2 Sheets—Sheet 1.

J. B. LYONS.

COTTON RENOVATING MACHINE.

No. 110,149. Patented Dec. 13, 1870.

Fig. 1.

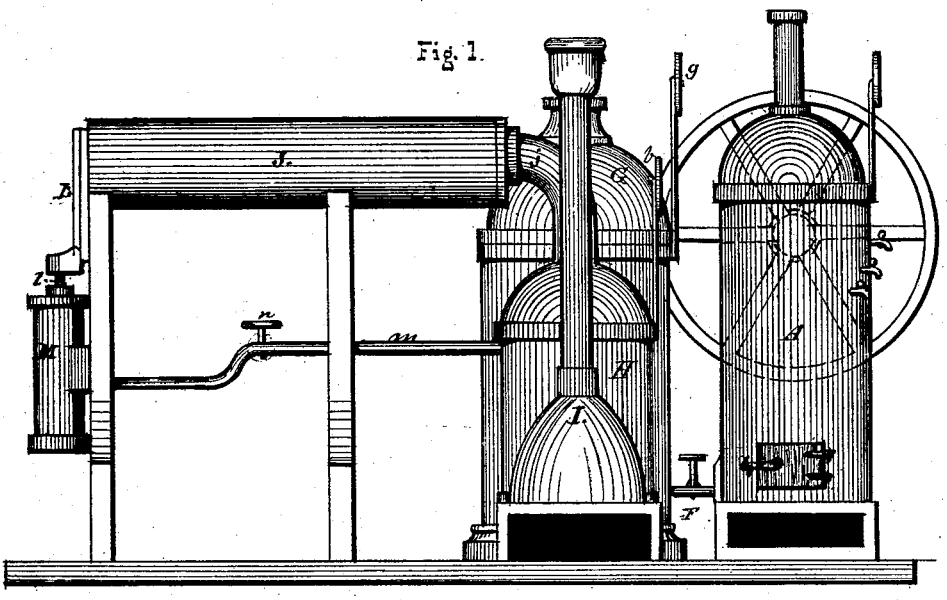
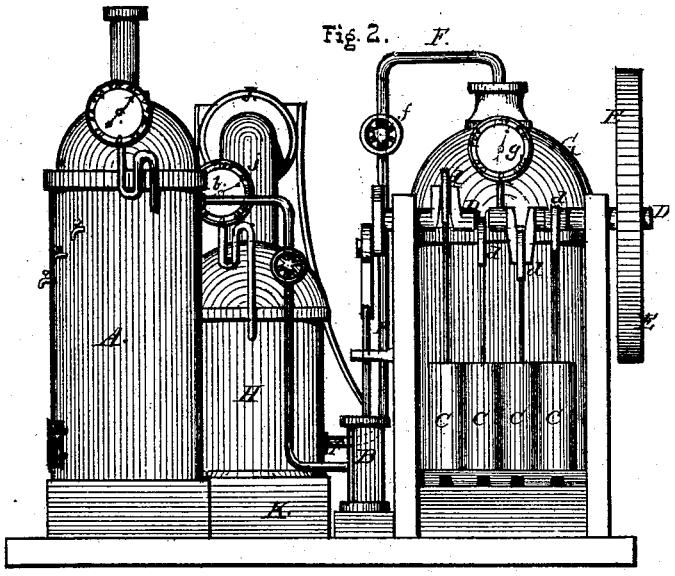


Fig. 2.



Witnesses.

Chas. H. Poole

J. B. Woodward

Inventor.

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2 Sheets—Sheet 2.

J. B. LYONS.

COTTON RENOVATING MACHINE.

No. 110,149. Patented Dec. 13, 1870.

Fig 3.

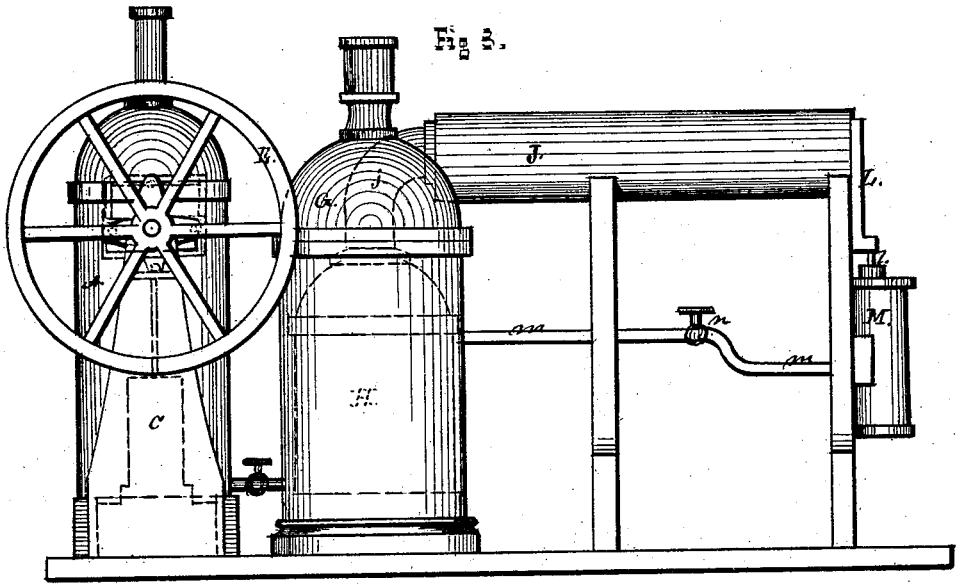
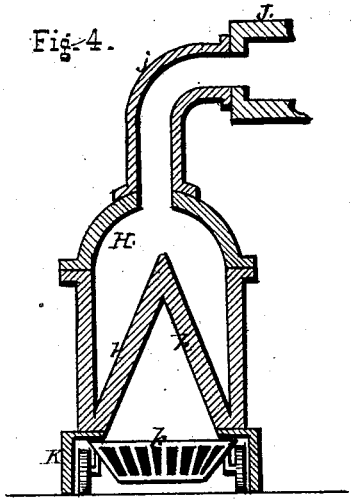


Fig 4.



Witnesses.

Chas. H. Poole.

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Inventor.

James B. Lyons

United States Patent Office.

JAMES B. LYONS, OF MILTON, CONNECTICUT.

Letters Patent No. 110,149, dated December 13, 1870.

IMPROVEMENT IN COTTON-RENOVATING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES B. LYONS, of Milton, in the county of Litchfield and State of Connecticut, have invented a certain new and useful Improvement in a Machine for Renovating Cotton, or an apparatus for cleaning and saving raw sanded cotton; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Plate I.

Figure 1 represents a side elevation of the machine or apparatus complete for operation.

Figure 2 shows an end-view elevation of the same, with the arrangement of the steam-engine and air-pumps.

Plate II.

Figure 3 shows a reverse side of the machine, as arranged in a longitudinal elevation.

Figure 4 shows a sectional view through the superheating air-retort, the curved connecting-pipe with a broken-off section of the horizontal tube or barrel; also the movable fire-pan or grate on truck-rollers.

The object of my invention is to cleanse, renovate, and save all of the cotton that grows low down on the stalks and that falls from the burs and gets wet and gritty, so that it cannot be ginned by any of the ordinary cotton-gins without great risk of setting fire to the gin and surroundings. The amount now lost, not being gathered for the above reasons, is annually nearly one-third of the crop.

My invention consists in the mechanism hereinafter described, by the operation of which the process of removing all of the sand and grit from the fiber of the cotton is effected, the wet and dampness removed, and the seed loosened and partially or wholly separated from the fiber, which is straightened out in the choicest manner, and the hitherto useless and waste cotton entirely renovated, restored to its original condition in ripening, and saved for commerce and manufacture.

To enable others to make and use my cotton-cleansing apparatus, I will describe it in detail.

The steam-boiler A and engine B may be of any desired form and capacity, and placed in a convenient and safe position to operate a series of four, more or less, of air-pumps, *c c*, all driven by eccentrics or cranks, *d d*, on the shaft D, their motion and force being distributed and equalized by the throw of the cranks at various points, and regulated by the fly-wheel E.

The series of air-pumps *c c* are for the purpose of forcing a large amount of atmospheric air into the receiver G, and compressing it in the receiver to the extent of two hundred pounds or more to the inch, its pressure being indicated by a gauge, *g*, attached to it.

From the receiver G there is a strong pipe, F, provided with a throttle-valve or stop-cock, *f*, the pipe connecting with the retort H, which must be made of cast or wrought metal of sufficient strength to hold the pressure of at least five hundred pounds to the square inch, the interior of the retort H being constructed with a cone center, *h*, as shown in fig. 4, the retort H being supported on a base, K, which forms the fire-place, in which a fire-grate, *k*, is placed on truck-wheels so as to be moved in and out to receive its supply of fuel and heat the retort H when required, and when not required is moved forward under the stack I, so that the heat will be conveyed off up the pipe.

The retort H is for the purpose of receiving the compressed air from the receiver G, and when filled the stop-cock *f* is closed and the heating-grate *k* is placed under the cone *h* in the retort so that the air is expanded and the pressure increased to five hundred pounds, more or less, to the inch in the retort and large horizontal cylinder J, which is connected with the retort H by the pipe *j*, at its rear end.

The cylindrical barrel or main tube J will be made of cast iron, from twenty to thirty feet in length, with a smooth bore of from twenty to thirty inches in diameter, and of sufficient thickness to stand all of the pressure of the atmosphere that can be compressed or expanded by heat of the retort H into it.

The front end of the barrel J is provided with a sliding door or shutter, L, fitted with grooved joints to close the base perfectly air-tight and hold it against the great atmospheric pressure within.

To the sliding door L is attached a piston-rod, *l*, and vertical cylinder M, which is connected with the hot-air retort H by a pipe, *m*, in which is a stop-cock, *n*, so that by turning the cock and letting the highly compressed air into the cylinder M the slide-door L is instantaneously drawn down and opened, thus releasing the expanded atmosphere into the air, carrying with it the cotton and other contents placed in the bore of the large barrel or tube J.

A quantity of sanded, gritty, or wet cotton, just as it is gathered up from the fields, is placed in the barrel J, the sliding door L is closed, the compressed cold air is let in from the receiver G into the retort H, and penetrates the mass in the barrel; then the heat is applied to the retort, the air is expanded, and all the moisture is soon absorbed by the heat, and the fibers of the cotton loosened, and when the pressure is sufficient, as will be indicated by the pressure-gauge *b* on the retort H, or connected therewith, the cock *n* is opened, the slide-door L is instantly opened, and the contents discharged with such force, the concussion with the common atmosphere being so great, that all of the gritty matter and the seeds are separated from

the fibers of the cotton, and are carried beyond the mass of the loose inflated fibers of the cotton, or drop down through a grating of wire-work arranged at the proper distance from the mouth of the barrel J to receive the renovated cotton as it falls onto the grating.

A room of sufficient capacity is provided, into which the contents of the barrel or cylinder are discharged, so that all of the cotton (however light) may be gathered up and saved after it is cleansed of the extraneous matter.

If desirable, a swinging or yielding partition or plate may be placed at any distance in front of the barrel J to react by the concussion of the discharged air and contents, and prevent the cotton from being scattered too much or be carried too great a distance.

If desired, the sliding valve door L can be operated by steam, by having a pipe connecting with the steam-boiler A.

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

1. The combination of the receiver G, air-pumps C C, retort H, barrel J, and door L, when arranged to operate substantially as and for the purposes described.

2. The combination of the sliding valve L, closing the barrel J, the piston *l*, vertical cylinder M, connecting-pipe *m*, and retort H for the purpose of suddenly liberating the contents of the barrel J by means of the compressed air in the retort, substantially as specified.

JAMES B. LYONS.

Witnesses:

EDM. F. BROWN,

J. B. WOODRUFF.