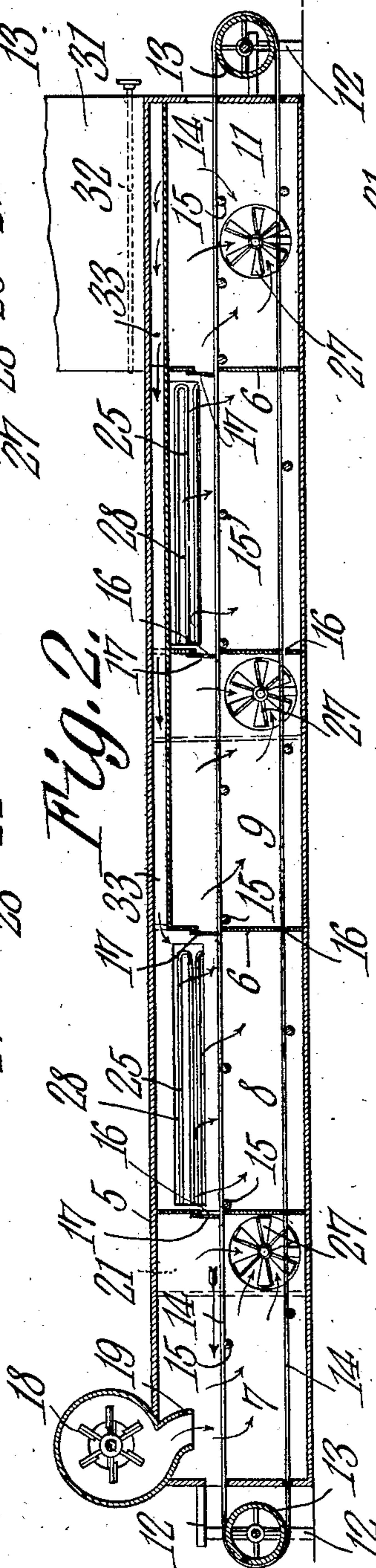
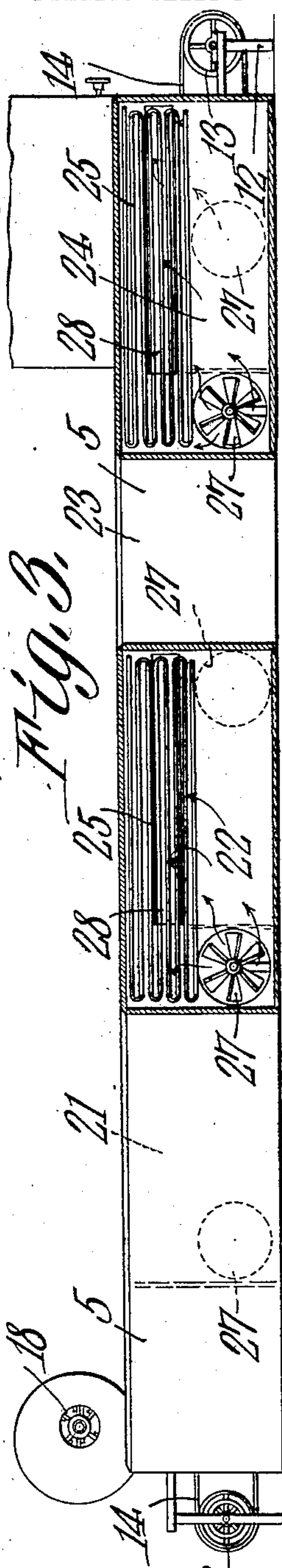


Fig. 3.



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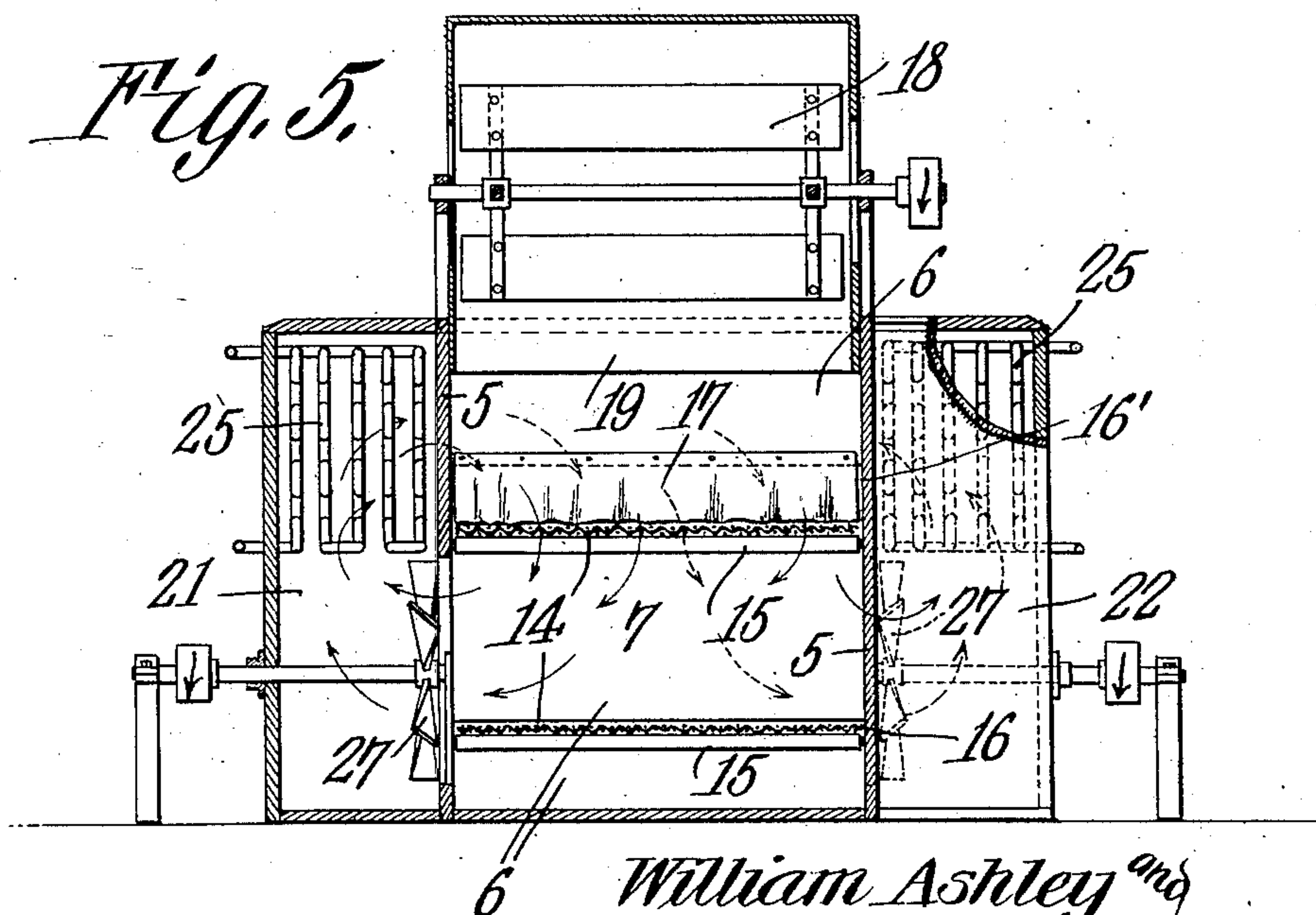
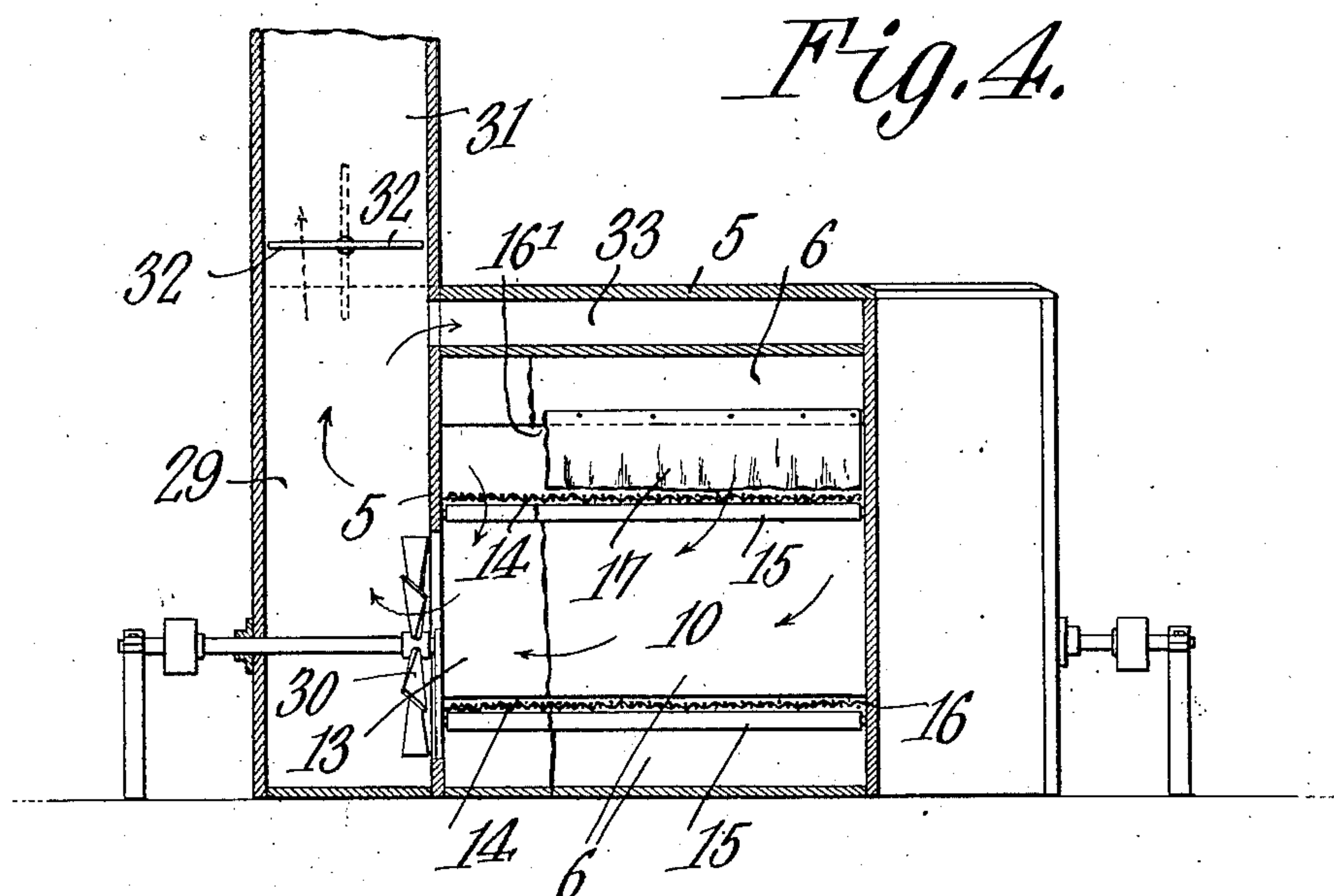
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

WILLIAM ASHLEY AND EDMUND J. HULING, OF TRINIDAD, COLORADO.

## DRIER.

No. 863,830.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed March 22, 1907. Serial No. 363,851.

*To all whom it may concern:*

Be it known that we, WILLIAM ASHLEY and EDMUND J. HULING, citizens of the United States, residing at Trinidad, in the county of Las Animas and State of Colorado, have invented a new and useful Drier; of which the following is a specification.

This invention relates to machines for drying wool, cotton, tobacco and other material and has for its object to provide means for imparting a spiral motion to a current of air and directing the same downwardly and through different portions of the stock or other material to be treated as the latter is fed through the drying chamber.

A further object of the invention is to provide means for supplying fresh air to the discharge end of the machine at a point above the stock or material and directing said air downwardly through the stock in the successive drying chambers, and further to provide means for heating the current of air after its passage through the stock in each chamber.

A further object is to provide a casing or housing having a plurality of drying chambers or sections each provided with a fan and having a coil associated therewith, said fans being disposed alternately on opposite sides of the casing for directing the air downwardly through the stock in one chamber and delivering said air above the stock in the adjacent chamber.

A further object is to provide means for directing the air from the last fan at the receiving end of the machine into a conduit and conducting the same rearwardly through the machine so as to permit the same to be again utilized for drying purposes.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification: Figure 1 is a top plan view partly in section of a drier constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view taken on the line 2—2 of Fig. 1 and looking in the direction of the arrow. Fig. 3 is a longitudinal sectional view taken on the line 3—3 of Fig. 1 and looking in the direction of the arrow. Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 1. Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 1.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The machine includes an elongated casing or housing 5 provided with a plurality of transverse partitions 6

forming a series of drying chambers or sections indicated at 7, 8, 9, 10 and 11.

Mounted for rotation in suitable supports 12 at the opposite ends of the casing or housing are rollers or drums 13 carrying an endless conveyer or apron 14, the latter being preferably formed of wire netting or foraminous material and adapted to receive and support the wool, cotton, tobacco or other stock to be treated.

The conveyer or apron 14 passes through the several drying sections or chambers and is supported in horizontal position by means of suitable rollers 15.

The lower portion of each transverse partition is provided with a slot or opening 16 for the reception of the lower leg of the apron 14 while the upper portions of the several partitions are formed with relatively large openings 16' which are normally closed by flexible flaps or curtains 17 so as to permit the free passage of the stock on the apron through the several sections without danger of displacing said stock.

Mounted for rotation above the casing or housing at the discharge end of the machine is a fan 18 the spout 19 of which extends within the drying chamber or section 7 and serves to supply the drier with fresh air.

Secured to the opposite sides of the casing or housing are a plurality of auxiliary casings or heating compartments 21, 22, 23 and 24 preferably arranged in staggered relation with the opposite ends of each compartment over-lapping adjacent drying compartments or sections.

Arranged within the several auxiliary casings or heating compartments are steam coils 25 by means of which the air from the fan or blower 18 is thoroughly heated prior to its delivery on the stock.

Mounted for rotation in the lower part of each heating compartment is a fan 27 which serves to impart a spiral motion to the current of air from the fan or blower 18 and deliver the same downwardly through the stock on the apron or conveyer in the several drying chambers or sections. It will thus be seen that the fan 27 in the heating compartment 21 will draw the air downwardly through the stock on the conveyer in the section 7 and force the same upwardly between the heating coils 25 in the compartment 21 from whence it will be discharged through an opening 28 in the adjacent wall of the casing into the drying chamber or section 8.

The heated air delivered through the opening 28 above the stock in the section 8 will be drawn downwardly through the stock by the fan in the compartment 22 and thence pass upwardly through the coils in said compartment and through a corresponding opening 28 in the opposite side of the casing and be discharged above the stock in the compartment 9, the air in the



several sections or drying chambers being successively drawn downwardly through the stock in each section in the manner, described.

Arranged in a casing or housing 29 at the discharge end of the machine is an auxiliary fan 30 which serves to draw the air downwardly through the last compartment 11 from whence it is delivered through a pipe 31 to the atmosphere.

Mounted in the pipe 31 is a damper or valve 32 by means of which the discharge of air through the pipe 31 from the compartment 29 may be controlled, or the flow of air entirely cut off so as to cause the same to enter the conduit 33.

The conduit 33 is preferably disposed at the top of the drier and opens into the drying chamber or compartment 8 so that when desired the air from the compartment 29 may be discharged into the section 8 and used over again.

The air in its passage through the conduit 33 is reheated but, if desired, suitable heating coils may be arranged in said conduit to assist in heating the air preparatory to discharging the same into the drying chamber.

In operation the wool, cotton, tobacco or other material is placed on the conveyer and the latter rotated from any suitable source of power so as to cause the conveyer to travel through the several sections or drying chambers of the machine, the stock on the apron receiving the effect of the blast of air drawn downwardly through said sections in the manner before stated. It will thus be seen that the stock is passed through successive chambers graded from high heat at the point of entrance to a moderate temperature at the discharge end or point of exit thereby thoroughly drying the material and producing a soft fiber free from harshness.

By imparting a spiral movement to the current of air the same blast of air does not come into contact with the same material twice, while by reason of the downward passage of the air through the several sections the stock is effectually retained in position on the endless conveyer during the drying operation.

From the foregoing description it is thought that the construction and operation of the device will be readily understood by those skilled in the art and further description thereof is deemed unnecessary.

Having thus described the invention what is claimed is:

1. A drier including a drying chamber, an endless conveyer operating within the chamber and adapted to receive the stock, means for supplying a current of air to said chamber, and means for directing the current of air in a continuous sinuous path and causing it at predetermined intervals to traverse the path of movement of the conveyer always in a downwardly direction.

2. A drier including a drying chamber, a conveyer operating within the chamber and adapted to receive the stock, means for supplying a current of air to said chamber, and means for directing the current of air progressively and downwardly through the conveyer alternately from right to left or vice versa.

3. A drier including a drying chamber, an endless conveyer operating within the chamber and adapted to receive the stock, means for supplying a current of air to said chamber at the discharge end of the conveyer and above the stock, and means for directing the current of

air progressively and downwardly through the conveyer alternately from opposite sides of the chamber.

4. A drier including a drying chamber provided with a plurality of sections, a conveyer operating within the several sections and adapted to receive the stock, means for supplying a current of air to one of said sections above the stock, and means for directing the current of air progressively and downwardly through the stock, alternately from opposite sides of said sections.

5. A drier including a sectional drying chamber, a conveyer passing through the several sections of the drying chamber and adapted to receive the stock, a fan for supplying air to one of the sections, means for heating the air, and means for directing the current of air progressively and downwardly through the stock alternately from opposite sides of said sections.

6. A drier including a casing provided with a plurality of drying chambers, a conveyer operating within the several chambers and adapted to receive the stock, means for supplying a current of air to one of said chambers, heating compartments disposed in staggered relation on the opposite sides of the casing and communicating with adjacent drying chambers, and means for drawing the air from the source of supply downwardly through the conveyer in one chamber and discharging the same into the adjacent heating compartment for delivery to the next succeeding chamber.

7. A drier including a casing provided with a plurality of drying chambers, a conveyer operating within the several chambers and adapted to receive the stock, means for supplying a current of air to one of the chambers at the discharge end of the conveyer, heating compartments disposed in staggered relation on the opposite sides of the casing and communicating with adjacent drying chambers, heating coils disposed within the compartments, and means for directing the air downwardly through the conveyer in one chamber and discharging the same upwardly between the heating coils and thence laterally and downwardly through the conveyer in the succeeding section.

8. A drier including a casing having a plurality of drying chambers, an endless conveyer operating within the several chambers and adapted to receive the stock to be treated, means for supplying a current of air to one end of the casing, heating compartments disposed in staggered relation on the opposite sides of the casing and having their opposite ends communicating with adjacent drying chambers, and means disposed within each heating compartment for directing the air downwardly through the conveyer in one chamber and forcing the same through the adjacent heating compartment for delivery above the conveyer in the succeeding section.

9. A drier including a casing provided with a plurality of drying chambers, a conveyer operating within the several chambers, means for supplying a current of air to the casing at one end thereof, heating compartments disposed in staggered relation on opposite sides of the casing and having their opposite ends communicating with adjacent drying chambers, there being slots formed in the walls of the casing and communicating with adjacent heating compartments, and means disposed within the heating compartments for directing the air in one chamber downwardly through the conveyer and forcing the same upwardly through the adjacent heating compartment for delivery through the adjacent slot into the succeeding chamber.

10. A drier including a casing provided with a plurality of drying chambers, an endless conveyer operating within the chambers and adapted to receive the stock, means for supplying a current of air to one end of the casing, means for imparting motion to the current of air and directing the same downwardly through the stock in the several chambers, and means for conducting the exhaust air from the last chamber through the machine and delivering the same into an adjacent chamber.

11. A drier including a casing having a plurality of drying chambers, an endless conveyer operating within the several chambers and adapted to receive the stock,



means for supplying a current of air to one of said chambers, a plurality of heating compartments disposed on opposite sides of the casing and communicating with adjacent chambers, fans disposed within the heating compartments for directing the current of air downwardly through the conveyer in one section and discharging the same through the adjacent heating compartment into the next succeeding section above the stock, an auxiliary compartment, a conduit disposed within the casing and forming a source of communication between the auxiliary compartment and one of the drying chambers, a dis-

charge pipe, and a valve for controlling the discharge of air through said pipe.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of 15 two witnesses.

WILLIAM ASHLEY.  
EDMUND J. HULING.

Witnesses:

THOMAS G. CHITTENDEN,  
NEWTON C. MCCLURE.