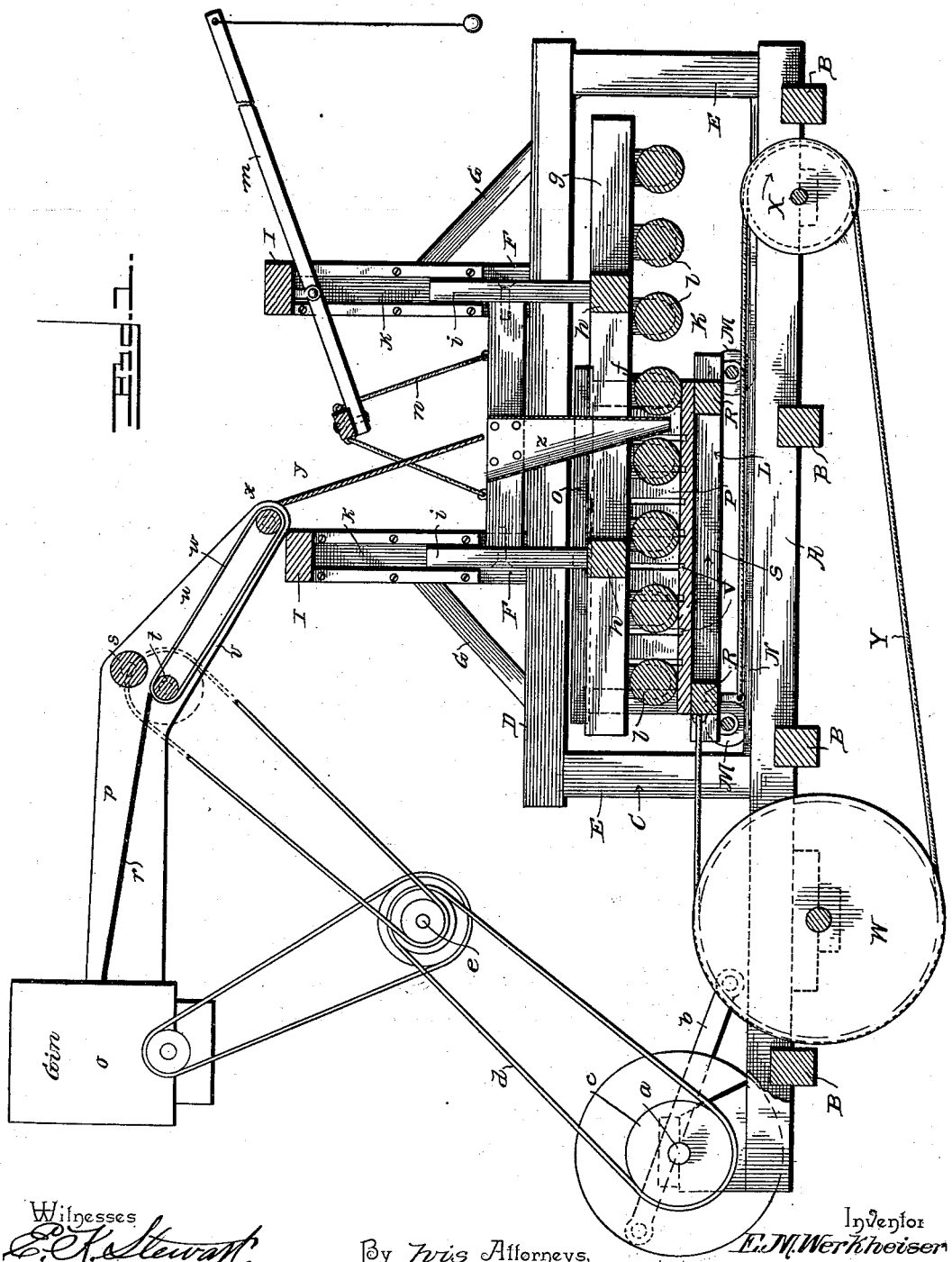
No. 647,712. Patented Apr. 17, 1900.

E. M. WERKHEISER.

COTTON PRESS.

(Application filed Dec. 21, 1899.)

(No Model.) 3 Sheets—Sheet 1.



Witnesses
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J. W. Garner

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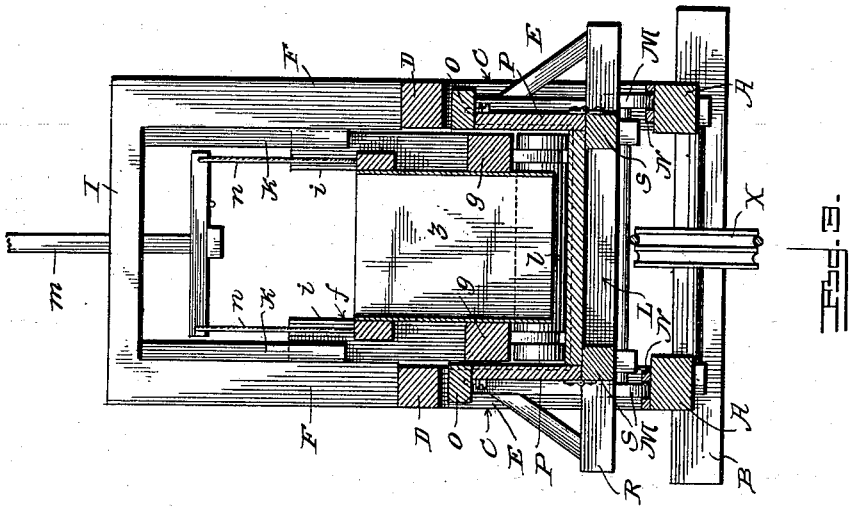

Fig. 1.

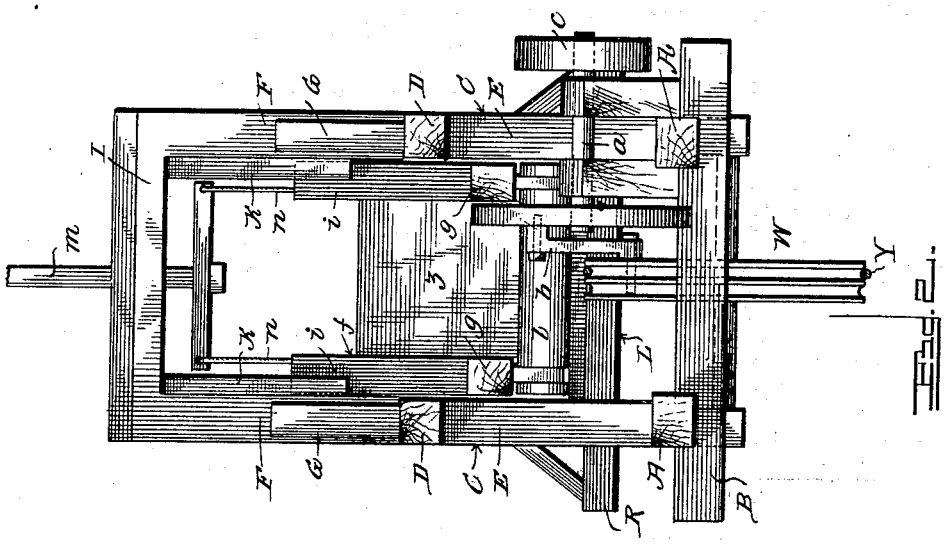

Fig. 2.

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Fig. 4.

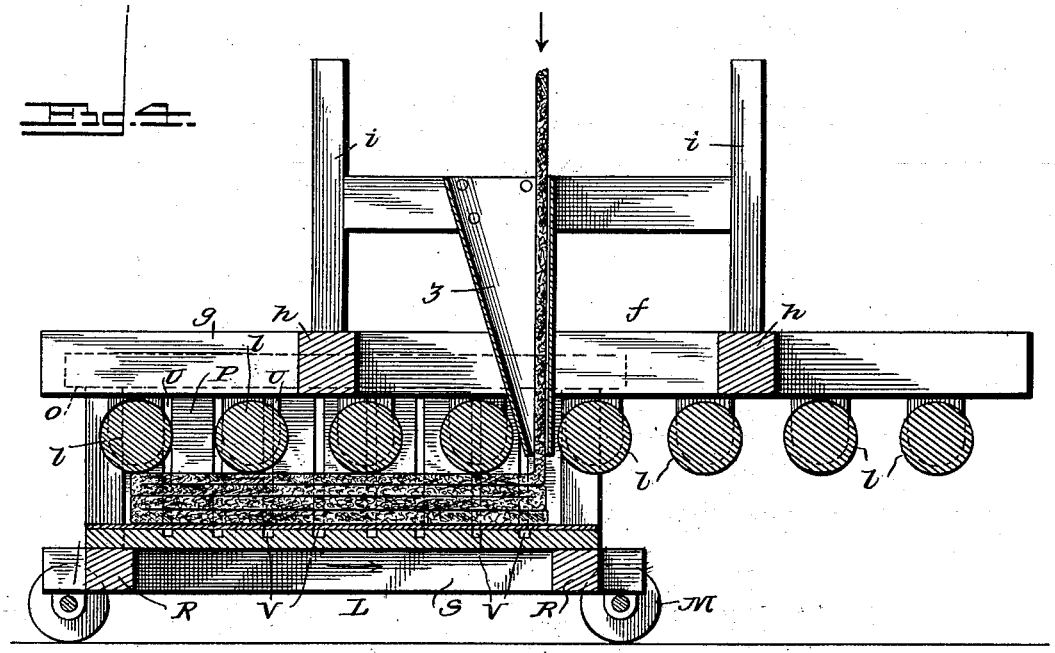
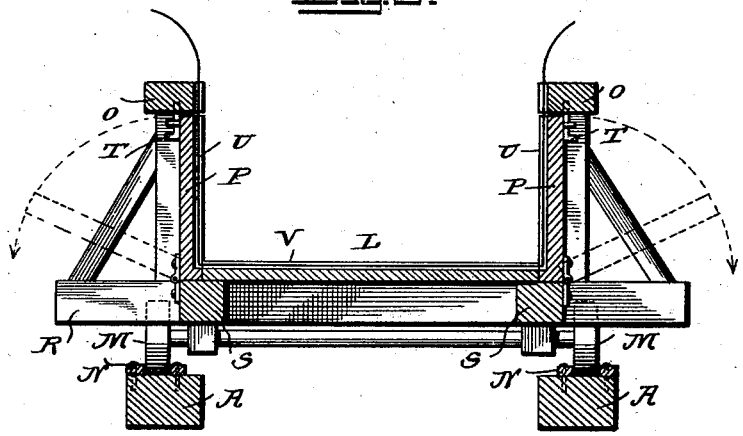


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN M. WERKHEISER, OF ARCADIA, LOUISIANA, ASSIGNOR OF ONE-HALF TO LEWIS F. WAKEMAN, OF SAME PLACE.

COTTON-PRESS.

SPECIFICATION forming part of Letters Patent No. 647,712, dated April 17, 1900.

Application filed December 21, 1899. Serial No. 741,170. (No model.)

To all whom it may concern:

Be it known that I, EDWIN M. WERKHEISER, a citizen of the United States, residing at Arcadia, in the parish of Bienville and State of Louisiana, have invented a new and useful Cotton-Press, of which the following is a specification.

My invention relates to improvements in presses adapted to form bales from cotton-bat and the like; and it consists in the combination, with a supporting-frame, of a bale-box or car adapted to reciprocate therein and to which the bat is fed and a vertically-movable follower having a series of horizontally-supported rolls in the path or race of the said bale-box or car, the said follower-rolls being supported by the said car and the layers of the bat therein during the process of compressing the bale.

My invention further consists in the peculiar construction and combination of devices hereinafter fully set forth, and particularly pointed out in the claims.

One object of my invention is to provide a press adapted to make bales from cotton-bat fed continuously thereto as the bat is formed and which is capable of forming a bale of maximum density with a minimum expenditure of power.

A further object of my invention is to provide a press which is adapted to form square bales composed of superimposed layers of cotton-bat.

A further object of my invention is to provide a press adapted to form bales of uniform density of layers of cotton-bat and in which the density of the bales may be increased or decreased at will by adding to or taking from the weight of the follower and its series of compressing-rolls.

A further object of my invention is to provide a press which is adapted to be operated simultaneously with the gin and a condenser for making cotton-bat and which converts the bat as it is formed into square bales of uniform density composed of superimposed layers of bat.

A further object of my invention is to provide a press that is adapted to form bales from moss, jute, and cotton goods and the like, as well as from cotton-bat.

A further object of my invention is to provide a press for cotton and the like which is extremely cheap in construction, is capable of being operated rapidly with but a slight expenditure of power, and in which the operating parts are few in number and perfectly accessible and of such simplicity of construction as to be not likely to get out of order.

In the accompanying drawings, Figure 1 is a vertical longitudinal central sectional view of a press embodying my improvements, showing the same connected with a gin, condenser, and conveyer for making cotton-bat from the lint-cotton as it is discharged from the gin and conveying the same to the press in which the bat is converted into bales continuously. Fig. 2 is an end elevation of my improved press. Fig. 3 is a vertical transverse central sectional view of the same. Figs. 4 and 5 are detail views of the bale-box or car.

A represents a pair of sills, which are supported and connected together by cross-bars or sleepers B. On each of the said sills is erected a side frame C, composed each of the longitudinal beam D, supported horizontally and at a suitable height above the sill by uprights E and by a pair of standards F, which are located equidistant from the center of the frame C and extend for a suitable height above the beam D. Inclined brace-bars G connect the upper portions of said standards with the said beam D and serve to brace and strengthen said standards, and the upper ends of said standards are connected together in pairs by the transverse beams I. The portions of the sills on which the side frames are erected form a race K for a reciprocating bale-box or car L, that travels horizontally in said race and has the supporting wheels or rollers M, which are guided on the track-rails N, supported on the sills. The ends of the bale-box or car are open, and the sides thereof are formed of open frames O and doors P, which latter are hinged at their lower sides and adapted to swing outwardly from the car and to be supported when thus opened to a horizontal position upon the projecting

ends of the cross-bars R at the ends of the car, which connect the longitudinal beams or trusses S thereof. Suitable fastening devices T are provided for securing the doors when closed, and on the inner sides of the doors are formed grooves U, adapted to receive the bale-ties, which grooves U are spaced equidistant apart and coincide with similar grooves V in the false bottom of the bale-box or car.

A pair of sheaves W X are mounted in suitable bearings, the sheave X being located near the outer end of the race and the sheave W being located beyond the inner end of the race, and on the said sheaves and connecting them is a traction-belt Y, the ends of which are attached to the bale-box or car in any suitable manner or as shown in Fig. 1. A crank-shaft *a*, which is mounted in suitable bearings, has its wrist connected to the sheave W by a pitman *b*, and said shaft is provided with a pulley *c*, to which power is communicated by a belt *d* from a counter-shaft *e*. As the crank-shaft rotates the sheave W, because of the connecting-pitman *b*, will be moved through a partial rotation, first in one direction and then in the reverse direction, and the said sheave and crank-shaft are so proportioned as to cause the sheave to communicate reciprocating motion to the bale-box or car through the traction-belt, as will be readily understood, and cause the car or bale-box to be moved back and forth throughout the race.

f represents a rectangular follower-frame comprising the pair of side beams *g* and the connecting end beams *h*, and from the sides of the follower-frame rise vertical standards *i*, said standards *i* and the standards *f* of the main frame being provided on their proximate sides with guideways *k*, which serve to keep the standards *i* at all times in a vertical position and to keep the follower-frame at all times in a horizontal position, while permitting the follower-frame to move vertically between the side frames C. The length of the follower-frame is nearly equal to the extreme length of the race, and on the under side of the follower-frame is journaled a series of horizontally-disposed follower-rolls *l*, and the said follower-frame, with its rolls, is adapted to be lowered into and upon the open-ended reciprocating bale-box or car and to be borne upon the same during the process of forming a bale. A lever *m* is fulcrumed under one of the cross-bars I and is connected to the follower-frame by suitable links *n*, the said lever and links serving to raise the follower, with its rolls, from the car or bale-box when the formation of a bale has been completed to permit the bale to be bagged, tied, and removed from the bale-box or car prior to the operation of forming a subsequent bale.

A gin *o* or series of gins is located on a floor above the press, and from the gin or series thereof extends a condenser *p*, into which the lint-cotton is blown from the gin or gins. In or near the bottom of the condenser trough or box is located an inclined screen *r*, of wire or other suitable material, and as the lint-cotton is blown through the trough or box of the condenser to the condenser-rolls the sand, particles of dirt, and other foreign substances which may be in the cotton, being heavier than the same, will fall from the cotton and pass through the screen, and hence the cotton will be delivered to the pair of condensing-rolls *s t* at the outer end of the trough of the condenser practically free from foreign substances, and thereby greatly improve the quality of the cotton and enhance its value.

A conveyer *u* is composed of a downwardly-inclined box or trough *v*, in which travels an endless belt or apron *w*, the upper portion of the said endless apron being carried by the lower condenser-roll *t* and the lower portion of said endless apron being carried upon a roller *x* at the lower end of the conveyer. As the lint-cotton is delivered to the pair of condenser-rolls *s t* it is condensed by the same into a continuous bat, which is carried by the conveyer to the lower end thereof and there delivered upon a slide or chute *y*, which guides the bat into the upper end of a spout *z*, which equals the bottom of the bale-box or car in width and the lower end of which passes between a pair of proximate follower-rolls at the center of the follower-frame and serves to deliver the bat to the outer end of the bale-box or car when the latter is at the inner end of the race. The delivery of the bat to the bale-box or car being continuous, as the same moves back and forth in the race and under the series of follower-rolls said follower-rolls serve to compress the bat in successive layers, which extend from end to end of the car and are of equal length. The entire weight of the follower-rolls and the follower-frame being carried by the car during the process of forming a bale, the various layers of the bale are subjected to a pressure equal to the weight of the follower and its rolls, and therefore each bale formed in the bale-box will be of equal density. As the car moves back and forth while the successive layers of the bat are fed thereto the series of rolls serve to expel the air from between the layers successively as they are deposited and compressed in the car or bale-box, thereby increasing the density of the bale. By adding to the weight of the follower the density of the bales formed by the press may be correspondingly increased, and by reducing the weight of the follower the density of the bales will be correspondingly diminished. It will be understood that the follower, consisting of the series of pressure-rollers journaled in the follower-frame, gradually rises and recedes from the bottom of the car as the bale is formed.

Before beginning the operation of forming the bale the bale-ties will be placed in the grooves U V, as is usual in presses of this

class, and a piece of bagging of suitable length and breadth will be placed on the bottom of the car to cover the bottom and sides of the bale which is afterward formed thereon. When the last layer of bat has been compressed on the bale and the latter finished, a piece of bagging to cover the top of the bale is fed into the upper end of the spout, the gin or gins being stopped, and the said bagging will be placed upon the top of the bale by the final motion of the bale-box or car, thereby covering the bale. The ties are then fastened, the same being readily accessible through the spaces between the follower-rollers. The doors of the bale-box or car are opened, and the follower is then raised by operating its lever, thereby permitting the finished bale to be removed.

In Fig. 1 of the drawings pulleys and belts are shown, which serve to convey power from the same counter-shaft *e* which operates the press to the gin and conveyer, this arrangement and combination not only insuring the simultaneous operation of the gin, condenser, conveyer, and press, but also effecting a considerable economy of power.

As will be understood from the foregoing description of the construction and operation of my improved press, the bales formed by the same will be square in shape and adapted to be packed closely together in the hold of a ship or in a warehouse, thereby lessening the danger of fire and correspondingly reducing the cost of fire insurance, as well as effecting a reduction in bulk.

My improved press is not only adapted to form bales of cotton-bat, but is equally effective for making bales of moss, jute, and cotton goods and the like.

A further advantage gained by my invention is that my improved press may be constructed at about the same cost as the primitive form of cotton-presses for making bales of lint-cotton now in common use. The parts of my press are few in number, are perfectly accessible, and may be readily removed and replaced when necessary in making repairs, and, moreover, my improved press is capable of being operated rapidly with a minimum expenditure of power.

Cotton-bales formed by my improved press, as hereinbefore stated, are composed each of the continuous bat of condensed cotton, which is greatly preferred by spinners to the bales of lint-cotton and commands a higher price in the market.

I do not desire to limit myself to the precise construction and combination of devices herein shown and described, as it is obvious that modifications may be made therein without departing from the spirit of my invention, which contemplates, broadly, a series of compressing-rolls in combination with a member having a compressing-surface opposed to the rolls, either the series of rolls or said member, or both, moving reciprocally with relation to the other.

As herein shown and described, my improved cotton-press is located below the gin, that being a convenient relative arrangement; but it will be understood that this is not a necessary relative arrangement of the press and gin, as they may be on a level with each other or the gin may be on a lower level than the press, if required or preferred, without impairing the ability of the conveyer to feed the bat to the press.

Having thus described my invention, what I claim is—

1. In a press, the combination, with the series of vertically-movable follower-rolls, of the reciprocating bale-box, said follower-rolls being so mounted as to gravitate toward said bale-box, substantially as described.

2. In a press, the combination with the reciprocating open-ended bale-box or car, traveling in a way or race, of the vertically-movable series of follower-rolls in the race or way of the car, and so mounted as to gravitate toward said bale-box or car, substantially as described.

3. The combination, in a press, of the supporting-frame, having the race or way, of the open-ended reciprocating bale-box or car, traveling in said race or way, and the vertically-movable follower, having the horizontal series of rolls, carried thereby, said follower and its rolls being disposed in the race or way of the said car, and so mounted as to gravitate toward said bale-box or car, during the process of forming a bale, substantially as described.

4. The combination of the press, comprising essentially the reciprocating bale-box or car, and the series of vertically-movable follower-rolls disposed in the race or way thereof, and so mounted as to gravitate toward said bale-box or car with the spout or feed device, adapted to introduce the bat to the interior of said box or car, beneath the said rolls, substantially as described.

5. The combination, in a cotton-press of the class described, with the reciprocating, open-ended bale-box or car and the follower having the series of follower-rolls so mounted as to gravitate toward said bale-box or car, when the press is in operation, of a lever or means to raise said follower from said car, and to lower the same thereto, for the purpose set forth, substantially as described.

6. In a cotton-compress of the class described, the combination with the reciprocating open-ended bale-box or car, of the sheaves disposed at the ends of the race in which said car travels, the traction-belt connecting said sheaves and attached to said car, the crank-shaft and the pitman connecting the crank to one of the sheaves, and the vertically-movable follower disposed in the path of the bale-box or car and having the follower-rollers under which the bottom of the car travels, substantially as described.

7. In a cotton-compress of the class described, the combination of a vertically-mov-

able compressing member comprising a series of rolls and a compressing member having a plane surface opposed to and forming the support of said series of rolls, said members being adapted for reciprocating movement with relation to each other, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWIN M. WERKHEISER.

Witnesses:

E. E. DAVIES,

L. F. WAKEMAN.