(No Model.) 5 Sheets—Sheet 1.

C. H. HORTON.

BRICK MACHINE.

No. 524,438. Patented Aug. 14, 1894.

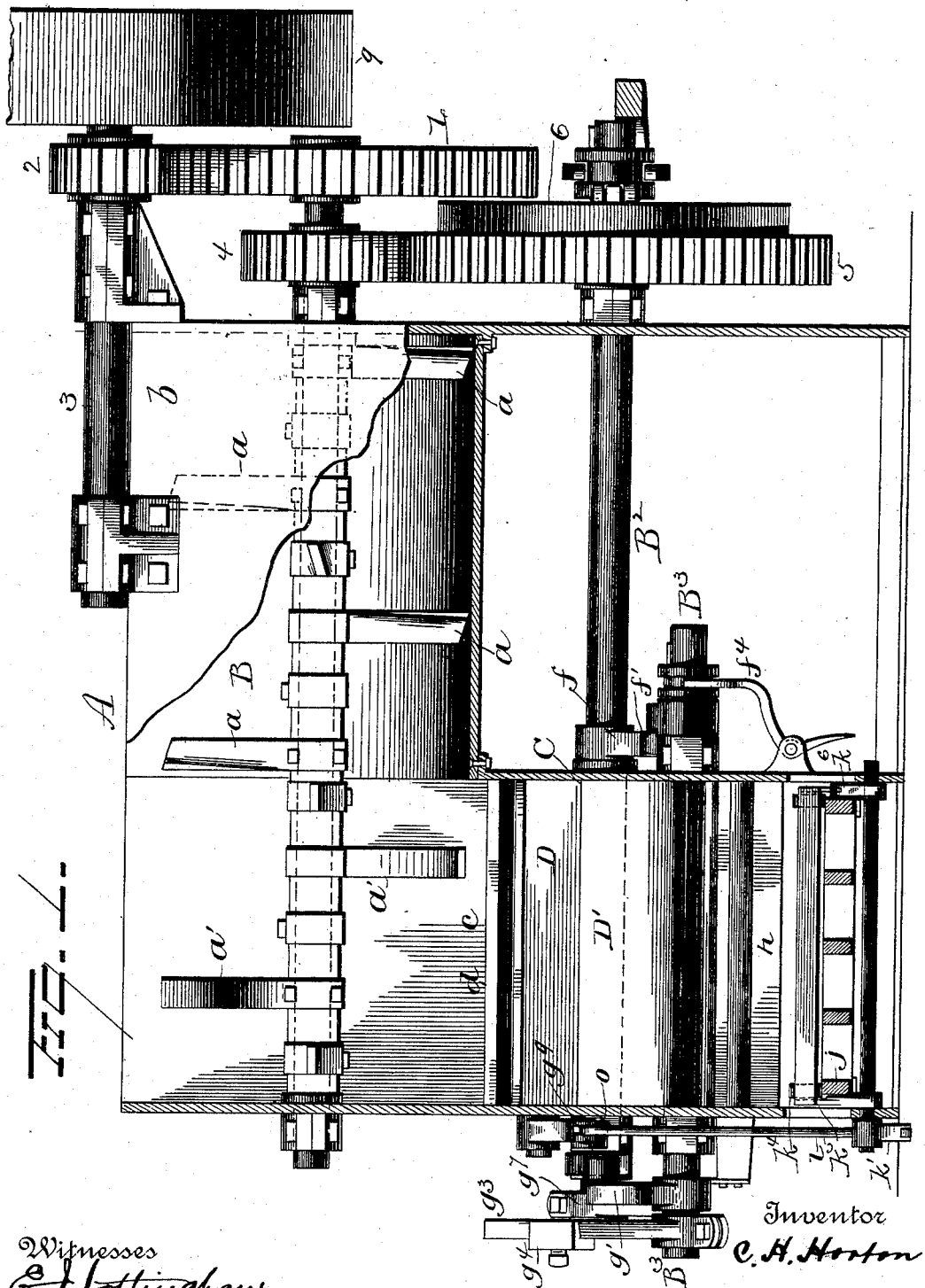

Fig. 1.

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(No Model.) 5 Sheets—Sheet 2.

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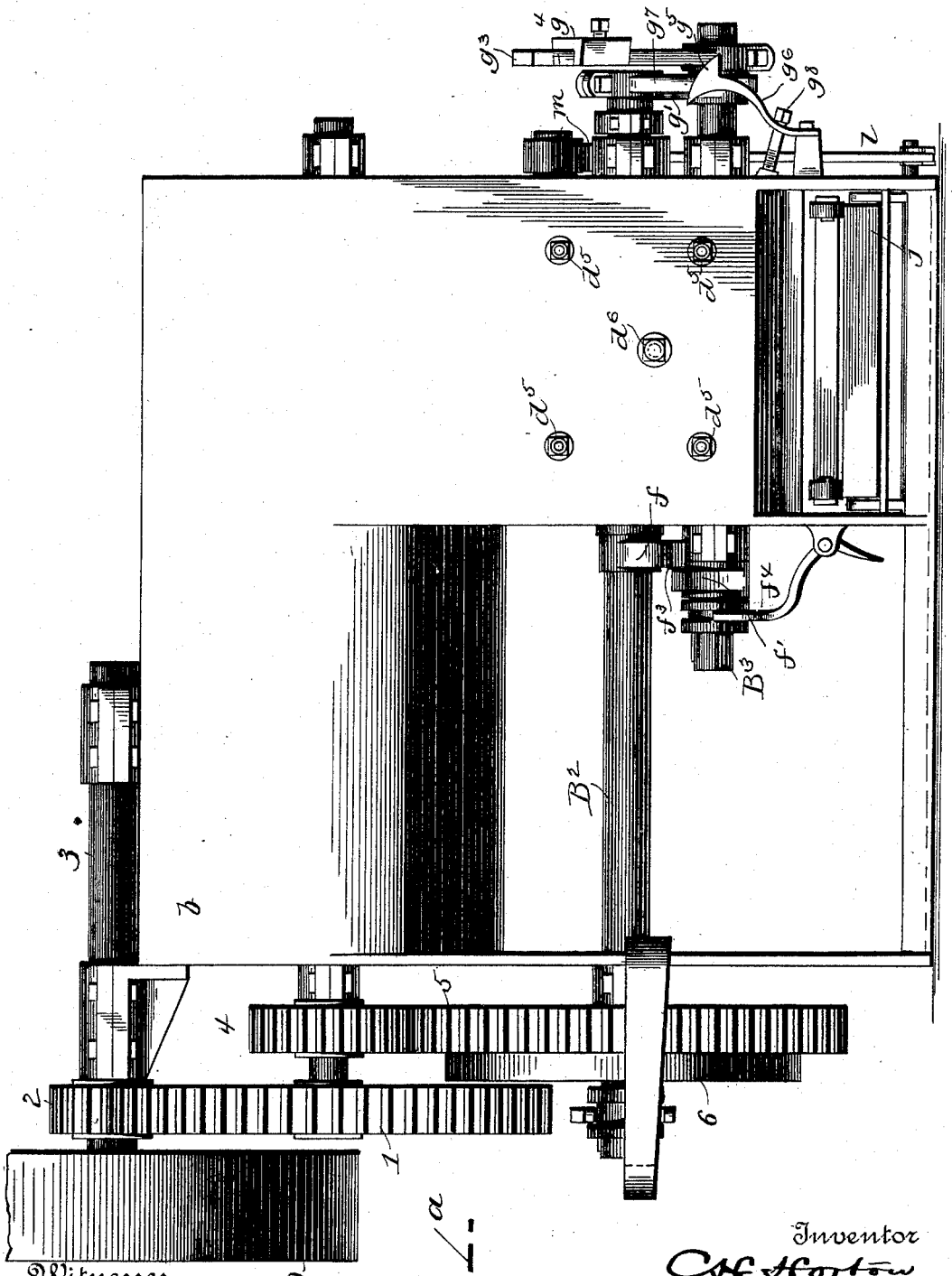

FIG. 1.

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BRICK MACHINE.

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Fig. 3.

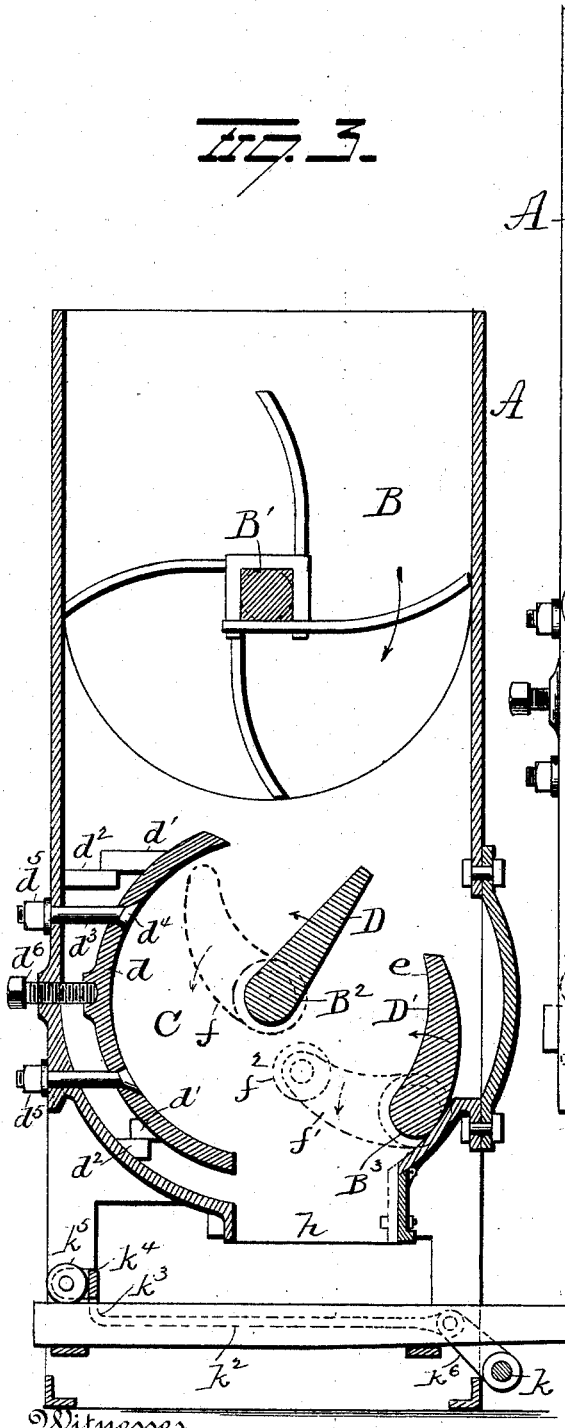
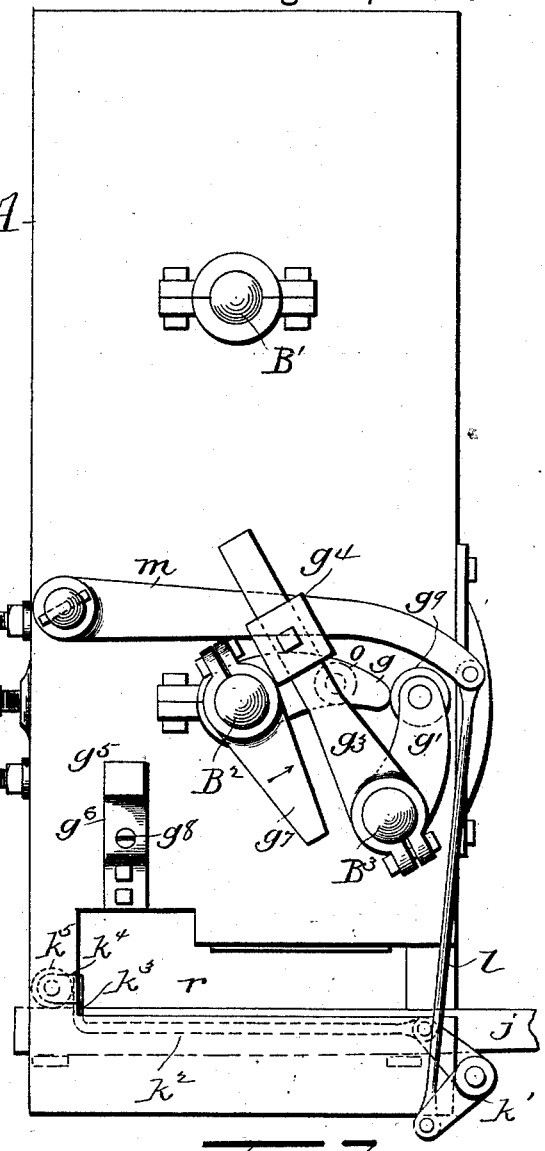


Fig. 2.



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5 Sheets—Sheet 4.

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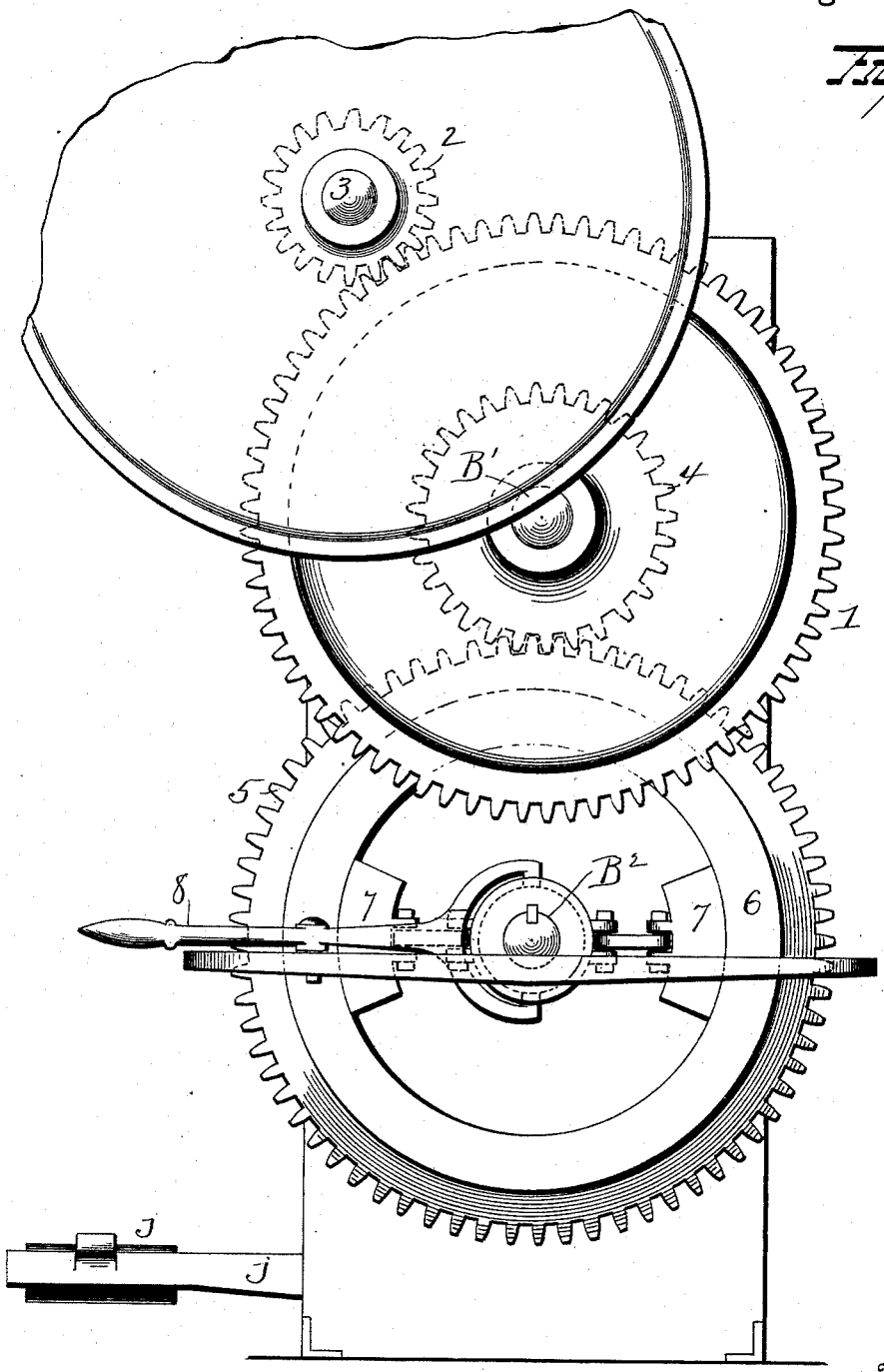
BRICK MACHINE.

No. 524,438. Patented Aug. 14, 1894.

Fig. 4



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No. 524,438. Patented Aug. 14, 1894.

Fig. 5.

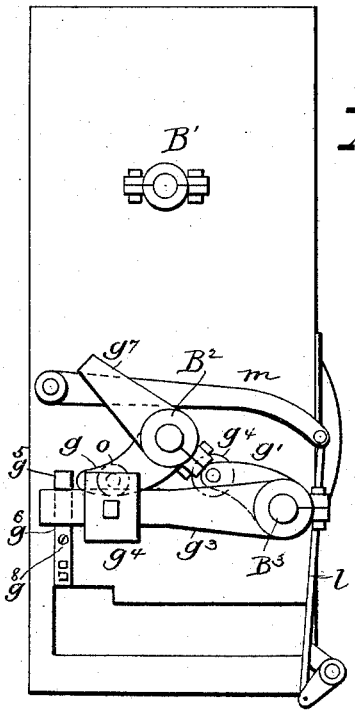


Fig. 6.

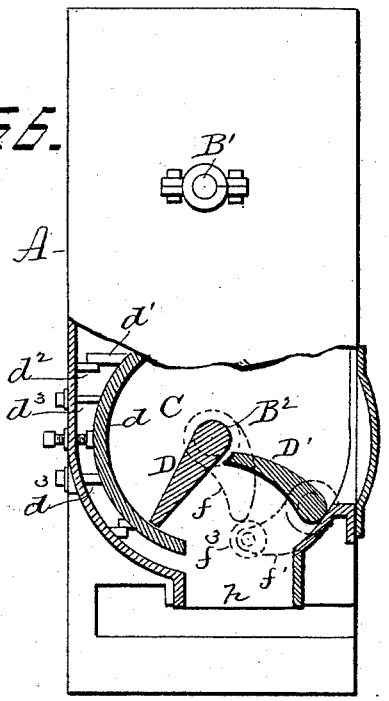
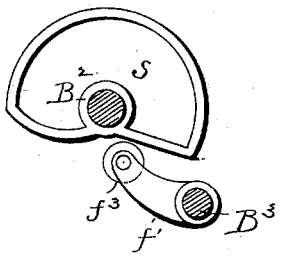


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES H. HORTON, OF WELLINGTON, OHIO.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,438, dated August 14, 1894.

Application filed February 24, 1894. Serial No. 501,406. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. HORTON, a resident of Wellington, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Brick-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in brick machines,—the object of the invention being to so construct the press of a brick machine that leakage of the material being treated will be prevented.

A further object is to construct a brick machine in such manner that the clay will be pressed into molds quickly, effectually, uniformly and automatically.

A further object is to so construct a brick machine and particularly the press thereof, that the wear on the parts will be reduced to a minimum.

A further object is to construct the presser apparatus of a brick machine in such manner as to avoid the use of crank mechanism for driving the presser wings.

A further object is to provide simple and efficient means whereby to adjust the presser box relatively to the presser arm or wing to compensate for wear.

A further object is to produce a machine for the manufacture of bricks, which shall be simple, durable in construction, comparatively cheap to manufacture and effectual in the performance of its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings: Figure 1 is an elevation partly in section. Fig. 1ª is an elevation partly in section taken from the opposite side from the view shown in Fig. 1. Fig. 2 is a left hand end view showing the positions of the parts at that end of the machine when the abutment wing is open. Fig. 3 is a sectional view showing the abutment wing open. Fig. 4 is a view illustrating the driving gear. Fig. 5 is a view of the left hand end of the machine showing the positions of the parts at that end of the machine when the abutment wing is closed. Fig. 6 is a sectional view through the press showing the abutment wing closed. Fig. 7 is a view of a modification.

A represents the frame of the machine, comprising a disintegrator or pug mill B and a press box C. A shaft B′, preferably angular in cross section, extends through the pug mill from end to end thereof, the journals of said shaft being mounted in suitable boxes secured to the ends of the frame. To this shaft a series of diagonal arms or grinders *a* is secured and adapted, when the shaft is rotated, to agitate, thoroughly mix and convey clay from the inlet *b* of the machine to the opposite end thereof, at which latter point the pug mill is made in its bottom with an opening *c* which communicates with the press box C located immediately under the end of the pug mill. Immediately over the outlet opening *c*, the wipers *a′* on the shaft B′ are made with flat faces parallel with the axis of the shaft, so that when the clay reaches the outlet *c* it will be forced downwardly by said wipers *a′* into the press box.

The wall *d* of the press box C is made segmental in form, concentric with a shaft B^2 which passes through the center of said press box and at its respective ends is mounted in the frame A. The segmental wall *d* is supported by means of lugs *d′* projecting rearwardly thereform and resting upon similar lugs d^2 projecting inwardly from the framework A.

Bolts or rods d^3 have their heads d^4 countersunk in the inner face of the wall *d* and at their other ends pass loosely through perforations in the framework, said bolts or rods being screwthreaded at their free ends for the reception of nuts d^5.

Screws d^6 pass through threaded perforations in the framework and at their inner ends bear against the rear face of the wall *d*. By means of the rods or bolts d^3 and the screws d^6, the wall *d* of the press box can be adjusted relatively to the shaft B^2, or more properly speaking, relatively to a presser wing D, carried by said shaft, the wall *d*, while being thus adjusted, being guided as well as supported by the lugs *d′*, d^2. A shaft B^3 is mounted in the frame-work below and to one

side of the shaft B^2, the distance apart of these shafts being about equal to the width of the presser wing D. In other words, the shaft B^3 is located at a point nearly coincident with the circle marked by the presser wing D and at an angle of about forty degrees relatively to the shaft B^2.

To the shaft B^3, a wing D′ is secured and preferably has a curved inner face *e* which, when said wing is in the position shown in Fig. 3, is concentric with the line of travel of the free end of the presser wing or arm D. The shaft B^2 is provided at a point in proximity to the inner end of the presser box, with an arm *f* and in line with this arm an arm *f′* is mounted on the shaft B^3, the last-mentioned arm preferably having a roller f^3 at its free end. The arm *f′* is mounted loosely on the shaft B^3 and adapted to be locked thereto by means of a clutch f^4.

On the shaft B^2, preferably at the outer end thereof an arm *g* is secured and on the shaft B^3 in line with this arm, an arm *g′*, having a roller g^9 is located. Also, adjustably, secured to the shaft B^3 is an arm or lever g^3 which projects rearwardly therefrom and is provided with an adjustable weight g^4. The free end of the weighted arm or lever g^3 is adapted to engage and be locked by a lug or enlargement g^5 on a spring g^6, secured to the framework. An arm g^7 is adjustably secured to and projects from the shaft B^2, said arm being adapted to engage the spring g^6 so as to release the weighted arm or lever g^3 as will be hereinafter explained. A set screw g^8 may be employed to retain the spring out of line with the weighted arm or lever, when desired.

The shaft B′ is provided with a gear 1 to which motion is imparted by a gear 2 carried by a shaft 3, said shaft having a belt pulley 9 secured thereto, over which a belt from any convenient source of power passes. The shaft B′ is also provided with a gear 4 which meshes with and imparts motion to a gear 5 mounted loosely on the shaft B^2. The gear 5 is provided with an annular flange 6, against which the shoes of a friction clutch 7, secured to said shaft B^2, are adapted to impinge, said clutch being adapted to be operated by means of a suitable lever 8.

From the construction and arrangement of parts above described, it will be seen that when clay is fed to the disintegrator or pug mill and motion is imparted to the machine, the clay, after having been mixed and fed to the outlet end of said disintegrator or pug mill, will be forced through the outlet *c* by the wipers *a′* and into the press box, through which it will pass, and will finally pass through the outlet *h* of the press box and enter the mold (not shown) which is adapted to be inserted in the space beneath said outlet.

When the presser wing is leaving the position shown in Fig. 3, the arm *f* will engage the arm *f′* and thus begin to turn the shaft B^3 and during the travel of the presser wing bring the abutment wing to the position shown in Fig. 6, in which position it will be retained by the weighted lever g^3 and to insure the retention of the abutment wing in this position when stiff clay is being operated upon, the spring locking device for the weighted lever above described, is employed. When the wing D′ shall have assumed this position the presser wing D will have passed the inlet of the press box and about reached the position shown in Fig. 6. During these movements of the wings D and D′, the clay, carried forward by the presser wing D will be pressed in the V-shaped space between said wings and will thus be forced through the outlet opening of the press box and into the mold beneath. Now it will be noticed that the curved wing D′ projects partly over the outlet *h* of the press box and thus said wing D′ not only serves as an abutment against which the clay is forced or pressed by the presser wing D, but also serves as a valve to direct the clay through the outlet of the presser box and into the mold beneath.

When the presser wing shall have moved sufficiently far to compress the clay into the mold to the desired extent, the arm g^7 will have reached the spring g^6 and compressed it so as to release the weighted arm or lever g^3. At the instant the shaft B^3 is thus released, the arm *g* carried by the shaft B^2 will engage the roller g^9 carried by the arm *g′*, and as the shaft continues its rotation, the arm *g′* will be caused by the arm *g* to move in the arc of a circle and cause the shaft B^3 to oscillate sufficiently to move the wing D′ carried thereby, out of the path of the presser wing D, as shown in Fig. 3. When the shaft B^3 is thus turned to move the wing D′ out of the path of the wing D, the arms *g*, *g′* will assume the positions shown in Fig. 2 and the arms *f*, *f′* will bear the relation to each other shown in Fig. 3.

If desired, the abutment wing may be retained closed solely by the weighted lever, so that in case the clay being operated upon becomes too heavy or stiff and the machine becomes clogged owing to the effort by the machine to force more clay into the molds than is possible, the weight, which is adjusted to a certain predetermined pressure, will yield and permit the abutment wing to move back, and thus allow the continued operation of the machine, without injury thereto. But it will be observed that means are provided for locking the weighted lever in position and automatically releasing it, and this locking device may be preferable under some conditions of the clay. It will also be seen that by the adjustment of the arms g^7 on the shaft B^2, the time at which the weighted lever g^3 is released relatively to the action of the other mechanism, can be readily regulated.

By the provision of the clutch f^4, the mechanism can be thrown out of operative relation without stopping the machine, should any-

thing occur suddenly which would warrant the suspension of the operation of the apparatus.

A platform j is located under the outlet of the press box, said platform projecting beyond the framework and at its free end has small rollers j' mounted therein. At the bottom of the framework, a short shaft k is mounted and at its respective ends carries a bell-crank lever k' and a crank arm k^6. To one arm of the bell-crank-lever and to the crank arm k^6, the inner ends of rods k^2 are pivotally connected, the opposite ends of said rods terminating near the back of the frame A in upturned arms k^3, to which a bar k^4 is secured and in the ends of this bar rollers k^5 are mounted. To the other arm of said bell-crank-lever, one end of a rod or bar l is pivotally connected, the other end of said rod or bar being pivotally connected to the free end of a lever m.

The lever m is pivoted at its opposite end to the framework of the machine and is disposed parallel with the arm g and in the path of a roller o carried by said arm. The end of the framework is made with an opening r through which a series of molds will be inserted, one in advance of another, and all in advance of the roller k^5.

From this construction and arrangement of parts it will be seen that when the clay shall have been pressed into the mold, and the pressure devices released as above described, the roller o carried by the arm g will engage the lever m and raise the free end of the same, whereupon the shaft k will be turned and the rollers k^5 carried by the bar k^4 thereby caused to move toward the operator, ejecting the filled mold and placing another in position under the press box.

In lieu of the devices above described for closing the abutment wing and locking it closed for a certain length of time, a cam s may be secured to the shaft B^2 and adapted to operate on one of the arms secured to said shaft to close the abutment wing and lock it in position for a predetermined length of time.

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

1. In a brick machine, the combination with a presser box, of a revoluble presser wing therein, and an abutment wing, said wings being so constructed and arranged as to jointly and unitedly compress clay between them and force it into a mold, substantially as set forth.

2. In a brick machine, the combination with a press box, of a revoluble presser wing therein, an abutment wing, said wings being constructed and adapted to jointly and unitedly press clay between them and force it into molds, and means for automatically holding and releasing said abutment wing, substantially as set forth.

3. In a brick machine, the combination with a presser box, of a revoluble wing and an abutment wing, said wings being constructed and adapted to jointly and unitedly press clay between them and force it into molds under said press box, means for automatically locking and unlocking said abutment wing and means for automatically moving the molds to and from the outlet of the press box, substantially as set forth.

4. In a brick machine, the combination with a press box, of a revoluble presser wing, an abutment wing and mechanism constructed and adapted to cause said wings to approach each other and produce a V-shaped space between them whereby to press clay into a mold, and means for opening and closing said abutment wing, substantially as set forth.

5. In a brick machine, the combination with the wall of the press box and a presser wing adapted to move in said box, of devices for adjusting said wall relatively to said presser wing, substantially as set forth.

6. In a brick machine, the combination with the presser wing, of a presser box having an adjustable wall, substantially as set forth.

7. The combination in a brick machine, of a presser box having an adjustable wall and a revoluble presser wing concentric within said press box, substantially as set forth.

8. In a brick machine, the combination with a revoluble presser wing, of a press box having a movable wall, lugs projecting from said wall, lugs projecting from the frame of the machine under said first-mentioned lugs, bolts connected to said wall and passing through perforations in said frame, nuts on said bolts, and screws passing through perforations in the framework and bearing against said wall of the press box, substantially as set forth.

9. In a brick machine, the combination with a press box and a revoluble presser wing concentric within said press box, of a shaft adjacent to said press box, an abutment wing carried by said shaft and adapted to act in conjunction with the presser wing upon the clay to compress clay into a mold, devices for automatically moving said abutment wing into operative relation to the presser wing, locking it in such position and releasing it, and devices constructed and adapted to positively and automatically move said abutment wing out of operative relation to the presser wing, substantially as set forth.

10. In a brick machine, the combination with a press box and a revoluble presser wing in said box, of an abutment wing, means for automatically moving said abutment wing into and out of operative relation to the presser wing and devices for holding said abutment wing in operative position with a yielding pressure, substantially as set forth.

11. In a brick machine, the combination with a press box and a revoluble presser wing in said press box, of an abutment wing, means for moving said abutment wing into and out of operative relation to the presser wing, a weighted lever connected with the abutment

wing and adapted to withstand a pressure commensurate with the pressure to be brought to bear against said abutment wing means for locking said weighted lever and means for automatically unlocking said weighted lever, substantially as set forth.

12. In a brick machine, the combination with a press box and a revoluble presser wing therein, of a shaft adjacent to the press box, an abutment wing carried by said shaft and adapted to act in conjunction with the presser wing, arms mounted on the shaft of the presser wing and the shaft of the abutment wing and adapted to engage each other whereby to move the abutment wing into and out of operative relation to the presser wing, substantially as set forth.

13. In a brick machine, the combination with a press box and a revoluble presser wing therein, of a shaft mounted adjacent to the press box, an abutment wing carried by said shaft, an arm on the shaft of the presser wing, an arm mounted loosely on the shaft of the abutment wing and adapted to be engaged by the first-mentioned arm, and a clutch for throwing said last-mentioned arm into and out of operative relation to its shaft, substantially as set forth.

14. In a brick machine, the combination with a press box and a revoluble presser wing therein, of a shaft mounted adjacent to the presser box, an abutment wing carried by said shaft, an arm carried by said shaft, an arm carried by the shaft of the presser wing and adapted to engage said first-mentioned arm to move the abutment wing into operative position, a weighted lever secured to the shaft of the abutment wing, an adjustable spring for retaining said weighted arm in position, an arm carried by the shaft of the presser wing and adapted to automatically release said weighted lever from the spring, and means for moving the abutment arm out of operative position, substantially as set forth.

15. In a brick machine, the combination with a press box and a revoluble presser wing therein, of a shaft mounted adjacent to the press box, an abutment wing carried by said shaft, an arm carried by said shaft, an arm carried by the shaft of the presser wing and adapted to engage said first-mentioned arm to move the abutment wing into operative position, a weighted lever secured to the shaft of the abutment wing, an adjustable spring for retaining said weighted lever in position, an arm adjustably secured to the shaft of the presser wing and adapted to automatically release said weighted arm from the spring, and means for moving said abutment wing out of operative position, substantially as set forth.

16. In a brick machine, the combination with a pug mill or disintegrator and a press box communicating therewith, of a revoluble presser wing in said presser box and an abutment wing adapted to act in conjunction with the presser wing to compress clay into a mold, and means for automatically moving said abutment wing into and out of operative relation to the presser wing, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES H. HORTON.

Witnesses:
R. S. FERGUSON,
S. G. NOTTINGHAM.