

(No Model.)

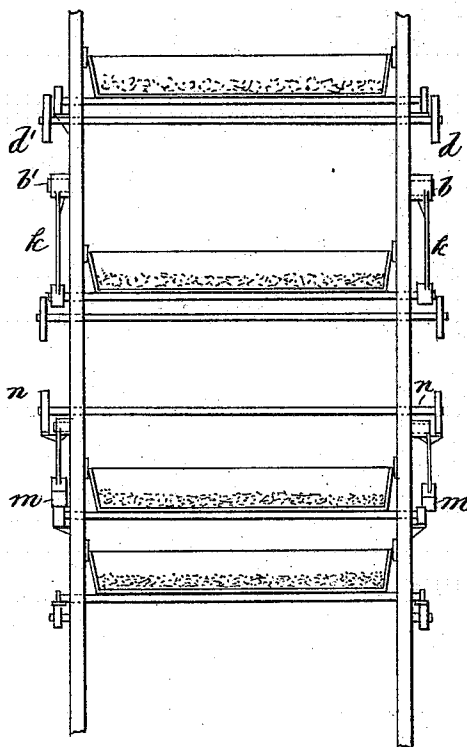
4 Sheets—Sheet 1.

J. FIELDEN.  
WOOL DRYING APPARATUS.

No. 601,317.

Patented Mar. 29, 1898.

FIG. 1.



WITNESSES  
*C. Ernst*  
*John Buckler*

INVENTOR  
*John Fielden*  
BY  
*Edgar Tate & Co.*  
ATTORNEYS.

(No Model.)

4 Sheets—Sheet 2.

J. FIELDEN.  
WOOL DRYING APPARATUS.

No. 601,317.

Patented Mar. 29, 1898.

Fig. 2.

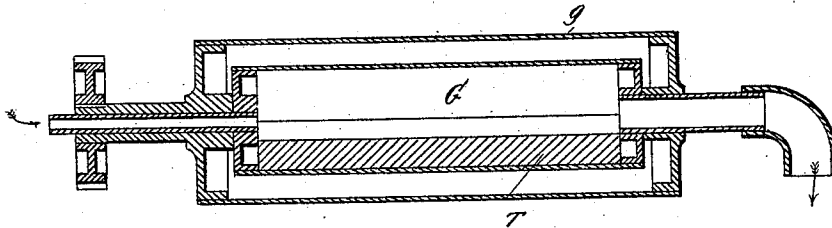
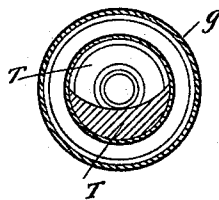


Fig. 3.



WITNESS  
*John Buckler,*  
*S. L. Hawkshurst*

INVENTOR  
*John Fielden*  
BY  
*Edgar Tate & Co.*  
ATTORNEYS

(No Model.)

4 Sheets—Sheet 3.

J. FIELDEN.  
WOOL DRYING APPARATUS.

No. 601,317.

Patented Mar. 29, 1898.

Fig. 4.

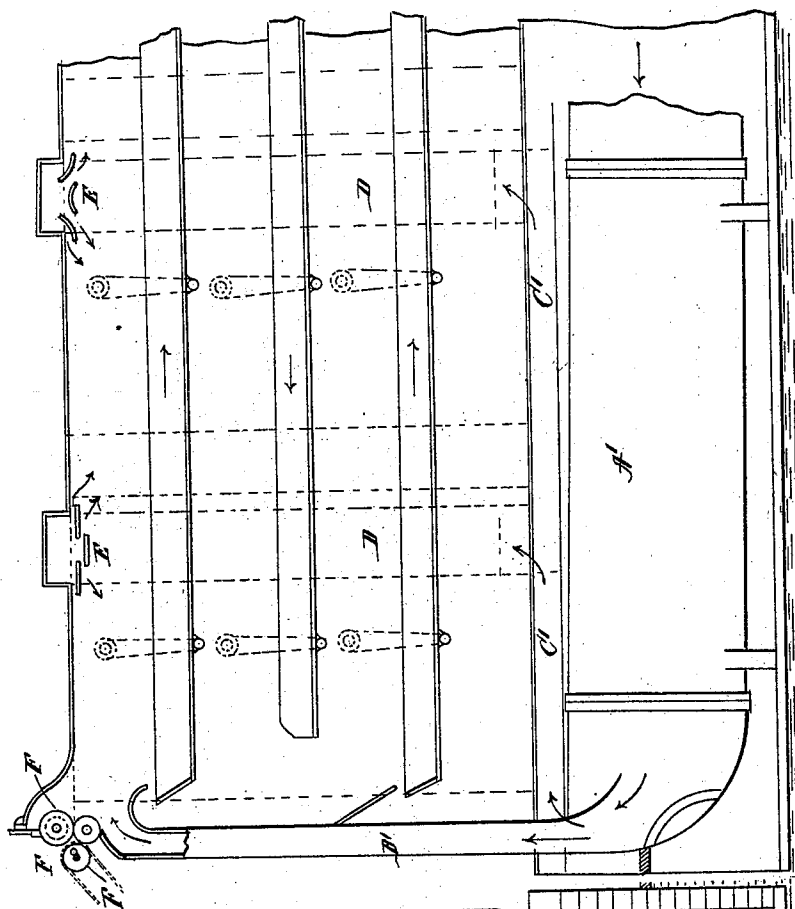
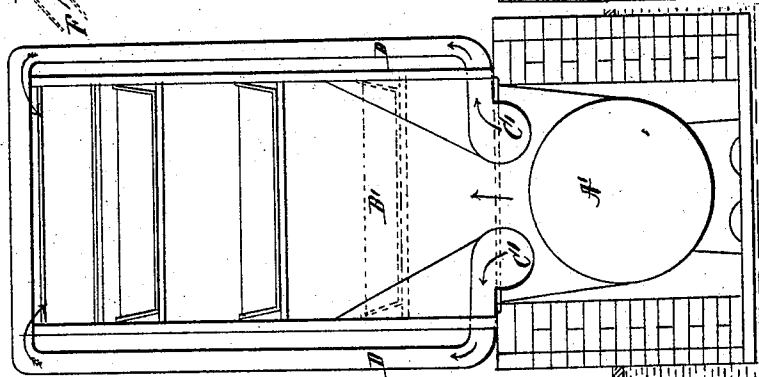


Fig. 5.



WITNESSES

*C. Gust.*  
*John Buckle,*

INVENTOR

*John Fielden.*  
BY  
*Edgar Tate & Co.*  
ATTORNEYS.

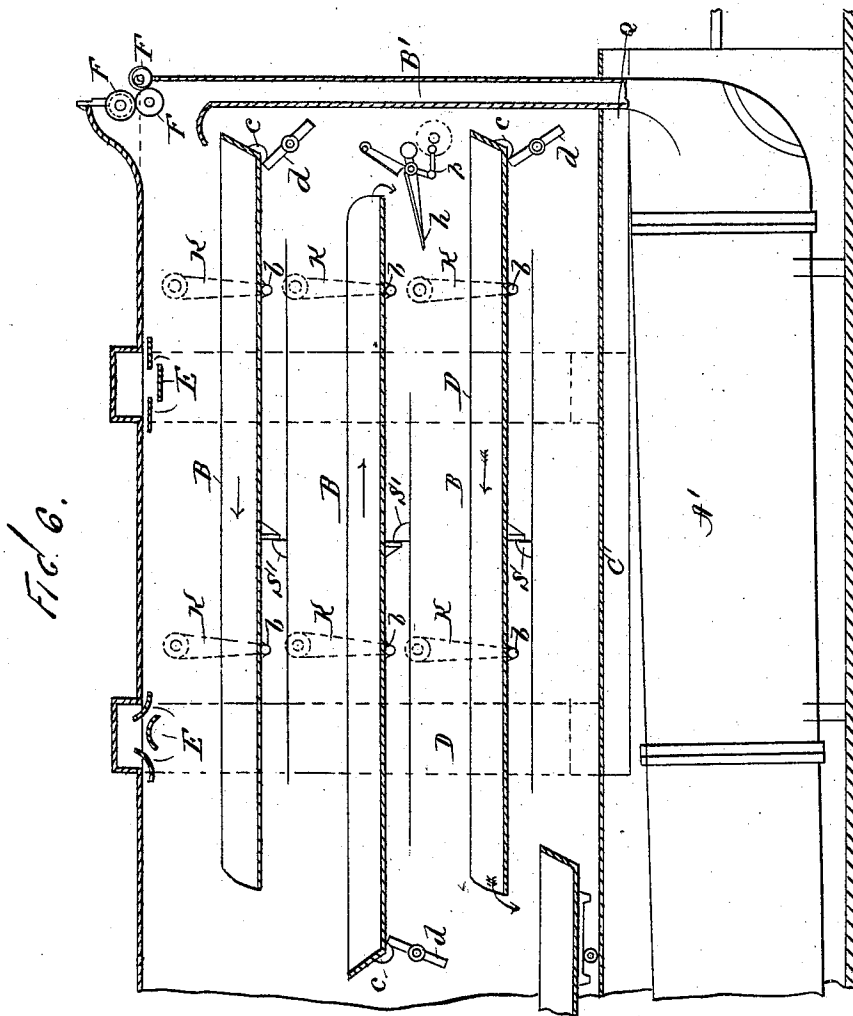
(No Model.)

4 Sheets—Sheet 4.

J. FIELDEN.  
WOOL DRYING APPARATUS.

No. 601,317.

Patented, Mar. 29, 1898.



**WITNESS**

John T. Buckler,  
S. L. Hawkshurst

**INVENTOR**

John Fielden,

BY  
Edgar Latorre

**ATTORNEYS**

# UNITED STATES PATENT OFFICE.

JOHN FIELDEN, OF ROCHDALE, ENGLAND.

## WOOL-DRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 601,317, dated March 29, 1898.

Application filed September 3, 1896. Serial No. 604,761. (No model.) Patented in England June 1, 1894, No. 10,632.

*To all whom it may concern:*

Be it known that I, JOHN FIELDEN, a subject of the Queen of Great Britain, and a resident of Sussex street, Rochdale, in the county of Lancaster, England, have invented certain new and useful Improvements in an Apparatus for Drying, Carbonizing, or Cooling Fibrous or other Material, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts wherever found throughout the several views.

This invention relates to apparatus for drying, carbonizing, or cooling fibrous or other material; and the object thereof is to provide an improved apparatus for this purpose by which fibrous or other material is dried either by cold or by heated air, a further object being to provide an apparatus for conveying such materials through a drying stove or chamber in which vegetable substances are carbonized or extracted by heat from the animal fibers, such as wool, hair, rags, &c.

The invention is the same as that for which Letters Patent were granted to me in Great Britain June 1, 1894, No. 10,632, and is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is an end elevation of a series of conveying-tables arranged to work one above another. Figs. 2 and 3 represent, respectively, the longitudinal side section and end section of the steam-heated feeding-roller. Fig. 4 is a longitudinal section of the feeding end of a drying and carbonizing machine. Fig. 5 is an end section of the feeding end of the drying and carbonizing machine containing a series of conveying-tables one above another; and Fig. 6, a view similar to Fig. 4, but on a somewhat larger scale and showing all of the parts in operative position and in connection, except the feed-rollers F, which are not shown in operative connection with a steam-boiler on account of the smallness of the scale, this feature being clearly shown in Fig. 2.

In the practice of my invention I employ a table or any number of tables or conveying-trays by which the material to be operated upon is to be conveyed. This table or tables may be made any convenient length and

breadth desirable. The said table or tables, which may be of perforated metal or other suitable material, may be of any convenient dimensions and so adapted or arranged as to operate, respectively, in a backward and forward direction or to have to and fro movements, which movements are effected by suitable mechanical means, but more particularly so arranged that the said table, tray, or trays shall during its forward movement engage, abut, or come in contact with a buffer or stationary piece, the effect of which produces stoppage of the table or tray by concussion, and consequently causes the material which may be situated on the surface to slide thereon or therefrom laterally in contradistinction to the pitching or tossing action as hitherto and which effect the stop or concussive force, for the said purposes herein forms a novel feature of my invention, as by such means rolling or tangling of the material is obviated.

The material to be dried or conveyed is received or placed upon the conveying table or tables or trays, which may be arranged in series or tiers in the ordinary manner and now well known, and is carried, impelled, or slid forward along the surface thereof and eventually therefrom onto the succeeding or sub-jacent reciprocating concussion-tray or any suitable table, as in the case when one conveying-tray is to be used, these simultaneous occurrences—the sliding on and from the tray or trays—occurring continuously from the receiving end to the delivering end of the machine. By these means fibrous or other materials are caused to be intermittently conveyed along the table or trays through either stove or cooling-chamber. The said conveying table or tray will save much time in cleaning the drying apparatus.

In the case of conveying-trays of small dimensions or not of heavy construction I employ a modification of mechanical means for effecting the concussive force or stop of the table or tray for the purpose hereinbefore described. The said conveying tables or trays may also be caused to perform the work of conveying, as hereinbefore described, by means of springs and hammers or other suitable means, but arranged and adapted to simultaneously force the conveying table or

tray forward, then backward intermittingly from underneath, the material resting upon the said table or tables during the process of drying or heating.

- 5 The second part of my invention relates to the metal feeding-rollers of the continuous drying-machine or cooling-chamber, usually two rollers. When either of these rollers is heated with steam for the purpose of drying,  
 10 I place a suitable core or block inside to prevent any excessive quantity of water from collecting in the steam box or cylinder used for heating the said feeding roller or rollers. A reciprocating perforated cleaning flap or  
 15 shaker may be used in connection with the said conveying-table inside the drying apparatus.

When it is desirable to have a current of heated air passing through the drying apparatus, I propose to arrange tubes and guide-plates in such a manner that they will direct and cause the air-supply to enter at the top of the drying-chamber by more than one inlet at the same time in such a manner that  
 25 the air-pressure will be distributed instead of the whole force of the blast entering in at one end of the heated chamber above the said conveying-tables.

In Fig. 2 I have shown a section of a metal  
 30 core or block *r* resting inside the stationary steam box or cylinder *G*, around which the metal feeding-roller *g* rotates. This core or block fills or partially fills the lower portion of the said steam-box *G*, which will prevent  
 35 any large quantity of condensed steam or water from lodging in the said steam box or cylinder when a siphon cannot be conveniently used with the feeding-roller of the drying-machine.

40 In Figs. 4 and 5 I have shown a sectional side elevation and the end elevation, respectively, of one part of a drying and carbonizing machine, illustrating by arrows the direction that the air may be caused by any blower  
 45 or fan to travel through air-supply tubes, as *B' C' D*, to the upper portion of the drying-chamber and pass through inlets or perforated plate or plates *W* or may come into contact with deflecting-plates *E*, arranged in  
 50 either case to distribute the current of air as equally as possible over the fibrous material after passing through the feeding-rollers, the position of which is here indicated at *F*. These perforated plates or the deflecting-plates may  
 55 extend across the top of the machine from side to side and may be adapted or so fixed as to distribute the current of air as it enters the drying-chamber. By preference I use these guide-plates when the air enters the  
 60 upper portion of the machine or drying-chamber and travels downward in the same direction as the fibrous or other material being dried and in combination with the conveying table or tray, as hereinbefore described.

65 It will be obvious from the present description of improvements that when the conveying table or tray is in motion, as herein set

forth, any material, such as wool and other fiber, fed upon one end of the said table or tray will be caused to travel along its surface  
 70 intermittently to the opposite end without being lifted, tangled, or damaged in any way, and that when any number of conveying-tables are suitably arranged in tiers one above  
 75 another the material operated upon after arriving at the extreme end of a conveying-table will fall upon the next conveyer below and thereby continue its course to the opposite end, and so on from conveyer to conveyer to the end of the series somewhat after the  
 80 manner that fibrous and other material is usually conveyed through drying chambers or machines by a series of traveling brattices one above another, but with the advantage that the said new conveying-table can be  
 85 made very strong and durable with few wearing parts, and said conveying-tables also effectually clear themselves from the materials placed upon them, which will greatly facilitate the working of the continuous drying ap-  
 90 paratus.

By the introduction of a core or block inside the feeding-roller used to feed fibrous material into the drying-chamber or stove, as herein explained, there is economy in the use  
 95 of steam when heating this feeding-roller.

The distribution of the air-supply from fan or blower in the upper part of the drying apparatus or stove will prevent small particles of wool or other fiber from being blown about  
 100 or rolled on its passage along the surface of the aforesaid conveying tables or trays, which is often the case when the full blast of heated air is all admitted at one end of the upper conveying table or tray.

105 Having fully described my invention, its construction and operation, I claim as new and desire to secure by Letters Patent—

1. In an apparatus of the character described, a feeding mechanism consisting of a  
 110 plurality of rollers, steam-cylinders mounted in each of said rollers and in communication with a boiler and metal cores concavo-convex in form in cross-section mounted in each of said cylinders, substantially as and for the  
 115 purpose described.

2. In an apparatus for drying, carbonizing or cooling fibrous or other material, the combination of a plurality of trays or tables mounted one above another in a suitable casing, and capable of intermittent longitudinal movement, said trays being supported by  
 120 suitable hangers, and each being provided at the end thereof with a lug or projection, a cam-plate mounted adjacent thereto and provided with means for revolving the same,  
 125 said cam-plate being adapted to engage the corresponding lug or projection for a predetermined part of its revolution, a lug or projection secured to the bottom of each of  
 130 said trays and a corresponding lug or projection secured to the sides of the said casing and adapted to engage the same, substantially as and for the purpose described.

3. In an apparatus for drying, carbonizing  
or cooling fibrous or other material, the com-  
bination with the shaking-trays of a supple-  
mental shaker consisting of a reciprocating  
5 plate mounted beneath the end of one of the  
shaking-trays, a crank-arm secured thereto,  
said crank-arm being pivotally and eccen-  
trically connected with a revolving disk, sub-  
stantially as and for the purpose described.

In testimony that I claim the foregoing as to  
my invention I have signed my name, in pres-  
ence of the subscribing witnesses, this 19th  
day of August, 1896.

JOHN FIELDEN.

Witnesses:

EDW. LYTLETON WORTH,  
NORMAN E. ROSTRON.