

J. BAADE.
COMPRESSING MACHINE.

APPLICATION FILED JAN. 17, 1910.

991,412.

Patented May 2, 1911.

3 SHEETS-SHEET 1.

Fig. 3.

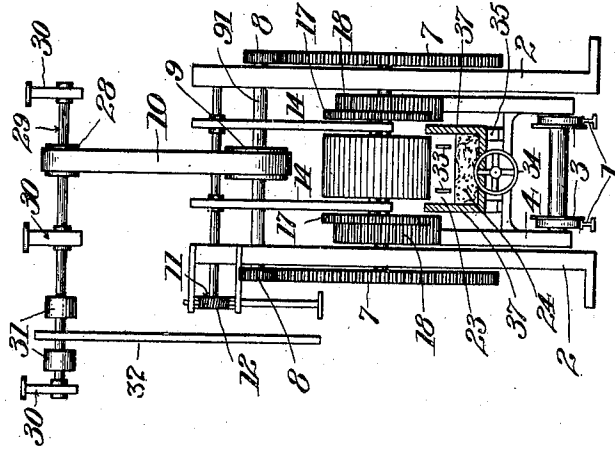


Fig. 1.

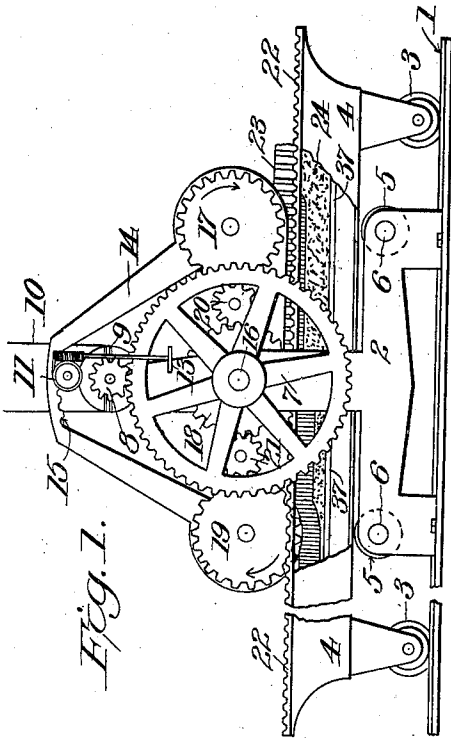
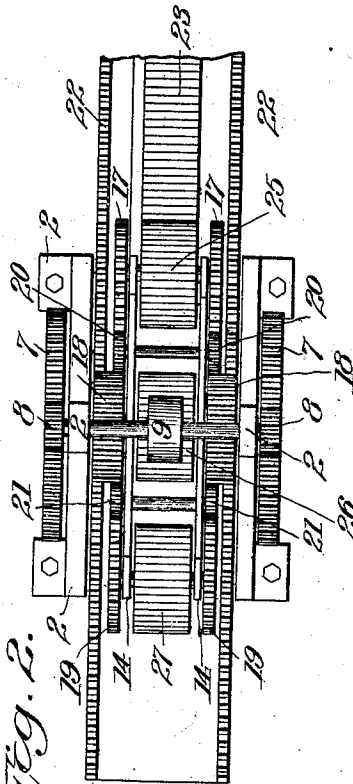


Fig. 2.



WITNESSES

C. H. Walker.
L. J. Knight

INVENTOR,

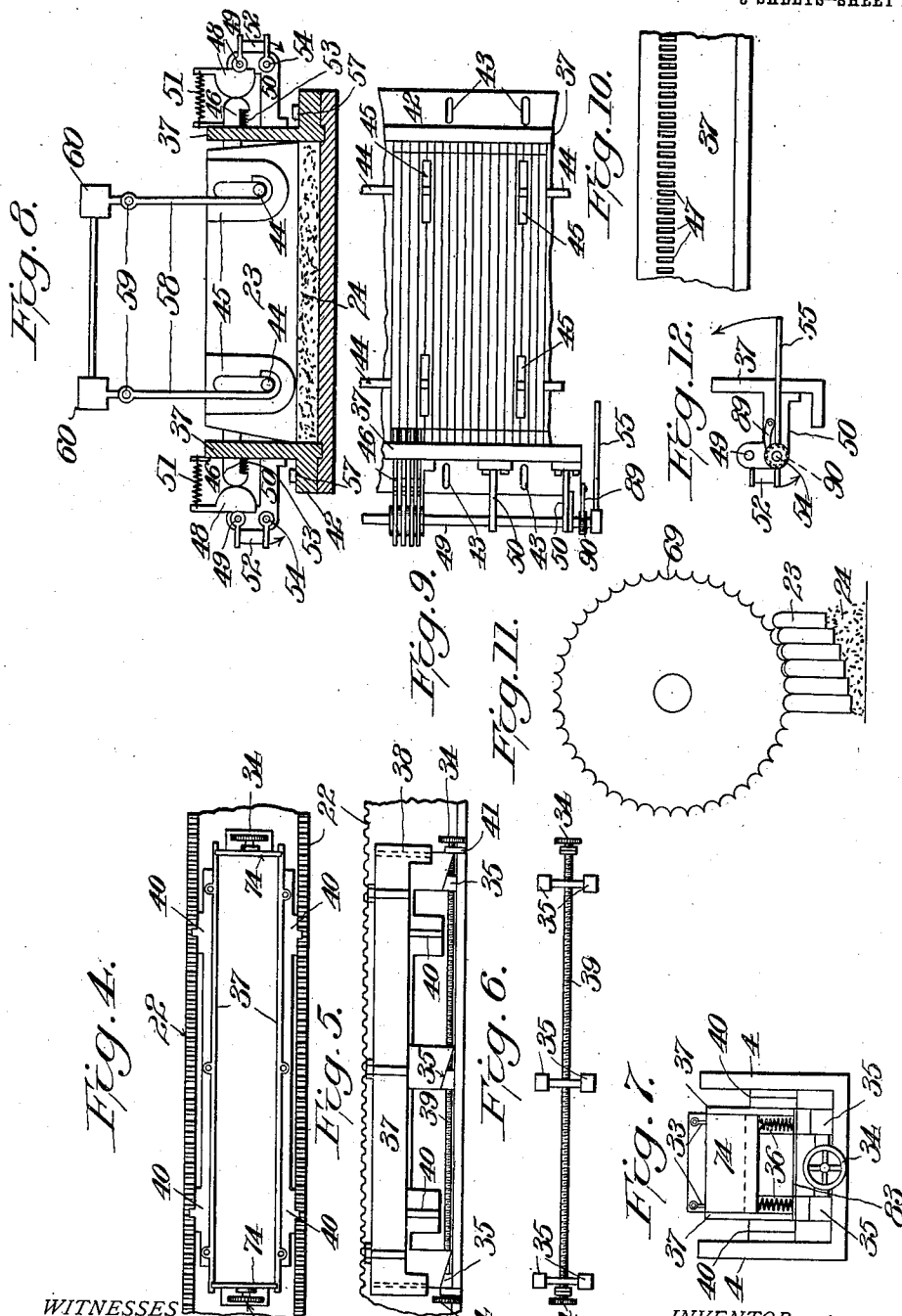
John Baade,
By A. D. Jackson,
Attorney

991,412.

J. BAADE.
COMPRESSING MACHINE.
APPLICATION FILED JAN. 17, 1910.

Patented May 2, 1911.

3 SHEETS-SHEET 2.

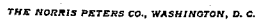


WITNESSES
C. Walker,
L. T. Knight

INVENTOR
By *John Baade*
A. D. Jackson,
Attorney

991,412.

3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

JOHN BAADE, OF WACO, TEXAS.

COMPRESSING-MACHINE.

991,412.

Specification of Letters Patent.

Patented May 2, 1911.

Application filed January 17, 1910. Serial No. 538,431.

To all whom it may concern:

Be it known that I, JOHN BAADE, a citizen of the United States, residing at Waco, in the county of McLennan and State of Texas, have invented certain new and useful Improvements in Compressing-Machines, of which the following is a specification.

My invention relates to machines for compressing plastic material for forming such articles as shingles for roofs, crossties for railways and the like, and also for pressing oil from cotton seed, beans and other things, and also for compressing cotton; and the object is to provide machines for exerting great power on the material to be compressed and which will be operated with little power.

A further object is to provide means for automatically locking the material in a compressed state or condition until it can be compressed one or more times and also to compress the material progressively.

Other objects and advantages will be fully claimed in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application.

Figure 1 is a side elevation of the machine without the hoisting mechanism, Fig. 2 is a plan view of the same; Fig. 3 is an end elevation of the same, Fig. 4 is a plan view of the press box and a broken view of the supporting frame and racks for driving the press box, Fig. 5 is a side elevation of the press box, showing screws for vertical adjustment of the press box, and also a broken view of one side of the supporting frame and rack thereon, Fig. 6 is a plan view of the blocks and screw shaft for vertical adjustment of the press box. Fig. 7 is an end elevation of the press box. Fig. 8 is a cross section of the press box, showing the manner of locking the pressing slats automatically. Fig. 9 is a broken plan view of the same without the hoisting mechanism. Fig. 10 is a broken side elevation of the press box showing the slots for the locking wedges. Fig. 11 is an end elevation of one of the compressing rollers, showing the peripheral grooves and several of the compressing slats, showing how the compression is accomplished progressively. Fig. 12 is a detail view of the releasing and locking mechanism. Fig. 13 is a detail view of the hoist-

ing mechanism. Fig. 14 is a plan view of the hoisting mechanism. Fig. 15 is a plan view of the press box, showing the end gates and a slot in the bottom of the press box for a lug on the bottom of a receiving plate. Fig. 16 is a plan view and Fig. 17 is a side elevation of the plate which is placed on the bottom of the press box for receiving the material and for removing the material. Fig. 18 is a plan view of a receiving table, showing a groove for the lug of the receiving plate. Fig. 19 is a side elevation of the receiving table. Fig. 20 is an end elevation of the receiving plate. Figs. 21 to 23 inclusive show detail views of slats which are slight variations from the slats shown in the previous figures.

Similar characters of reference are used to indicate the same parts throughout the several views.

The machine may be supported on tracks 1. The side frame pieces are provided with wheels 3 which run on the tracks 1. The machine is further supported at the central part by frames 2 and rollers 5 with journals 6 having bearings in the frames 2. The press box 37 is mounted in the frame 4. The power mechanism is mounted in frame pieces 2. Cog wheels 7 are mounted on shaft 16. Shaft 16 is journaled in frame pieces 2. The cog wheels 7 are driven by pinions 8 and the pinions 8 are driven by the power pulley 9 which is mounted on the same shaft 91. The pulley 9 is driven by belt 10 and the belt 10 is driven by pulley 28 which is mounted on shaft 29. The shaft 29 is mounted in hangers 30 and power may be applied to shaft 29 by one of the pulleys 31. A belt shifter 32 is provided for shifting the belt from and to the pulleys 31. The shaft 16 drives the gear wheels 18 and the gear wheels 18 are broad enough to engage the racks 22 and also the pinions 20 and 21. The pinions 20 drive the gear wheels 17 and roller 25, the gear wheels 18 drive the compression roller 26. The pinions 21 drive the gear wheels 19 and the gear wheels 19 drive the roller 27. The gear wheels 17 and 19 and rollers 25 and 26 are carried in the frame 14. The frame 14 is pivotally mounted and may be shifted by means of the rack 15 which is formed on the frame 14 and by the worm gear 11 and 12, the worm gear wheel 12 being provided with a hand shaft 13.

It will be noticed that the rollers 27, 26, and 25 are so arranged that the compressing is done progressively, the roller 25 being the highest and operating on the slats 23 which engage the material 24 to be compressed. The roller 26 will next engage the slats 23 and press them lower and roller 27, being the lowest, presses the slats still lower. If the material has not been sufficiently compressed after having gone under the rollers once it may be run under the rollers a second time and more if necessary. In order to do this the frame 14 is shifted by the worm gearing heretofore described to bring the rollers 26 and 25 lower than the roller 27. The roller 26 is not lowered but the roller 27 is elevated and the roller 25 lowered. The press box is then elevated by means of a screw shaft 39, wedges 35 and hand wheels 34 so that the slats which have been pressed down will be brought up against the roller 27. Thus the press box 37 may be run under the rollers as many times as may be necessary for compressing the material to the desired density. The press box 37 is guided in its vertical movement by lugs 40 which move in grooves in the frame pieces 4.

The end gates 74 move vertically in grooves in the sides of the press box 37 and may be raised by knobs 33. The end gates 74 will also be pressed down by the compression rollers 25, 26 and 27 but the end gates will rebound by reason of the springs 36, portions of the frame 37 project downwardly as shown in Fig. 7 to guide the end gates 74. The means for vertical adjustment of the press box 37 includes bearings 41 for the screw shaft 39.

Fig. 11 illustrates a compression roller in action. Each compression roller has peripheral grooves 69 which engage the rounded edges of the slats 23.

Means are provided for locking the slats 23 down automatically. A series of locking bolts 46 are mounted in grooves 47 in the side frame pieces 37. The ends of the slats or bars 23 are slanting as shown in Fig. 8. Springs 53 are provided for causing automatic release of the locking bolts 46 when the bolts themselves are released by the cams 48. The cams 48 are mounted on shafts 49 and have arms rigid therewith. A shaft 54 is mounted on each side of frame 37 in a bearing 50 which is rigid with the frame 37. The shafts 54 have arms rigid therewith and cables or chains 52 are connected to the arms of the shaft 49 and 54 so that when the shafts 54 are turned by the cranks 55 the shafts 49 will also be turned. The locking bolts 46 can thus be locked in place or released when desired by means of the cams 48. When the cams are brought to the positions illustrated in Fig. 8, springs 51 will cause an automatic locking of the slats 23 as these slats are pressed down, the springs

51 having sufficient strength to overcome the tension of the springs 46 so that as each slat is pressed down the springs 51 will draw the respective cams 48 against locking bolts 46. It will be understood that there is a cam 48 for each locking bolt 46 and also a spring 51 for each cam. The slats 23 are hoisted by means of hooks 58 which engage rods 44. The rods 44 run through all the slats 23. Some of the slats 23 are cut out on the sides to form recesses 45 through which the hooks 58 may be inserted to engage the rods 44. For the purpose of holding the locking mechanism out of engagement with slats 23 ratchet wheels 90 are mounted on the shafts 54 and pawls 89 are mounted on the bearings 50 to lock the ratchet wheels and thus hold the cams 48 out of locking engagements with the locking bolts 46. The hooks 58 are raised by means of beams 60 and cables 68. The beams 60 have downward projecting arms and the hooks 58 are connected to the arms by the pivot bolts 59. The cables 68 are continuations of the cable 67 and cables 67 are driven by pulleys 63 which are mounted on shafts journaled in uprights 62. One of the shafts 63 is driven by worm gearing 64 and 65. The worm gear 65 is driven by a shaft 70 which is journaled in bearings 66 and also in hangers 71. Power may be applied to shaft 70 by one of the pulleys 72. A belt shifter 73 is provided for shifting a belt to one of the pulleys 72. The cables 67 are so arranged on the shafts or cylinders 63 that driving one cylinder will drive the other and thus raise the frame 60' vertically so that the ends of the frame will be in the same horizontal plane and may be locked in any position that may be desired. The cylinder 63 may be held against displacement by collars 62. In order to release the material so that it can be removed from the press, bolts 57 are removed from the frame flanges 42 so that the frame pieces 37 may be moved. The slats are maintained in a horizontal plane by means of the rods 44 and the frame 60', the beams 60 of the frame being held at a fixed distance apart by a cross rod 61. The material is taken out of the press box on a plate 75 which has a lug 76 attached to the bottom thereof and which lug rests in a slot 78 in the bottom of the press box. The lug 76 is for the purpose of moving the plate 75. A receiving table 77 is provided for the material when removed from the press box and a groove 78 is formed in the bottom of the table 77 for the passage of the lug 76. The table 77 is mounted on a platform supported by the legs 82. Means are provided for adjusting the table 77 to bring the table on a level with the bottom of the press box. The means consist of a screw shaft 80 journaled in bearings 81 and wedges 79 for raising the table 77.

Figs. 21, 22 and 23 show slight variation in the pressing slats, which variations adapt the machine for pressing oil out of seed meal and for pressing any liquid out of material from which liquid is to be separated, as cider from apples, or oil from beans or nuts. The slats 83 are cut out on the sides to form recesses 84 for the escape of oil or other liquid and grooves 88 are made between the adjacent edges of the slats 83 so that oil can pass from the lower edges of the slats up into the recesses 84. The oil can escape from the recesses 84 out at the ends of the press, the bottom slats 85 having recesses or tapered grooves 86 so that oil or other liquid can pass through the bottom of the frame and out through recesses 87 formed in the bottom of the slats 85. Air pressure may be used to force the oil or other liquid out of the press after it is separated from the other material.

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

1. A compressing machine having a frame, a former box movable on said frame, a series of slats transversely arranged in said former box, a series of compressing rollers arranged above the path of said former box for pressing on said slats, each succeeding roller being lower than the first roller to press on said slats, a rockable frame carrying said rollers, means arranging said rollers in the inverse order relative to their height for pressing on said slats when said slats are to be moved backwardly under said rollers, and means for reciprocating said former box and slats under said rollers.

2. A compressing machine having a frame, a former box movable on said frame, a series of slats transversely arranged in said former box, a series of compressing rollers mounted above the path of said former box, means for driving said former box under said rollers, said rollers being disposed to press on said slats progressively in the forward movement, means for driving said former box backwardly under said rollers, and means for arranging said rollers in inverse order relative to their respective heights when said box is to be moved back under said rollers, to press on said slats progressively in their backward movement.

3. A compressing machine having a frame, a former box movable on said frame, a series of slats transversely arranged in said former box, a series of compressing rollers journaled above the path of said former box to press on said slats, means for driving said former box under said rollers, and means for adjusting said former box to said rollers consisting of a series of wedges and a screw shaft for operating said wedges.

4. A compressing machine having a frame, a former box movable on said frame,

a series of slats transversely arranged in said former box, a series of compressing rollers for pressing said slats downwardly, means carried by said former box for locking each slat in a depressed position, and means for driving said former box under said rollers.

5. A compressing machine having a frame, a former box movable on said frame, a series of slats transversely arranged in said former box, a series of compressing rollers for pressing said slats downwardly, means for driving said former box under said rollers, means for locking each slat in the depressed position, and means for elevating said former box toward said rollers for further pressure on said slats.

6. A compressing machine having a frame, a former box movable on said frame, a series of slats transversely arranged in said former box, a series of compressing rollers journaled above the path of said former box, for pressing said slats downwardly, a series of bolts carried by said former box for automatically locking said slats in depressed positions, and means for driving said former box under said rollers.

7. A compressing machine having a frame, a former box movable on said frame, a series of slats transversely arranged in said former box, a series of compressing rollers journaled above the path of said former box, for pressing said slats downwardly, a series of bolts carried by said former box for locking said slats in depressed positions, a series of spring-actuated cams for actuating said locking bolts, and means for driving said former box under said rollers.

8. A compressing machine having a frame, a former box movable on said frame, a series of slats transversely arranged in said former box, a series of compressing rollers journaled above the path of said former box, a series of locking bolts carried by said former box for locking said slats in depressed positions, a series of spring-actuated cams for actuating said locking bolts, a shaft for releasing said cams from said bolts, and means for driving said former box under said rollers.

9. A compressing machine having a frame, a former box movable on said frame, a series of slats arranged in said former box, a series of compressing rollers journaled above the path of said former box to press said slats downwardly, a series of locking bolts carried by said former box for locking said slats in depressed positions, a series of spring-actuated cams for actuating said bolts, means for elevating said former box toward said rollers, and means for reciprocating said former box under said rollers, said slats being further pressed toward the bottom of said former box during each suc-

cessive passage under said rollers, and said bolts locking the slats automatically in each changed position.

10. A compressing machine having a frame, a former box movable on said frame, a series of slats arranged in said former box, a series of rollers journaled above the path of said former box to press on said slats, means for reciprocating said former box under said rollers, means for elevating said former box closer to said rollers after each movement of said box under said rollers, and means for lifting said slats out of said former box.
11. A compressing machine having a frame, a former box movable on said frame, a series of slats arranged in said former box, a series of rollers journaled above the

path of said former box to press on said slats, means for reciprocating said box under said rollers, means for elevating said box closer to said rollers after each reciprocation of the box under said rollers, and means for lifting said slats from said box consisting of rods running through said slats, hooks engaging said rods, cables for elevating said hooks, and gearing for operating said cables.

In testimony whereof, I set my hand in the presence of two witnesses, this 31st day of December, 1909.

JOHN BAADE.

Witnesses:

A. L. JACKSON,
J. W. STITT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
