

(No Model.)

2 Sheets—Sheet 1.

S. D. MURRAY.
COTTON GINNING APPARATUS.

No. 467,044.

Patented Jan. 12, 1892.

Fig. 1.

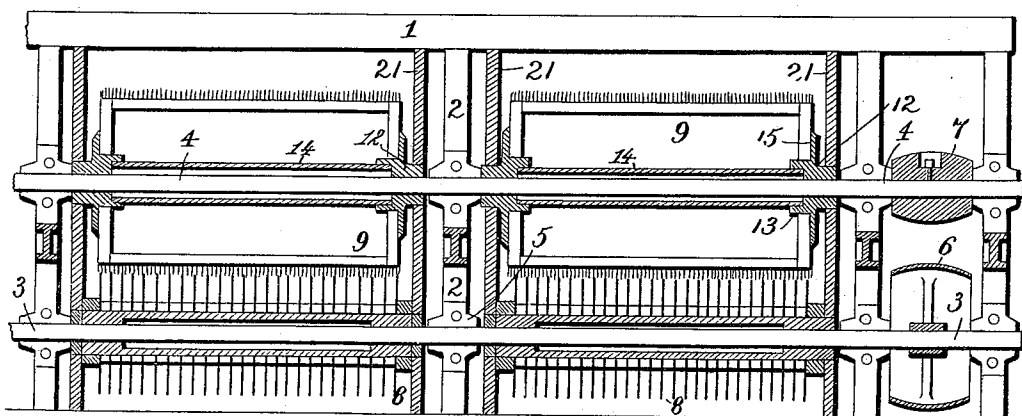
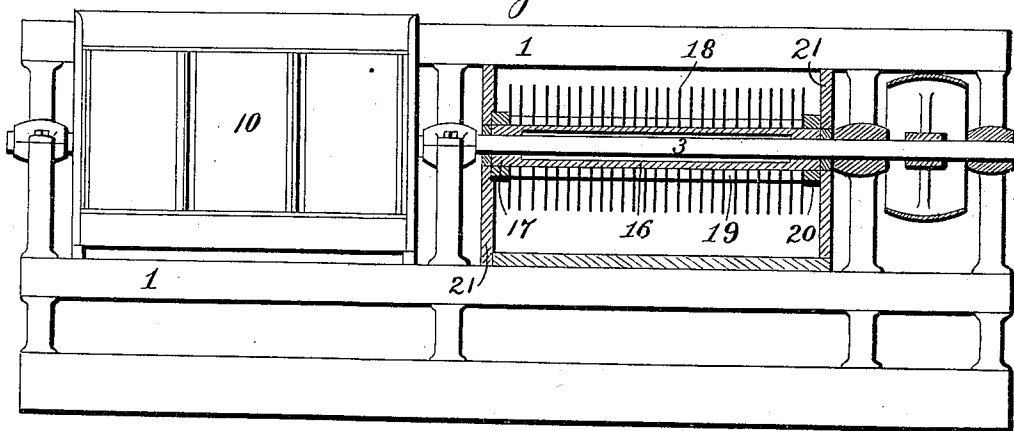


Fig. 2



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Stephen D. Murray

By James L. Norris.
Attorney

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Fig. 3.

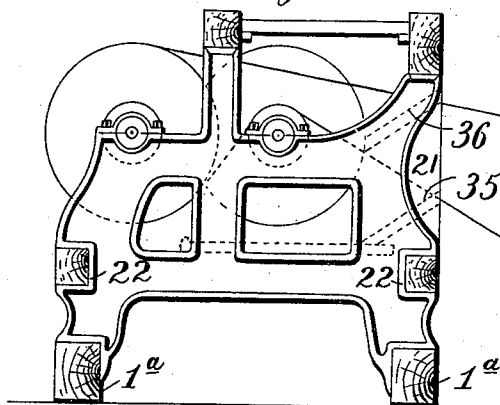


Fig. 4.

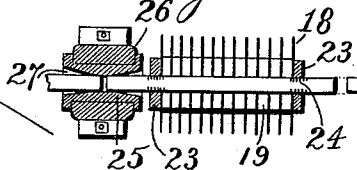


Fig. 5.

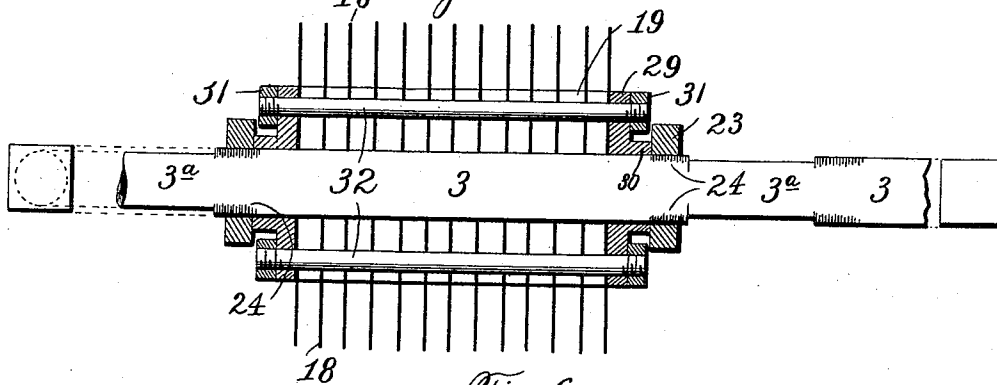
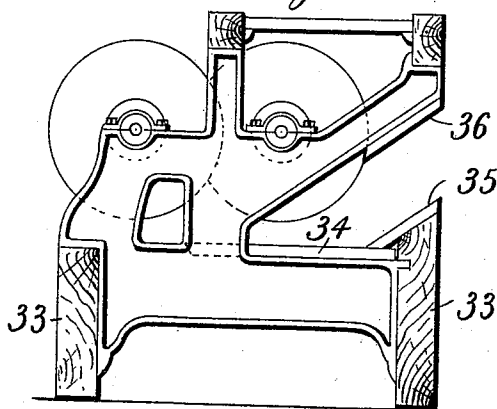


Fig. 6.



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UNITED STATES PATENT OFFICE.

STEPHEN DOUGLAS MURRAY, OF DALLAS, TEXAS, ASSIGNOR TO WILLIAM BURR, OF SAME PLACE.

COTTON-GINNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 467,044, dated January 12, 1892.

Application filed April 6, 1891. Serial No. 387,808. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN DOUGLAS MURRAY, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Cotton-Ginning Apparatus, of which the following is a specification.

Heretofore and prior to my invention it has been customary in ginning-houses to arrange and operate each gin-head separately from all the others, the saw-shaft and brush-shaft of each gin-stand being provided with pulleys and driven from a line-shaft or counter-shaft having a series of independent pulleys and belts, one for each gin. In order to gear the counter-shaft to each gin in this manner, it is necessary to separate the gin-stands sufficiently at least to permit the extension of the saw-shaft and brush-shaft to receive the driving-pulleys, and if a number of gin-stands are employed the increase of space in the gin-house necessary to provide accommodation for the machinery becomes a material and frequently a very serious item in the expense of construction. The long line of shafting, with its multitude of pulleys, belts, and bearings, and the consumption of oil or other lubricants, as well as the increase in material and in the wear and tear of the parts, add largely to the first cost of the "plant," as well as to the running expense.

It is the purpose of my invention to avoid the complex and expensive multiplication of shafts, pulleys, idlers, belts, and other machinery of a large ginning establishment, to materially diminish the floor-space required for the accommodation of a series of gin-stands, to simplify and cheapen the construction of the latter, and to decrease the expense of operating the same.

It is my purpose, also, to provide a novel and simple construction and combination of parts whereby a series of brushes and a corresponding series of saw-gangs may be mounted upon and carried or driven by continuous shafts, which are arranged within a continuous frame inclosing a series or plurality of gin-sections, a single bearing for each continuous shaft being arranged between the gin-sections.

It is my purpose, also, to provide simple means for mounting the brush-

cylinder and gin-saws upon extended shafts in such manner that any springing or bending of the shaft need not bind the brush-cylinder or saw-cylinder thereon and cause either to run untrue.

It is my purpose, also, to provide a simple construction whereby the brush-shaft and saw-shaft, or either of them, may be divided into sections to facilitate the removal and replacement of the saws and brushes and so coupled as to constitute a practically homogeneous or continuous piece of metal.

The invention consists, to these ends, in the several novel features of construction and new combinations of parts hereinafter fully set forth, and more particularly pointed out and defined in the claims following this specification.

To enable others skilled in the art to which my invention pertains to fully comprehend and practice the same, I will describe said invention in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a horizontal section taken through the axis of the brush-shaft and saw-shaft. Fig. 2 is a view, partly in elevation and partly in section, the section being taken in a vertical plane passing through the saw-shaft. Fig. 3 is an end elevation, the roll-box being removed. Fig. 4 is a detail section showing a construction by which a series of individual shafts may be coupled together to form a practically continuous horizontal main shaft. Figs. 5 and 6 are detail sections showing the preferred construction of the saw-cylinder and a modified construction of the continuous frame for the gins.

In the said drawings, the reference-numeral 1 indicates a continuous frame of any suitable or necessary length and provided at regular intervals with vertical shaft-supporting frames or leg-pieces 2. Through this frame and coextensive therewith run two parallel longitudinal shafts 3 and 4, each having support in bearings 5, arranged upon the leg-pieces or leg-frames 2. At one end of the frame 1, which is slightly extended for the purpose, the shafts project sufficiently to receive pulleys 6 and 7, the extremities of the shafts outside these pulleys being supported in similar bearings upon an additional leg-frame.

Between the leg-frames 2 and mounted upon the shafts 3 and 4, respectively, are a series of saw-cylinders 8 and brush-cylinders 9, arranged in the manner seen in an ordinary gin-stand. The space between the leg-frames is inclosed continuously upon the breast side; but for the convenience of removal the roll-boxes 10 are preferably formed separately and are arranged with their ends inside the adjacent bearings 5. This construction also prevents the lint from becoming fouled by the oil of the journal-bearings and permits ready access to the latter at all times.

Upon the continuous brush-shaft 4, between the leg-frames 2, are mounted heads 12, keyed or otherwise fastened to the shaft and having threaded sockets 13, which receive the ends of a tubular shaft 14, the interior diameter of the latter exceeding that of the continuous brush-shaft 4.

Upon the heads 12 are formed or mounted flanges 15, between which a brush-cylinder of wood or other suitable material is built up, having upon its periphery the ribs of bristles commonly seen in gins.

Upon the continuous shaft 3, between the leg-frames 2, are slipped hollow shafts 16, preferably made from sections of hydraulic tubing, which are upset at their ends to provide bearings 17 for the tubular shafts, which are keyed upon the continuous shaft or fastened thereto in any suitable manner. Upon the exterior of each tubular shaft a gang of gin-saws 18 are arranged between rings 19, and upon the ends of the tubular shaft are turned threaded rings or nuts 20. This construction not only provides light, stiff, and strong shafts for the saw, but it permits the removal and replacement of the saws and brushes upon shafts of any length, and should the latter spring or bend the brush-cylinder or saw-cylinder will not spring with it.

Division-walls 21 are preferably introduced to form separate gin-casings in the several gin-sections; but I do not in these constructive features limit my invention to any specific form. The leg-frames 2, which mark the divisions between the several gin-sections and afford bearings at equal intervals for the two shafts, are usually, though not necessarily, made of metallic ribbed plates, as shown in Figs. 1 and 2, bolted to and resting upon the floor-pieces 1^a of the frame, the lower beams of the latter being laid in sockets or seats 22 in the leg-frames.

To promote the convenience of the user in removing the saws or brushes, either for repairs or for the purpose of sharpening the saws, I may make the shafts 3 and 4 in sections so coupled together as to practically convert a series of individual sections into a single continuous shaft. To accomplish this, I divide the entire shaft into parts, each being of such length that it will extend from the central part of the bearing upon one leg-frame to the center of the bearing upon the next leg-frame. The individual sections thus formed are

square, or substantially so, in cross-section, and the saws, as well as the intermediate rings or clamps, are provided with suitable openings to receive the shaft. Split rings or nuts 23 are placed upon the shaft-section at each end of the series of saws, and their threads mesh with screw-threads 24, cut upon the angles of the square shaft-section, as shown in Fig. 4.

Within the bearings or boxes upon the leg-frames I arrange a steel casting 25, having a cylindrical exterior, which turns truly in the box, in which it is held by collars 26 upon each end of the casting. Through the latter from end to end extends a square opening 27, its mouth at each end being slightly greater than the end of the square shaft-section, said opening contracting gradually toward the center of the coupling, where it corresponds with the size and form of the end of the shaft-section which is inserted therein. The opposite end of the adjacent shaft-section being inserted in the other part of the coupling and the same connection being duplicated throughout the series, the several sections are made to constitute practically a continuous shaft, and at the same time the easy and speedy removal of the saws or brushes is provided for. The slight taper or flare of the shaft-openings in the couplings 25 permits small variations in the alignment of the individual shaft-sections without injuriously affecting the action of the parts.

While the constructions already shown and described are operative, I prefer for some reasons to use the saw-cylinder and shaft shown in Fig. 5. In mounting the saws upon a hollow shaft, as in Figs. 1 and 2, it is necessary to use keys or some equivalent device to fasten the hollow shaft in place, keying being the only practical method by which this can be accomplished. In order to dispense with the keys to enable the saw-cylinder to be readily taken off and put on the continuous shaft and to provide means for giving a delicate end adjustment to the saws to cause them to run truly and avoid rubbing upon the ribs of the roll-box, I make the saw-shaft 3 square and in one continuous piece, providing at suitable intervals cylindrical portions 3^a to form the bearings. On the square shaft, between the bearings, the saws 18 and space-blocks 19 are arranged, fitting upon the square parts of the shaft, and at each end of the series of saws and space-blocks is placed a head 29, preferably provided with a flange 30 to give an extended support upon the shaft and to allow ample space for the nuts 31, which are turned on the ends of tie-bolts 32, passing through the heads, space-blocks, and saws and binding the whole together so firmly as to make a saw-cylinder which is practically homogeneous. Upon the ends of the square parts of the shaft are turned nuts 23, similar to those shown in Fig. 4, their threads meshing with male threads 24, cut upon the angles of the square parts. By this construction the saw-

cylinder may be removed at any time and may receive a very delicate and accurate end adjustment upon the shaft to cause it to run truly and avoid contact with the ribs of the roll-box.

5 This feature is of great value in all gins, and in a structure of the kind shown it is especially necessary that each cylinder shall have an independent adjustment upon the shaft. I may, if it is desired, use jaw-nuts 23, or I
10 may cut the threads 24 with an opposite pitch, so that the revolution of the saw-cylinder will tend to draw both nuts more closely against the flanges 30. These flanges may be dispensed with, if preferred, and the nuts 23
15 may be turned up against the outer faces of the heads 29. By making the nuts 23 circular upon their outer edges and using a spanner, which engages with openings in the outer vertical face of the nut, it may be caused to
20 enter inside the circle of the nuts 31. I may, however, remove the flange 30 from the head 29 and form similar flanges upon the nuts 23.

It should be clearly understood that the division-boards 21 (shown in Figs. 1, 2, and 3)
25 are not indispensable, as I may use the construction shown in Fig. 6, in which the parts are the same as already described, with the following exceptions: The leg-pieces 2 of the frame are preferably supported upon tim-
30 bers 33, to which they are bolted, and the web connecting the upper and lower horizontal parts of the leg-piece (seen at the right hand of Fig. 3) is removed or omitted, giving an unobstructed space, as shown in Fig. 6.
35 Upon the lower horizontal parts of the leg-pieces is laid a continuous mote-board 34, extending from end to end of the gin-frame. The deflecting-boards 35 and 36 are supported upon one of the beams 33 and upon the up-
40 per inclined parts of the leg-pieces, and both are continuous. By this construction or one equivalent thereto the division-boards 21 may be wholly dispensed with.

What I claim is—

45 1. In a cotton-ginning apparatus, the combination, with a gang of gin-casings, of a continuous shaft extending through all the casings of the gang, the bearings or heads secured to the continuous shaft, a tubular shaft through
50 which the continuous shaft extends, the sockets on the heads, in which the tubular shafts are secured, and brush-cylinders built up between the heads, substantially as described.

2. In a cotton-ginning apparatus, the combination, with a continuous shaft driven by a single pulley, of tubular shafts having bearings at their ends, which are keyed or fast-
55 ened to the continuous shaft, gin-saws arranged upon the exterior of the tubular shaft, and rings or nuts turned thereon to clamp the saws, substantially as described.

3. In a cotton-ginning apparatus, the combination of a continuous horizontal main frame, a gang of gin-casings, a series of vertical
65 shaft-supporting frames interposed between the gin-casings and rigidly connected with the main frame, a continuous shaft carrying

gangs of saws and extending through all the casings, a continuous shaft provided with heads rigidly secured thereto, a series of tubular shafts through which one of the con-
70 tinuous shafts extends, the sockets on the heads, in which the tubular shafts are secured, and brush-cylinders built up between the heads, substantially as described. 75

4. A cotton-ginning apparatus consisting of a continuous horizontal main frame divided into a gang of ginning-sections, a brush-shaft extending from end to end of the continuous frame and traversing the ginning-sections, a
80 series of brushes upon the brush-shaft, a saw-shaft extending from end to end of the continuous frame, gangs of saws on the saw-shaft, vertical leg-frames interposed at intervals between the ginning-sections and rigidly
85 joined to the continuous horizontal main frame, boxes or bearings on the interposed frames for the two continuous shafts, and a pulley at one end of each shaft, substantially as described. 90

5. In a ginning mechanism, the combination of a continuous horizontal main frame and vertical shaft-supporting leg-frames rigidly connected with the continuous main frame and marking the division-lines of a
95 plurality of ginning-sections, of a series of rectangular shaft-sections, saws arranged in gangs upon the shaft-sections and confined or clamped by split nuts turning upon angular threaded portions of the shaft-sections,
100 and couplings flanged at both ends and lying in boxes or bearings on the leg-frames, said couplings being provided with rectangular openings, which contract from the ends toward the centers, where the openings are of a
105 size to fit the ends of the shaft-sections inserted therein, substantially as described.

6. In a ginning mechanism, the combination, with a saw-shaft, of a saw-cylinder composed of saws and space-blocks, heads mounted upon the shaft at the ends of the cylinder,
110 tie-bolts passing through the series of saws and space-blocks, nuts upon the ends of the tie-bolts, and nuts turned upon the shaft and bearing against the heads, substantially as
115 described.

7. In a ginning mechanism, the combination, with a square continuous shaft having cylindrical portions at intervals for bearings, of a series of saws and space-blocks mounted
120 on the square parts of the shaft and locked together by tie-bolts and nuts, and nuts turned upon threads formed upon the angles of the shaft, said nuts bearing against heads at the ends of the saw-cylinder, substantially
125 as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

STEPHEN DOUGLAS MURRAY. [L. S.]

Witnesses:

M. G. STIRMAN,
S. H. CARRINGTON.