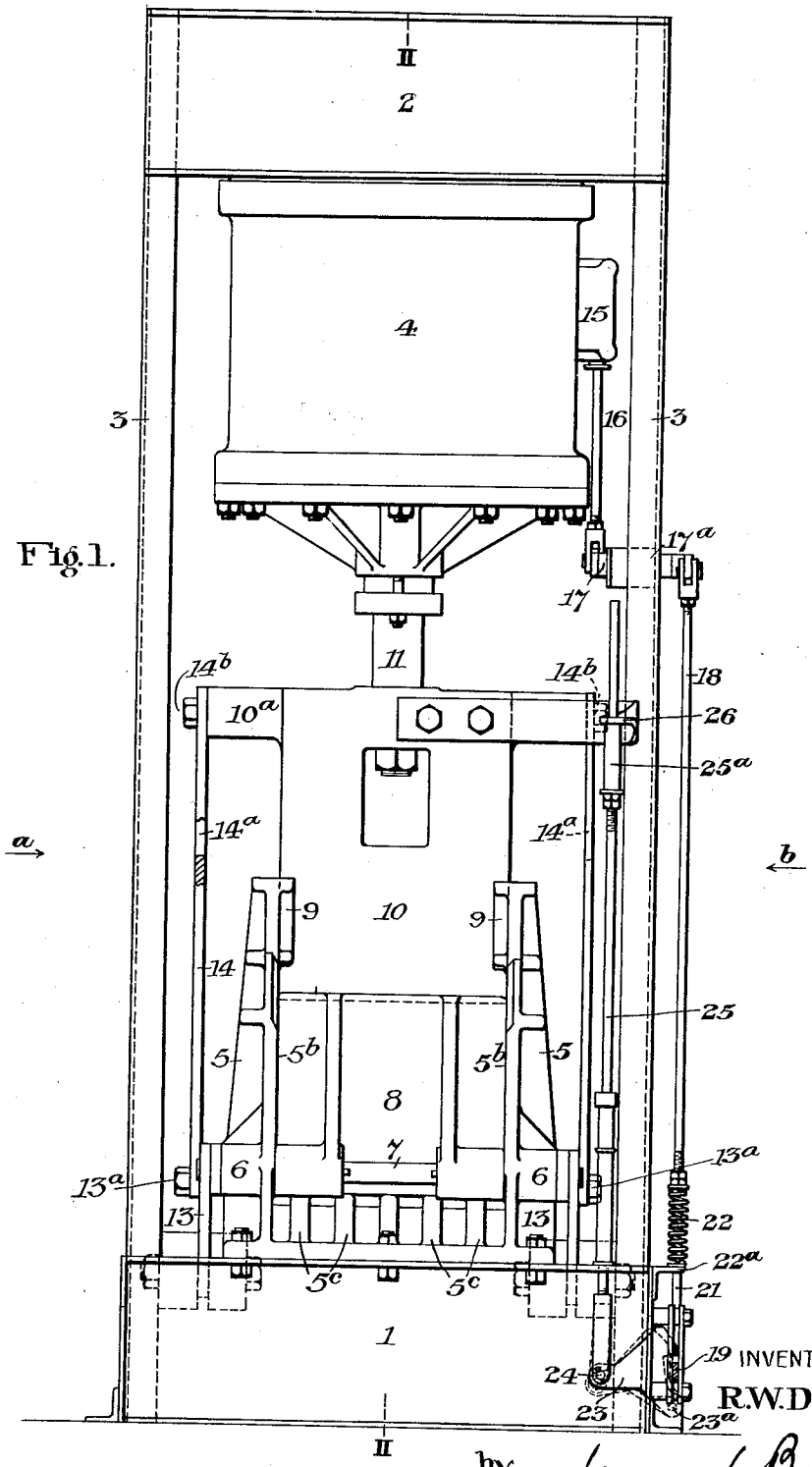
July 11, 1933. R. W. DINZL 1,917,241

PRESS MECHANISM

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Fig. 1.



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Fig. 3.

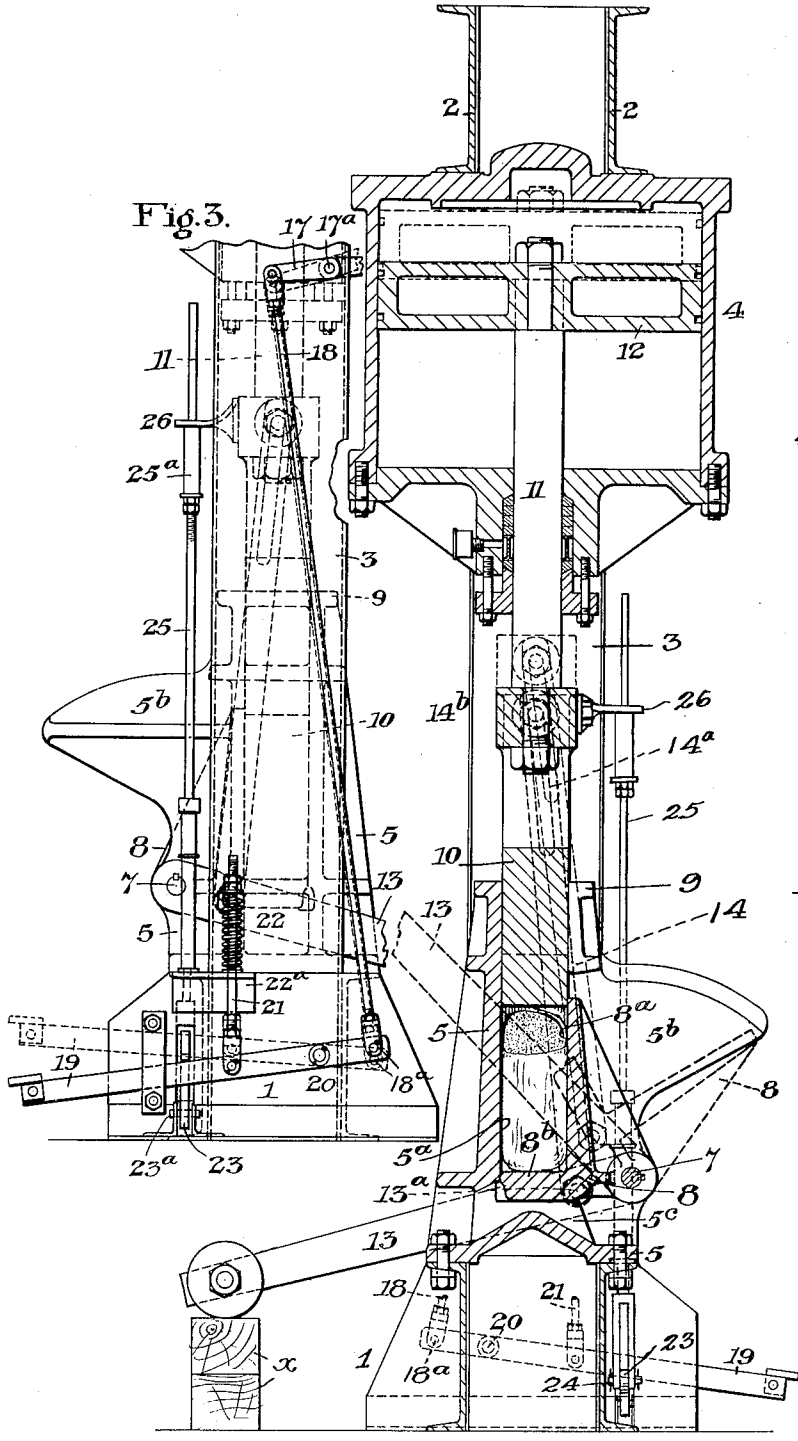


Fig. 4.

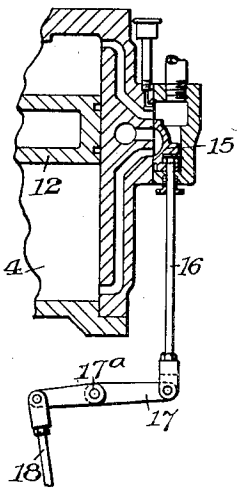


Fig. 2.

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UNITED STATES PATENT OFFICE

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PRESS MECHANISM

Application filed November 6, 1928. Serial No. 317,552.

My invention relates to press mechanism for effecting condensation of pulverulent material, powdered carbon, for instance, preliminarily packed in containers such as bags of paper, fabric or the like.

The object of my invention is to provide a simple and efficient structure operating automatically upon pressing a foot lever, such action opening a valve admitting fluid pressure to a cylinder which lowers a plunger in contact with the bag of material disposed within a chamber formed by a fixed rear wall and a movable front wall which, in the inactive position, is tilted forward to provide a trough receiving the material to be pressed.

A further object of my invention is to simplify the operation of compressing the material and reduce the time usually required for such purpose.

And a still further object of my invention is to utilize fluid pressure to effect movement of the compressing plunger in both directions.

These and other features of my invention are more fully set forth hereinafter; reference being had to the accompanying drawings, in which:

Figure 1 is a front elevation of press mechanism embodying the features of my invention.

Fig. 2 is a sectional elevation on the line II—II, Fig. 1; looking in the direction of the arrow *a*.

Fig. 3 is a side elevation of the lower part of the structure, looking in the direction of the arrow *b* Fig. 1, and

Fig. 4 is a sectional view of the valve controlling admission of motive fluid to the cylinder in which the piston for moving the compressing plunger is disposed.

My improved structure may comprise a suitable frame consisting of a base 1 made up of suitable beams and filling members; an upper cross-head 2 made up of similar beams, and side supports 3 which may be structural members channel shape in cross section. The cross-head supports a cylinder 4 in the upper part of the frame, and the base supports a fixed anvil frame 5, constituting the rear and side walls of a compressing chamber, which walls are indicated respectively at 5^a and 5^b.

The side walls of the lower portion of the anvil frame project forwardly, as clearly indicated in Fig. 2, and are furnished with journals 6, for a rock shaft 7, which shaft supports a movable member 8 which constitutes the front wall and bottom of the compressing chamber, indicated respectively at 8^a and 8^b; such parts being shown in the closed position in full lines and in the open position in dotted lines, in the sectional view, Fig. 2. When in the closed position, the lower wall forming the bottom 8^b of the compression chamber, may rest upon a series of rib projections 5^c extending upwardly from the lower cross member of the anvil frame which may be bolted to the base.

The upper part of the side walls of the anvil frame 5 are provided with guides 9 between which and the rear wall 5^a of said frame, a plunger 10 is adapted to move; such plunger being connected to a piston rod 11, depending from a piston 12, disposed within the cylinder 4. The rock shaft carrying the member 8 constituting the front wall and bottom of the compression chamber is connected at its ends to weighted levers 13, whose normal action serves to close said member and hold it in the position to complete the compression chamber, as indicated by full lines Fig. 2. These levers are pivotally connected at 13^a, with links 14, having slotted upper ends 14^a, connected at 14^b, to side arms 10^a of the plunger 10, and when the latter is in the raised position, with the piston in its extreme upper position, as indicated by the dotted lines Fig. 2, said links lift the weighted levers 13 and move the member 8 providing the front wall and bottom of the compressing chamber outwardly to the position shown by dotted lines Fig. 2. The side walls 5^b of the anvil frame 5 project forwardly as clearly shown in Fig. 2, and when the front wall of the movable member 8 is in the position illustrated by dotted lines, a trough is provided for the reception of the bags or other containers for the material undergoing compression; such bags being carried into the compression chamber

when the front wall and bottom are moved into the position indicated by full lines.

Pressure to actuate the piston, which may be liquid or fluid, is controlled by a valve 15, shown in section in Fig. 4. The stem 16 of this valve is connected to a bell crank lever 17 pivotally mounted at 17ª in one of the side supporting members 3, while the opposite end of said bell crank lever is connected by a link 18, to a foot lever 19, pivoted at 20 at the side of the base 1; said link being connected to the lever at the point 18ª. This foot lever is normally in the position indicated by dotted lines Fig. 3; being held in such position by the rod 21, actuated by the spring 22, which is interposed between a nut on the end of said rod and a guide bracket 22ª at the side of the base. When it is desired to operate the press, the foot lever 19 is depressed from the position shown by dotted lines which it occupies when the press is inactive, to the position shown by full lines, Fig. 3, and said lever is held in this position by means of a catch 23, pivoted at 23ª, to the base 1, and connected at 24, to a tripping rod 25 in operative engagement with the plunger 10, so as to be actuated thereby. The depressing of the foot lever has operated the valve actuating mechanism comprising the link 18 and bell crank lever 17 connected to the valve stem 16, and such valve has been moved thereby to a position permitting exhaust of fluid pressure from the under side of the piston and admission of fluid pressure to the upper side of the same whereby the plunger may be lowered.

The position of the plunger 10 in Figs. 1 and 2 as indicated by full lines, is that just after it has commenced to move downwardly; the bag of material to be compressed being in position in the compression chamber ready to be acted upon by said plunger. The lowering of the plunger to the extent indicated has released the links 14 and permitted the weighted levers 13 to move the member 8 constituting the front wall and bottom of the compression chamber, with the bag of material, into the closed position indicated. (The blocks x, which may be of wood, are engaged by the weights when the levers 13 drop and relieve any shock to the member 8).

As the plunger 10 descends and compresses this material, it carries with it the tripping rod 25; the latter having an enlarged portion 25ª engaged by a bracket 26 carried by the plunger; the smaller portion of said rod passing through an opening in said arm bracket and being guided thereby. When the plunger reaches the limit of its downward movement, the tripping rod 25 engages and shifts the catch 23 to the position indicated by dotted lines Fig. 1, releasing the foot lever 19 which is automatically lifted by the spring 22 and through the link 18 and bell crank lever 17 connected to the valve rod 16 shifting the position of the valve 15 so as to place the upper portion of the cylinder open to exhaust and the lower portion open to pressure; whereupon the plunger will be raised and as it nears the limit of its upward movement it will pick up the links 14 connected to the weighted levers 13 and on the continued movement open the compression chamber by moving the front wall and bottom to the position shown by dotted lines, Fig. 2. The block of compressed material may then be lifted out and a fresh bag for compression may be placed in the trough provided by the member 8.

The operation of this press mechanism is entirely automatic after it has been first set in action by depressing the foot lever 19 and causing it to be engaged by the catch 23 which holds it in the depressed position.

I claim:

1. In press mechanism, the combination of a frame, an anvil disposed in the lower part of said frame and forming part of a compression chamber, a movable member pivotally mounted in said frame and forming the front wall and bottom of said compression chamber, weighted levers for holding said pivotally mounted member in the closed position, a plunger operatively connected to said weighted levers for acting upon material disposed in said compression chamber, a piston for actuating said plunger, means for raising and lowering said piston including a valve, and a foot lever for actuating said valve; said plunger when lowering under pressure permitting the weighted levers to close the compression chamber.

2. In press mechanism, the combination of a frame, an anvil disposed in the lower part of said frame and forming part of a compression chamber, a movable member pivotally mounted in said frame and forming the front wall and bottom of said compression chamber, weighted levers for holding said pivotally mounted member in the closed position, a plunger operatively connected to said weighted levers for acting upon material disposed in said compression chamber, a piston for actuating said plunger, means for raising and lowering said piston including a valve, a foot lever for actuating said valve; said plunger when lowering under pressure permitting the weighted levers to close the compression chamber, a pivoted catch for holding said foot lever in the depressed position during the compressing action, and means operated by the descending plunger for displacing said catch and releasing the foot lever; such action of the lever reversing the valve and causing the piston to raise the plunger and open the compression chamber.

3. In press mechanism, the combination of a frame, an anvil disposed in the lower part of said frame and shaped to form the rear

and side walls of a compression chamber, a member pivotally mounted in said frame and forming the front wall and bottom of said compression chamber, a rock shaft supporting said pivotally mounted member, weighted levers connected to said rock shaft for moving said pivotally mounted member to and holding it in the closed position, a plunger for acting upon material disposed in the compression chamber formed by said anvil and the pivotally mounted member, a piston for actuating said plunger, means for raising and lowering said piston including a valve controlling the inlet of fluid pressure, a depressible foot lever for actuating said valve; said plunger when lowering under pressure permitting the weighted levers to move the pivotally mounted member of the compression chamber to the closed position, and a releasable catch for holding said foot lever in the depressed position during the compressing action.

4. In press mechanism, the combination of a frame, an anvil disposed in the lower part of said frame and shaped to form the rear and side walls of a compression chamber, a member pivotally mounted in said frame and forming the front wall and bottom of said compression chamber, a rock shaft supporting said pivotally mounted member, weighted levers connected to said rock shaft for moving said pivotally mounted member to and holding it in the closed position, a plunger for acting upon material disposed in the compression chamber formed by said anvil and the pivotally mounted member, a piston for actuating said plunger, means for raising and lowering said piston including a valve controlling the inlet of fluid pressure, a foot lever for actuating said valve; said plunger when lowering under pressure permitting the weighted levers to move the pivotally mounted member of the compression chamber to the closed position, a pivoted catch for holding said foot lever in the depressed position during the compressing action, a trip rod for displacing said catch and releasing the foot lever; said trip rod being actuated by the descending plunger, and a spring for raising said foot lever when released from said catch; such action of the foot lever reversing the valve and causing the piston to raise the plunger and open the compression chamber.

5. In press mechanism, the combination of a frame, an anvil disposed in the lower part of said frame and forming part of a compression chamber, a movable member pivotally mounted in said frame and forming the front wall and bottom of said compression chamber, weighted levers for moving said pivotally mounted member to the closed position, a plunger operatively connected to said weighted levers for acting upon material disposed in said compression chamber, a piston for actuating said plunger, means for raising and lowering said piston including a valve, a foot lever for actuating said valve; said plunger when lowering permitting the weighted levers to move the pivotally mounted member of the compression chamber to the closed position, means for holding said foot lever in the depressed position during the compressing action, and means for releasing said foot lever when the plunger reaches the lower limit of its movement.

6. In press mechanism, the combination of a fixed member forming the ends and one side of a compression chamber, a pivotally mounted member disposed relatively to said fixed member and providing the bottom and another side of said compression chamber, a plunger adapted to be lowered into said compression chamber when said pivotally mounted member is in place, links connecting said plunger and the pivotally mounted member; the position of said latter member being controlled by the operation of said plunger through said links, means for lowering and raising the plunger including a valve, a foot lever for operating said valve, and means for holding said foot lever in the depressed position; the means actuating the plunger being automatically brought into action to lift the plunger when the latter reaches the limit of its downward movement by the release of said foot lever.

7. In press mechanism, the combination of a fixed member forming one wall and the sides of a compression chamber, a pivotally mounted member disposed relatively to said fixed member and providing another wall and bottom to complete said compression chamber, a plunger adapted to be lowered into said compression chamber when the wall of said pivotally mounted member is in place, links connecting said latter wall and plunger; the position of said latter wall being controlled by the operation of said plunger through said links, means for lowering and raising the plunger including a valve, a foot lever for operating said valve, and means for holding said foot lever in the depressed position; the means actuating the plunger being automatically brought into action to lift the plunger when the latter reaches the limit of its downward movement by the release of said foot lever.

8. In press mechanism, the combination of a frame, a fixed member disposed in the lower part of said frame, a pivotally mounted member disposed relatively to said fixed member and forming with the latter a compression chamber, a plunger adapted to be lowered into said compression chamber when said pivotally mounted member is in place; the position of said pivotally mounted member being controlled by the position of said plunger, means for lowering and raising the plunger includ-

ing a valve and a depressible foot lever for actuating said valve, means for holding said lever in the depressed position whereby the valve may be held in the lowered position, means actuated by the plunger when it reaches the limit of its downward movement for releasing said foot lever, and means for raising said foot lever; such action of the foot lever automatically operating the valve to bring the plunger raising means into action.

9. In press mechanism, the combination of a frame, a fixed member disposed in the lower part of said frame and forming one wall and the sides of a compression chamber, a pivotally mounted member disposed relatively to said fixed member and comprising another wall and the bottom of said compression chamber, a plunger adapted to be lowered into said compression chamber when said movable wall is in place, means cooperating with said plunger for controlling the position of said movable wall and fluid pressure means for lowering and raising the plunger; said means being automatically brought into action to raise the plunger when the latter reaches the limit of its downward movement.

In witness whereof I have signed this specification.

RICHARD W. DINZL.