M. F. KEVLIN.

DRIER.

APPLICATION FILED MAR. 3, 1916.

1,249,771.

Patented Dec. 11, 1917.

4 SHEETS—SHEET 1.

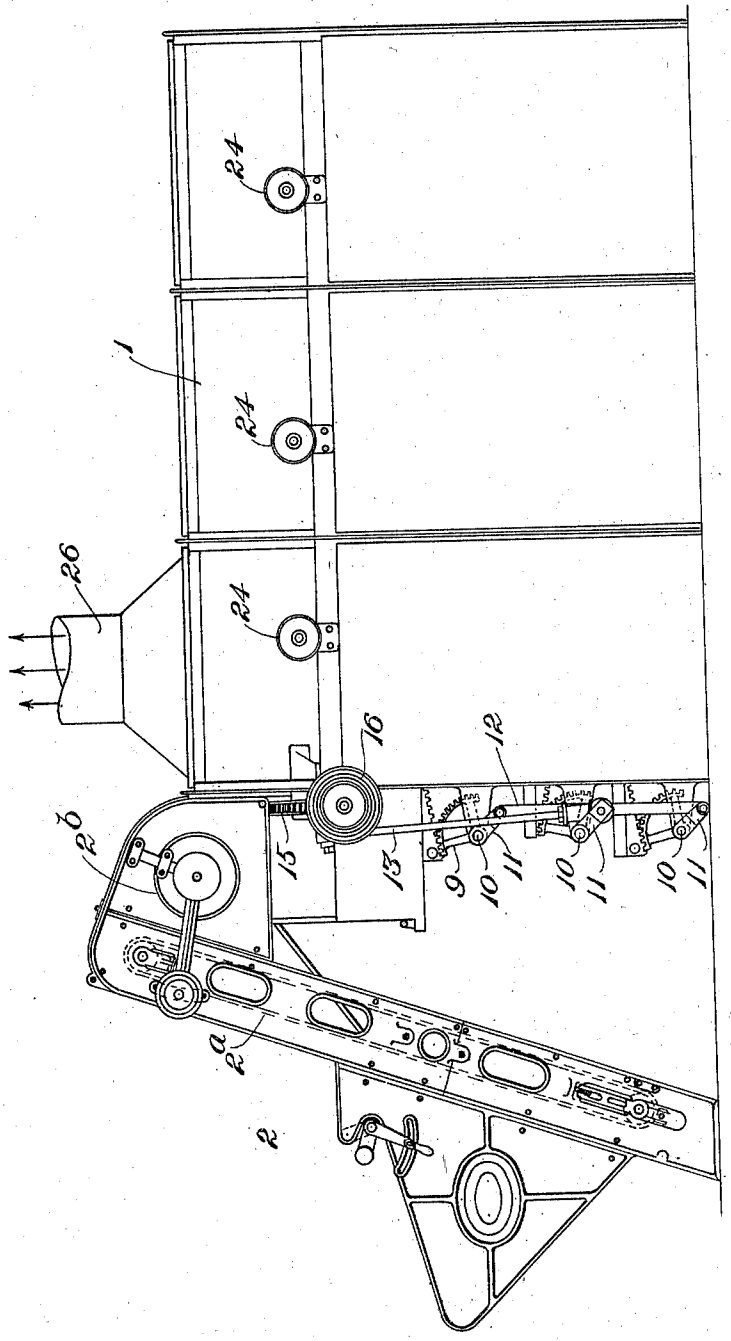


Fig. 1.

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4 SHEETS—SHEET 2.

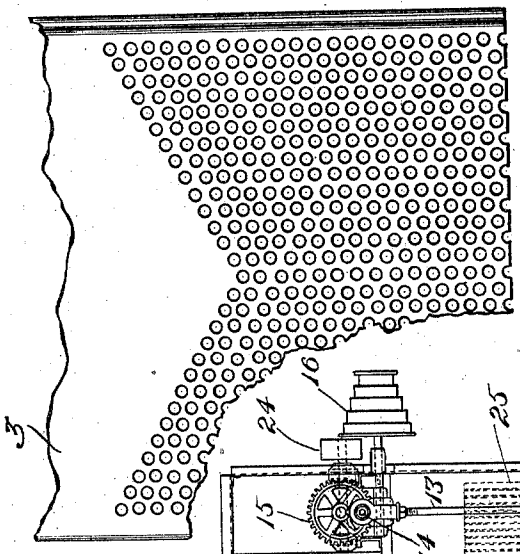


Fig. 6.

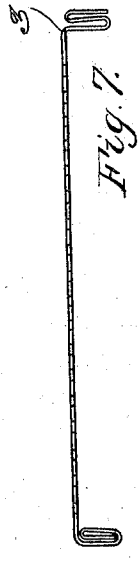


Fig. 7.

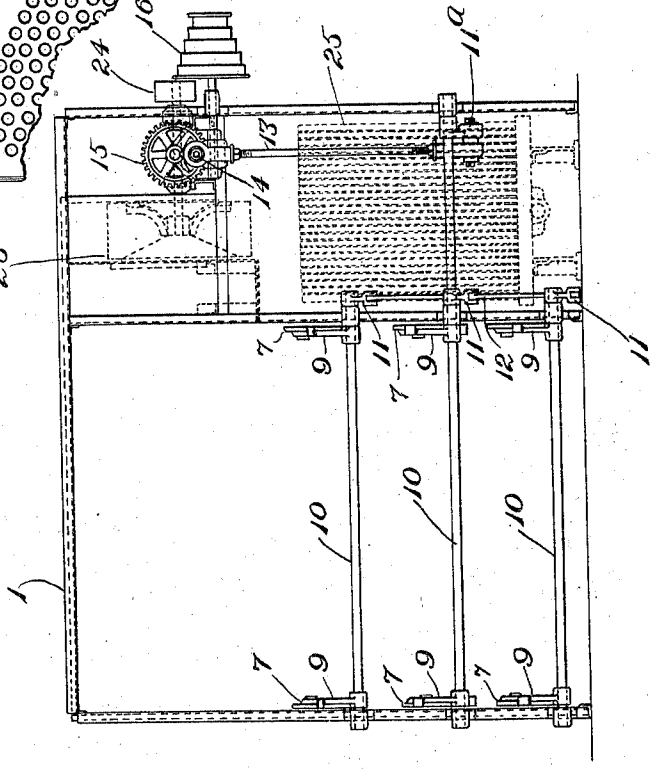


Fig. 2.

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4 SHEETS—SHEET 3.

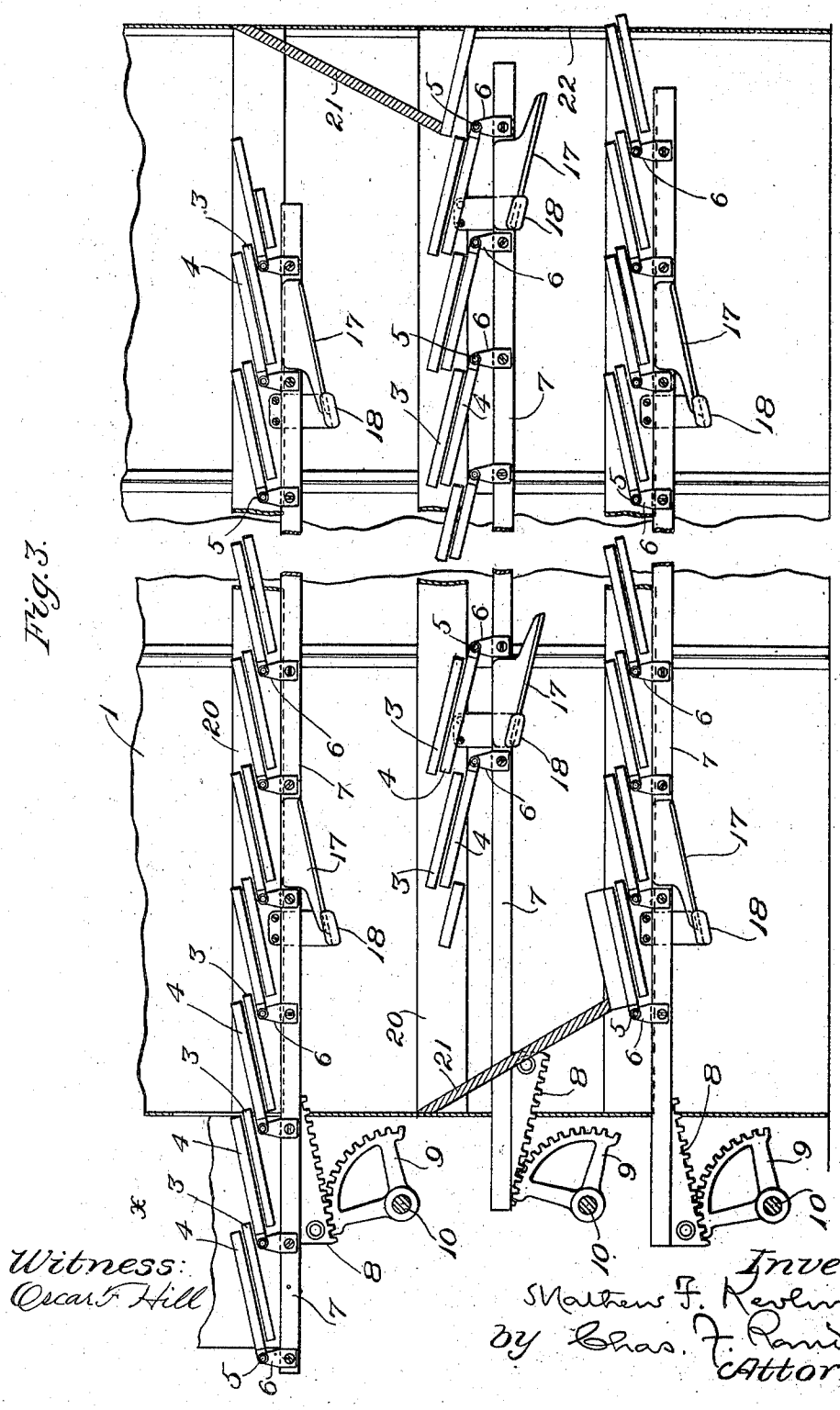


Fig. 3.

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4 SHEETS—SHEET 4.

Fig. 5.

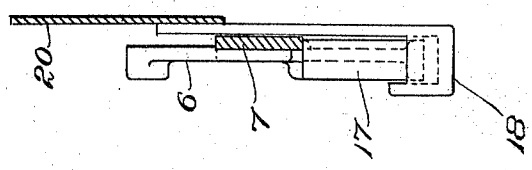
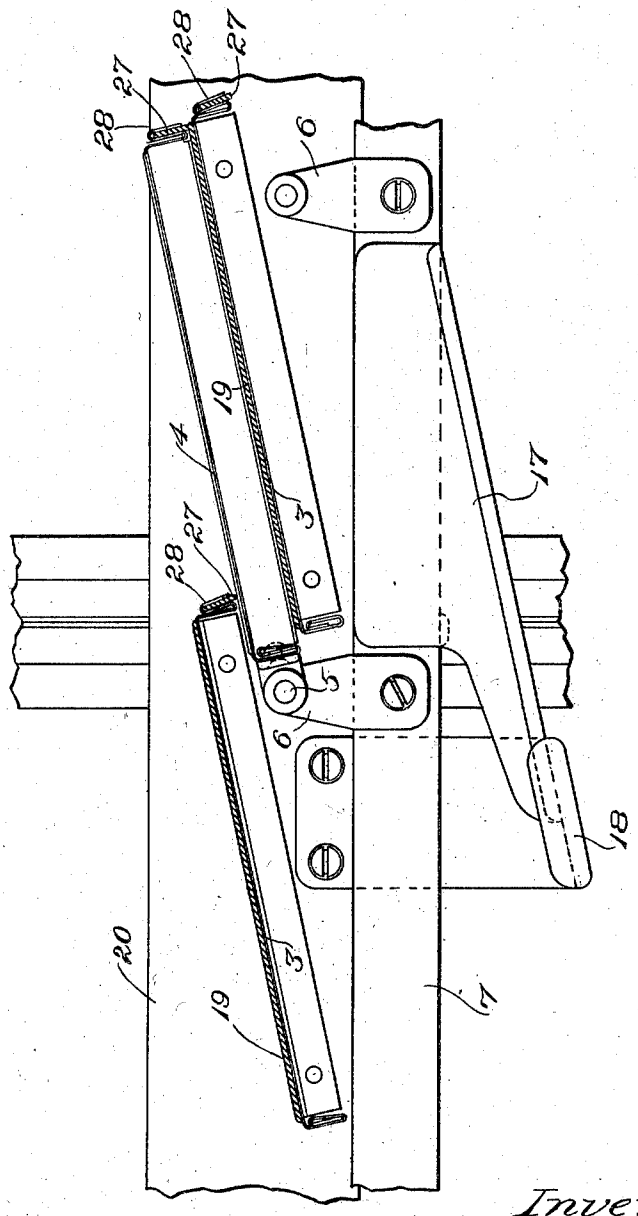


Fig. 4.



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Inventor:
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UNITED STATES PATENT OFFICE.

MATHEW F. KEVLIN, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO THE JAMES HUNTER MACHINE COMPANY, OF NORTH ADAMS, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

DRIER.

1,249,771. Specification of Letters Patent. **Patented Dec. 11, 1917.**

Application filed March 3, 1916. Serial No. 81,771.

To all whom it may concern:

Be it known that I, MATHEW F. KEVLIN, a citizen of the United States, residing at Pittsfield, in the county of Berkshire, State of Massachusetts, have invented a certain new and useful Improvement in Driers, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in an improved drier for wool, rags, cotton, and other loose material. The general aims of the invention are to provide a drier of great efficiency and having large and economical drying capacity, in which every particle of stock shall be subjected to the same temperature and volume of air, and which will secure the results of even drying, lofty stock, and a better quality for future operations.

An embodiment of the invention is illustrated in the drawings, in which latter—

Figure 1 is a side elevation of a drier containing the said embodiment of the invention.

Fig. 2 is an end elevation from the left in Fig. 1, with the automatic feeder removed.

Fig. 3 is a view on a larger scale than Figs. 1 and 2 showing in longitudinal vertical section the drier of the said figures.

Fig. 4 is a view in section on a still larger scale than Fig. 3, showing a group of the sections of a platform.

Fig. 5 is a transverse section of certain of the parts that are shown in Fig. 4.

Fig. 6 is a plan view of a portion of one of the shelves detached, illustrating the perforations.

Fig. 7 is an end view of a shelf.

The invention consists, essentially, in a drier having a special table or platform which supports the stock while drying. This table or platform consists, in brief, of a longitudinal series of transversely-extending shelves which are comprised in groups or sets, 3, 3, etc., and 4, 4, etc., with those of one group or set alternated with those of another, the said shelves having combined therewith means for causing movement of the shelves widthwise back and forth lengthwise of the table or platform relative to one another whereby those of a given group or set alternately are advanced over those of another and then are retracted under the latter, and so on. In the preferred form of embodiment, the shelves of the table or platform are alternately stationary shelves 3, 3, and movable ones 4, 4, and the movable shelves are reciprocated slowly edgewise, widthwise, between the stationary shelves. The wool, rags, or cotton under treatment lies on top of the table or platform in a layer, usually of considerable thickness. When the movable shelves 4, 4, etc. occupy the fully projected positions in which they are shown in the case of the top series or table in Fig. 3, the said layer of material rests upon the said movable shelves, it extending down from the leading edge of one movable shelf 4 to the adjacent rear portion of the next succeeding movable shelf. As the movable shelves of a series or table are retracted from the positions occupied by them in the top series or table, toward the fully retracted positions occupied by the movable shelves of the middle series or table in Fig. 3, the layer is carried back slightly but the continued withdrawal of the movable shelves from under the layer permits the latter to rest upon the stationary shelves 3, 3, etc., where it remains while the movable shelves complete their withdrawing movement, withdrawing from under the layer. As the movable shelves next are projected in the reverse direction outward from under the stationary shelves, that is, are moved from their positions in the middle series or table in Fig. 3 toward those occupied by them in the first or third series or table, they slip in under the layer of material again, lifting and separating the material from the stationary shelves. In this movement they partly push and partly carry the layer of material a short distance in the direction of the length of the series or table, so that the effect of successive reciprocating movements is to shift the layer of material gradually along the table or platform from the receiving end thereof to the discharging end thereof. In being thus shifted along, the stock is subjected to an agitation from beneath, due to the working of the movable shelves underneath the layer of material, producing a movement of the particles of the general mass among themselves. In addition, the stock continually is being separated from the surfaces of the shelves. Thus, as the movable shelves move from their projected position in the top table or platform in Fig. 3 toward their retracted position in

the middle table or platform in said figure they slip out from under the layer of stock, dropping the latter upon the stationary shelves. As the movable shelves return from their retracted position, as in the middle table or platform, toward their projected position, as in the first table or platform, they slip in between the layer of stock and the stationary shelves, lifting the said layer from the stationary shelves. As the layer is partly carried and partly pushed along the stationary shelves in this returning or advancing movement of the movable shelves, portions of it fall from one stationary shelf upon the next succeeding moving shelf, throughout the table or platform. The action has the important effect of producing a succession of changes in the position of the stock, involving agitation and turning of the latter so that every particle thereof is presented frequently to the circulating currents of air within the drier, insuring vaporization of any moisture with which the stock may be charged and thereby rendering the vaporization, and consequently the drying, more rapid. The drier is furnished with means of inducing the drying of the stock while the latter rests upon and is being advanced along the table or platform. Such means consists, preferably, in means for causing an upward flow of heated air within the casing containing the table or platform as the action just referred to proceeds. At the time of the reverse movement of the movable plates, the withdrawal of the latter in among the stationary shelves leaves openings under the stock adjacent the edges of the stationary shelves, facilitating the air movement. Preferably, perforations are provided in the different shelves as illustrated in Fig. 6, in which some of the perforations in a shelf are shown so that the heated air may pass upward therethrough, in addition to finding passageway at the leading edges of the different shelves where the material hangs down from one shelf to the next. Movement of the air upward through the shelves and the stock has the advantages of preventing the stock from adhering to the surfaces of the shelves, and loosens or lofts the stock, without any tendency to mat or pack.

A single table or platform comprising shelves such as just described, and operating to feed the stock in one direction within the drier may be sufficient to effect the required drying in some cases. Usually, as in Fig. 3, one such table or platform is arranged to deliver or discharge upon another like table or platform below the same, such second table or platform being arranged to feed the stock in the reverse direction while undergoing the like treatment, and to deliver or discharge the stock upon a third table or platform below the second and feeding in the same direction as the first. Additional ones may be employed, if desired, in order to extend the treatment to the extent desired. In falling from the discharge or delivery end of one table or platform to the next table or platform below the stock becomes turned over, and this turning over of the stock is repeated each time the stock drops from one table or platform to another. The final table or platform discharges from the machine through a suitable outlet 22.

The stock to be dried may be applied by hand to the receiving end of the first table or platform, but Fig. 1 shows an automatic feeder 2 having a hopper, and furnished with an elevating belt or creeper 2^a and a transfer cylinder or like device 2^b, for delivering the stock at X, Fig. 3, so that it falls upon the said receiving end.

The general assemblage of shelves comprising a table or platform is shown as extended horizontally so that the table or platform is horizontal from one end thereof to the other, although it is to be understood that a strictly horizontal arrangement of the table or platform is not necessary. The stationary shelves 3, 3, are mounted on suitable supports in connection with the casing 1, and in order to permit a movable shelf to work in and out between one stationary shelf and the next a vertical opening is left between the adjacent edges of one stationary shelf and the next. This vertical opening is provided for in the present instance by inclining the stationary shelves upwardly and forwardly, so that the said adjacent edges are separated vertically from each other. The movable shelves 4, 4, etc., which alternate with the stationary shelves work in these openings and are similarly inclined. As thus arranged and combined the parts constitute a stepped alternating succession of transversely-extending stationary shelves and movable shelves.

Stock supplied at the point X, Fig. 3, upon the receiving end of the top table or platform, either by being thrown by an attendant into the space above said receiving end or delivered thereinto by an automatic feeder, will rest upon the exposed portions of the shelves at that end. In Fig. 3 the movable shelves 4, 4, are at the extreme of their movement toward the right so that stock supplied as just referred to will lie chiefly upon the top surfaces of the movable shelves at such end. As the said movable shelves are drawn toward the left they will slip out from under the stock, which will settle down upon the top surfaces of the adjacent stationary shelves 3, 3. As the movable shelves, after having moved to the full extent toward the left, are returned toward the right the leading edges of those which are located at the receiving end will push portions of the stock forward from

the said adjacent stationary shelves on to the movable shelves next toward the right. Toward the final portion of the movement toward the right the stock will be largely supported and carried by the said movable shelves, which at such stage in the movement will almost completely cover and conceal the stationary shelves over which they have been moved, as in Fig. 3. Then as the movable shelves move toward the left again they will draw out from under the layer of stock, permitting such layer to settle down again upon the stationary shelves. Continuance of the action will work the stock gradually from the receiving end of the table or platform toward the discharging end thereof, and cause it to discharge from the latter end, and so long as the supply is maintained at X a continuous layer of stock will extend along the table or platform, from the receiving end thereof to the discharging end. When the various shelves are perforated for the passage of air, as preferred, and provision is made for an upward flow of air within the casing, the air will pass upward through the perforations and into and through the layer of stock, fully permeating the latter, and in escaping from the top of the latter will carry off the vaporized moisture.

The means for operating the movable shelves may vary in practice. In the present instance every movable shelf of a table or platform, at each end thereof, is pivotally connected at 5 to a post or standard 6 carried by a slide-bar 7 extending the length of the table or platform and serving to join together the entire series of movable shelves pertaining to the latter. The two slide-bars 7, 7, of each table or platform are reciprocated by means of racks 8, 8, made fast to them and engaged by toothed sectors 9, 9, on a transversely extending rockshaft 10. The rock shaft 10 is rocked through suitable power-connections. In the present instance the rockshaft 10 of each table or platform is provided with an arm 11, the arms of the three rockshafts being connected together by a link or links 12, and another arm 11^a of one of the said rockshafts is connected by means of a connecting rod 13 to an actuating crank 14 carried by a worm-gear 15 which is engaged by a worm upon the shaft of a step-pulley 16. The slide-bars 7, 7, are guided to move back and forth in an oblique direction corresponding with the obliquity or inclination of the stationary shelves 3, 3, by means of inclined shoes 17, 17, 17, carried by the slide-bars and working upon brackets 18, 18, having inclined supporting or guide-surfaces, as shown best in Figs. 3 and 4. The said brackets are mounted upon convenient fixed supports 20, 20, within the casing. Each movable shelf is supported at its ends upon inclined guides 19, 19, fixed to the supports, 20, 20. To suit the obliquity of the paths of movements of the slide-bars, the toothed surfaces of the racks 8, 8, 8, are formed with the same obliquity or incline as the shoes 17, 17, 17,

At the delivery end of the top platform in Fig. 3 a guide or deflector 21 is mounted in position where it will properly guide the stock, as it falls from the said delivery end, upon the receiving end of the next platform below, a like guide 21 being located at the delivery end of the second platform in position to guide the stock on to the receiving end of the third platform. In this instance the third platform delivers or discharges out through an outlet 22 in the right-hand end of the casing.

Suitable circulation fans 23 (Fig. 2) are located in an auxiliary chamber or chambers at one side of the chamber containing the tables or platforms, and in conjunction with the said fans steam coils 25 are provided in the said auxiliary chamber or chambers. Each of the circulation fans has its actuating pulley 24. An outlet 26 for the escape of the moisture-surcharged air is provided at the top of the casing, as shown in Fig. 1.

To prevent the stock from being dragged in between the stationary shelves and the moving ones by the back and forth movement of the latter, guard-strips 27, 27, Fig. 4, are mounted in connection with the leading edges of all the said shelves. The guard-strip carried by one shelf makes contact with the top surface of the shelf next below. In the present instance the said guard-strips are shown mounted in conveniently formed bent spring-clips 28, 28, etc., carried by the respective shelves.

The construction and arrangement may be varied in many respects without necessarily involving any departure from the principles of the invention. With certain classes of stock, the air movement may be downward.

What is claimed as the invention is,

1. A drier for wool, rags, cotton, etc., comprising means for inducing the drying, and a table or platform adapted to support a continuous layer of the material to be dried, and by which the stock supported thereon is agitated from beneath in addition to being fed forward slowly, the said table or platform consisting of a longitudinal series of transversely-extending shelves comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to intervene between the stock and the latter group or set and advance it lengthwise of

the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

2. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of a longitudinal series of transversely-extending shelves comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to intervene between the stock and the latter group or set and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

3. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of a longitudinal series of transversely-extending shelves respectively having openings for the passage of air therethrough and comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to intervene between the stock and the latter group or set and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

4. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for inducing the drying, the said table or platform consisting of an alternating succession of transversely-extending stationary shelves and movable shelves, and means for causing widthwise movement of the movable shelves back and forth lengthwise of the table or platform, whereby they are advanced between the stationary ones and the stock thereon to receive and advance the stock, and then are withdrawn from under the stock to re-deposit the latter upon the stationary shelves.

5. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of an alternating succession of transversely-extending stationary shelves and movable shelves, and means for causing widthwise movement of the movable shelves back and forth lengthwise of the table or platform, whereby they are advanced between the stationary ones and the stock thereon to receive and advance the stock, and then are withdrawn from under the stock to re-deposit the latter upon the stationary shelves.

6. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of an alternating succession of transversely-extending stationary shelves and movable shelves, the various shelves having openings for the passage of air therethrough, and means for causing widthwise movement of the movable shelves back and forth lengthwise of the table or platform, whereby they are advanced between the stationary ones and the stock thereon to receive and advance the stock, and then are withdrawn from under the stock to re-deposit the latter upon the stationary shelves.

7. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for inducing the drying, the said table or platform consisting of a stepped series of transversely-extending shelves comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to intervene between the stock and the latter group or set and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to

re-deposit the latter upon the other group or set.

8. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of a stepped series of transversely-extending shelves comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to intervene between the stock and the latter group or set and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

9. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of a stepped series of transversely-extending shelves respectively having openings for the passage or air therethrough and comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to intervene between the stock and the latter group or set and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

10. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for inducing the drying, the said table or platform consisting of a stepped alternating succession of transversely-extending stationary shelves and movable shelves, and means for causing widthwise movement of the movable shelves lengthwise of the table or platform, whereby they are advanced between the stationary ones and the stock thereon to intervene between the stock, and the stationary shelves, and then are withdrawn from under the stock to re-deposit the latter upon the stationary shelves.

11. A drier for wool, rags, cotton, etc., comprising a table or platform which supports the stock in a continuous layer during the drying operation, and by which the layer of stock is agitated from beneath in addition to being fed forward slowly, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table consisting of a stepped alternating succession of transversely-extending stationary shelves and movable shelves, and means for causing widthwise movement of the movable shelves lengthwise of the table or platform, whereby they are advanced between the stationary ones and the stock thereon to intervene between the stock and the stationary shelves, and then are withdrawn from under the stock to re-deposit the latter upon the stationary shelves.

12. A drier comprising a table or platform which supports the stock during the drying operation, and means for inducing the drying, the said table or platform consisting of a stepped series of transversely-extending upwardly-inclined shelves comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to receive the stock and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

13. A drier comprising a table or platform which supports the stock during the drying operation, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of a stepped series of transversely-extending upwardly-inclined shelves comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to receive the stock and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

14. A drier comprising a table or platform which supports the stock during the drying

operation, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of a stepped series of transversely-extending upwardly-inclined shelves respectively having openings for the passage of air therethrough and comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to receive the stock and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter.

15. A drier comprising a table or platform which supports the stock during the drying operation, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table or platform consisting of a stepped series of transversely-extending upwardly-inclined shelves respectively having openings to permit the passage of air therethrough which alternately are stationary and movable, and means for causing widthwise movement of the movable shelves back and forth lengthwise of the table or platform, whereby they are advanced between the stationary shelves and the stock thereon to receive and advance the stock, and then are withdrawn from under the stock to re-deposit the latter upon the stationary shelves.

16. A drier comprising a plurality of stock-supporting and feeding tables or platforms at different levels, adapted to feed the stock in opposite directions, arranged with the receiving end of a lower table or platform below the discharging end of an upper one and adapted to overturn the stock at said receiving end, and means for inducing the drying, each table or platform consisting of a longitudinal series of transversely-extending shelves comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to receive the stock and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

17. A drier for wool, rags, cotton, etc., comprising a plurality of stock-supporting and feeding tables or platforms at different levels, respectively supporting the stock in a continuous layer, and adapted to feed the stock in opposite directions, arranged with the receiving end of a lower table or platform below the discharging end of an upper one and adapted to overturn the stock at said receiving end, and means for inducing an upward flow of air through the table or platforms and the stock resting thereon, each table or platform consisting of a longitudinal series of transversely-extending shelves comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to intervene between the stock and the latter group or set and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to re-deposit the latter upon the other group or set.

18. A drier for wool, rags, cotton, etc., comprising a plurality of stock-supporting and feeding tables or platforms at different levels, respectively supporting the stock in a continuous layer, and adapted to feed the stock in opposite directions, arranged with the receiving end of a lower table or platform below the discharging end of an upper one and adapted to overturn the stock at said receiving end, and means for inducing an upward flow of air through the tables or platforms and the stock resting thereon, each table or platform consisting of a longitudinal series of transversely-extending shelves respectively having openings for the passage of air therethrough, and comprised in groups or sets with those of one group or set alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform whereby those of a given group or set are advanced between those of another group or set and the stock thereon so as to intervene between the stock and the latter group or set and advance it lengthwise of the table or platform, and then are withdrawn from under the stock so as to redeposit the latter upon the other group or set.

19. A drier for wool, rags, cotton, etc., comprising a plurality of stock-supporting and feeding tables or platforms at different levels, respectively supporting the stock in a continuous layer, and adapted to feed the stock in opposite directions, arranged with the receiving end of a lower table or platform below the discharging end of an upper one and adapted to overturn the stock at said receiving end, and means for inducing the drying, each table or platform consisting of an alternating succession of trans-

versely-extending stationary shelves and movable shelves lengthwise of the table or platform, whereby they are advanced between the stationary ones and the stock supported thereon to intervene between advance the stock, and the stationary shelves and then are withdrawn from under the stock to re-deposit the latter upon the stationary shelves.

20. A drier for wool, rags, cotton, etc., comprising a plurality of stock-supporting and feeding tables or platforms at different levels, respectively supporting the stock in a continuous layer, and adapted to feed the stock in opposite directions, arranged with the receiving end of a lower table or platform below the discharging end of an upper one and adapted to overturn the stock at said receiving end, and means for inducing an upward flow of air through the tables or platforms and the stock resting thereon, each table or platform consisting of an alternating succession of transversely-extending stationary shelves and movable shelves, and means for causing widthwise movement of the movable shelves lengthwise of the table or platform, whereby they are advanced between the stationary ones and the stock supported thereon to intervene between the stock, and the stationary shelves and then are withdrawn from under the stock to re-deposit the latter upon the stationary shelves.

21. A drier for wool, rags, cotton, etc., comprising a plurality of stock-supporting and feeding tables or platforms at different levels, respectively supporting the stock in a continuous layer, and adapted to feed the stock in opposite directions, arranged with the receiving end of a lower table or platform below the discharging end of an upper one and adapted to overturn the stock at said receiving end, and means for inducing an upward flow of air through the tables or platforms and the stock resting thereon, each table or platform consisting of an alternating succession of transversely-extending stationary shelves and movable shelves, the said shelves respectively having openings for the passage of air therethrough, and means for causing widthwise movement of the movable shelves lengthwise of the table or platform, whereby they are advanced between the stationary ones and the stock supported thereon to intervene between the stock and the stationary shelves, and then are withdrawn from under the stock to redeposit the latter upon the stationary shelves.

22. A drier for loose stock, having a drying table or platform comprising a horizontal series of transverse shelves for supporting and exposing the stock while drying, means for inducing the drying, and means for causing relative movement of the said shelves widthwise in overlapping planes, one above the other, whereby the advancing shelf both pushes and carries the stock so as to feed the latter along in a continuous horizontal plane.

23. A drier for loose stock, having a drying table or platform comprising a horizontal series of transverse shelves for supporting and exposing the stock while drying, means for causing an upward flow of air through the stock, and means for causing relative movement of the said shelves widthwise in overlapping planes, one above the other, whereby the advancing shelf bodily pushes and carries the stock so as to feed the latter along in a continuous horizontal plane.

24. A drier for loose stock, having a drying table or platform comprising a horizontal series of transverse stock-supporting shelves having openings for the passage of air therethrough, means for causing an upward flow of air through the said openings and the stock supported by the plates, and means for causing relative movement of the shelves widthwise in overlapping planes, one above the other, whereby the advancing shelf bodily pushes and carries the stock so as to feed the latter along in a continuous horizontal plane.

25. A drier for loose stock having a horizontal stock-supporting and feeding drying table or platform comprising a plurality of fixed shelves, a plurality of widthwise-movable pushing and carrying shelves which respectively work over the respective fixed shelves, a bar connected with all of the movable shelves, and means for reciprocating said bar to thereby actuate the movable shelves in unison.

26. A drier for loose stock having a horizontal stock-supporting and feeding drying table or platform comprising a plurality of fixed inclined shelves, a plurality of widthwise-movable pushing and carrying shelves which respectively move in inclined paths over the respective fixed shelves, a bar connected with all of the movable shelves, and means for reciprocating said bar in an inclined path to thereby actuate the movable shelves.

27. In a drier, the combination with a horizontal drier-table or platform having widthwise-movable stock-supporting and feeding shelves moving in inclined paths, a reciprocable bar connecting with all of the said shelves, guides for causing said bar to reciprocate in a correspondingly inclined path, an inclined toothed rack carried by said bar, and a vibrating toothed member engaging with said rack and serving to communicate movement to the bar.

28. A drier comprising a plurality of

stock-supporting and feeding tables or platforms at different levels, adapted to feed the stock in opposite directions, with the receiving end of a lower table or platform adapted to receive the stock from the discharging end of an upper one, each table or platform consisting of a longitudinal series of transversely-extending shelves comprised in groups or sets with those of one group alternated with those of another, and means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform to feed the stock along the latter, comprising bars connecting a series of shelves together in each table or platform, a single actuating crank, and means for reciprocating said bars from said crank.

29. A drier having means for inducing drying, and a horizontal stock-supporting and feeding table upon which the stock rests while being dried, the said table comprising transverse shelves which alternately are fixed and movable, and actuating mechanism by which the movable shelves are reciprocated widthwise and thereby alternately drawn in under the fixed shelves so as to withdraw from the layer of stock which is being operated upon, leaving the latter resting upon the series of fixed sections, and then are advanced out from under the fixed sections so as to take the said layer upon their own upper surfaces, lifting it as well as pushing it forward upon the fixed shelves.

30. A drier having means for inducing drying, and a horizontal stock-supporting and feeding table upon which the stock rests while being dried, the said table consisting of a series of transverse shelves comprised in groups or sets with those of one group or set alternated with those of another, and actuating mechanism for producing relative reciprocating widthwise movement by which the shelves of one group or set are alternately drawn in under those of the other group or set so as to withdraw from the layer of stock which is being operated upon, leaving the latter resting upon the other shelves, and then are advanced so as to take the said layer upon their own surfaces, lifting it as well as pushing it forward.

31. A drier having a horizontal stock-supporting and feeding table, and means for causing an upward flow of air through the table or platform and the stock resting thereon, the said table consisting of a series of transverse shelves respectively having openings for the passage of air therethrough and comprised in groups or sets with those of one group or set alternated with those of another, and actuating mechanism for producing relative reciprocating widthwise movement by which the shelves of one group or set are alternately drawn in under those of the other group or set so as to withdraw from the layer of stock which is being operated upon, leaving the latter resting upon the other shelves, and then are advanced so as to take the said layer upon their own surfaces, lifting it as well as pushing it forward.

32. A drier comprising, essentially, means for inducing the drying, and a table or platform which supports the stock while drying as well as feeds it along, the said table or platform consisting of a horizontally extending longitudinal series of transversely-extending shelves which are comprised in groups or sets, with those of one group or set alternated with those of another, and having combined therewith means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform, whereby those of a given group or set alternately are covered by those of another group or set, and vice versa.

33. A drier comprising essentially, means for causing an upward current of air, and a table or platform which supports the stock while drying as well as feeds it along the said table or platform consisting of a horizontally extending longitudinal series of transversely-extending shelves having openings for passage of air and comprised in groups or sets, with those of one group or set alternated with those of another, and having combined therewith means for causing relative movement of the shelves widthwise back and forth lengthwise of the table or platform, whereby those of a given group or set alternately are covered by those of another group or set, and vice versa.

In testimony whereof I affix my signature in presence of two witnesses.

MATHEW F. KEVLIN.

Witnesses:

CHAS. F. RANDALL,

ELLEN O. SPRING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."