(No Model.) 2 Sheets—Sheet 1.

A. H. SIMMS & W. M. FULTON.

HYDRAULIC COMPRESS.

No. 534,700. Patented Feb. 26, 1895.

Fig. 1.

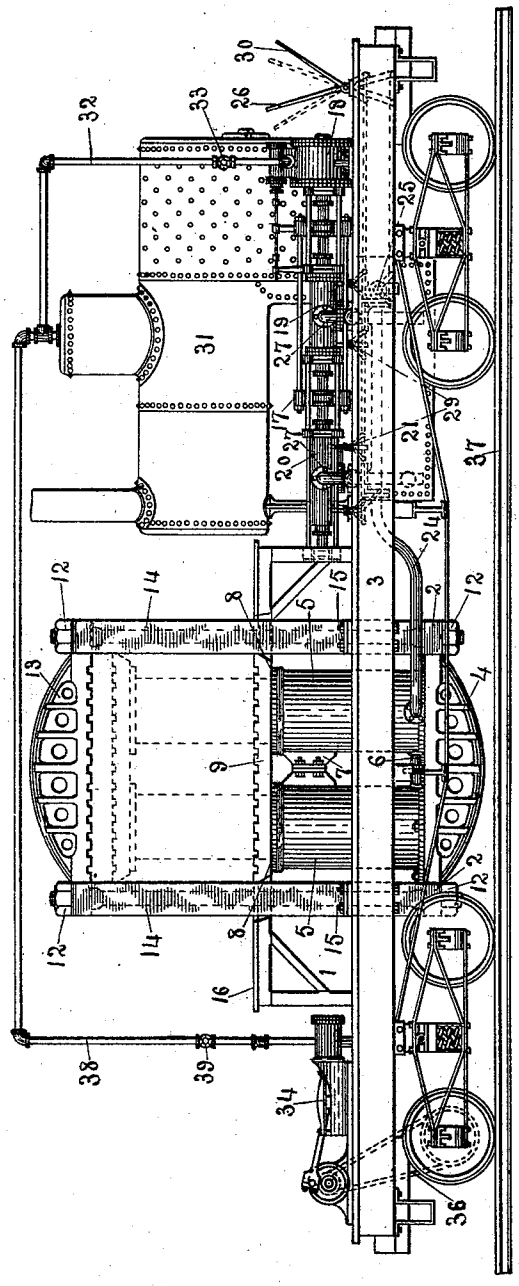
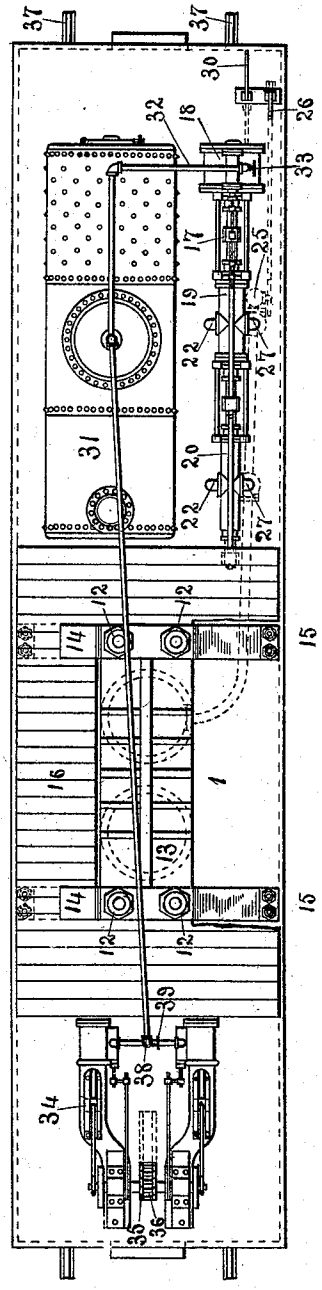


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

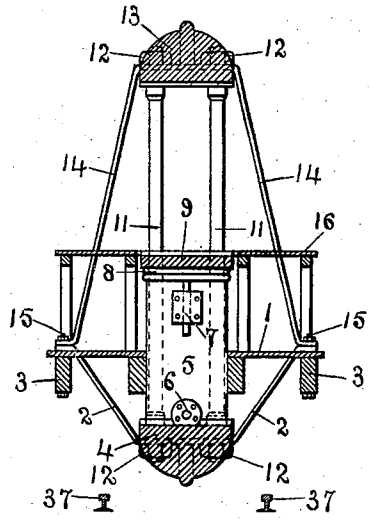


Fig. 4.

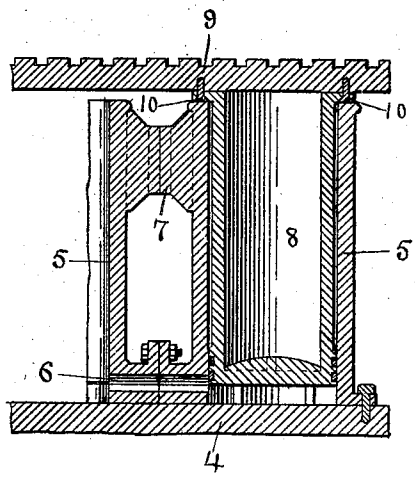


Fig. 5.

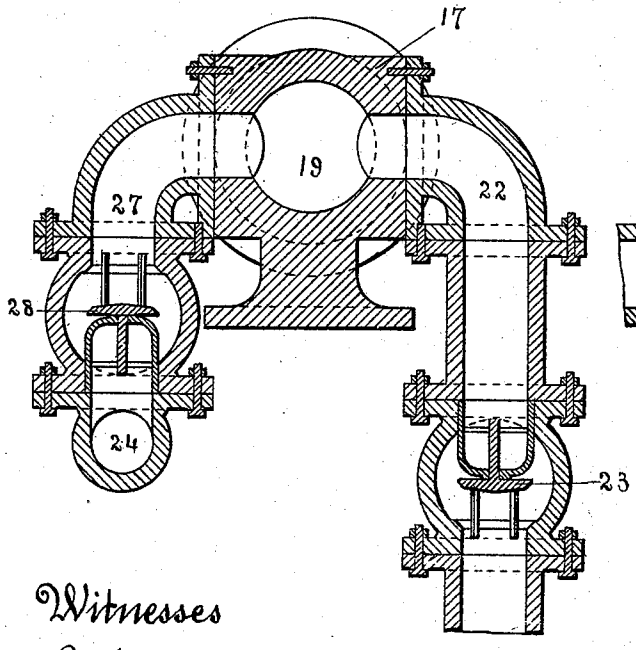
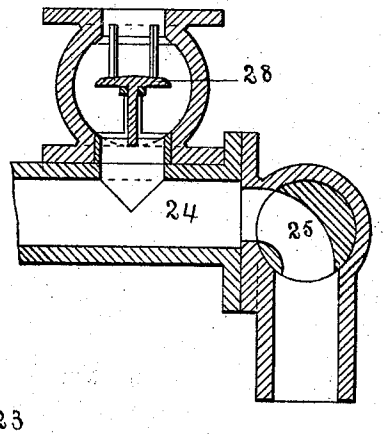


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALONZO HENRY SIMMS AND WILLIAM MILTON FULTON, OF BIRMINGHAM, ALABAMA.

HYDRAULIC COMPRESS.

SPECIFICATION forming part of Letters Patent No. 534,700, dated February 26, 1895.

Application filed September 13, 1894. Serial No. 522,957. (No model.)

To all whom it may concern:

Be it known that we, ALONZO HENRY SIMMS and WILLIAM MILTON FULTON, citizens of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Hydraulic Compresses; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in cotton compresses in which the bottom platen is raised to compress the bale; and the objects of our improvement are, first, to provide a cotton compress of that description having hydraulic plungers to raise the bottom platen the plungers operated by a hydraulic pressure pump, the pump operated by steam from an adjoining boiler; second, to provide a cotton compress consisting of a boiler, a hydraulic pressure pump, and a hydraulic compress, all attached to a railway car, by which the compress can be moved from place to place as required; third, to provide a portable cotton compress of a cheap and durable construction the parts of the press of such dimensions as to be easily arranged on a railway car to facilitate its moving from town to town, the press operated by a hydraulic pressure pump having a low pressure cylinder with a high pressure cylinder to finish the compression; fourth, to provide a railway car having a cotton compress and operating machinery attached, the car provided with a steam engine connected to the car axle by a chain belt operating on sprocket wheels to operate or move the car from place to place as may be desired. We attain these objects by the mechanism and the arrangement of the parts illustrated in the accompanying drawings, in which—

Figure 1, is a vertical side view of our improved cotton compress as arranged on a railway car, part of the platform above the car removed to show the press. Fig. 2, is a top view of the same. Fig. 3, is a detail cross sectional view of the press through the center, showing the connection of the press to the car sills. Fig. 4, is an enlarged detail longitudinal section through the center of one of the hydraulic press cylinders with plunger and their connections. Fig. 5, is an enlarged cross sectional view through the center of one of the hydraulic pressure cylinders, showing the suction and discharge pipes with their check valves. Fig. 6, is an enlarged longitudinal section through the end of the connecting pipe, showing the valve to allow the discharge of the water to the tank.

Similar figures refer to similar parts throughout the several views.

The car 1 as shown in the drawings, represents a railway car of the usual form of construction adapted to operate upon the rails of a railway track as usually constructed, which permits the car to be moved to any part of a continuous track to which it is desired to place a car.

Two suspension plates 2. 2 made of steel or other suitable metallic material and formed as shown, are placed with the ends resting on the car sills 3. 3 and attached thereto. The suspension plates support the bottom plate 4 of the press. The bottom plate is made of cast steel or other suitable metallic material. The ends of the plate are supported on the suspension plates. The bottom plate is ribbed, and formed to attain the most desirable form for strength.

Two hydraulic cylinders 5. 5 are attached to the bottom plate by flanges and bolts in the usual manner, the bottom plate forming the heads of the cylinders. The cylinders are provided near the bottom with a connecting pipe 6 to permit the water to pass from one cylinder to the other. The cylinders are attached to each other near the bottom by flanges on the connecting pipe secured by bolts, and near the top by a flanged web 7 secured in the same manner.

Two hydraulic plungers 8. 8 are placed in the cylinders 5. 5. The plungers are made of cast steel or other suitable metallic material. The plungers are provided at the bottom ends with heads, and they have flanges formed on the upper edges as shown. A bottom platen 9 made of cast steel or other suitable metallic material is placed on the top ends of the plungers, and attached thereto, by counter sunk bolts 10, 10 passing through the plunger flanges.

Four columns 11 extend upward from the bottom plate 4. The columns are made of wrought steel or other metallic material, and have collars formed on them near the top and bottom ends, pins being formed at the ends with screw threads for nuts. The pins formed on the bottom end of the columns are inserted through the bottom plate and suspension plates, and secured to place by nuts 12 screwed on the ends of the pins. A top platen 13 formed as before described for the bottom plate, and made of the same material, is placed on the top ends of the columns, holes being provided in the plate to allow the column pins to pass through. Two braces 14. 14 formed as shown are placed over the column pins to engage the ends of the platen, the lower ends of the braces resting on the ends of the suspension plates 2. 2. The braces and suspension plates are both secured to the car sills by bolts 15. 15. The platen and braces are both secured to the heads of the columns, by the nuts 12 screwed on the ends of the column pins.

A platform 16 is constructed above the car floor. The platform is made to inclose the press on all sides, and of an elevation sufficient to come even with the bottom platen when down, so as to roll the cotton bales into or out of the press on a level. Temporary platforms or skids can be used as additions to the platform if necessary.

A hydraulic pressure pump 17 is placed on the floor of the car and attached thereto. The pump is provided with a steam cylinder 18, a low pressure water cylinder 19, and a high pressure water cylinder 20. All the cylinders are connected together in the usual manner, and provided with the usual form of plungers provided with the necessary packings. A water tank 21 made of tank iron or other suitable material, is attached to the car on the under side of the floor, the tank extending underneath the pump.

A suction pipe 22 extends from each water cylinder of the pump to the tank. The pipes are provided with check valves 23 placed at any desired position between the pump and the water. A connecting pipe 24 extends from the tank to one of the hydraulic press cylinders. The pipe is attached to the cylinder by flanges and bolts in the usual manner. The end of the pipe at the water tank is closed by a valve 25. Any other form of valve to the one shown can be used, the valve to be operated by a hand lever 26 pivoted to the car. A discharge pipe 27 is connected to each of the water cylinders of the pump. The discharge pipes are attached to the connecting pipe leading to the press cylinder. Each discharge pipe is provided with a back pressure check valve 28 located between the pump and connecting pipe.

The pump cylinders are provided with the usual drain pipes having straight way cylinder or vent cocks 29 fitted thereto, and the cocks in the high and low pressure pump cylinders are connected by a connecting rod, the rod being pivoted to cranks attached to the stem of the cocks. A second connecting rod pivoted at both ends, connects the low pressure vent cock crank with the bottom end of a hand lever 30, and the hand lever is pivoted in a bearing attached to the car floor. The hand lever when set as shown by full lines in drawings, opens the vents to the high pressure pump cylinder, and closes the vents to the low pressure cylinder. The pump if then started, will only operate the cylinder in which the vents are closed, namely the low pressure. If the hand lever is then reversed as shown by dotted lines, it opens the vents in the low pressure cylinder, and closes the vents in the high pressure, thereby changing the operation of the pump from one cylinder to the other, and reversing in the same manner, by a reversal of the hand lever.

A boiler 31 is placed on the car and secured thereto, the form of boiler known as a fire box, or locomotive, boiler preferred. The boiler is provided with a steam pipe 32. The pipe connecting to the steam cylinder of the pump, supplies steam from the boiler to the pump. The pipe is provided with a valve 33 to shut steam from the pump when desired.

A steam engine 34 is secured to the car. The engine can be of any of the usual forms, one having double cylinders preferred. The main shaft of the engine is provided with a sprocket wheel 35, the sprocket wheel provided with a chain belt 36 connecting with a like sprocket wheel on the car axle. The steam engine and operating chain communicates motion to car, when necessary to transport the car on the rails 37 to some other desired position.

A steam pipe 38 connects the boiler with the cylinders of the engine, to furnish steam from the boiler to the engine. A valve 39 is placed in the pipe to cut steam off from the engine when desired.

To operate the compress, steam is admitted from the boiler to the steam cylinder of the pump. The hand lever operating the cylinder cocks, being thrown to open the vent pipes from the high pressure cylinders and close the vents from the low pressure cylinder, the operation of the pump will force water from the tank through the low pressure cylinder and connecting pipes to the press cylinders. The water operating on the plungers will force the bottom platen to ascend. When the increasing pressure is sufficient to slow the pump, the hand lever operating the cylinder cocks is reversed, to open the low pressure and close the high pressure cylinder vents. The high pressure cylinder then operates until the bale is compressed. The opening of the valve in the end of the connecting pipe by the operation of the hand lever, allows the water to escape from the press to the tank. The plungers descending as the water escapes, brings the platen and compressed bale down to the level of the platform, when the bale is

rolled out and another rolled in, to repeat the operation.

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

1. In a cotton compress, the combination with a railway car of a hydraulic compress the compress having a bottom plate suspended on plates attached to the sills of the car, two hydraulic cylinders attached to the bottom plate, two hydraulic plungers operating in the cylinders, the plungers having a platen attached to flanges on the upper ends of the plungers, four columns attached to and extending upward from the bottom plate, the columns having a platen attached to their upper ends, braces embracing the ends of the platen, the braces extending downward and attached to the car sills, a hydraulic pressure pump having connections to the press cylinders, and a boiler having a steam pipe connecting with the pump, substantially as and for the purpose described.

2. In a hydraulic compress, the combination with a railway car of a compress bottom plate suspended on plates attached to the car sills, two connected hydraulic cylinders open above, the cylinders at their bottom ends attached to the bottom plate, an aperture provided in one cylinder for the admission of an operating fluid, two plungers operating in the cylinders, a platen extending across the heads of both plungers and attached thereto, four columns having screw-threaded pins formed on both ends of the columns, the column secured to the bottom plate by nuts on the ends of the pins, a top platen placed on the heads of the columns, two metallic braces placed over the ends of the platen, the ends of the braces extending downward and attached to the car sills, the braces and platen secured to the columns by nuts on the ends of the pins, substantially as and for the purpose described.

In testimony whereof we affix our signatures in presence of two witnesses.

ALONZO HENRY SIMMS.
WILLIAM MILTON FULTON.

Witnesses:
J. E. NORMAN,
S. W. BYARS.