

921,489.

Patented May 11, 1909.

2 SHEETS—SHEET 1.

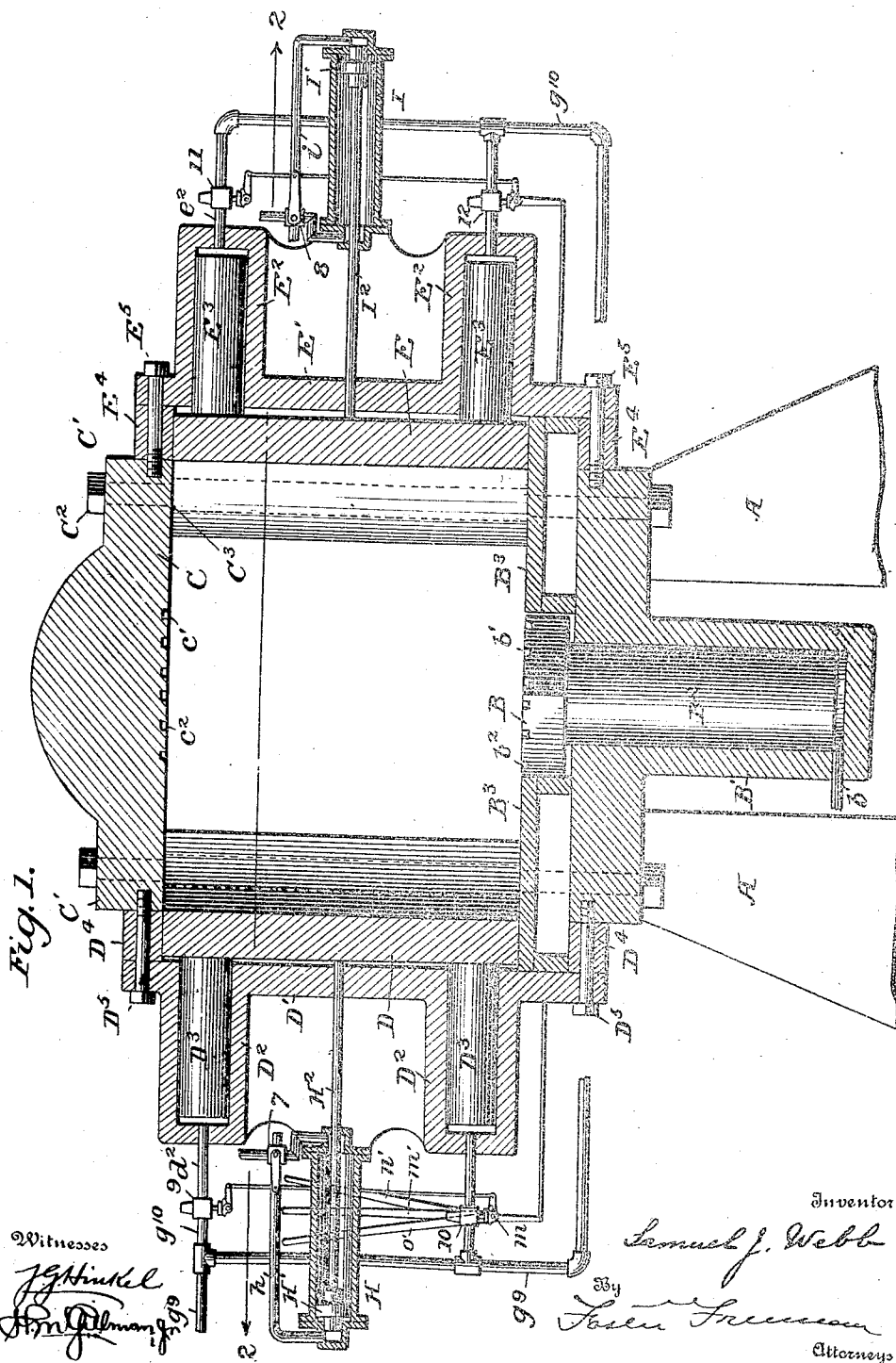


Fig. 1.

Witnesses

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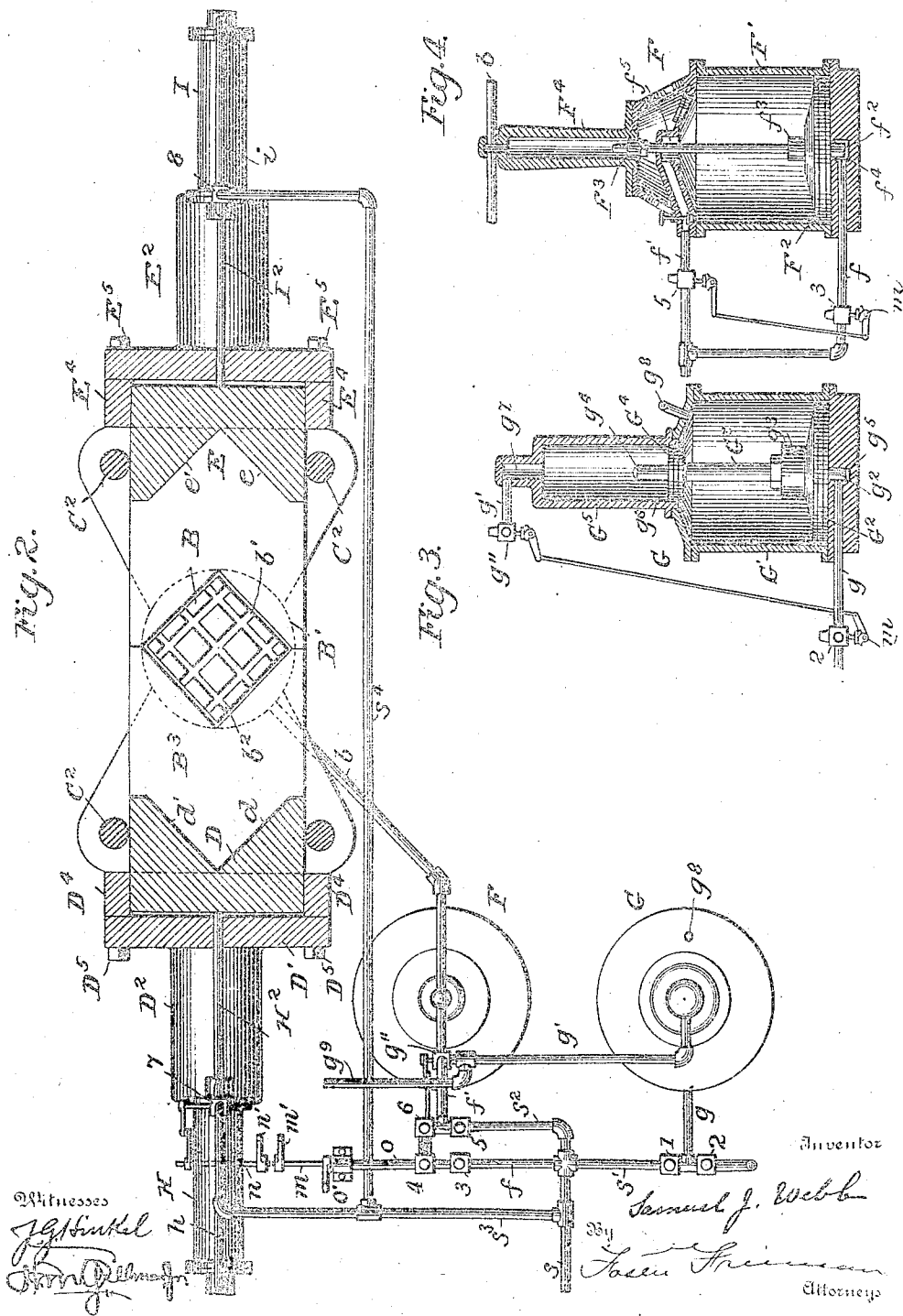
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APPLICATION FILED JAN. 14, 1901.

Patented May 11, 1909.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

SAMUEL J. WEBB, OF MINDEN, LOUISIANA.

COMPRESS.

No. 921,489.

Specification of Letters Patent.

Patented May 11, 1909.

Application filed January 14, 1901. Serial No. 43,224.

To all whom it may concern:

Be it known that I, SAMUEL J. WEBB, a citizen of the United States, residing at Minden, in the parish of Webster and State of Louisiana, have invented certain new and useful Improvements in Compresses, of which the following is a specification.

My invention relates to compresses of that class which are adapted more especially for compressing bales of cotton and similar material, and the object of the invention is to provide improved means for accomplishing this result, and to this end my invention consists in the various features of construction arranged, combined and having the general mode of operation substantially as herein-after more particularly set forth.

In the accompanying drawings: Figure 1 is a longitudinal vertical sectional view of a compress embodying the invention; Fig. 2 is a horizontal section of the same on the line 2—2, Fig. 1, showing also the preferred means for operating the pistons or plungers; Figs. 3 and 4 are vertical sections of the low and high pressure rams.

While my invention is, as above stated, more especially intended for use in connection with compressing bales of cotton, the various features of construction can be used for other purposes, and the general features may be arranged and combined so as to adapt them for the particular purpose for which they are intended without departing from the spirit of the invention. So also the compress can be used for compressing bales by different methods, some of which are more particularly set forth in applications heretofore filed by me, and while I shall more particularly describe the construction of the compress arranged and adapted to compress the bales in a certain manner, the invention is not limited to this use of the device.

Referring to the drawings: mounted upon any suitable base, as the standards, A, A, is a hydraulic cylinder, B', having a plunger, B², supporting the movable platen, B, and provided with a suitable pipe connection, b. In this instance the head of the movable platen, B, is outside of the hydraulic cylinder, and arranged on either side of the same are platforms or plates B³, forming floor extensions around the movable platen, B, and

practically on a level with its face when in its withdrawn position, but, of course, it is understood that the body of the hydraulic cylinder may project forward sufficiently to take the place of these platforms or plates.

Suitably connected with the hydraulic cylinder, B', is the stationary bed or platen, C, and this may be supported in any suitable or desired manner, but in the present instance it is provided with extensions, C', by means of which it is connected to and supported on the hydraulic cylinder through the intervention of rods or bolts, C², C³, which rods are provided with shoulders, C⁴, to regulate the space between the hydraulic cylinder and the fixed bed.

Mounted on the sides of the hydraulic cylinder and bed are the side plates, D', E', which are provided with one or more hydraulic cylinders, D², E², in which move plungers, D³, E³, connected to move the side plates, platens or dies, D and E. These side plates D', E', may be attached in any suitable manner, and in the present instance distance pieces, D⁴, E⁴, are shown between the plates and the hydraulic cylinder and bed, and bolts D⁵, E⁵, pass through the same and secure the side plates in position.

The side plates, platens or dies D, E, may be of different shapes according to the particular purpose for which the press is intended, but in the present instance they are provided with V-shaped faces having two compressing faces, d, d', e, e'. These faces are preferably arranged substantially at right angles to each other, as shown.

Connected to the hydraulic cylinders, D², E², are suitable pipes, d², e², for supplying fluid to the hydraulic cylinders, and fluid may be supplied to these pipes in any suitable way and by any suitable means, but preferably I make use of hydraulic rams constructed and arranged substantially as shown in Figs. 3 and 4. These rams as shown are, respectively, adapted for what is generally termed "high" and "low" pressure, and the ram, F, comprises essentially a steam cylinder, F', having a piston, F², therein, the piston rod of which extends through the upper head of the cylinder and carries a piston, F³, operating in a hydraulic cylinder, F⁴. Suitable steam inlet and outlet pipes, f, f',

are provided for admitting steam to both sides of the piston, F^2 , and the piston is provided with projections, f^2, f^3 , on either side adapted to enter recesses, f^4, f^5 , in the heads of the cylinders to form steam cushions in a manner well understood. The low pressure ram, G, comprises a steam cylinder, G' , having a piston, G^2 , the piston-rod, G^3 , of which carries a piston G^4 , fitting the low pressure hydraulic cylinder, G^5 , and the piston, G^2 , is likewise provided with extensions, g^2, g^3 , and the piston rod with an extension, g^4 , adapted to enter the recesses g^5, g^6, g^7 , to form cushions. The low pressure ram is single-acting and so I provide the steam cylinder, G' , with an opening or vent, g^8 , to permit atmospheric pressure on the upper side of the piston, G^2 . A suitable pipe, g , furnishes steam to the piston and may be connected with a suitable valve system in any desired manner, and there is a hydraulic pipe, g' , connected with the upper portion of the hydraulic ram.

While the various hydraulic cylinders and plungers of the compress can be operated directly and solely by means of the hydraulic rams, F and G, for many purposes it is desirable to provide the side plates, platens or dies with an independent means for operating them, and in the present instance I have shown steam cylinders H and I, mounted on the side plates, D' , E' , and having pistons, H' , I' , connected by piston-rods, H^2 , I^2 , with their respective platens or dies D and E. These pistons are provided with projections fitting recesses in the heads of the cylinders for cushioning purposes as heretofore described, and with suitable steam pipe connections and controlling means, which may vary according to the particular circumstances.

For convenience it is desirable to provide means for operating the steam and hydraulic valves from a single position, and I have indicated a convenient arrangement and location of the rams with respect to the compress and means for operating or controlling them. Thus, as shown more particularly in Fig. 2, the hydraulic rams, F and G, are connected together by the pipe, g' , and leading from the high pressure ram is the pipe, b , connected with the hydraulic cylinder, B' . Branching from the pipe, g' , between the low and high pressure rams is a pipe g^9 , leading to the pipes, d^2 , and a branch g^{10} , of this pipe is connected with the pipes e^2 .

While any suitable steam connections may be used, as shown the pipe, s , leads to the boiler and a branch, s' , is connected with the pipe, g , at one end and f , at the other end, while another branch, s^2 , leads to the pipe f' , and a third branch s^3 , leads to the pipe, h , and a branch s^4 , from this leads to the pipe i . These pipes are provided with suitable inlet

and outlet valves 1, 2, 3, 4, 5, 6, 1, 3, 5 being inlet valves and 2, 4, 6 outlet or exhaust valves, while the valves 7 and 8 are combined inlet and outlet valves, being four-way valves. These valves may operate in any suitable way, but as shown there is a valve-operating rod, m , having suitable cams arranged thereon for operating the valves 1-6, and there is an operating handle, m' , therefor. Arranged adjacent thereto is another valve-operating rod, n , having connections for operating the valves 7 and 8, and this rod is operated by a handle, n' . This handle also operates the check valves 9, 10, 11 and 12 of the small hydraulic cylinder to release the fluid. There is a sleeve, O, on the rod, m , connected to operate the valve, g^{11} , in the pipe g' , of the low pressure ram, and this is operated by a lever o . It will be understood that the cams on the valve-operating rods are so arranged as to operate the inlet and outlet valves in the proper order to insure the correct or desired operation of the parts of the compress.

In the construction shown the stationary bed, C, and the movable platen, B, are provided with sets of grooves c', c^2, b', b^2 , extending across their adjacent faces at right angles to each other, as more particularly shown in Fig. 2.

Such being the general construction of the compress, as before indicated it may be used to carry out various operations; for instance it can be used to carry out the method of changing the shape of and compressing the bale more particularly set forth in my application Serial No. 36,886, filed Nov. 17, 1900, or again it may be used for carrying out the method of compressing bales without removing their bands, more particularly set forth in my application Serial No. 36,741, filed Nov. 16, 1900. Furthermore, it may be used for compressing the bales on end and banding them longitudinally with one or two sets of bands extending around the ends, one being at right angles to the other, and this compression on end and banding longitudinally may be preceded by a change of the form of the bale or a slight compression thereof, sufficient to release the bands of the plantation bale from pressure, or the sides and top and bottom of the bale may be subjected to direct pressure prior to the compression in a longitudinal direction. Thus, for instance, the parts being in the positions shown in Fig. 1, the bale is placed on end upon the movable platen, B, and extends over onto the platform, B^2 . The dies D and E, are then operated either by the steam cylinders, H and I, or by the hydraulic cylinders D^2, E^2 , to compress the bale on its sides and top and bottom to a greater or less extent by means of the compressing faces d, d' ,

e, e', of said dies, and when this is done the dies will operate as confining plates, holding the bale in its more or less compressed condition while the movable platen, B, is operated to compress the bale in the direction of its length or longitudinally. When this is done the side dies D and E, may be withdrawn and while the bale remains under compression between the stationary bed, C, and the movable platen, B, it may be banded by inserting one or more bands through grooves, b', c' or, b², c² or both. These bands will then pass around the bale over its ends and over its sides or its top and bottom or over both its sides and top and bottom, and the bale will thus be secured while under pressure, and by passing the bands around the bale in two directions at substantially right angles to each other it may be more securely held against expansion. It will thus be seen that the dies D and E, may be used as either compressing platens, confining plates, or form-changing dies, and that they may be operated to exert the desired amount of pressure on the bale either directly by the steam in the steam cylinders or by the fluid in the hydraulic cylinders or by both, and they may be restored to their normal positions by either the hydraulic or steam devices.

It will thus be seen that the press is simple and compact in construction and is capable of being used for carrying out different modes of operation without material change, and these operations may be quickly and rapidly performed.

It will be understood that the side plates D and E, may be operated directly by steam pressure in the steam cylinders H and I, when little pressure is desired, but when greater pressure is desired the hydraulic cylinders will be used to exert the pressure. In some instances the side plates D, E, may be withdrawn to their normal positions by the hydraulic rams, but this process is relatively slow and it is preferable to use the steam cylinders H and I, to return the side plates to position by the direct action of steam in said cylinders, as this increases the speed of operation of the compress. It will further be understood that the use of two kinds of operating devices for the side plates is especially desirable when the side plates are used as compressing plates for the bale, while it is receiving its final compression in the direction of its length, in that the hydraulic cylinders and their plungers act as locking or holding means for the side plates during the operation of the movable platen in compressing the bale, the water being a non-compressible fluid and would be compressed or condensed in the steam cylinders, and would not act as a holding or locking device for the side plates as do the hydraulic cylinders and plungers.

What I claim is:

1. In a compress the combination with side dies or platens to press and confine the bale in the direction in which it has been previously pressed, and a main platen fitted to work between these side platens to compress the bale in the direction of its length, substantially as described.

2. In a compress, the combination with the main platen adapted to receive and compress a bale in the direction of its length, of side dies each having one or more compressing faces, and means for operating the same, substantially as described.

3. In a compress, the combination with the main platen each having grooves arranged substantially at right angles to each other, of side dies each die having two compressing faces at an angle to each other, and means for operating the same, substantially as described.

4. In a compress, the combination with a hydraulic cylinder having a plunger carrying a movable platen, of platforms surrounding the platen, a stationary bed connected to and supported on the hydraulic cylinder, side plates supported on the cylinder and bed and having hydraulic cylinders and plungers, and side platens or dies connected to be operated by said hydraulic cylinders and plungers, substantially as described.

5. The combination of the main platens of a press and side platens having faces practically at right angles to each other, one of the main platens being practically square and adapted to operate between the faces of the side platens to press the bale on end, and means for operating the platens, substantially as described.

6. In a press the combination with the main platens, of side platens arranged to operate to press the bale to a fixed position and means for rigidly holding these side platens in this position, the main platens being arranged to compress the bale on end while thus confined between the side platens, substantially as described.

7. In a compress, the combination with the main platens of side platens, having concave faces to press and confine the bale, one of the main platens being adjusted to compress the bale while it is confined between the side platens, substantially as described.

8. In a compress, the combination of the main platens, of side platens arranged to operate to a fixed position, means for holding them in this position, and independent means for retracting them to their normal position, and means for cushioning or preventing jar at each end of the movement, substantially as described.

9. The combination of the main platens of a compress, and side platens movable trans-

versely of the main platens and arranged to
confine the bale while it is being compressed
by one of the main platens.

10. In a compress, the combination with
5 side dies or platens to confine the bale in the
direction in which it has been previously
pressed, and a main platen fitted to work
between these side platens to compress the

bale in the direction of its length, substan-
tially as described.

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

SAMUEL J. WEBB.

Witnesses:

HARRY B. ZELLER,
ELMER W. DECK.