N. B. HENRY.

COMPRESS FOR COTTON AND OTHER MATERIALS.

APPLICATION FILED JAN. 11, 1921.

1,402,358. Patented Jan. 3, 1922.

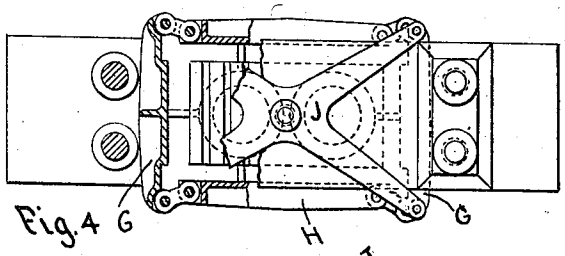


Fig. 4

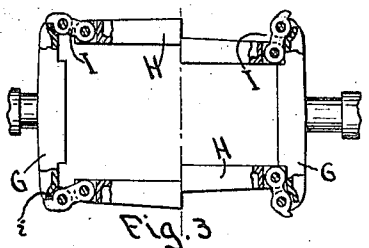


Fig. 3

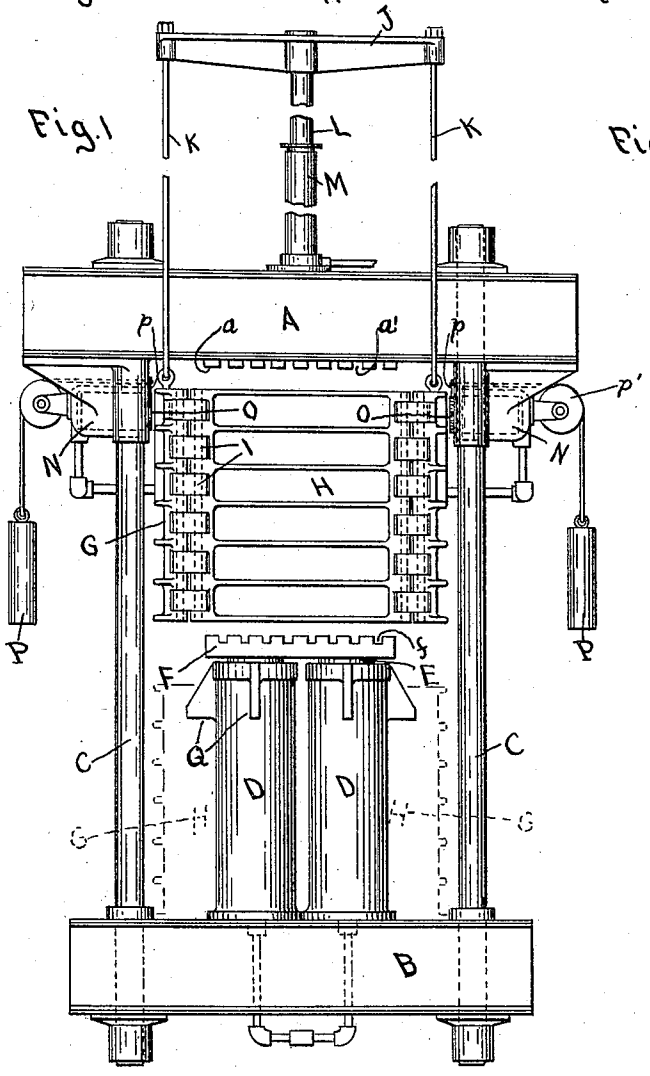


Fig. 1

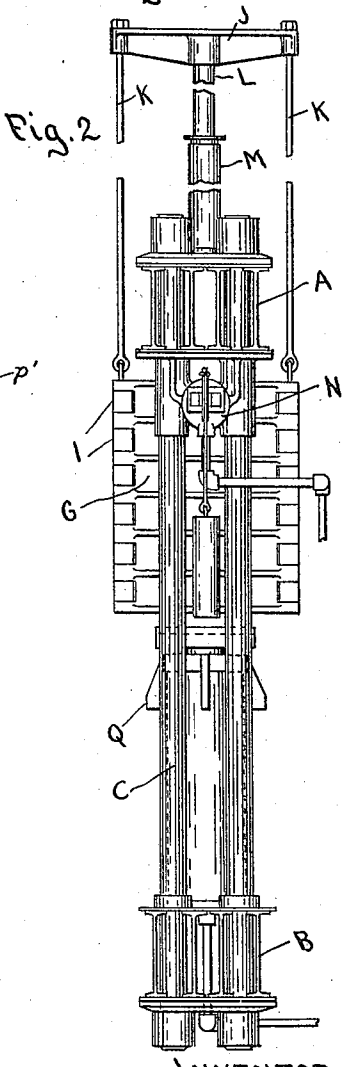


Fig. 2

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UNITED STATES PATENT OFFICE.

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COMPRESS FOR COTTON AND OTHER MATERIALS.

1,402,358. Specification of Letters Patent. Patented Jan. 3, 1922.

Application filed January 11, 1921. Serial No. 436,578.

To all whom it may concern:

Be it known that I, NELSON B. HENRY, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Compresses for Cotton and other Materials, of which the following is a specification.

My invention is a compress, particularly designed for the recompression of the ginnery bale to the standard of compression necessary to load a freight car to its rated capacity. My object is to provide a compress of simple construction, in which the necessary operations may be almost entirely performed by the power actuated mechanism, thus reducing the manual labor necessary, to a minimum; to make the mechanism self-contained, that is to provide a frame, of strong construction, within which the moving compressing parts move and react, and, by simplification of the mechanism, to reduce the wear and tear of operation and render the upkeep expense as small as may be. The result aimed at, is to lower the labor cost of operation by reducing the amount of manual operations and by providing an apparatus which may be efficiently operated by unskilled labor; to render installation cheap and the production of an apparatus almost foolproof and immune to the breakage and consequent loss of time incident to more complicated mechanisms hitherto employed for similar purposes. Incidentally, the first cost of the apparatus is exceedingly moderate and the cost of compression is low. The ginnery bale, which is compressed at the ginnery is compressed only to a density of about ten to twelve pounds per cubic foot, and in ordinary course, passes from the ginnery to a warehouse, where it is stored until ready to be recompressed and marketed. From the warehouse, under the present system, it passes by freight to some central point at which is located a compress capable of recompressing the bale to the standard density required to load a freight car to its rated capacity. It is obvious that the relatively bulky ginnery bale must occupy a relatively large space in the warehouse and obvious also that the freight to the central point must be higher per bale owing to the inability to load a car to capacity. My compress is designed to be located at the initial warehousing point, to compress the bale before going into storage, thus reducing the storage space necessary and in effect increasing the storage capacity of the warehouse and also reducing insurance charges. When the cotton is sold it is ready for shipment from the warehouse direct to the consumer, in a fully loaded car, entirely eliminating the transporation to the central compress, as above described, at a considerable economic saving in time, freight and insurance and rehandling charges.

My compress is not only cheap to install and operate, but, owing to the fact that the period of compression is much longer than that of the great central compress, the bale is much more uniform in density owing to the fact that time is given for the escape of air, with the result that an undue compression is not given to a part of the bale, resulting in deterioration of the staple. Due also to the fact that the act of compression is comparatively slow, the power required is comparatively small, my compress having a capacity of about ten bales per hour and requiring a maximum of 25 horse power for its operation.

In the drawings:

Figure 1 is a side elevation of my compress;

Figure 2 is an end elevation;

Figure 3 is a view in plan of the releasing bale box, showing it in released and also in closed position; and

Figure 4 is a view in plan partly in section, of the top of the compress.

The frame of the apparatus is made up of I section beams A and B which are coupled together by columns C. Mounted upon the lower or base beams, in the preferred form shown in the drawings, is a hydraulic cylinder or cylinders D in which work rams E carrying loosely upon the upper end thereof a follower block F, provided with suitable grooves, *f*, for the reception of the bale ties. Directly over the follower block, upon the under side of the beams A and across them are secured metal slats, *a*, spaced apart to provide a series of grooves, *a'*, correspond-

ing with the grooves, *f*, through which the bale bands may be passed. The bale box G H is made up of two side pieces G and two side pieces H, linked together by toggle members, I, which are pivoted at their ends to the sides G and the sides H respectively. A stop *i*, is, preferably, provided upon the link I, which will prevent the link I from turning under any circumstances, in the open or released position of the parts, beyond the position shown in Figure 3, at the left side thereof.

Mounted upon the beams A is a small hydraulic cylinder M in which works a ram L, carrying at its upper end a frame J, from the four corners of which depend rods K, the lower ends of which are loosely connected to the upper end of bale box G H. Mounted upon the under side of beams A and opposite the sides G of the bale box, when the bale box is in operative position, are a pair of hydraulic cylinders N in which work rams O. The rams O carry a boss *p*, to which is secured a cable, passing over a sheave, *p'*, and upon the free end of the cable is suspended a weight P. Upon the upper end of cylinders D are secured a series of cam projections Q for a purpose to be hereinafter indicated.

Operation: It will be apparent that the bale box G H, which is freely suspended on the lower ends of the rods K may be raised and lowered by means of the ram L. At the outset of an operation the rams O are retracted by the weight P. The ram L is lowered and the bale box G H drops downward around the cylinders D upon the base beams B, the cams Q operating, as the bale box descends, to wedge the bale box to wide open position, as shown at the left in Figure 3. The bale to be compressed is now placed upon the follower F and the bale bands removed. The ram L is then lifted by the admission of the hydraulic fluid to the cylinder M, and the bale box thereby lifted against the under side of beams A and around the bale. The rams O are then operated to move them inward, against the sides G of the bale box, forcing the sides toward one another and, through the toggle links, simultaneously forcing the sides H toward one another, until the sides are forcibly in contact with the sides of the bale and in position to resist any lateral expansion of the bale. The hydraulic fluid is now admitted to the cylinders D causing the rams E and follow block F to rise and compress the bale against the under side of the beams A. The compressing period is about three minutes, in which time the bale attains to the desired degree of density, giving time for the escape of the air contained in the bale and permitting very even compression of the bale. The compression being accomplished, the rams O are retracted, a slight lateral expansion of the bale ensues, moving the sides of the bale box outward, the vertical pressure however prevents more than a relatively slight lateral expansion. The bale box is now moved endwise completely exposing the bale, in compression, between the compression members. The bale bands are now applied through the groves *f* and *a'* and secured, and the rams E lowered and the compressed bale ejected.

I have not shown nor described the source of hydraulic power, which may be by any desired means, either pressure or pump, as is well understood in the art.

I have described and illustrated my compress in the best mode in which I have contemplated applying the principle of my invention. I desire it to be understood however that the principle of my invention might be embodied otherwise than in what I consider the best mode, and that such modifications are within the scope of my invention.

In the drawings the bale box G H is shown in Figure 1 suspended with its upper end a short distance below the under side of beams A, in order that the slats *a* and slots *a'* may be disclosed. In operation the bale box is lifted into contact with the under side of beams A and, while the bale bands are being applied and the bale ejected from the press and another bale placed in position for recompression, the bale box is lowered to rest upon the base beams B.

I claim:

1. In a compress, the combination of a frame, made up of a base and a cooperating abutment, secured in fixed relation by tying members; a compressing means: an expansible and collapsible bale box; means to contract the bale box and means to reciprocate the bale box within the frame.

2. In a compress, the combination of a frame, made up of a base and a cooperating abutment, secured in fixed relation by tying members; a compressing means; an expansible and collapsible bale box; means to contract the bale box and a ram linked to the bale box to reciprocate the bale box within the frame.

3. In a compress, the combination of a frame, made up of a base and a cooperating abutment, secured in fixed relation by tying members; a compressing ram; an expansible and collapsible bale box; opposed rams engaging the sides of the bale box to force the sides toward each other; a ram linked to the bale box to reciprocate the bale box within the frame.

4. A bale box, made up of four sides, organized together by toggle links, to cause the four sides to move in unison toward the center, when force is applied to opposed sides.

5. As in claim four, in combination with

a compression ram and abutment and means to force opposed sides of the bale box toward one another.

6. As in claim four, in combination with a compression ram and abutment; means to force opposed sides of the bale box toward one another and means to move the bale box to and fro in the direction of the compression force.

7. In a compress, in combination, a compressing means; an expansible and collapsible bale box; means to contract the bale box and means to move the bale box to and fro in the direction of the compression force.

Signed at Atlanta, Georgia, this eighth day of January, 1921.

NELSON B. HENRY.