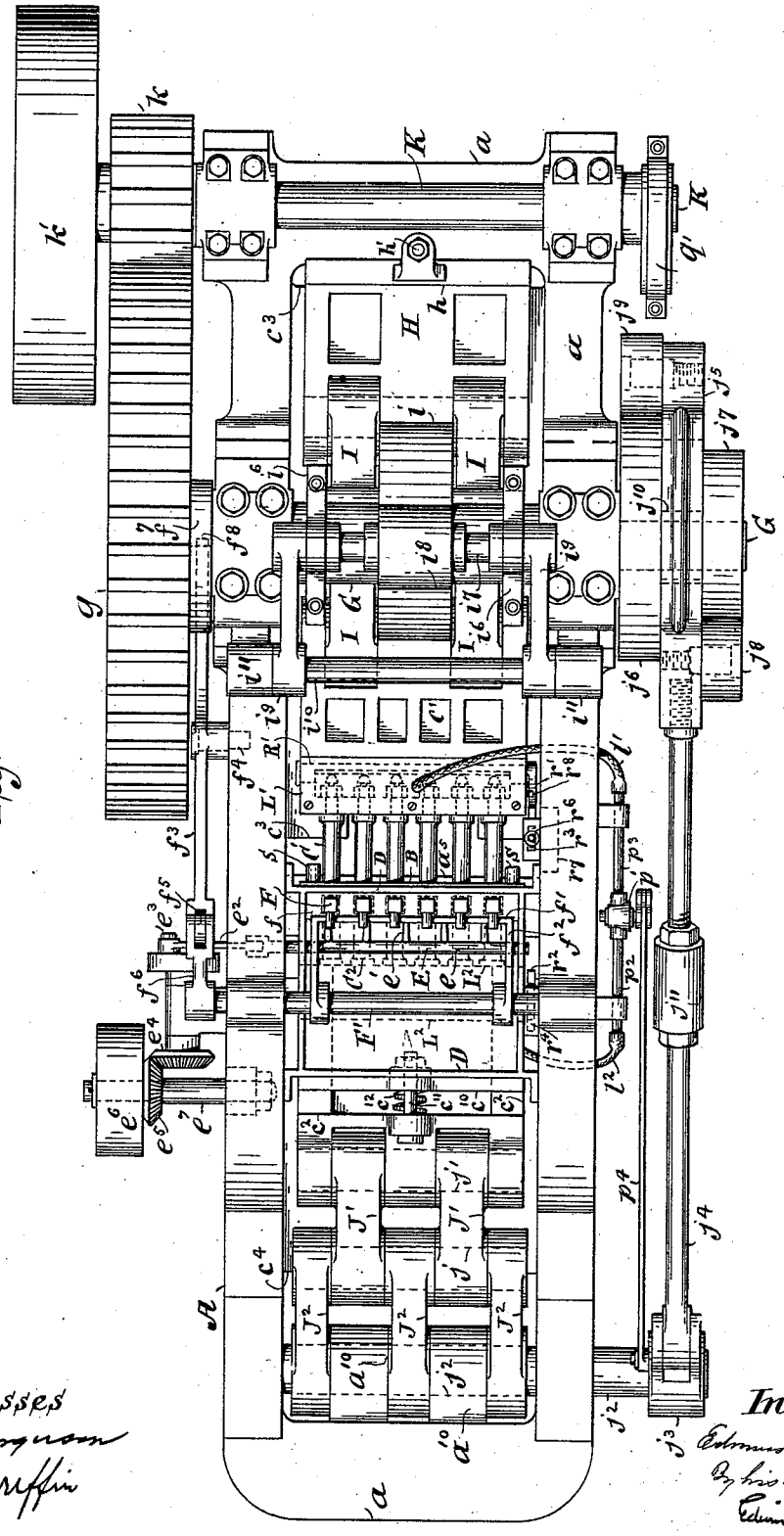
(No Model.) 4 Sheets—Sheet 1.

E. JORDAN.

PRESS FOR PLASTIC MATERIALS.

No. 523,430. Patented July 24, 1894.

Fig. 1



Witnesses
C. R. Ingram
G. Griffin

Inventor
Edmund Jordan
By his attorney
Edwin H. Brown

(No Model.)

4 Sheets—Sheet 2.

E. JORDAN.

PRESS FOR PLASTIC MATERIALS.

No. 523,430. Patented July 24, 1894.

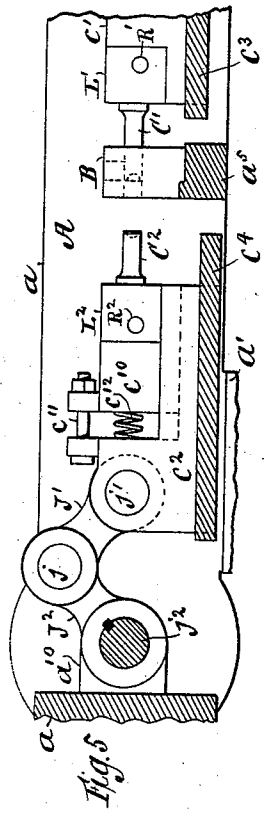


Fig. 5

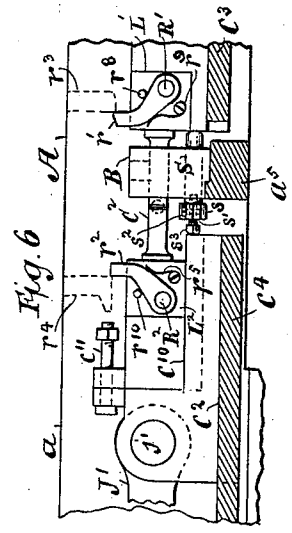


Fig. 6

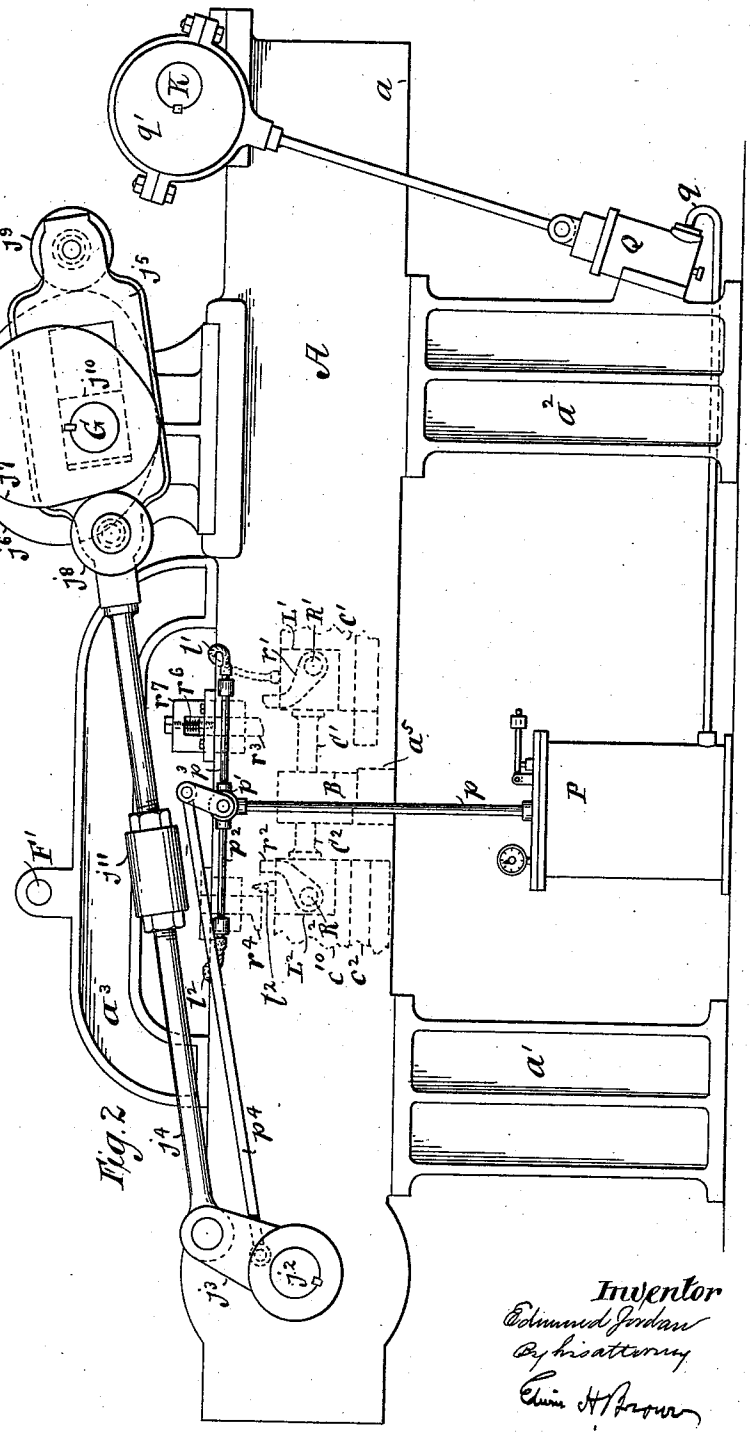


Fig. 2

Witnesses
C R Ferguson
G Griffin

Inventor
Edmund Jordan
By his attorney
Elmer A Brown

(No Model.) 4 Sheets—Sheet 3.

E. JORDAN.

PRESS FOR PLASTIC MATERIALS.

No. 523,430. Patented July 24, 1894.

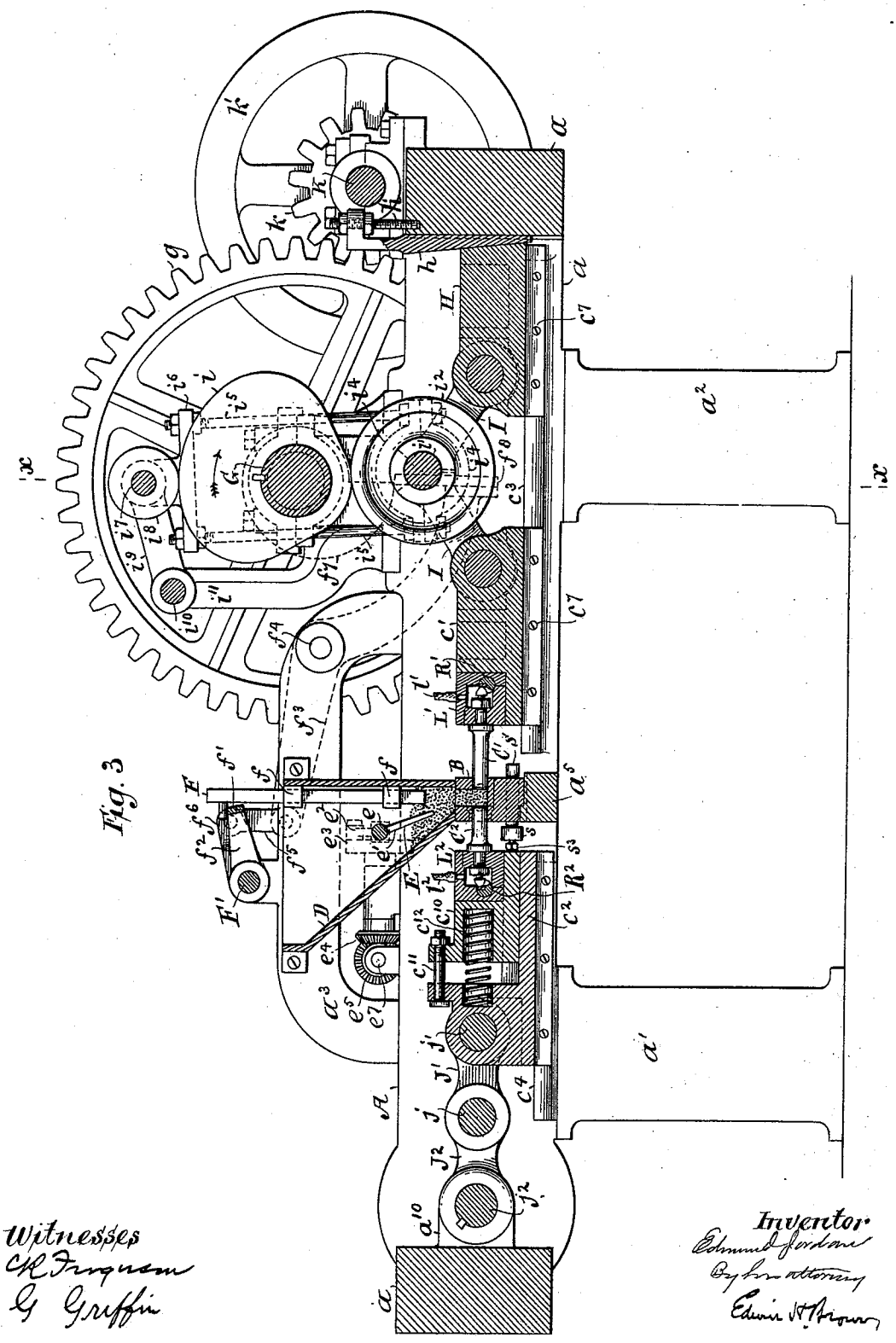


Fig. 3

Witnesses
C. R. Ferguson
G. Griffin

Inventor:
Edmund Jordan
By his attorney
Edwin J. Brown

(No Model.) 4 Sheets—Sheet 4.

E. JORDAN.

PRESS FOR PLASTIC MATERIALS.

No. 523,430. Patented July 24, 1894.

Fig. 7

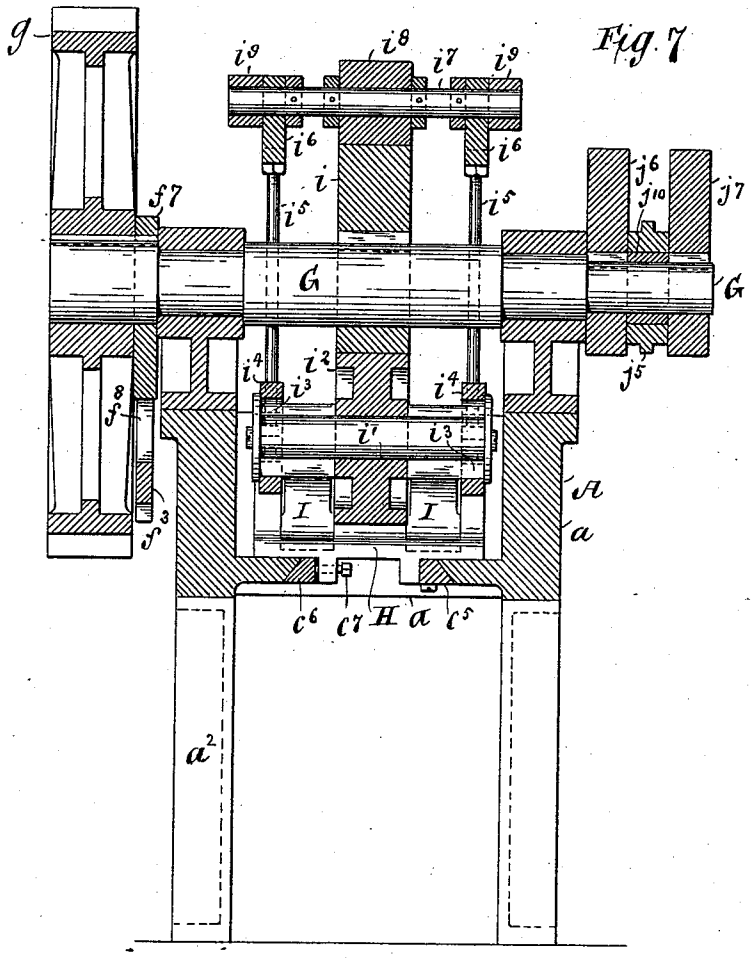
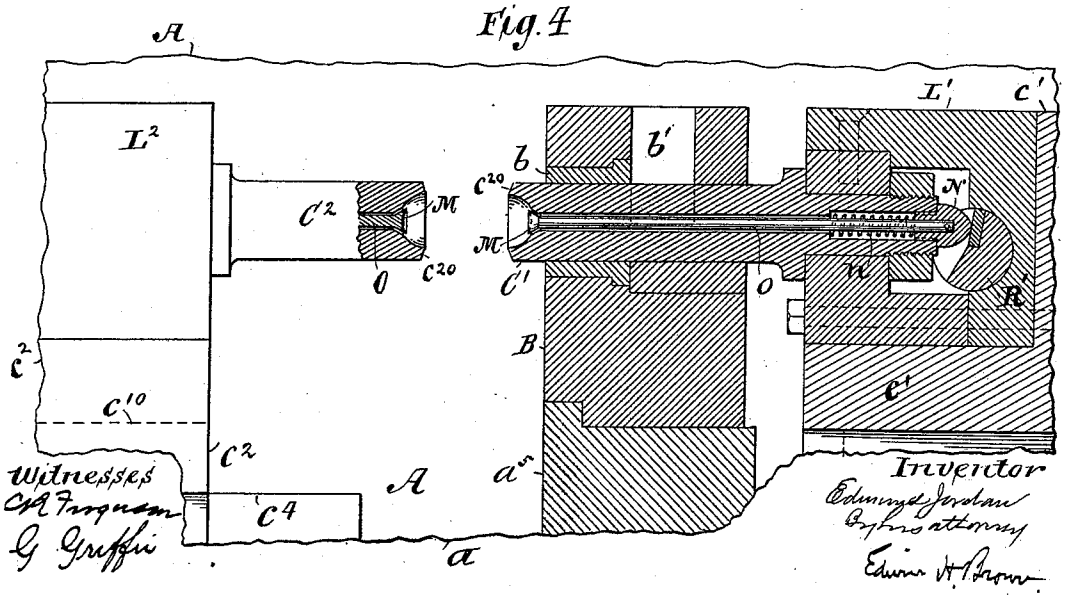


Fig. 4



UNITED STATES PATENT OFFICE.

EDMUND JORDAN, OF BROOKLYN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE PNEUMATIC PRESS COMPANY, OF NEW YORK, N. Y.

PRESS FOR PLASTIC MATERIAL.

SPECIFICATION forming part of Letters Patent No. 523,430, dated July 24, 1894.

Application filed March 4, 1891. Serial No. 383,713. (No model.)

To all whom it may concern:

Be it known that I, EDMUND JORDAN, of Brooklyn, Kings county, and State of New York, have invented a certain new and useful Improvement in Presses for Plastic Material, of which the following is a specification.

My improvements are specially designed for presses wherein plastic, powdered or granular substances are to be treated.

I will describe a press embodying my improvement and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a plan or top view of a machine embodying my improvement. Fig. 2 is a side elevation of the same. The side here represented is the side forming the front of the machine. Fig. 3 is a central longitudinal vertical section of the machine. Fig. 4 is a longitudinal section of certain parts on a larger scale. Fig. 5 is a longitudinal section of certain parts representing them in different positions from those which they occupy in Fig. 3. Fig. 6 is a longitudinal section of some of the same parts which are represented in Fig. 5 and also other parts, and representing different positions of parts which are common to these figures. Fig. 7 is a vertical transverse section taken at the plane of the dotted line $x\,x$ Fig. 3.

Similar letters of reference designate corresponding parts in all the figures.

The framework, A, of the machine may be of any suitable construction. As here represented, it consists essentially of a casting a of substantially rectangular form erected upon legs a' a^2, and having fastened to the top of its side portions two pieces a^3.

In order to most speedily convey a conception of the machine, I will premise that the pressing devices comprise a body section or mold plate B and opposite end sections or formers C′ C^2 co-operating with said body section or mold plate. The body section or mold plate may be supported on a cross piece a^5 of of the casting a.

There will preferably be a number of cavities in the body section or mold plate and a corresponding number of end sections or formers in each of the sets C′ C^2. The end sections or formers are in the present instance cylindric and the cavities of the body section or mold plate are therefore of that shape. In the extremities of the end sections or formers are shaping cavities which, in the present example of my improvement, are semi-spherical. Preferably linings or bushings b of hardened steel will be fitted to each of the cavities in the body section or mold plate. As here shown, these cavities extend horizontally and the end sections or formers occupy horizontal positions and move horizontally toward and from each other, and, consequently, in the direction of the length of the cavities of the body section or mold plate.

The material to be pressed is introduced through feed boxes b' which, as here shown, extend vertically downward from the upper part of the body section or mold plate B far enough to communicate with all the cavities. It is to be understood that there is one feed box for each cavity in the body section or mold plate.

It will be advantageous in treating many substances, to erect a hopper, D, above the body section or mold plate, so as to conduct the substance to be treated to the feed boxes.

I have shown an agitator E, combined with the hopper for maintaining the contents of the latter in proper condition to pass downwardly into the feed boxes. The particular form of agitator which I have represented consists of a rod e, extending horizontally across the hopper from side to side and provided with a number of downwardly extending fingers, e'. The ends of the rod are supported in bearings in the sides of the hopper and one end is connected by means of a link e^2 with a crank e^3 affixed to a shaft deriving motion through bevel gear wheels e^4 e^5 from a pulley e^6. The pulley e^6 is mounted upon a stud e^7 affixed to the casting a of the machine. The bevel gear wheel e^5 is fastened to the pulley e^6 to rotate therewith. Obviously, the rotation of the pulley e^6 by a belt will cause the agitator E to reciprocate within the hopper.

With the feed boxes b', I combine loaders or fillers F, here shown as consisting of vertically sliding bars working in guides f extending from one of the walls of the hopper

E and having the lower ends constructed so as to be of a size to work loosely in the feed boxes b'. When thus constructed, the loaders or fillers are intended to descend by gravity and thereby force portions of the contents of the hopper down into the feed boxes and to retain the contents of the feed boxes until the opposite end sections or formers C' C^2 shall have taken from the feed boxes the proper amount of the substance to be treated and carried it away into the cavities of the body section or mold plate. It is important to secure for these loaders or fillers a yielding action, and one way of accomplishing this result will be attained by allowing them to descend by their own gravity.

The means I have shown for raising the loaders or fillers consist of a cross bar f' sustained by arms f^2 extending from a rock shaft F' journaled in the sides of the casting a of the framework A. The cross bar bears against pins projecting from the loaders or fillers, and, by an upward movement, raises all the loaders or fillers together. Afterward it is allowed to descend and then it leaves the loaders or fillers free to descend by gravity.

The rock shaft F' is journaled in bearings formed in the pieces a^3 of the framework, and, as here shown, derives motion from a lever f^3 fulcrumed by a stud f^4 to one of the pieces a^3, and connected by a link f^5 with an arm f^6 affixed to the said rock shaft. The lever f^3 derives motion from a cam f^7 affixed to the main shaft G of the machine, the motion being imparted by the contact of the cam with a shoe f^8 affixed to the lever. It will be seen that the cam is a toe-shaped cam. As soon as its toe passes the shoe f^8, it releases the lever f^3, whereupon the loaders or fillers will be free to descend, and, by their engagement with the bar f', they will lower this also.

Having now described the body section or mold plate, its appurtenances and the manner in which the latter are operated, I will turn to the end sections or formers and explain the manner in which their operation is secured.

The end sections or formers C' are all attached to a horizontally reciprocating cross-head c' and the end sections or formers C^2 are carried by a horizontally reciprocating cross-head c^2. While the end sections or formers C' are rigidly connected to the cross head c', the end sections or formers C^2, on the contrary, have a yielding connection with the cross-head c^2. The cross-heads c' c^2 are fitted to ways or shears c^3 c^4, projecting from the casting a of the framework A.

Before describing the details of the manner in which the end sections or formers are connected to the cross-heads whereby they are carried, I will explain the mechanism by which the cross-heads are reciprocated.

H designates a block or bearing piece which, as here shown, is fitted to the ways or shears c^3 and is capable of adjustment in the direction of the length of the machine. Toggle links, I, are pivotally connected to the block or bearing piece, H, to the cross head c' and to each other. As here shown, there are two pairs of these links. The adjustment of these links into or approximately into line, will produce a movement of the cross-head c', causing the end sections or formers C' to move past the feed boxes into the cavities of the body section or mold plate and entirely through the latter. A reverse adjustment of the toggle links into the position in which they are represented in Fig. 3, will cause the reversal of the cross-head c' and its end sections or formers C'. The block H does not receive any movement during these adjustments of the toggle links, as it is fastened in position by being clamped to the ways or shears c^3. Its longitudinal movement along the ways or shears is, in the present example of my invention, simply for the purpose of adjusting it, to produce the proper action of the end sections or formers C'. The adjustment of the block or bearing piece H may be effected by means of a wedge h, slid vertically between it and the opposite part of the casting a of the framing A. The wedge may be adjusted in any suitable manner, as, for instance, by means of a stud bolt h' inserted in the casting a, and nuts applied thereto above and below a lug extending from the wedge and surrounding the stud bolt.

The block or bearing piece and the cross-heads c' c^2 have interposed between their gibs and the ways or shears c^3 c^4 wearing pieces c^5 c^6. The wearing pieces c^6 may be adjusted by means of set screws c^7 to occupy the proper relation to the ways or shears. In the case of the wearing pieces which are combined with the block or bearing piece H, the screws c^7 serve to adjust the wearing piece c^6, so as to effect a clamping of the said block or bearing piece to the ways or shears c^3, resulting in the fastening of the said block or bearing piece in this position after adjustment. When necessary to effect a new adjustment, it will have to be unclamped and the wedge operated. Afterward it will be re-clamped in position.

The toggle links I are adjusted by means of a cam i affixed to the main shaft G. The mechanism through which this cam performs its work, I will now describe. The toggle links, I, of both pairs, by their meeting ends, are pivotally connected together by means of a pin i'. This pin loosely fits the toggles and has loosely mounted on its central portion a roller i^2. The cam i contacts with this roller. On the outer sides of the meeting ends of the toggle links cylindric hubs i^3 are formed, and to these are fitted yoke-shaped pieces i^4, preferably made in semi-cylindric sections having flanges at their ends bearing against each other. They are fastened together by screws and nuts. The screws, as here shown, form part of rods i^5 extending upwardly to yokes i^6. Their upper ends, as well as their lower ends, are screw-threaded, and have nuts ap-

plied to the upper ends above and below the yokes, fastening them to the latter. To the yokes i^6 a cross rod i^7 is fastened. It serves to unite the upper ends of the frames consisting of the yoke-shaped pieces i^4, the rods i^5 and the yokes i^6. On the rod i^7 is loosely mounted a roller i^8. The cam i contacts with this roller. The upper ends of these frames are connected with radius bars i^9, pivotally connected at one end with the rod i^7 and at the other end with a rod i^{10}, journaled in arms i^{11} erected upon the side portions of the casting a. The office of these radius bars is to maintain the roller i^8 in its proper position. It will be readily understood that the cam i acting between the rollers i^2 and i^8, will adjust the toggle links I into the two different positions which they assume in the operation of the machine.

It may be here said in passing that I have represented the main shaft G, which carries the cam i, as provided with a gear wheel g that engages with a pinion k affixed to a driving shaft K. The latter is represented as having a belt pulley k' affixed to it, as a means for transmitting power.

The cross-head c^2 derives its motion from toggle links J' J^2. As here shown, there are two toggle links J' connected to the cross-head c^2 by means of a pin j', and three toggle links J^2 radially affixed to a rock shaft j^2, journaled in lugs a^{10}, extending from one end of the casting a. The adjacent ends of the links J' J^2 are pivotally connected together by means of a pin j passing through them. The rock shaft j^2 has affixed to one end an arm j^3, which at the outer end is pivotally connected with one end of a pitman rod j^4, having at its other end a head j^5 that co-acts with two cams j^6 j^7, affixed to the main shaft G. The cam j^7 co-acts with a roller j^8, mounted upon a stud extending from the head j^5, and the other cam j^6 co-acts with a roller j^9, mounted upon a stud extending from said head. The head j^5 is longitudinally slotted to embrace the shaft G, and, as here shown, is supported by means of a block j^{10}, that is loosely mounted upon said shaft and fits within the slot of the head. This manner of supporting the head allows it to move longitudinally while supported upon the shaft G, and thus it is enabled to impart motion to the rock shaft j^2. It also allows the head to oscillate upon the shaft G, as may be necessary for it to do because of its connection with the crank arm j^3. I have shown the pitman rod j^4 as made in two sections having its adjacent ends reversely screw-threaded and united by means of a turn buckle j^{11}. This is advantageous for adjustment of its length. Obviously, by oscillating the rock shaft j^3, the toggle links j' j^2 will be adjusted out of and into, or approximately into, line. The latter adjustment will produce a movement of the cross-head c^2, and of its end sections or formers C^2, toward the end sections or formers C', and the reverse adjustment will of course produce a reverse movement of the cross-head c^2 and the end sections or formers C^2.

I have already said that the end sections or formers C^2 have a yielding connection with the cross-head c^2. I will now describe the means whereby this yielding connection is effected. c^{10} is a block fitted in a slide-way formed lengthwise of the cross-head c^2, and fastened to said cross-head by means of a screw c^{11}. This screw passes through a lug formed integral with the upwardly extending portion of the cross-head c^2 and through a lug extending from the block c^{10}. At one end the screw has a head and at the other, has a nut applied to it. Its office is simply to limit the movement of the block c^{10} in one direction. A spring c^{12} is interposed between the cross-head c^2 and the block c^{10}, and resists the movement of the block toward the upwardly extending portion of the cross-head. The advantage of the yielding connection of the block with the cross-head may be more clearly explained in connection with the operation of the machine.

There is combined with each set of end sections or formers, a gas chamber. The end sections or formers C' are connected with a gas chamber L', carried by the cross-head c', and the end sections or formers C^2 are connected with a gas chamber L^2, which is fastened to the block c^{10} of the cross-head c^2.

The end sections or formers have passages extending longitudinally through them from their outer to their inner extremities. This construction may perhaps be best understood by reference to Fig. 4. The inner ends of the end sections or formers communicate with the gas chambers and are adapted to receive gas therefrom at certain times.

With the end sections or formers, there are combined valves or ejectors, M, located at their operative extremities or shaping surfaces and other valves, N, which co-act with the inner ends, communicating with the gas chambers. When the valves or ejectors M are seated, they will prevent the passage of gas to the shaping surfaces of the end sections or formers, but at this time the valves N will be removed from their seats, so as to permit gas to flow from the gas chambers through the end sections or formers, as far as the valves M. The valves M and N are shown as connected together by rods, O, extending through the end sections or formers. These rods are made so small as not to interfere with the flow of gas. Preferably springs will be combined with the valves N, so as to hold them normally open, and, as here shown, springs n are shown as being coiled around the rods O between the valves N and shoulders formed on the end sections or formers.

Gas, which may be compressed air, is supplied to the gas chambers by means of flexible pipes l' l^2 from any suitable reservoir or container. As here shown, a reservoir or con-

tainer, P, is employed and from it extends a pipe p, which, under the control of a cock or valve p', communicates with branch pipes p^2 p^3 connecting with the flexible pipes l' l^2. The flexible pipes l' l^2 are employed because the gas chambers are carried by the cross-heads c' c^2. The cock or valve p', as here represented, is intended to oscillate, and derives its motions from a rod p^4 connected pivotally at one end to an arm extending from the plug of the cock or valve, and at the other end with the crank arm j^3. Obviously, this valve will intermittingly permit the flow of gas from the reservoir or container P to the gas chambers. It is intended that the gas shall flow to both gas chambers simultaneously and at proper times to detach articles formed between the operative extremities of the end sections or formers C' C².

For maintaining a supply of gas in the reservoir or container P, I have shown a pump Q, as connected with it by means of a pipe q. The piston of the pump may be operated by an eccentric q' affixed to the driving shaft K.

In treating some substances, I preferably combine with the valves or ejectors M, mechanism whereby they may be forced outwardly from their seats to permit of the flow of gas to articles pressed in and held by the shaping ends of the end sections or formers. I have shown mechanism comprising cams R' R², made by forming suitable slots in rock shafts journaled in the gas chambers and facing a portion of the slots with wearing pieces. These rock shafts extend through the gas chambers, and, at those ends which are near that side of the machine which constitutes its front, have arms r' r^2 affixed to them. The rocking of these arms will oscillate the rock shafts in such direction as to force the rods, O, outwardly. This will cause the opening of the valves or ejectors M. Motion will be transmitted to the rods O through the valves N as the rock shafts contact with the latter, hence when the rods O are moved outwardly and the valves or ejectors M opened, the valves N will be closed. The opening of the valves or ejectors M will permit the passage of gas to the articles shaped by the operative extremities of the end sections or formers for detaching them. There will be a puff of gas through each end section or former, because the completion of the movement produced by the rock shafts will close the valves N, so as to cut off communication between the gas chambers and the end sections or formers.

The operation of the cock p' is so timed as to leave the reservoir or container P in communication with the gas chambers long enough for gas to be properly supplied to the end sections or formers. The rocking of the arms r' r^2 is effected by means of fixed cams r^3 r^4. The cam r^4 is incapable of any movement except for adjustment and is fastened to one of the sides of the casting a. The end sections or formers C² move out of and away from the body section or mold plate B, and, as they do this, the arm r^2 comes in contact with the fixed cam r^4. The continuation of this movement of the end section or formers C² causes the arms r^2 to be depressed by the fixed cam r^4 in such direction as to oscillate the rock shaft R², so that it will open the valves or ejectors M and close the valves N of said end sections or formers C². Obviously, when the end sections or formers C² move toward the body sections or mold plate, the arm, r^2 will be carried away from the fixed cam r^4 and will resume its normal position. It is adjusted to its normal position by a spring r^5 attached to the end of the gas chamber L² and bearing against said arm. The spring r^5 will force it against a pin r^{10}.

When the end sections or formers C' move toward the end sections or formers C², the arm r' will be carried into contact with the fixed cam r^3. This fixed cam r^3 is vertically adjustable against the resistance of a spring r^6, which bears at one end against a portion of this cam and also against a bracket r^7, which is fastened to the casting a. The upper end of the arm r^3 and the lower extremity of the fixed cam r^4 are rounded or inclined, so that the said arm, on contacting with the fixed cam, may, while the end sections or formers are moving in the direction last mentioned, raise said cam and pass by it. No motion is imparted to the arm r' at this time because its movement is resisted by a stop pin r^8. When the end sections or formers C' begin their movement in the reverse direction, the arm r' will contact with the fixed cam r^3, which will have dropped behind said arm, and the continued movement of said end sections or formers C' will cause a depression of the arm r' in such direction that the valves or ejectors M of said end sections or formers C' will be opened and the valves N thereof closed. The tilting of the arm r' will enable it to pass the cam r^3, and when it shall have passed the latter a spring r^9 restores the arm r' to its normal position resting against the stop pin r^8.

Having now described the various parts and their movements, I will explain more fully the operation of the parts in pressing or shaping material.

When the parts are in the starting position, the two sets of end sections or formers will occupy the positions represented in Fig. 3, each set of end sections or formers being arranged at one side of the feed boxes b'. The substance to be treated will be fed into the feed boxes by the loaders or fillers, and, while still held by the latter, will be compressed by the movement of the end sections or formers C' into the feed boxes. This movement of the end sections or formers will be produced by the downward adjustment of the connected ends of the toggle links I. The toggle links J' J² will meanwhile be in line or substantially in line. This movement of the end sections or formers, C', will, by acting through the substance intermediate of their operative extremities and the operative extremities of

the end sections or formers C^2, impart movement to the end sections or formers C^2, the block c^{10} yielding to permit of this. In this way, a partial pressing of the substance will be effected. The end sections or formers, C^2, in the operation of pressing, will be forced entirely out of the body section or mold plate and the operative extremities of the end sections or formers C′ will also be carried through the latter. The pressing will be completed outside of the body section or mold plate by the operative extremities of the two sets of end sections or formers coming together. It will be seen that the operative extremities of the two sets of end sections or formers are beveled off at c^{20}. This is so as to obviate as far as practicable the forming of any fin or projection on the pressed articles and the separation of surplus material, escaping from the shaping cavities during the pressing operation. Balls will be formed when shaping cavities of the kind illustrated are employed.

To prevent the extremities of the two sets of end sections or formers from suffering injury, I preferably combine with the body section or mold plate, a stop pin, S, which will limit the movement of the cross heads toward each other. I have shown such a stop pin passing horizontally through the body section or mold plate and having at one end a head *s*. In this head *s* a cavity is formed and from this cavity to the extremity extends a radial slot. From the sides of the slot, lugs *s′* extend. A screw s^3 combined with these lugs, serves to draw the sides of the slotted part of the head together. The cavity in the head is tapped and has fitted to it a screw s^3. By adjusting this screw s^3, the length of the pin S as a whole may be varied, so as to adjust the point at which the movement of the two sets of end sections or formers toward each other will be terminated. By tightening the screw s^3 after the adjustment of the screw s^3, the latter may be clamped in position.

After the two sets of end sections or formers shall have completed the pressing operation, a reverse movement of both sets will be produced by means of raising the connected ends of the toggle links I and of the toggle links J′ J^2. Just before this time, the cock p' will be opened to admit air to the gas chambers L′ L^2, and at the proper time the shafts R′ R^2 will be oscillated, so as to permit of puffs of gas passing through the end sections or formers to detach the articles pressed between the same.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a press, the combination of a body section or mold plate, end sections or formers arranged with their operative extremities opposite to each other, and mechanism whereby said end sections or formers will be moved into the body section or mold plate and afterward together moved entirely out of the same while still forcibly impelled toward one another to complete the pressing outside of the body section or mold plate, and afterward separated outside of the body section or mold plate, substantially as specified.

2. In a press, the combination of a body section or mold plate, end sections or formers, cross-heads carrying said end sections or formers into and out of the body section means whereby one of the said end sections or formers is connected in a yielding manner with its cross-head, and means for operating both of said end sections or formers substantially as specified.

3. In a press, the combination of a body section or mold plate, end sections or formers, cross-heads carrying said end sections or formers into and out of the body section, sets of toggle links for moving each of said cross-heads and a block carrying one of said end sections or formers and having a sliding connection with its cross-head, substantially as specified.

4. In a press, the combination of a body section or mold plate, end sections or formers, cross-heads carrying said end sections or formers into and out of said body section, sets of toggle links for moving said cross-heads, a block carrying one of said end sections or formers and having a sliding connection with its cross-head, and a spring intermediate of said block and cross-head, substantially as specified.

5. In a press, the combination of a body section or mold plate, end sections or formers, a cross-head carrying one of the end sections or formers, toggle links, I, imparting motion to the latter, a pin or rod *i′* uniting the ends of said toggle links, a roller i^2 mounted on this pin or rod, a rod i^7 connected to said pin or rod *i′*, a roller i^8 mounted on said pin or rod i^7 and a cam operated by said rollers i^2 i^8, substantially as specified.

6. In a press, the combination of a body section or mold plate, end sections or formers, a cross-head carrying one of the end sections or formers, toggle links, I, imparting motion to the latter, a pin or rod *i′* uniting the ends of said toggle links, a roller i^2 mounted on this pin or rod *i′*, a rod i^7, frames connecting said rod i^7 with the pin or rod *i′*, a roller i^8 mounted on the rod i^7, radius bars i^9 for sustaining the rod i^7 in its proper position and a cam operating upon said rollers i^2 i^8, substantially as specified.

7. In a press, the combination of a body section or mold plate, end sections or formers, a cross-head carrying one of the end sections or formers, toggle links, I, imparting motion to the latter, a cam for operating said toggle links a sliding block, H, with which said toggle links are connected, and means for moving said block, substantially as specified.

8. In a press, the combination of a body section or mold plate, end sections or formers, a cross-head carrying one of the end sections or formers, toggle links, I, imparting motion to the latter, a cam for operating said toggle

links, a sliding block, H, with which said toggle links are connected means, as a wedge, for adjusting said sliding block and means, as a clamp, for securing it in position, substantially as specified.

9. In a press, the combination of a body section or mold plate, opposite end sections or formers, toggle links, I, J′ J^2, for moving one of said end sections or formers, a rock shaft j^2, a crank j^3 on this rock shaft, a rod j^4 made of two sections, a turn buckle j^{11} uniting said sections and cams j^6 j^7 for operating said rod, substantially as specified.

10. In a press, the combination of a body section or mold plate, opposite end sections or formers, toggle links J′ J^2 for moving one of said end sections or formers, a rock shaft j^2, a crank j^3 on this rock shaft, a rod extending from said crank and having a slotted head or end, a block fitting within the slot of the head or end and a shaft supporting said block whereby said rod may oscillate upon this shaft and move lengthwise over said shaft, substantially as specified.

11. In a press, the combination of opposite end sections or formers, a body section or mold plate with which said end sections or formers co-operate, feed boxes, a hopper above the feed boxes, loaders or fillers co-acting with said feed boxes and working into the hopper, and means for operating said loaders or fillers, substantially as specified.

12. In a press, the combination of opposite end sections or formers, a body section or mold plate with which said end sections or formers co-operate, a feed box, a hopper, a loader or filler co-acting with said feed box and a bar for raising said loader or filler and afterward allowing it to descend by gravity, substantially as specified.

13. In a press, the combination of opposite end sections or formers, a body section or mold plate with which said end sections or formers co-operate, a feed box, a loader or filler co-acting with said feed box, a bar f' for raising said loader or filler, a lever f^3 for actuating said bar and a cam f^7 for oscillating said lever, substantially as specified.

14. In a press, the combination of opposite end sections or formers, a body section or mold plate, a feed box, a loader or filler coacting with said feed box a hopper and an agitator in said hopper, substantially as specified.

15. In a press, the combination of opposite end sections or formers, a body section or mold plate, a feed box, a loader or filler coacting with said feed box, a hopper and an agitator consisting of a reciprocating bar provided with teeth operating within said hopper, substantially as specified.

16. In a press, the combination of a body section or mold plate, opposite end sections or formers, gas chambers with which said end sections or formers communicate, valves or ejectors at the operative extremities of said end sections or formers, and means independent of the gas pressure, whereby said valves or ejectors will be opened to permit of the passage of gas to detach articles pressed by the said end sections or formers, substantially as specified.

17. In a press, the combination of a body section or mold plate, opposite end sections or formers, gas chambers with which said end sections or formers communicate, valves or ejectors at the operative extremities of said end sections or formers, and oscillating shafts whereby said valves or ejectors will be forcibly opened to permit of the passage of gas to detach articles pressed by the said end sections or formers, substantially as specified.

18. In a press, the combination of a body section or mold plate, opposite end sections or formers, gas chambers with which said end sections or formers communicate, valves or ejectors at the operative extremities of said end sections or formers, oscillating shafts R′ R^2, arms r' r^2 and cams r^3 r^4, substantially as specified.

19. In a press, the combination of a body section or mold plate, opposite end sections or formers, gas chambers with which said end sections or formers communicate, valves or ejectors at the operative extremities of said end sections or formers, valves at the inner extremities of said end sections or formers and connected with the valves or ejectors aforesaid, and means independent of the gas pressure, whereby said valves or ejectors will be forcibly opened to permit of the passage of gas to detach articles pressed by the said end sections or formers, substantially as specified.

20. In a press, the combination of opposite end sections or formers having their operative extremities beveled and a stop pin for limiting the movement of the opposite end sections or formers toward each other, substantially as specified.

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

EDMUND JORDAN.

Witnesses:
LOUIS H. REED,
JACOB G. CARPENTER.