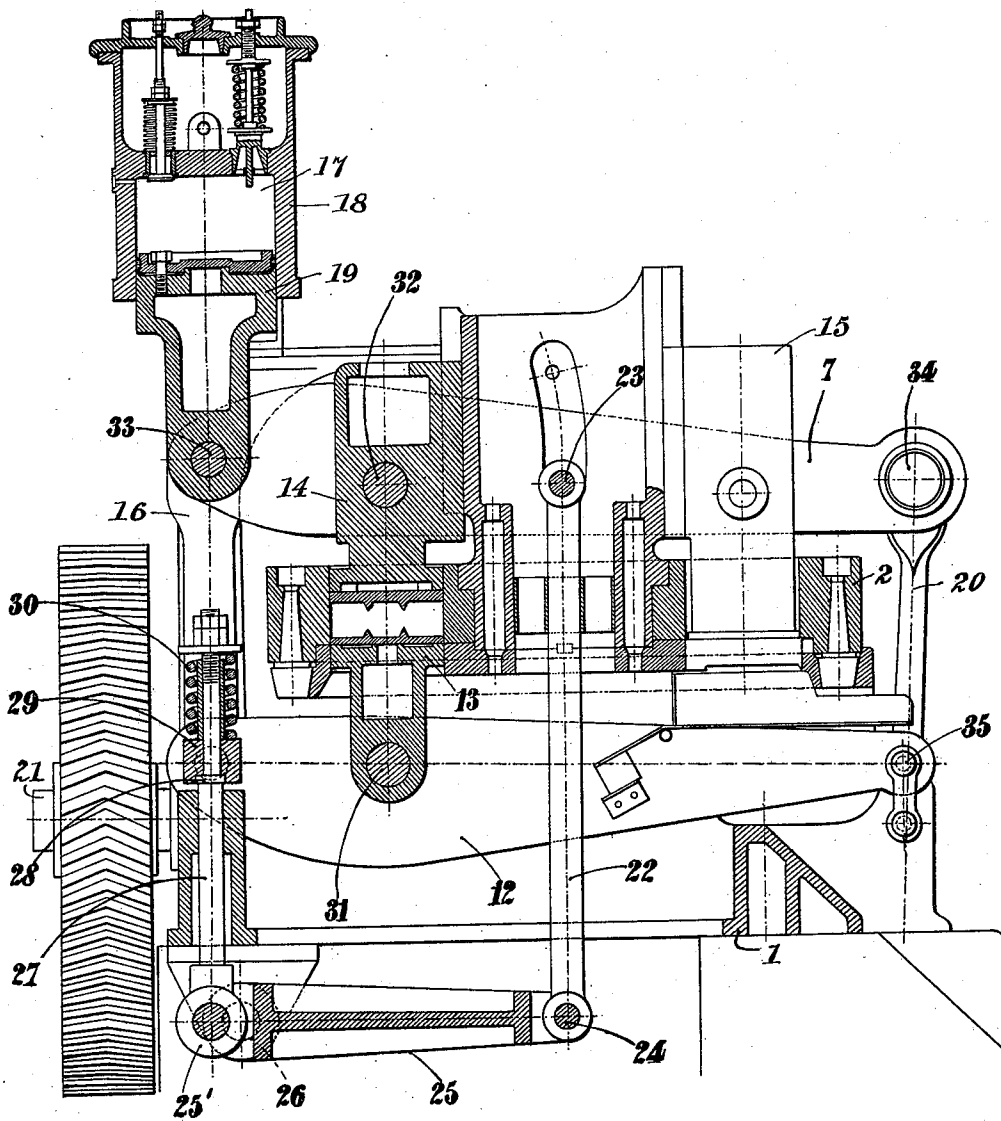


J. LEFLAIVE.
DOUBLE COMPRESSION PRESS.
APPLICATION FILED MAR. 11, 1910.

1,000,823.

Patented Aug. 15, 1911.



Witnesses:

[Signature]
[Signature]

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UNITED STATES PATENT OFFICE.

JOSEPH LEFLAIVE, OF ST.-ÉTIENNE, LOIRE, FRANCE.

DOUBLE-COMPRESSION PRESS.

1,000,823.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed March 11, 1910. Serial No. 548,668.

To all whom it may concern:

Be it known that I, JOSEPH LEFLAIVE, citizen of the French Republic, residing at St.-Étienne, Department of the Loire, in France, have invented certain new and useful Improvements in Double-Compression Presses, of which the following is a specification.

This invention relates to improvements in agglomerating presses of the Couffinhal type in which the material is subjected to a double compression between two complementary molds mounted on plungers which move toward one another, one downwardly and the other upwardly, in a vertical direction. In this type of press which is illustrated in U. S. Patent No. 323,856 of August 4, 1885, the double compression movement usually takes place when the upper plunger commences to descend. The resistance of the material which fills the recess, causes a reaction, which acts upon the upper plunger and through the agency of the latter and levers and connecting rods, causes the lower plunger to be raised. However, in certain cases the reaction referred to is ineffective and the compression of the material is not properly carried out.

The object of the present invention is to avoid this objection and for this purpose the invention proposes positive connections between the plungers in the nature of a link and lever transmission, the lever being pivoted on the frame of the machine and the transmission connecting the beam which carries the upper plunger and the free end of the beam which carries the lower plunger.

The invention is illustrated in the accompanying drawing in which the single figure is a sectional view of the improved machine taken in the plane of the beams above referred to.

The general type of machine to which the present improvement relates is fully described in the Couffinhal patent referred to and for this reason the old elements herein shown will be given only a general description. These elements comprise the machine frame, as 1, the mold table, as 2, provided with an annular series of openings, the upper beam 7, the lower beam 12, the mold plunger 13 carried by the lower beam, the mold and ejecting plungers 14 and 15 respectively, carried by the upper beam, the pivot connections 31 and 32 for the plungers 13

and 14, the cheek pieces 16 with which the inner end of the beam 7 is associated by means of the pivot 33, the pressure relieving device designated generally by the numeral 17 and including the cylinder 18 and the plunger 19 which is also assembled by means of the pivot 33, and the axle or cross bar 29 for the beam 12.

The upper beam 7 is operated exactly as in the Couffinhal patent referred to, being pivoted by means of a cross pin or bar 34 to pitmen 20 which are connected eccentrically to disks (not shown), these being provided at the end of parallel shafts 21 which rotate in opposite directions. Only one of the pitmen 20 and shafts 21 appear in the drawing.

The present invention resides in the manner of connecting the beams 7 and 12. According to the invention the upper end of a connecting rod 22 is pivoted at 23 to the upper beam 7 in advance of the pivot 32 which connects said beam and the plunger 14 and the lower end of the rod 22 is connected to the longer arm 25 of a lever which is pivoted at 26 upon the frame of the machine. The other and shorter arm 25' of the said lever is pivoted to a vertical rod 27 which reciprocates in a guide on the frame. This rod is provided with an abutment 28 which operates against the rear axle 29 of the lower beam 12, a spring 30 being provided to keep the abutment always in contact with the axle, the spring being interposed between the axle and a retaining collar secured at the upper end of the rod 27.

The operation of the machine is of course in its general nature similar to the operation described in the Couffinhal patent referred to although it differs in so far as the present improvements are concerned in that when the upper beam 7 descends the lower beam 12 is positively acted upon to cause an upward movement of the plunger 13. The lower beam is linked to the frame by the connection 35 which allows of a suitable forward and backward play and which provides at the same time, in effect, a stationary pivot. When the upper beam 7 descends, the connecting rod 22 through the medium of the lever 25, 25', causes an upward movement of the rod 27. This latter acts upon the free end of the lower beam, raising said free end, and thus causing the plunger 13 to move upwardly into the mold space. The two plungers are thus simultaneously moved

in a continuous manner toward one another and a very powerful compression is thus effected.

5 In this apparatus direct action upon the parts subjected to the greatest stress, namely, the plungers, is avoided and the lower plunger is operated by displacing the end of the beam which carries it in such a way as to divide all the compression stresses
10 between the points 29, 31, 32, 33, 34 and 35. On this account the reactive effect produced by the system of connections is divided between the bearings of the pivot shaft 35 and the bearings of the pivot shaft 26 instead of
15 being applied only to the bearings of the axle of the lower beam as in the ordinary Couffinhal press.

Having fully described my invention, I claim:

20 In a Couffinhal agglomerating press, the combination with the opposed upper and lower beams, coöperating compression plungers pivoted between the ends of said beams,

a driving connection associated with the forward end of the upper beam, a pivot support 25 associated with the rear end of the upper beam, a pivot support associated with the forward end of the lower beam and an axle associated with the rear end of the lower beam, of a rod pivoted to the upper beam 30 and depending therefrom, a vertically reciprocatory rod having an abutment which at all times engages the said axle and a lever pivoted to the frame of the machine and having a longer arm pivoted to the lower 35 end of the first-named rod and a shorter arm pivoted to the lower end of the second-named rod.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 40

JOSEPH LEFLAIVE.

Witnesses:

JOSEPH BERNARD,
EDMOND A. BURRILL.

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