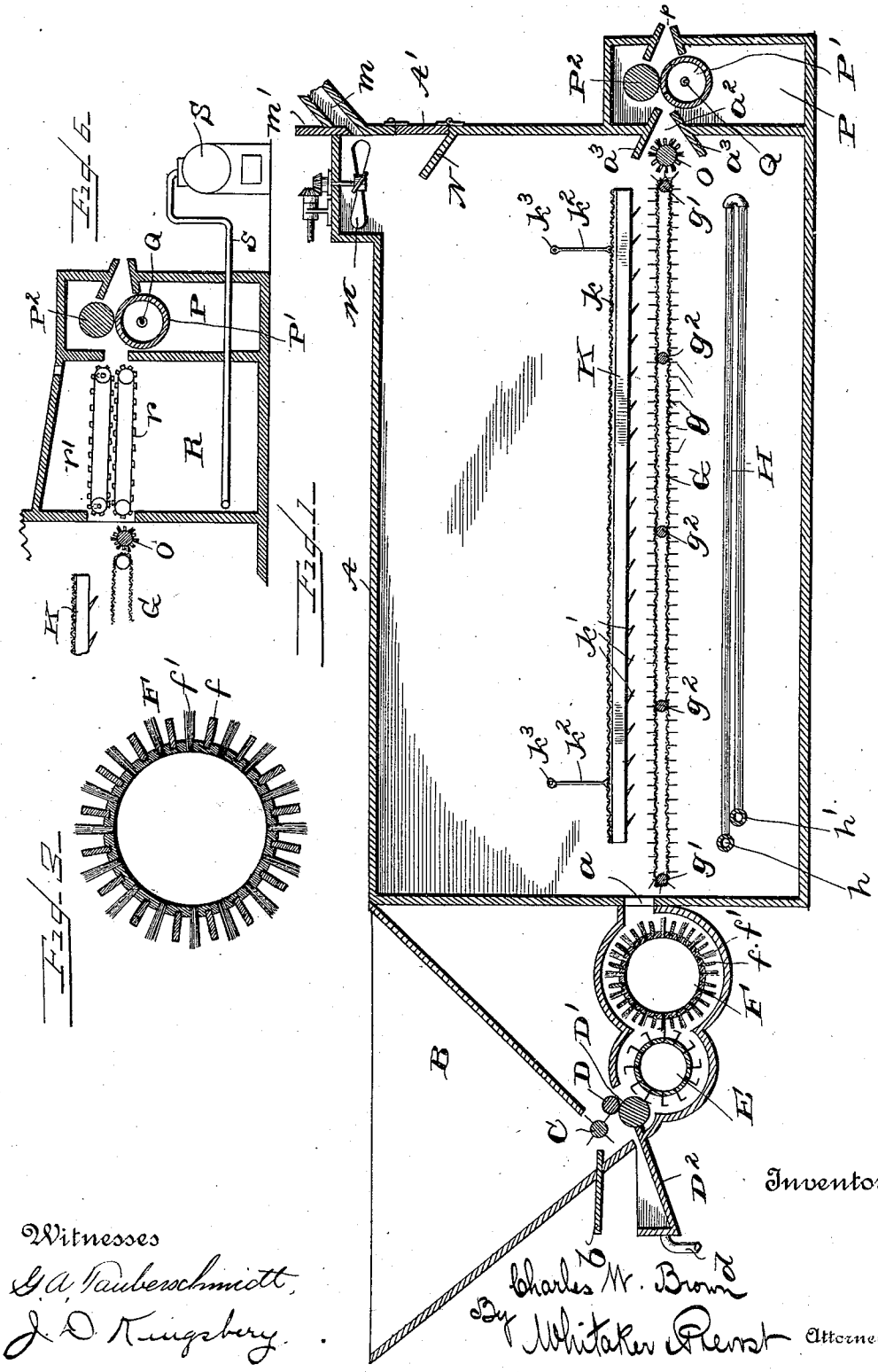
(No Model.) 2 Sheets—Sheet 1.

C. W. BROWN.

MACHINE FOR DRYING AND CLEANING COTTON.

No. 556,528. Patented Mar. 17, 1896.



Witnesses
G. A. Tauberschmidt,
J. D. Kingsbery.

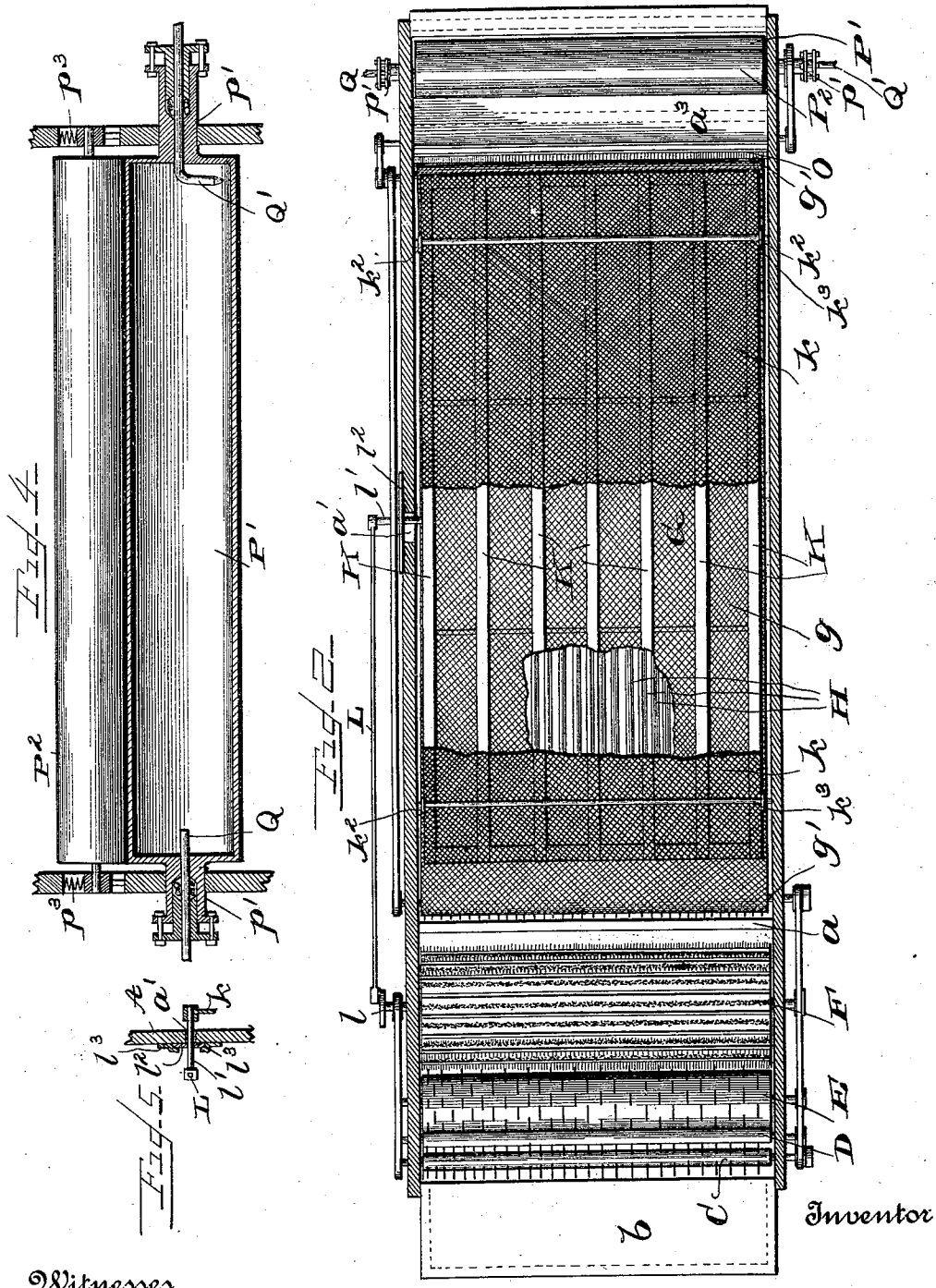
Inventor
Charles W. Brown
By Whitaker & Rensh Attorneys.

(No Model.) 2 Sheets—Sheet 2.

C. W. BROWN.

MACHINE FOR DRYING AND CLEANING COTTON.

No. 556,528. Patented Mar. 17, 1896.



Witnesses
G. A. Tauberschmidt,
J. D. Kingsbury

Inventor
Charles W. Brown
By Whitaker & Prentiss Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES W. BROWN, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-FOURTH TO R. L. HEFLIN, OF SAME PLACE.

MACHINE FOR DRYING AND CLEANING COTTON.

SPECIFICATION forming part of Letters Patent No. 556,528, dated March 17, 1896.

Application filed May 23, 1895. Serial No. 550,416. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. BROWN, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Machines for Drying and Cleaning Cotton; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features of construction and combination of parts hereinafter fully described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claims.

Referring to the drawings, Figure 1 represents a longitudinal vertical sectional view of an apparatus embodying my invention. Fig. 2 represents a horizontal longitudinal sectional view of the same, parts being shown in elevation. Fig. 3 is a detail sectional view of one of the pneumatic feeding-brushes. Fig. 4 is a longitudinal sectional view of the condensing-rollers. Fig. 5 is a detail view of the slide for closing the slot in the casing through which an arm from the shaking-screen projects. Fig. 6 is a detail sectional view of a portion of the drying-chamber, showing a bleaching-chamber interposed between the drying-chamber and the condenser.

The object of my invention is to provide an apparatus for picking, cleaning and drying cotton which has been injured by fire and water; but the apparatus may also be used for any other similar purposes for which it may be found desirable.

In the drawings, A represents a tight box or casing, which I term the "drying-box," and adjacent to one end of the same is supported the hopper B, of any desired form, provided at its lower end with a delivery-aperture. In the delivery-aperture is located a positively-operated feeding-roller C, which is preferably provided with teeth or projections, and adjacent thereto is a movable slide or grate *b*, which can be moved toward or from the feed-roller to regulate the amount of cotton withdrawn from the hopper by the said feeding-roller.

D D′ are a pair of compressing-rollers located in such a position that the feed-roller C will feed the cotton into the bite of said compressing-rollers, which wring out the moisture from the cotton. Adjacent to the rolls D D′ is a trough D^2 provided with an outlet-pipe *d* for conducting away the water squeezed out by the rolls. The upper roll D is preferably mounted in vertically-movable bearings, so as to be able to yield slightly to accommodate thick portions of cotton passing between the compressing-rolls, and said upper roll may be forced downward by springs engaging its bearings, if found necessary or desirable.

Between the rolls D D′ and the drying-chamber I provide two cylindrical casings, communicating with each other. In the first of these is a picker-roll E, provided on the periphery with teeth having their ends bent as shown, so that they can disintegrate the cotton and leave it in a loose condition. In the other casing is a pneumatic feeding-brush, consisting, in this instance, of a cylindrical core or body provided alternately with fan-blades *f* and brushes *f′*, as shown best in Fig. 3. This brush is made to revolve in such relation with the picker-roll as to brush the loose cotton off from the hooked points of the teeth, and the fan-blades create a blast of air which assists in feeding the cotton along into the casing A of the drying-chamber through an aperture *a*.

Within the casing A and adjacent to the aperture *a* is a horizontal endless apron or carrier G, preferably formed of wire-gauze netting or other perforate material and provided with spikes or teeth *g*. This apron is driven by the end rollers *g′ g′*, over which it passes, and I provide a series of intermediate idle-rollers g^2 g^2 to support the upper lap of the conveyer and the cotton carried thereon.

Beneath the conveyer G are a series of steam-coils H connected with a steam-supply pipe *h* and a return-pipe *h′*, which heat the air within the drying-chamber and dry the cotton on the endless conveyer during its passage through the machine.

In order to facilitate the drying of the cot-

ton, I provide a shaker or rake K for agitating the cotton upon the conveyer. This consists in this instance of a frame K, having its upper face covered with wire gauze or netting k, and provided on its lower face with a series of teeth k' set at an incline with the frame of the rake or shaker. The frame is supported by hangers k^2 k^2 from cross-rods k^3 k^3 or other suitable supports, so as to be free to vibrate longitudinally of the drying-chamber. The vibrations of the rake or shaker are effected by means of a crank or eccentric on one of the revolving shafts of the machine—in this instance by a crank l on the shaft of the pneumatic feeding-brush F, from which motion is imparted by a link L (see Figs. 2 and 5) to an arm l' extending from the rake-frame through a slot a' in the side of the casing. In order to close this slot so as to prevent the escape of air at this point, I provide a slide l^2, longer than the slot a', mounted in guides l^3 on the side of casing A and having a small aperture for the passage of the arm l' therethrough. As the rake is vibrated, this slide is moved backward and forward, but in all positions closes the slot a'. The inclined teeth k of the shaker will catch up the cotton on the endless carrier and loosen it up, so as to detach any dirt, cinders, or other impurities, and keep it in a loosened condition so as to facilitate its drying. The wire-gauze covering of the rake or shaker will allow the impurities to pass through, but will prevent the cotton from being drawn upward by the ascending air-currents.

A strong suction-blast is provided in the drying-chamber to draw out the moist air and all dirt, dust, and other impurities. This is accomplished in this instance by means of a suction-fan M in the upper part of the casing A driven by suitable gearing and arranged to draw the air out of the casing A and force it out through an exhaust-port m, which is provided with a valve m', so that it can be partially or completely closed, as desired.

Below the fan M the rear wall of the casing A is provided with a shelf or a series of shelves N (one being shown) upon which the heavier particles of the impurities may fall, and the casing is provided with a manhole or door A', by opening which access may be had to such shelf or shelves to clean the same.

At the rear end of the conveyer G is a pneumatic feeding brush or roller O, constructed similarly to the brush or roller F, arranged to brush the cotton from the teeth of the conveyer and feed it through a suitable aperture a^2, provided with chute-boards a^3 a^3, into the condensing-chamber P, which is a tight box or casing containing the condensing-rollers P' and P^2, between which the cotton passes. These rollers are arranged to further dry the cotton and condense it and feed the condensed cotton through an aperture p into a suitable receptacle. The roller P' is hollow and has hollow trunnions or sleeves p' mounted in stationary bearings, as shown best in Fig. 4. Through the hollow sleeves are passed a steam-pipe Q and an exhaust-pipe Q', the said sleeves being provided with suitable stuffing-boxes, as shown. The exhaust-pipe Q' is bent downward to a point very close to the wall of the cylinder or roller P', so that the pressure of steam within the cylinder will force the water of condensation out through the exhaust-pipe Q'. Above the roller P' is the roller P^2, which is mounted in vertical movable bearings, so as to accommodate itself to different thicknesses of cotton passing through the rolls, and the said upper roller may be provided with springs p^3 p^3, engaging its bearings, as shown, if desired.

In Fig. 6 I have shown a slight modification of my invention, in which a bleaching-chamber is interposed between the drying-chamber and the condenser for the purpose of bleaching the cotton before it is discharged from the machine. In this figure R represents the bleaching-chamber, which communicates at one side with the drying-chamber and at the other with the condenser. I prefer to provide the bleaching-chamber with a pair of endless aprons or conveyers r and r', composed preferably of canvas and wood, so as not to be affected by the bleaching fumes, and the interior of the bleaching-chamber will be so constructed as not to be affected by said fumes. The rollers supporting the upper apron r' will be supported in vertically-slotted bearings, so as to yield upwardly to accommodate the differing thickness of cotton, as indicated in dotted lines, and it will only be necessary to drive a roller or rollers of the lower apron.

S represents a retort in which the fumes of sulphur are generated in any usual manner and are conducted to the bleaching-chamber by a pipe s. The pipe s may have a water-jacket (not shown) or other cooling device for reducing the temperature of the sulphur fumes, if desired. The fumes are introduced into the bleaching-chamber at the front of the same and below the cotton as it passes through the chamber. After leaving the bleaching-chamber it passes into the bite of the condensing-rolls and is condensed and further dried, as previously described.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine for drying and cleaning fibrous material, the combination with the drying-chamber, of a picker-cylinder provided with teeth having points bent at an angle to the main portions thereof, a pneumatic feeding-roller interposed between the drying-chamber and the picker-chamber, and a casing surrounding said picker and roller and communicating with the drying-chamber, the said roller being provided with brushes for engaging said bent portions of the picker-teeth to remove the material therefrom, and fan-blades to produce an air-current to assist in feeding the material into the drying-chamber, substantially as described.

2. In a machine for drying and cleaning fibrous material, the combination with the drying-chamber provided with heating means, and devices for moving the material therethrough, of a casing communicating with the said chamber, a picker in said casing, a pneumatic feeding-roller in said casing having brushes for engaging the picker and fan-blades for producing an air-current and forcing the same with the material into said drying-chamber, and an air-exit for said drying-chamber, substantially as described.

3. In a machine for cleaning and drying fibrous material the combination with the drying-chamber, heating devices therefor and means for moving the material therethrough, of a casing communicating with said chamber, a picker-cylinder in said casing, and a pneumatic feeding-roller in said casing provided with brushes for engaging the picker-cylinder, and fan-blades for forcing a current of air with the material into the said chamber and an air-exhausting device for said drying-chamber, substantially as described.

4. In a machine for cleaning and drying fibrous material, the combination with the drying-chamber, of a perforate endless conveyer extending longitudinally thereof, a vibrating rake provided with a covering of perforate material, teeth carried by said rake inclined to the surface of said conveyer, heating devices for said drying-chamber, and an air-exhausting device for said chamber, substantially as described.

5. In a machine for cleaning and drying fibrous material, the combination with the picker-roll, of a drying-chamber provided with an endless conveyer, a vibrating rake above said conveyer having a covering of perforated material, heating devices in said drying-chamber and an air-exhausting device for said chamber, substantially as described.

6. In a machine for cleaning and drying fibrous material, the combination with picking and feeding devices, of the drying-chamber provided with an endless conveyer, a vibrating rake having a gauze covering above the conveyer, an air-exhausting device, a shelf below said exhausting device for receiving heavy impurities and a manhole giving access to said shelf, substantially as described.

7. In a machine for drying and cleaning cotton, the combination with the drying-chamber, of an endless conveyer extending longitudinally therethrough, a condenser, and a pneumatic feeding-roller engaging said conveyer and forcing the material removed therefrom into the condenser by means of its air-current, substantially as described.

8. In a machine for cleaning and drying fibrous material, the combination with the drying-chamber having an endless conveyer and a rake, suspended above said conveyer, an arm secured to said rake and extending through a slot in the wall of the drying-chamber, means connected with said arm for vibrating said rake and a slide connected with said arm for closing said slot, substantially as described.

9. In a machine for cleaning and drying fibrous material, the combination with the picker-roll, of the drying-chamber communicating therewith through said chamber, an air-forcing device for said chamber, a bleaching-chamber, a condenser communicating with said drying-chamber and a bleaching-chamber interposed between the drying-chamber and said condenser whereby said material is cleaned, dried and bleached during its passage through the machine, substantially as described.

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

CHARLES W. BROWN.

Witnesses:
J. C. WENCK,
THOS. ENANDINE.