F. L. WHITE.

COTTON COMPRESS.

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1,422,014.

Patented July 4, 1922.

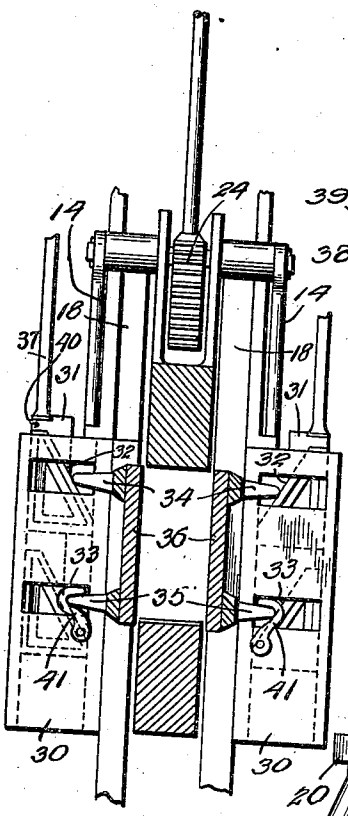


Fig. 2.

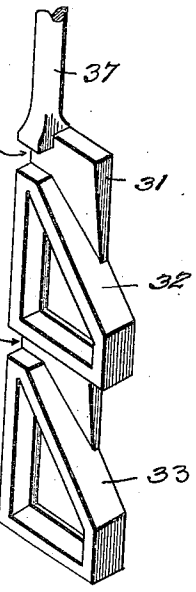


Fig. 3.

Fig. 1.

Witness

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COTTON COMPRESS.

1,422,014. Specification of Letters Patent. Patented July 4, 1922.

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To all whom it may concern:

Be it known that I, FRANK L. WHITE, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Cotton Compresses, of which the following is a specification.

My invention relates to certain new and useful improvements in cotton compresses, that is, presses which are designed, primarily, to bale cotton and like material between opposed platens forming, in conjunction with suitable swinging sides or gates, a baling chamber, suitable toggle-mechanism being employed to actuate the plates and appropriate novel arrangements being installed to impart the necessary motion and power to the hinged sides or gates.

Among the leading objects of the present invention are the following:

(*a*) To improve the mechanism employed for actuating the platens so as to obtain a maximum compressive force with the expenditure of a minimum of fuel;

(*b*) To reduce the weight and consequently the cost of the usual steam cylinder; and

(*c*) To provide a novel high-density attachment of great effectiveness for actuating the gates or hinged sides of the baling chamber.

With the above and other objects in view my invention consists of the parts and the constructions, arrangements and combinations of parts which I will hereinafter describe and claim.

In the accompanying drawings forming part of this specification and in which similar reference characters indicate like parts in the several views,—

Figure 1, is a side elevation of a cotton compress embodying my invention;

Figure 2, is a cross-section on the line 1—1 of Fig. 1, showing in elevation the high-density attachments for the hinged sides or gates.

Figure 3, is a perspective view of the wedge-member of the high-density attachment.

In carrying out my invention I mount the press upon a solid concrete or other appropriate base or foundation A and upon this the base B of the press proper is seated and secured. From the base B rises the bearing blocks, 10, whose upper surfaces are formed with socket-bearings, 11, for the inner ends of the curved toggle-levers, 12, said levers being pivoted in said bearings and the outer ends of the lever being pivotally-connected to cross-rods, 13, to the outer ends of which the lower extremities of the usual lifting rods, 14, are pivotally attached, said rods being in pairs at opposite sides of the press, as is well known in this art.

Each toggle-lever, 12, is also formed with a socket bearing, 15, in the upper surface of an intermediate part and in this bearing one end of a link, 16, is pivotally mounted, the other end of said link being in turn pivotally-connected to the adjacent side of the lower platen, 17, which may follow any of the approved forms of platens now in use in machines of the type shown. It will be understood, of course, that a toggle lever and its described connections is employed at opposite sides of the press and that these levers operate in unison and actuate the lower platen in the usual manner.

At the four corners of the press are the uprights or columns, 18, the lower ends of which pass through bearings, 19, on the sides of the bearing blocks, 10, while the upper ends of the columns pass through bearings, 20, formed on or secured to the head or housing, 21, which forms or carries the upper stationary platen, 22, the space between the two platens forming the usual chamber in which the cotton is placed and tightly compressed to reduce its bulk as much as possible.

The columns support the upper platen or housing and through the latter appropriately support the usual steam cylinder, 23, whose piston-rod, 24, carries at its lower end a tapering rack-head 24′. This head has its side edges converging downwardly and supplied with teeth to engage similar teeth on curved eccentrics or cams, 25, one on each side of the wedge-shaped lower end of the piston rod, said eccentrics or cams having their upper portions pivotally mounted on cross-pins or shafts, 26, disposed near the upper corners of the housing or upper platen, as shown in Fig. 1. To the eccentrics or cams are also pivotally connected the upper ends of the lifting rods, 14. By this or equivalent press-movement I combine the desirable motions of other well known presses of this same general character, but in doing this I also compound the power of one movement on the other, double the capacity in power of my press, with the same

amount of steam required for the other and well known presses, and am able to reduce by nearly one-half the weight of metal required for the steam cylinder and its adjuncts.

In operation, as the piston rod moves upwardly the gradually decreasing diameter of the wedge-shaped rack-bar accommodates the gradually increasing curvature of the cams and the latter rock about their pivotal centers from the full line position *a*, to the dotted position, *b;* through the lifting rods, 14, the toggle-levers, 12, are rocked about their bearings until the lower bearings of the rods move from the full line position, *c*, in Fig. 1 to the dotted position, *d*, and the said rods are brought into a more nearly vertical position, and a substantial increase of power is applied to the lower platen, over what is now obtainable with other constructions of which I have knowledge.

In addition to the foregoing features my press is supplied with a high-density attachment the purpose of which is to compress a bale of given dimensions into the smallest possible space, thus economizing in space in railroad or steamship transportation, a factor of importance when freight charges are based upon cubic area rather than upon weight.

The high-density attachment I herein disclose consists of or comprises a suitable housing, 30, one at each side of the press and appropriately sustained by the corresponding columns, 18. Within each of these housings is mounted to slide a wedge, which may be in the form of a plate, 31, having two wedge-shaped portions, 32, 33, which are designed to be engaged by upper and lower studs or projections, 34, 35, secured to the free ends of the swinging sides or gates, 36, which form two of the sides of the baling chamber of the press, said gates having tubular bearings 36′ at the opposite sides and which are mounted on the adjacent corner columns of the frame construction. The studs or projections on the gates project through slots in the housings, 30, and lie in the range of action of the wedge, 31, which is reciprocated by means of a rod, 37, having a piston, 38, within an appropriate steam cylinder, 39. The operation of this wedge mechanism is substantially as follows: After the charge has been placed in the baling chamber and the gates are pushed to a final stopping point, which is permitted because of grooves or channels, 40, made in the sides of the wedge-plate to allow the ends of the studs or projections on the gates to pass, the studs lie in the path of the wedge-surfaces, 32, 33, and as the piston rod continues to move upwardly, the studs ride over the wedge-surfaces with the result that the gates are further closed under the increased pressure communicated to their free ends and a corresponding increased compression is given the bale, and this compression remains until steam is admitted to the cylinder to cause the wedge-plate to descend and thus withdraw the wedge-surfaces from contact with the studs or projections, 34, 35. As the gates are hinged, they may be almost entirely closed by hand, but in the final closing the last few inches of closing requires more power and this is supplied by the steam-actuated wedge before described.

There are two steam cylinders and wedges, one for the hinged gate at each side of the press, and when the gates are closed against the bale the tendency of the latter to push the gates open will be resisted by suitable hooks, 41, which are designed to hook over the studs or projections, 34, 35, on the gates, to thereby hold the gates in place.

From the foregoing it will be seen that I have improved the power mechanism of a press of the character shown and have reduced the operating cost of the same, and have supplied such a press with a high-density attachment of simple and effective form and which enables me to compress the bale within the smallest possible limits.

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

1. In a press having upper and lower platens and hinged gates forming two sides of a press chamber, a high-density attachment comprising a reciprocable wedge and actuating means therefor, said wedge being disposed adjacent the free ends of the gates and reciprocable parallel to the axis thereof, said gates having projections on their free ends projecting into the range of action of said wedge and engaged by the latter to impart additional closing motion thereto.

2. In a press having opposed platens and hinged gates forming two sides of a press chamber, a high-density attachment for each gate, said attachment comprising a wedge-member reciprocable parallel to the axis of the gate and a projection on the free end of the gate extending into the range of action of the wedge-member when the gate is closed to substantially its normal maximum extent, said projection being actuated by the wedge member to impart additional closing movement to the gate and an increased compression to the contents of said press chamber.

3. In a press having opposed platens and hinged gates forming two sides of a press chamber, a high-density attachment for each gate, said attachment comprising a member reciprocable parallel to the axis of a closed gate having a wedge-surface for engaging the closed gate and imparting further closing motion thereto and increased density to the material in the press chamber, and means for operating said member.

4. In a press having opposed platens and hinged gates forming two sides of a press chamber, a high-density attachment for each gate, said attachment comprising a plate reciprocable adjacent the free end of the gate and having upper and lower spaced wedge-surfaces, said gates having upper and lower studs or projections, one for each of said wedge-surfaces, and said plate having grooves to accommodate said studs or projections when closing the gate, said wedge-surfaces adapted to engage the studs or projections of a closed gate and to impart additional closing motion to the gate and increased density to the material in the press chamber.

5. In a press having opposed platens and hinged gates forming two sides of a press chamber, a high-density attachment for each gate, said attachment comprising a plate reciprocable relatively to a closed gate having a wedge-surface for engaging the closed gate and imparting further closing motion thereto and increased density to the material in the press-chamber, a cylinder and a fluid operated piston rod for operating said plate, and a housing for the plate, said gates having projections on their free ends and said housings having slots for accommodating the projections when closing the gates, and said wedge-surfaces adapted to engage the projections on the closed gate and impart further closing motion to the gates and increased density to the material in the press chamber.

6. In a press having opposed platens and hinged gates forming two sides of a press-chamber, a hign-density attachment for each gate said attachment comprising a reciprocable wedge-member operable parallel to the axis of the gate adjacent the free end of the gate and adapted to impart further closing motion to a previously closed gate and increased density to the material in the press-chamber, said gates having projections on their free ends for the engagement of the wedge member, and hooks to engage said projections and hold the gates against opening movement.

7. In a press of the character described, the combination with upper and lower platens and hinged gates forming there-between a press chamber, and a toggle-lever mechanism connected to the lower platen, of lifting rods connected to the toggle-lever mechanism, curved cams or eccentrics pivotally mounted above the press chamber and having teeth on their curved faces, the upper ends of said lifting rods being pivotally connected to said cams, a fluid pressure cylinder having a piston rod, and a wedge-shaped rack on the lower end of the piston rod disposed between the curved faces of opposed cams and having teeth on its sloping edges to engage the teeth on the curved faces of the cams.

8. A cotton compress comprising a base and spaced columns rising therefrom; upper and lower platens; gates hung on said columns and coacting with the platens to form an enclosed baling chamber; curved levers pivoted on the base having socket bearings in an intermediate portion and links mounted in said bearings and pivotally connected to the lower platen; lifting rods connected to the outer ends of the curved levers; curved cams pivotally-mounted above the baling chamber and to the upper portions of which the upper ends of the lifting rods are connected; a steam cylinder and piston rod; a rack-head on the lower end of the piston rod between the curved faces of said cams, said head having tapering sides provided with teeth and the curved faces of the cams having teeth engaged thereby; and a high-density attachment comprising a fluid-operated wedge for imparting further closing motion to a previously closed gate and thereby further compressing the material in the press-chamber.

In testimony whereof I affix my signature.

FRANK L. WHITE.