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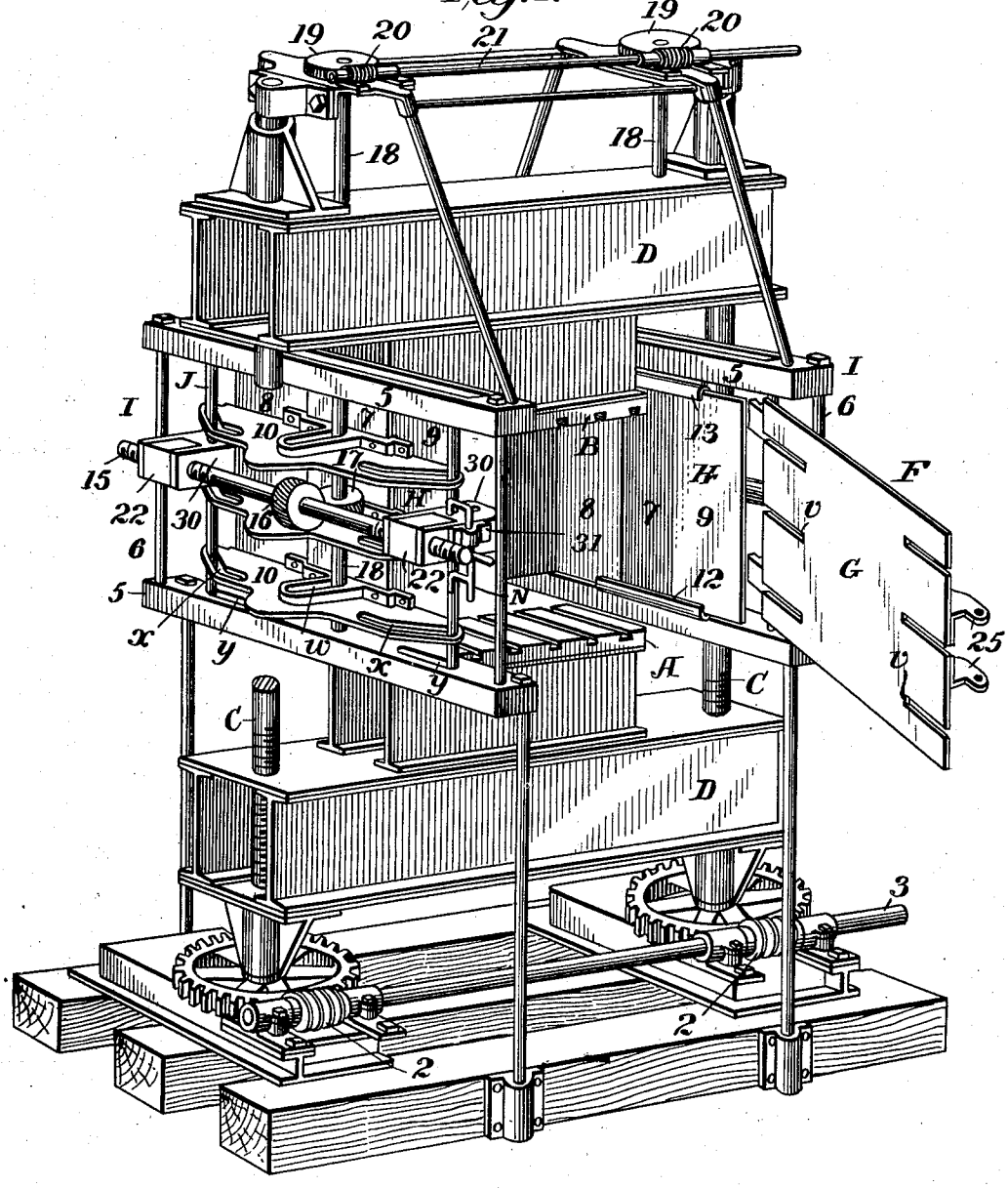
COTTON COMPRESS.

APPLICATION FILED JUNE 22, 1908.

923,190. Patented June 1, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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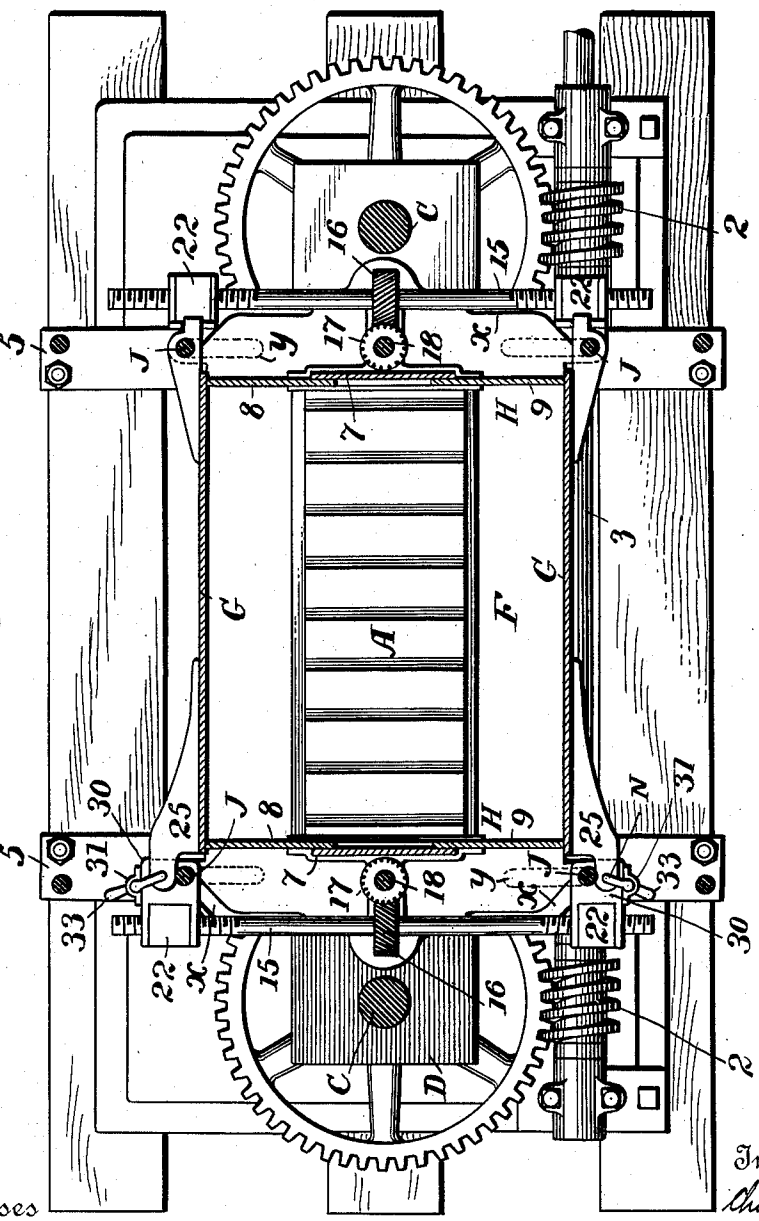
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

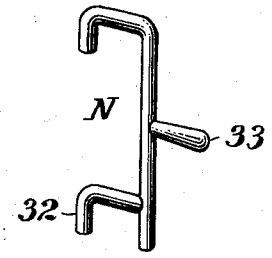


Fig. 4.

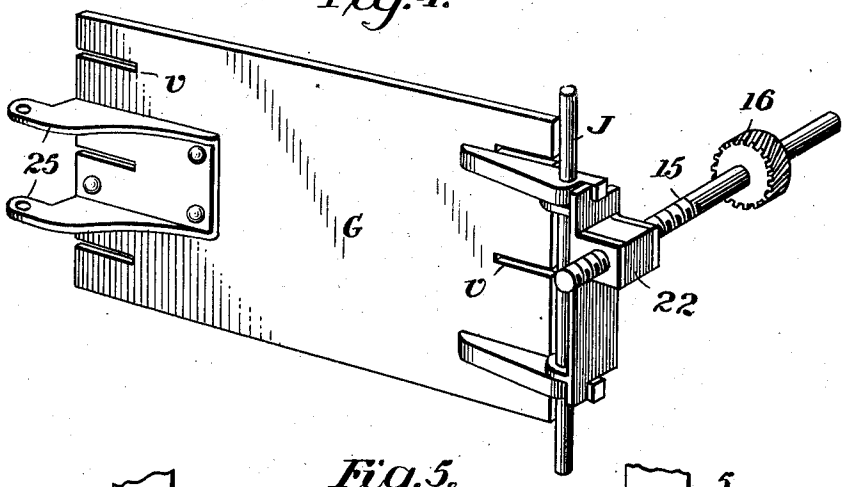
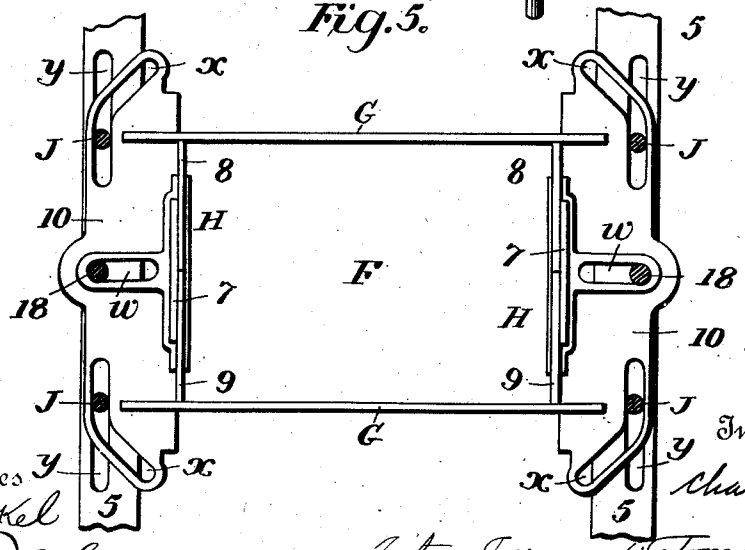


Fig. 5.



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UNITED STATES PATENT OFFICE.

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COTTON-COMPRESS.

No. 923,190. Specification of Letters Patent. Patented June 1, 1909.

Application filed June 22, 1908. Serial No. 439,796.

To all whom it may concern:

Be it known that I, CHARLES J. LUCE, a citizen of the United States, and resident of Niantic, Connecticut, have invented certain new and useful Improvements in Cotton-Compresses, of which the following is a specification.

My invention relates to compressing plantation bales of cotton, and consists in means for first reducing the plantation bale to a uniform density throughout and then compressing the same, as fully set forth hereinafter and as illustrated in the accompanying drawing, in which:

Figure 1 is a perspective view showing my improved compress; Fig. 2 a sectional plan; Fig. 3 a view of one of the locking bolts; Fig. 4 a perspective view of a side door or side piece of the box at the hinged end thereof; Fig. 5 a detached plan.

The compress is provided with a lower platen A, an upper platen B, each having the usual transverse grooves, and with means whereby the two may be carried to and from each other. As shown the said means consists of threaded shafts C, C, the threaded portions carrying the two cross-beams D, D, which support the platens, and the two shafts being provided with worm-wheels which engage worms 2 on a transverse shaft 3, to which power is applied in any suitable manner. With these parts is combined a compress box F, the latter having side pieces G, G, and end pieces H, H, which side and end pieces are supported by two side frames I, I, each consisting of cross-pieces 5, 5, and vertical bars 6, 6.

Each end piece instead of consisting of a single plate, as usual, is composed of a plurality of sections. As shown there are three sections 7, 8, 9, in each end piece, the central section 7 being connected to a plurality of equidistant cross-plates 10, while the side sections 8, 9, rest upon the lower cross-bars 5, being held in place by lips 12 below, and 13, above, so that they can slide to and from each other freely.

Each of the cross-plates 10 has at the end a slot x, inclined or diagonal at the end and the inner end parallel to the end piece, and through these slots at the opposite ends of the said cross-plates extend standards J, J, which project into and are guided by slots y, in the cross-pieces 5, 5, with the result that if the standards J, J are carried forcibly toward each other they will bear on the inclined edges of the slots x, and will force the cross-plates inward until they enter the parallel parts of the slots in which they will travel without imparting movement to the cross-plates. Any suitable means may be employed for thus forcibly drawing together the standards. As shown there are cross-shafts 15, each having reversely threaded ends and a central worm wheel 16, which engages with a similar wheel 17 upon a vertical shaft 18 which extends through central slots w of the cross plates and also upward through the upper beam D where it is combined with means for rotating the same, as, for instance, with a worm-wheel 19 engaging with a worm 20 on a shaft 21, to which movement is imparted in any suitable manner.

The threaded ends of the cross shafts 15 carry each a nut 22, so arranged that it may carry or engage the adjacent standard J, and when the shaft is rotated in one direction the nuts are drawn toward each other, thus drawing the standards inward.

Each of the side pieces G of the compress box is hinged at one end to one of the standards and the nuts 22 at this end are connected with the hinges, Fig. 4. At the other end each nut has a wing 30 through which the standard J passes, and against this standard the braces 25 of the side piece are brought as the box is closed. To then hold the side piece in engagement with the nut and standard the wings are provided with a sliding bolt N sliding vertically in a staple 31 and provided with shaped pintles 32 which may be brought above and then passed down into coinciding openings in the braces and wings thus locking the parts together. The bolt has a handle 33 by which it may be moved vertically and when lifted and swung to one side the parts are unlocked. When the parts are connected the side pieces G are carried inward with the standards and are brought to bear against the movable sections 8, 9 of the end pieces and thereby carry them toward each other, and each of the side pieces has slots v into which the cross plates 10 pass as the end pieces of the box are drawn toward each other.

The grooves x of the end pieces are so

formed and the parts are so constructed and arranged that after the side pieces are closed and the shafts 18 begin to rotate the first action will result in forcing the end pieces H, H, toward each other as the standards J, J, are drawn together, and after the end pieces have moved for a predetermined distance the standards will come into the straight portions of the slots *x*, and the side pieces will then be further drawn toward each other. If desired the sides may be made with slots, so bands can be put on before the door is opened.

In the operation of the press the ordinary plantation bale is placed between the platens, the bands removed so that the cotton is loose, and the side pieces G, G, are closed so as to practically close the box. The box is so proportioned that it is wider than the width of a plantation bale and therefore upon operating the shaft 21 the end pieces will be first carried toward each other and press on the ends of the bale; then the side pieces will be carried toward each other against the sides of the bale; and then the platens will be brought toward each other and compress the bale vertically. It will be obvious that while I have shown one means of building the compress so as to secure these successive actions of the end and side pieces of the box and of the platens, these parts may be differently constructed and arranged to secure this result.

The fundamental factor in connection with the operation of a compress of the character described consists in the ability to bring an end pressure upon the bale, compressing it in the direction of its length before any side pressure, then applying side pressure, and then applying the top and bottom pressure by means of the platens.

In the ordinary operations of forming the plantation bale the cotton is generally thrown to a greater extent toward the center of the box than toward the ends, with the result that in all plantation bales the cotton is very much looser at the ends than at the center. In ordinary compresses this condition of the plantation bale is ignored and the result is that the said bale, which is pressed generally only from top to bottom, is very much denser at the center than at the ends, and in order to secure a proper average density per cubic foot it is necessary to overpress the central portion. In the operation of my compress I have adapted the parts so as to operate upon the principle of securing, to as great a degree as possible, a uniform density of bale before compression, and I therefore first bring the end pieces of the box to bear upon the loose ends of the plantation bale, and this pressure is continued until the latter is reduced to the proper extent longitudinally, and all parts of the bale are substantially of like density, and then the side pressure is brought to bear so that the pressure of the fibers at the sides against the fibers that have been thus condensed at the ends not only tends to increase the general density, but the binding of the side fibers against the end fibers tends to hold them in place and to prevent reaction resulting in longitudinal expansion. After sufficient side compressing is thus applied I then bring the platens toward each other to the extent necessary to secure the proper final compression, the pressure in this direction bringing the top and bottom fibers against the fibers at the side, tending to hold and bind the bale against lateral expansion, and the vertical expansion is then prevented by applying and securing the bands in the usual manner. I have found that by this combination of operations it is practicable to secure a greater reduction in bulk and a better average compression by means of less direct pressure and actual compression at the center than is practicable in ordinary operations.

I do not here claim the method of operation above described as the same constitutes the subject-matter of a separate application.

Without limiting myself to the precise construction and arrangement of parts shown, I claim as my invention:

1. The combination in a compress of opposing movable grooved platens and a compress box and means whereby the end and side pieces of the latter after closing the box may be brought toward each other to compress and reduce the dimensions of a bale first in the direction of its length, then of its width, and then of its height, for the purpose set forth.

2. The combination in a compress of upper and lower platens narrower than a plantation bale, and a press box having movable side and end pieces, and means for carrying the platens, sides and ends toward each other to compress the bale after the box is closed upon the bale.

3. The combination in a compress of upper and lower platens, and a press box having movable side and end pieces, and means for carrying the platens, sides and ends toward each other after closing the box, the end pieces moving in advance of the side pieces, to condense the mass of cotton longitudinally.

4. The combination in a compress of upper and lower platens, and a press box having movable side and end pieces, and means for carrying the platens, sides and ends toward each other after closing the box, the end pieces moving in advance of the side pieces and the latter in advance of the platens, to compress the bale.

5. The combination with the movable platens of a compress, of a box having movable side pieces and movable end pieces, and means for carrying the platens and side and end pieces inward, the end pieces consisting of sections to permit of contraction in width.

6. The combination with the movable

platens of a compress, of a box having movable side pieces and movable end pieces, and means for carrying the platens and side and end pieces inward, the end pieces consisting each of independent sections, and means for moving the sections of the end pieces to contract the width of the latter.

7. The combination in a compress of upper and lower movable platens having grooved faces, and a box having hinged side pieces, and end pieces each in sections movable inward, and means for carrying the side pieces and end pieces inward and for moving inward the sections of the end pieces.

8. The combination in a compress of upper and lower movable platens having grooved faces, and a box having hinged side pieces, and end pieces each in sections movable inward, and means for carrying the side pieces and end pieces inward, and for moving inward the sections of the end pieces, all constructed to move the end pieces in advance of the side pieces and the latter in advance of the platens.

9. The combination with the movable grooved platens of a compress, of four vertical standards arranged in pairs opposite the ends of the platens, supports for the standards permitting each pair to be moved toward each other, a box having side pieces each hinged to one of the standards, and end pieces in sections, means for connecting each outer section to move with one of the standards, and means for carrying the platens, the side pieces and standards toward each other.

10. The combination with the movable grooved platens of a compress, of standards arranged in pairs opposite the ends of the platens, a box having side pieces each hinged to one of the standards and with means for engaging the standard at the opposite end of the platen, supports in which the standards can slide to and from each other, and sectional end pieces adapted to slide with the standards, and means for moving the platens and side and end pieces toward each other, and each pair of standards also toward each other.

11. The combination with the movable grooved platens of a compress, of a frame with end pieces provided with guides, pairs of standards movable to and from each other in said guides, abox having side pieces and sectional end pieces, each end piece contractible in width, and a plurality of parallel cross-plates each having slots x in the ends through which the standards extend, and means for moving the platens and the standards of each pair toward each other.

12. The combination with the movable grooved platens of a compress, of a frame with end pieces provided with guides, pairs of standards movable to and from each other in said guides, a box having side pieces and sectional end pieces, each end piece contractible in width, and a plurality of parallel cross-plates each having slots x in the ends through which the standards extend, and means for moving the platens and the standards of each pair toward each other, the side pieces of the box each hinged to one of the standards and with means for engaging the standard at the opposite end.

13. The combination with the movable grooved platens of a compress, of a frame with end pieces provided with guides, pairs of standards movable to and from each other in said guides, a box having hinged pieces, side pieces and contractible end pieces, a plurality of parallel cross-plates each having slots x in the ends through which the standards extend, and means for moving the platens and the standards of each pair toward each other, the side pieces of the box each hinged to one of the standards and with means for engaging the standard at the opposite end, said side pieces slotted to receive the ends of the cross-plates.

14. In a compress having movable platens and a box with side and end pieces movable toward each other, each end piece having a central and two side sections, and a plurality of cross-plates attached to each of the said central sections, and each with slots diagonal at the ends, and two pairs of standards extending through said slots, guides for supporting each pair of standards to move to and from each other, the side pieces each hinged to a standard, and means for connecting each to a standard at the opposite end, and slotted to receive the ends of the cross-plates, and means for carrying the standards of each pair toward each other.

15. The combination with the end piece of a compress box, of a plurality of cross-plates having slots x diagonal at the ends and central slots, vertical standards extending through said slots x, means for guiding the standards to slide to and from each other, vertical shafts extending through the central slots, and means for imparting the sliding movements to the standards from said vertical shafts.

16. The combination with the end piece of a compress box, of a plurality of cross-plates having end slots x with diagonal and parallel portions and central slots, vertical standards extending through said slots x, means for guiding the standards to slide to and from each other, a driving shaft extending through the central slots, transverse threaded shafts geared to be driven from the driving shafts, and nuts on said transverse shafts arranged to engage and move the standards.

17. The combination with the sides of a compress box, of end pieces each consisting of a plurality of sliding sections, and means for moving the sides toward each other and against the said sections to slide them toward each other.

18. The combination in a compress of a box having independently movable side and end pieces adapted to inclose upper and lower platens, and means whereby the end pieces may be brought against the bale to compress it to a uniform density, and means whereby the side pieces, end pieces and platens may then be caused to approach each other to reduce the dimensions of the bale in all directions.

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

CHARLES J. LUCE.

Witnesses:

RICHARD B. CAVANAGH,

T. E. HARDENBERGH, Jr.