

(No Model.)

G. SEAVER.
VENEER DRYING MACHINE.

No. 428,147.

Patented May 20, 1890.

Fig. 1.

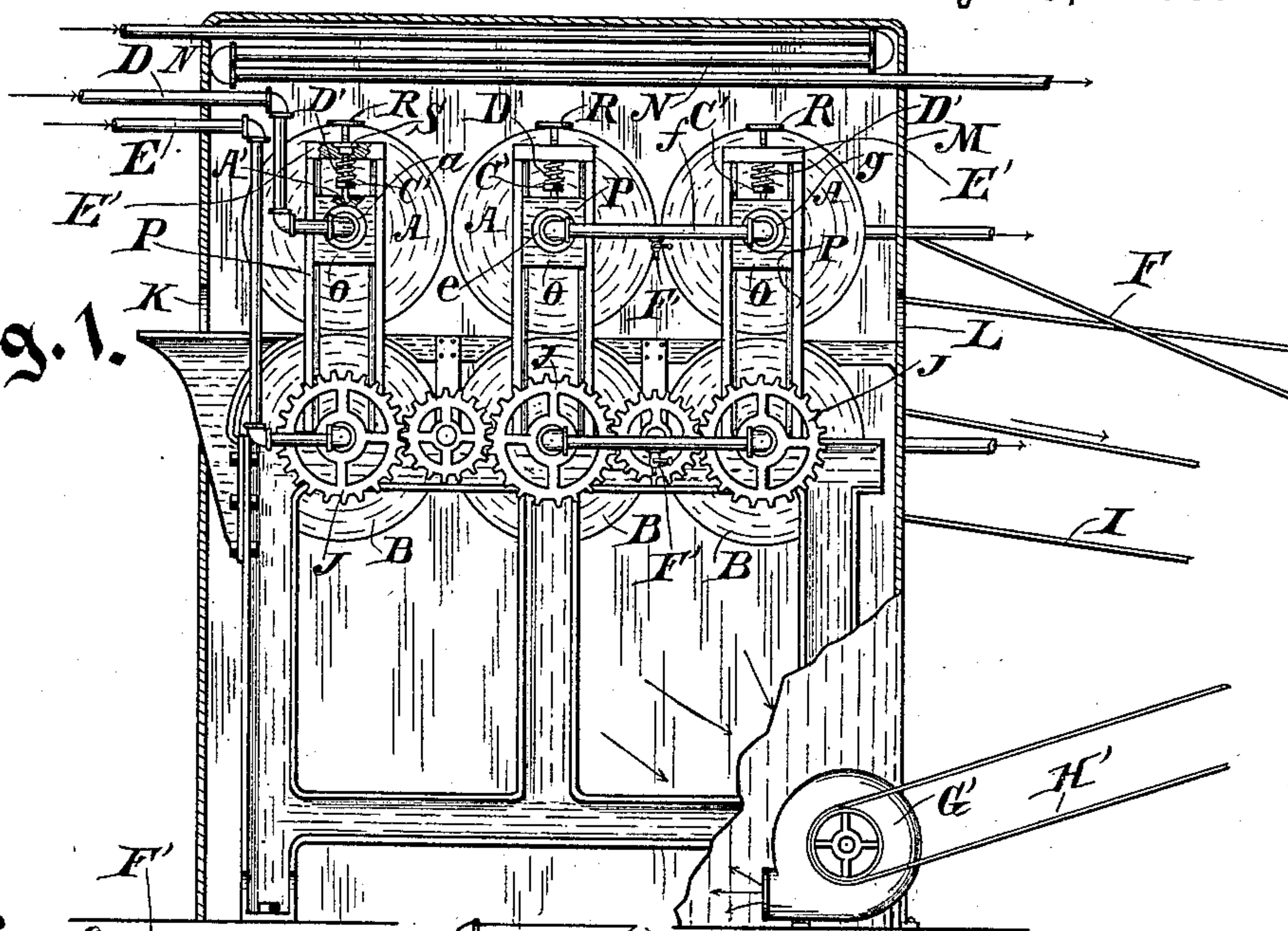


Fig. 2.

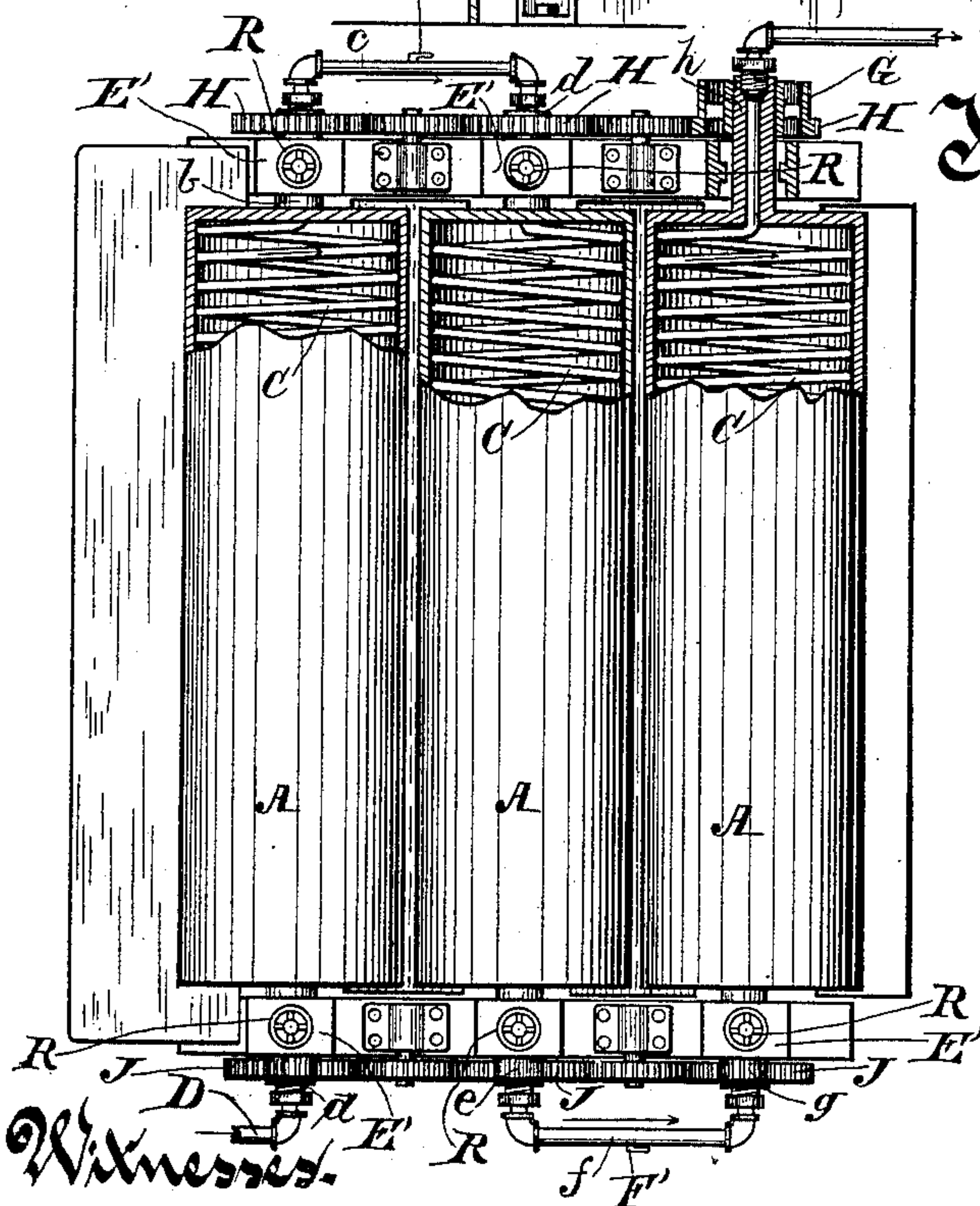
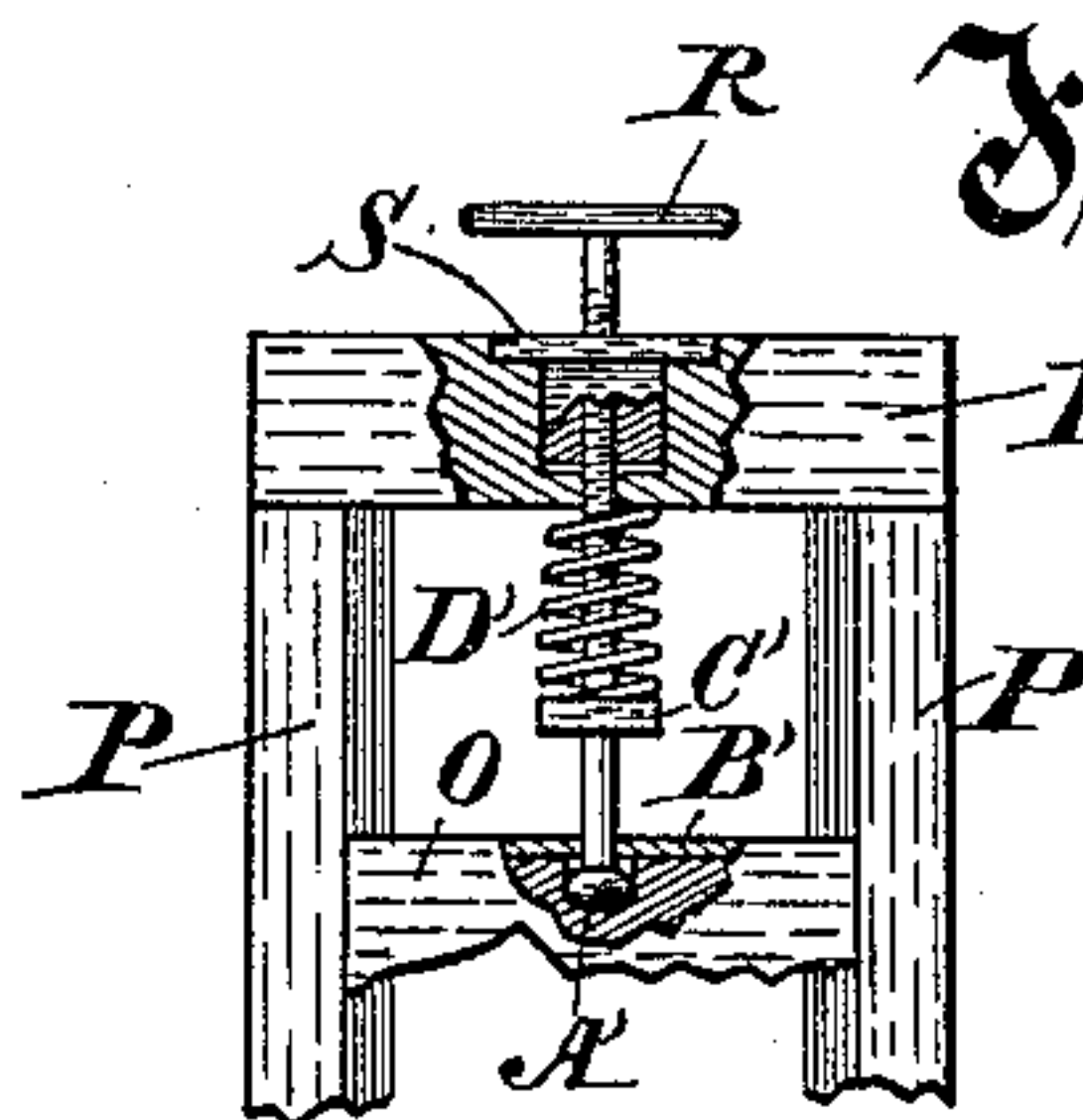


Fig. 3.



Witnesses.

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veneer-drying machine.

SPECIFICATION forming part of Letters Patent No. 428,147, dated May 20, 1890.

Application filed December 24, 1888. Serial No. 294,481. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SEAVER, of Tigerton, in the county of Shawano and State of Wisconsin, have invented new and useful Improvements in Veneer-Drying Machines; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in machines for pressing together the several layers of veneers which have been coated with glue or other adhesive substance preparatory to being united and simultaneously drying such veneers by heat radiated from the rollers between which they are being pressed.

The construction of my invention is explained by reference to the accompanying drawings, in which—

Figure 1 represents a side view of the machine with a part of the inclosure broken away disclosing the ends of the drying-rolls. Fig. 2 represents a top view of the machine, part in section; and Fig. 3 represents a detail showing the device for adjusting the upper series of drying-rollers.

Like parts are represented by the same reference-letters throughout the several views.

Both the upper series of rollers A and the lower series of rollers B are made hollow, and they are provided with spirally-coiled steam-tubes C C C, which tubes communicate with each other through the supporting-journals of the several rollers, whereby a current of steam may be caused to flow from the same steam-pipe through all the rollers of the respective series in its passage from the boiler to the discharge or outlet, whereby said series of rollers may be heated to a high temperature with a small volume of steam, as compared with the ordinary heating-rollers in which the heating-tubes are dispensed with and the steam discharged directly into the cylinders, the heat being radiated from the heating-coils of the spiral tube against the inner surface of the heating rolls or cylinders. The arrangement of the spirally-coiled heating-tubes C C is such that the water arising from the condensation of steam therein is

caused to flow forward through said coils as they rotate, passing from one cylinder to another from the inlet to the discharged ends of the steam-pipe.

D is the steam-pipe communicating with the upper series of heating-rolls. Steam enters the first roller A at *a*, passing from thence through the coils and out through the journal at *b*. From thence it passes through the duct *c* and the journal *d* into the second cylinder of the series, when it passes out through the journal *e*, and from thence through the duct *f* and the journal *g* to the third and last roller of the series, when it passes out through the journal *h* to the discharge, and in like manner steam is conducted through the steam-pipe E to the lower series of heating-rolls B B, each of which is also provided with spiral steam-heating tubes, which communicate with each other in the same manner through their respective journals. It will be understood that the upper series of rolls A A rotate from right to left, motion being communicated to the last roller in the series from the belt F, operating on the pulley G, and from thence motion is communicated to the other rollers in the series through the chain of gears and idlers H H, while motion is communicated in like manner from the belt I to the last roller in the lower series B B, and from thence through the chain of gears and idlers J J to the other rollers in the series, the lower series of rollers being rotated from left to right, whereby the veneers, which are introduced through the aperture K of the inclosure, are carried forward by and between said rotating series of rollers and pass out through the opening L of the inclosing-case M. I have shown but three heating-rolls in each series; but the number of rolls used may be increased indefinitely, as occasion may require and as may be found necessary to thoroughly dry and compress the material that is passed through between them.

To provide for the escape of water which may accumulate in the heating-tubes of the rollers, said tubes are so coiled, as stated, to cause the water to flow forward as they rotate from the entrance toward the discharge. Thus, as shown in Fig. 2, the steam-pipe in the first roller is coiled forward from right to left, whereby the water will be led forward

from the entrance through the journal *a* to the opposite end of said roller, and from thence through journal *b*, passing around through the duct *c* into the second spiral tube *C* of the second roller, which second tube *C* is coiled in the opposite direction, whereby the water will be led in the opposite direction through the second roller, when it passes out through the duct *f* and enters the third spiral tube through the journal *g*; the third spiral tube being coiled in the opposite direction to that of the second, whereby the water is led on, as before, toward the discharged end of the steam-pipe. Thus all the spiral tubes in each alternate roller of the series are reversely coiled, whereby the rotation of the cylinders causes the water to pass through the respective coils from the entrance toward the discharge.

We have thus far illustrated and described the arrangement of the spiral coils in the upper series, the arrangement of the coils of the lower series being the same, whereby they are in like manner adapted as they rotate to discharge the accumulations of water arising from condensation.

N is a heating-coil of steam-pipe, which extends across the upper end of the inclosure *M*, whereby the temperature may be raised, as may be required, for drying the material operated upon. The upper series of rollers *A A* are supported in movable journal-bearings *O*, which permit said rollers to move a slight distance upward and downward, as may be required, to conform to any slight variation in thickness of the material which is being operated upon. The journal-bearings *O* are retained in place at their respective ends by the side frames *P*, and they are suspended at the desired point of adjustment by the hand-screws *R*, which respectively operate in the movable nuts *S*. The lower ends of the hand-screws *R* are each provided with a retaining-knob *A'*, which engage beneath a supporting-plate *B'* within the upper end of the journal-bearings. The screws *R* are each provided with spring-supporting collar *C'*. A spiral spring *D'* is interposed between the collar *C'* and the cross-piece *E'* of the frame *P*. Thus it is obvious that the journal-bearings *O* may be raised by turning said hand-screws *R* toward the right or lowered by turning them in the opposite direction, while said journal-bearings are free to rise and fall to conform to the varying thicknesses of the material between them, carrying with them the supporting-screws *R* and nuts *S*. The object of the spring *D'* is to force said rollers downward with the required pressure upon the material; but said springs *D'* are adapted to yield sufficiently to conform to the slight variations in the thickness of the material which is being passed between the rollers. The

nuts *S* are provided with angular bearings in the supporting-frame, which prevent them from turning as said hand-screws are turned, while they permit of the free upward and downward movement of said nuts to conform to the movement of the screws and journal-bearings connected therewith.

F' F' are water-controlling cocks, through which water may, if desired, be withdrawn from the heating-coils.

To provide for withdrawing the moisture of steam which may arise from drying the veneers, an exhaust-fan *G'* is provided, which communicates through the inclosing-case *M* with the exterior.

H' is a drive-belt, by which motion is communicated to the exhaust-fan from the motive power, whereby the drying of the veneers is greatly facilitated.

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

1. In a veneer-drying machine, the combination of two series of hollow cylinders or rollers *A* and *B*, a corresponding series of coiled heating-tubes *C*, located within the hollow cylinders, one tube in each cylinder and each heating-tube in the respective series being reversely coiled to those adjoining it and all communicating with each other, and the steam-supply through the journals of the respective inclosing-rollers, and driving-gears communicating between the several rollers of each series and between said series and the motive power, substantially as and for the purpose specified.

2. In a veneer-drying machine, the roller-adjusting device consisting of the adjustable supporting hand-screws *R*, provided with supporting-knobs *A'*, operating in sockets formed therefor in the thereon-supported journal-bearings *O*, spring-supporting collars *C'*, vertically-movable rectangular nuts *S*, located in rectangular retaining-recesses formed therefor in their respective supporting-frames, movable journal-bearings *O*, supporting guide-frames *P*, and spiral springs *D'*, said springs *D'* being adapted to yield to the movement of said journal-bearings, and said screws and nuts to move together as they rise and fall with the yielding movement of said springs while the relative positions of the upper and lower series of drying-rollers are permanently adjusted to each other by turning said hand-screws in their supporting-nuts, substantially as and for the purpose specified.

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

GEORGE SEAVER.

Witnesses:

JOSEPH HIMMEL,
WILLIAM SCOTT.