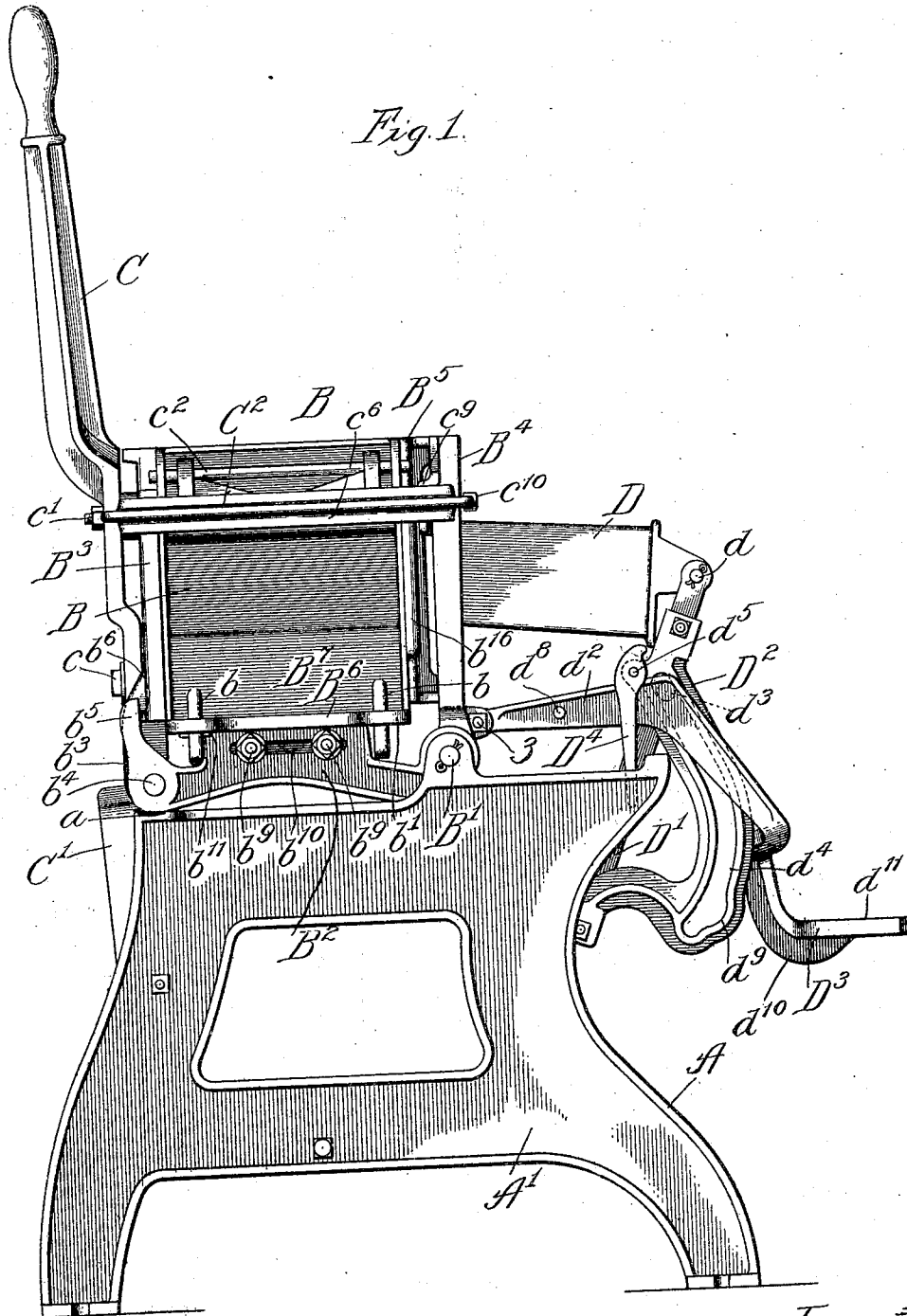


C. R. WALTER.
 BLOCK FORMING MACHINE.
 APPLICATION FILED AUG. 24, 1907.

Patented Sept. 14, 1909.
 7 SHEETS—SHEET 1.

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Fig. 1.

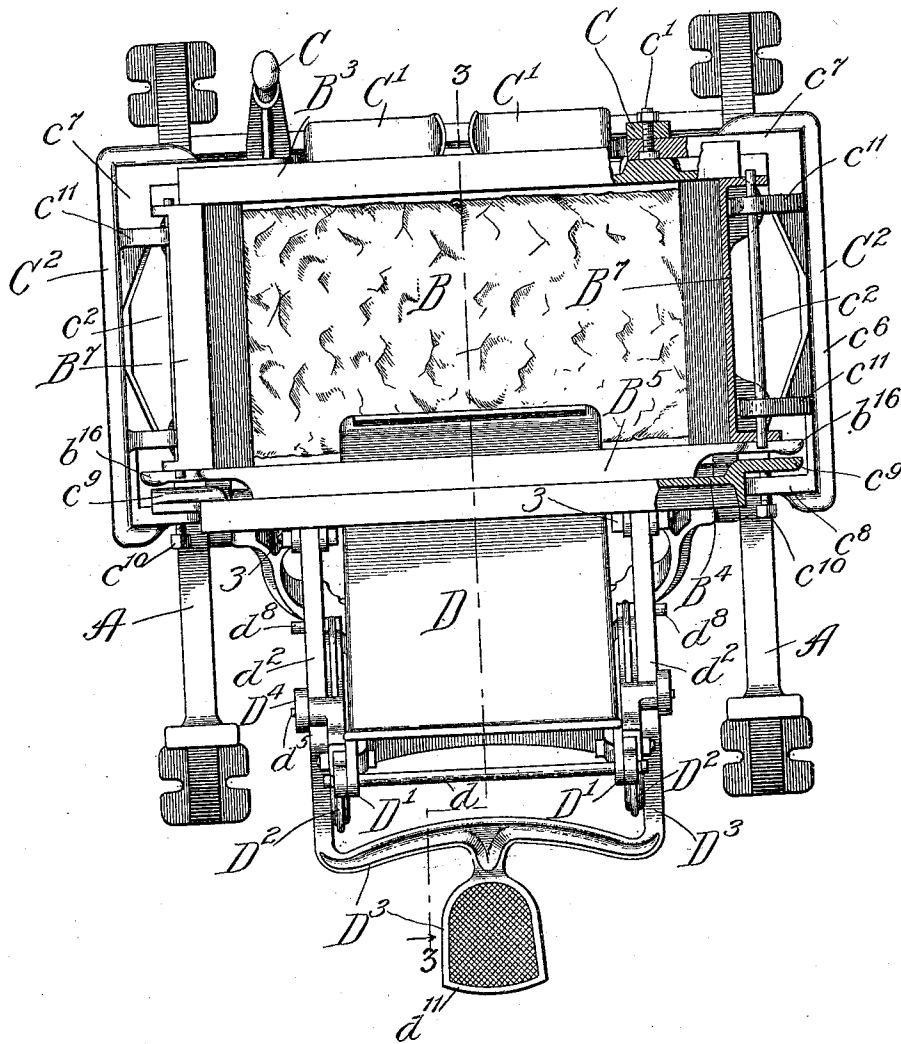


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Fig. 2.



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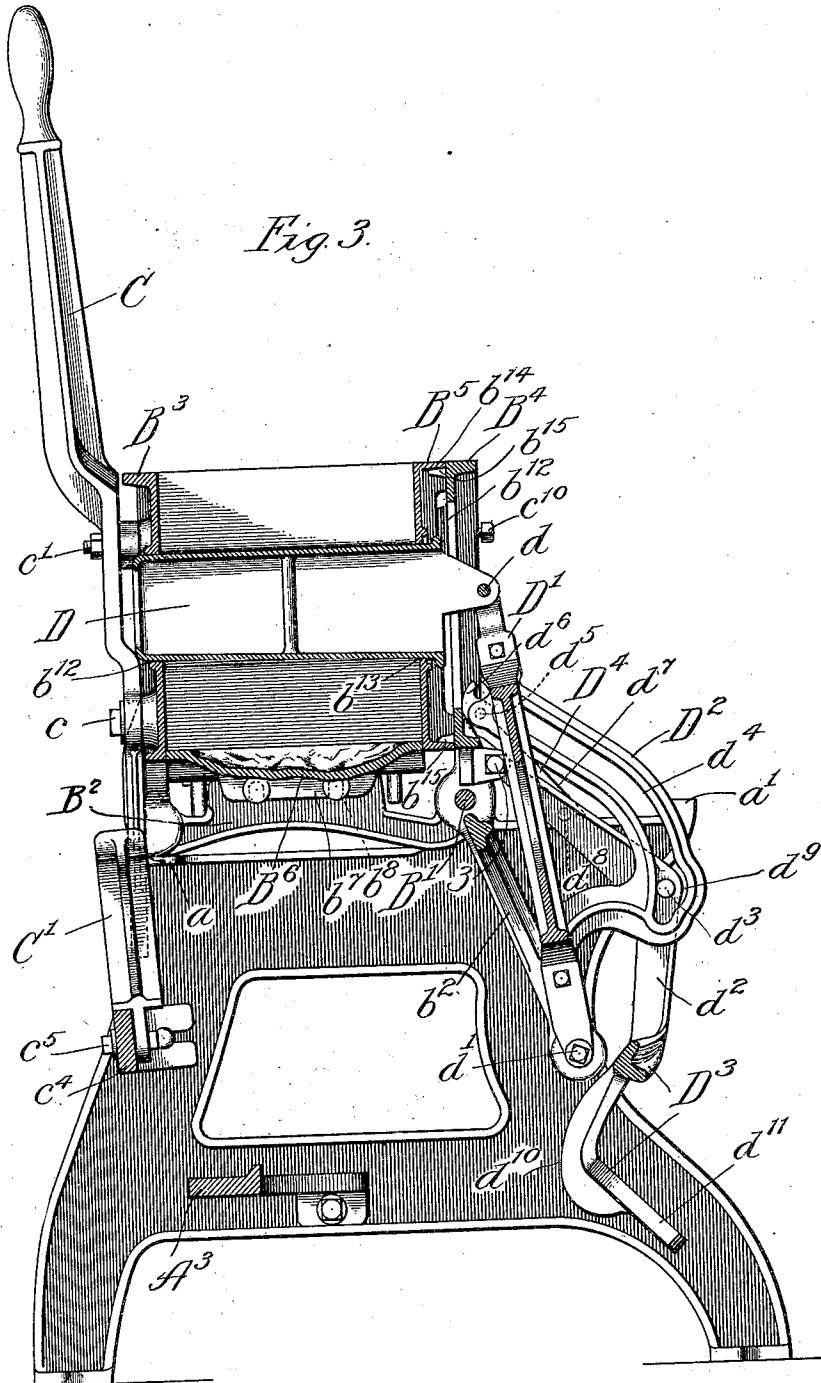
By Dymally, Lee, Chittow and Wiles
Atty's. 4

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Fig. 3.



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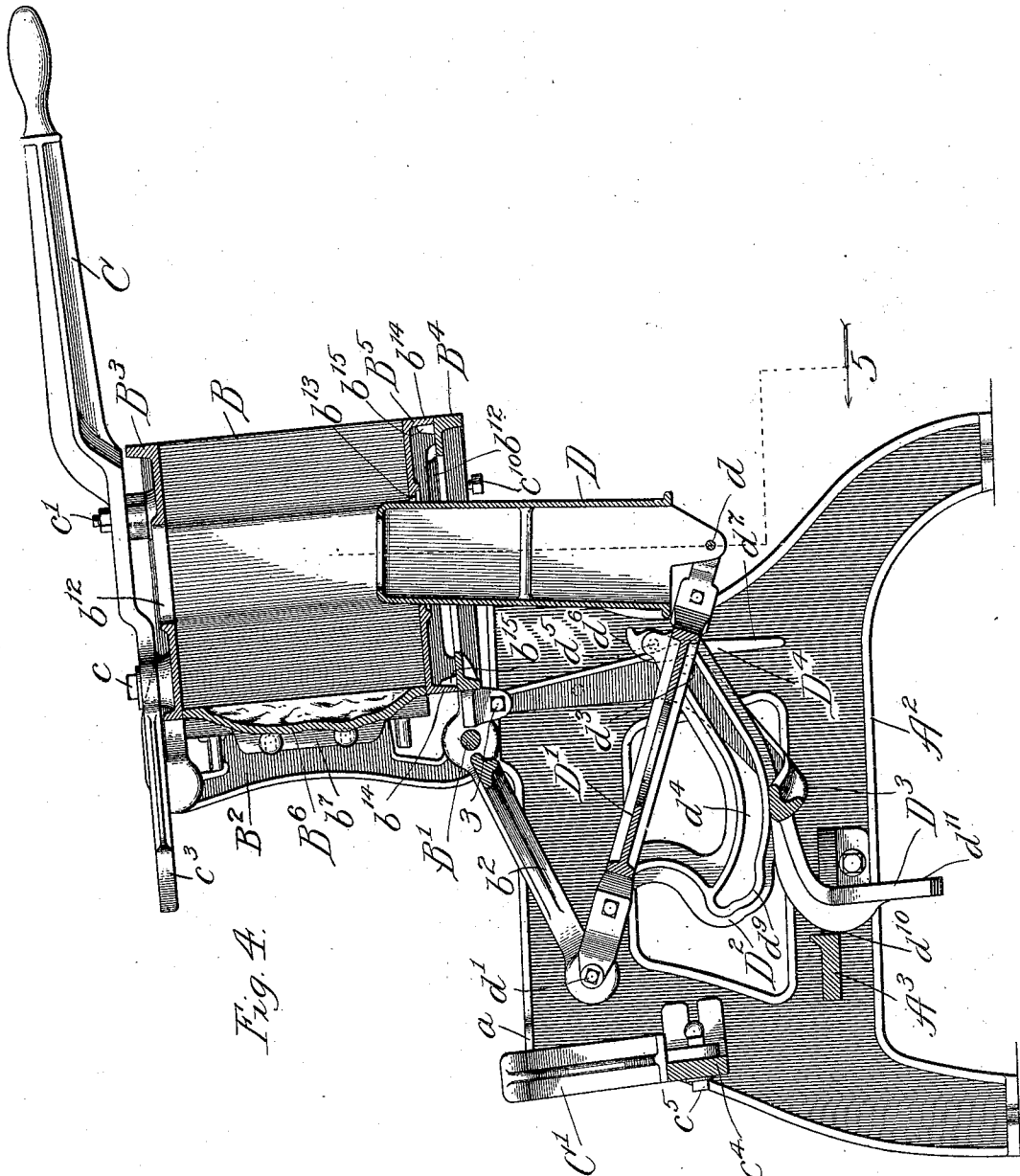


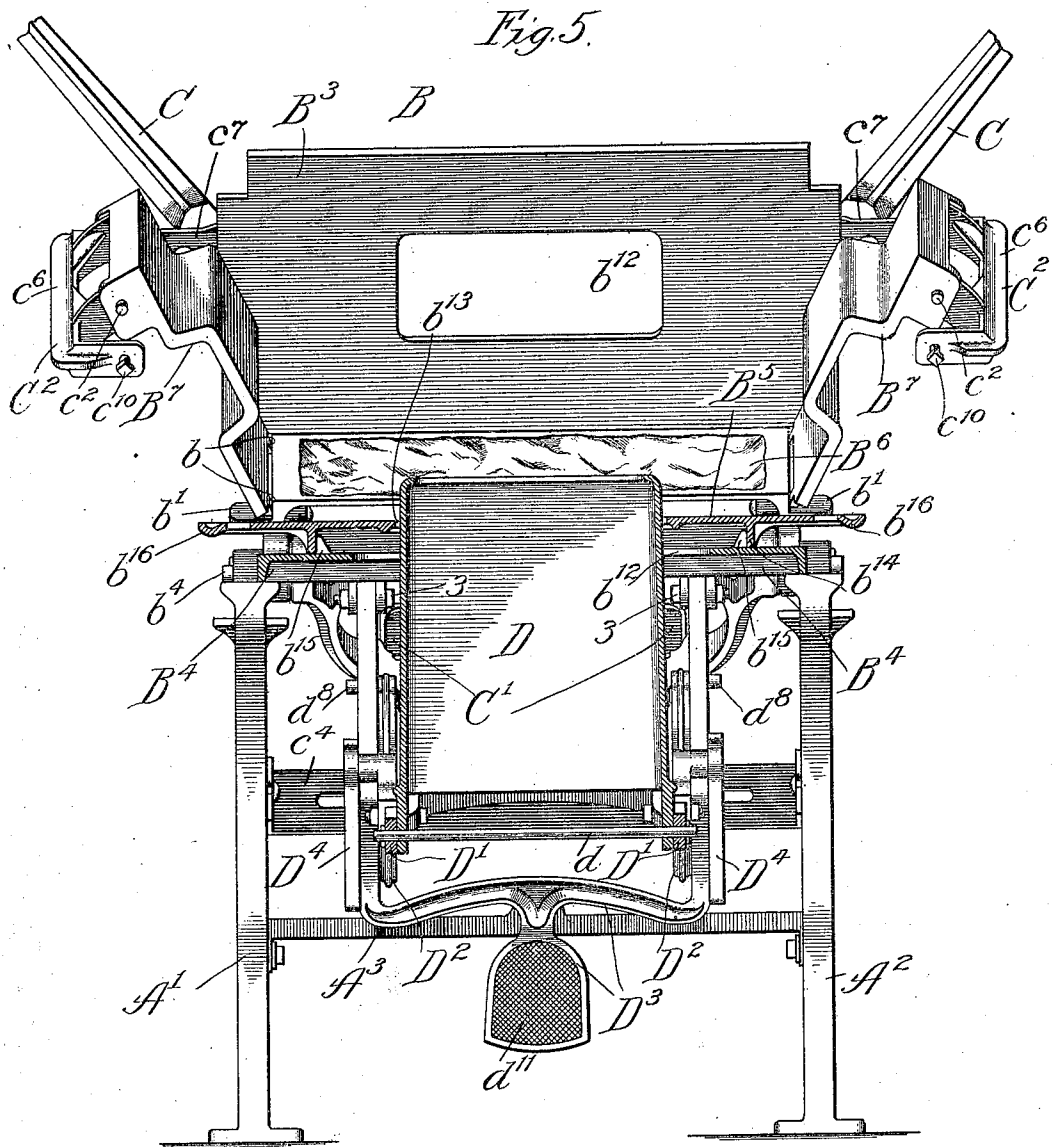
Fig. 4.

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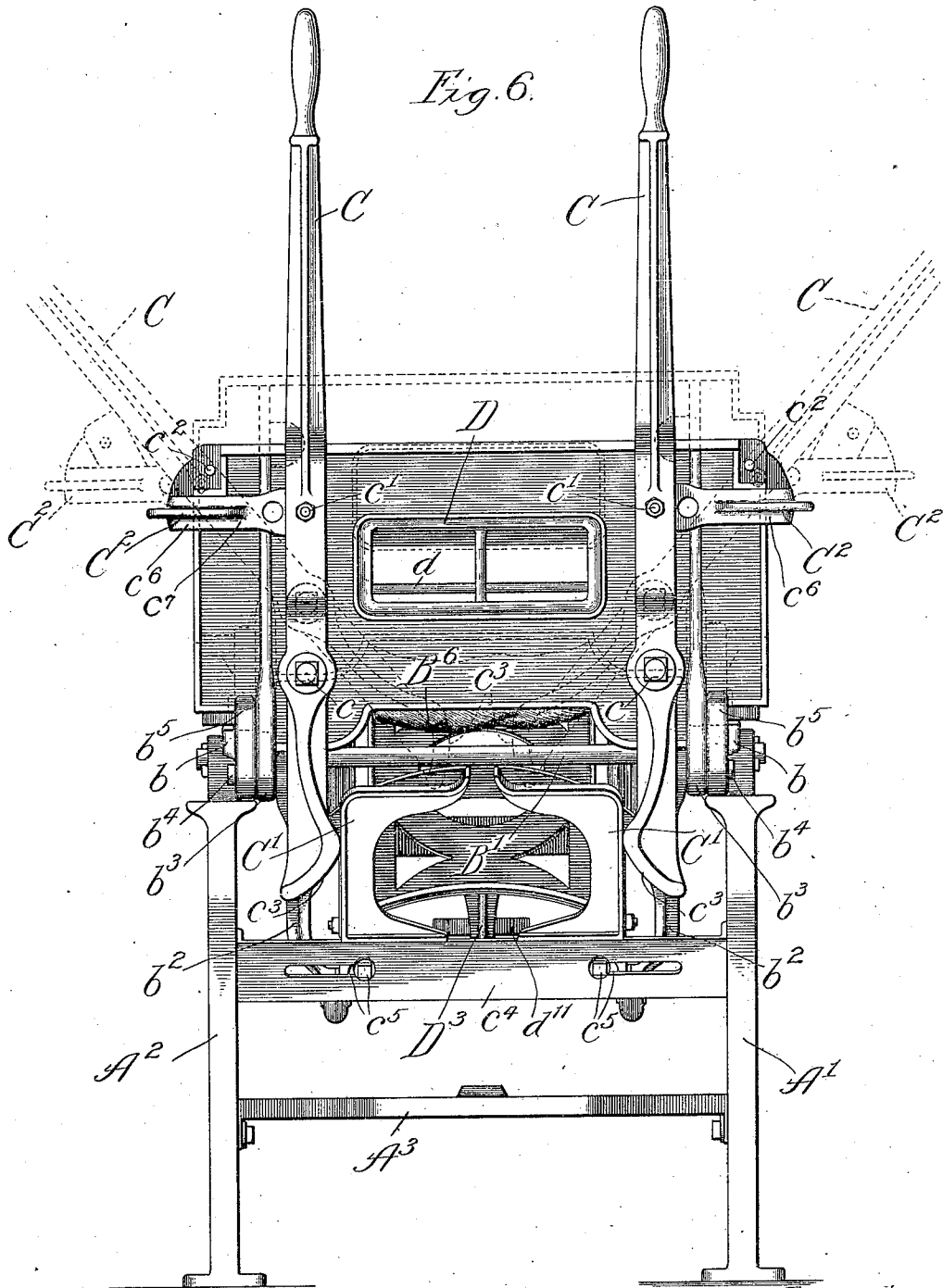
By Wyrenforth, Lee, Chritton & Stiles.
Atty's. 41

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934,112.

Patented Sept. 14, 1909.

7 SHEETS—SHEET 8.



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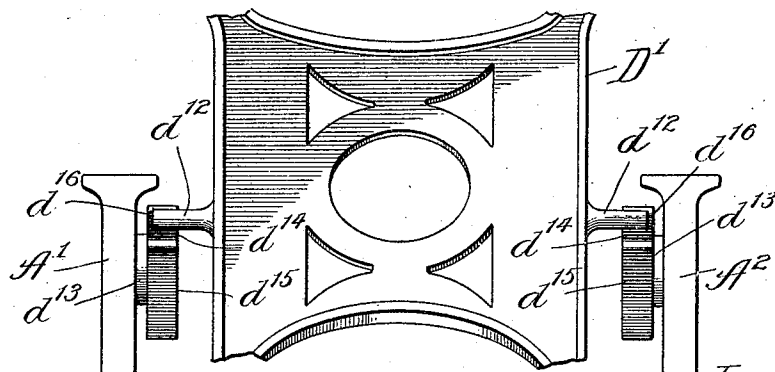
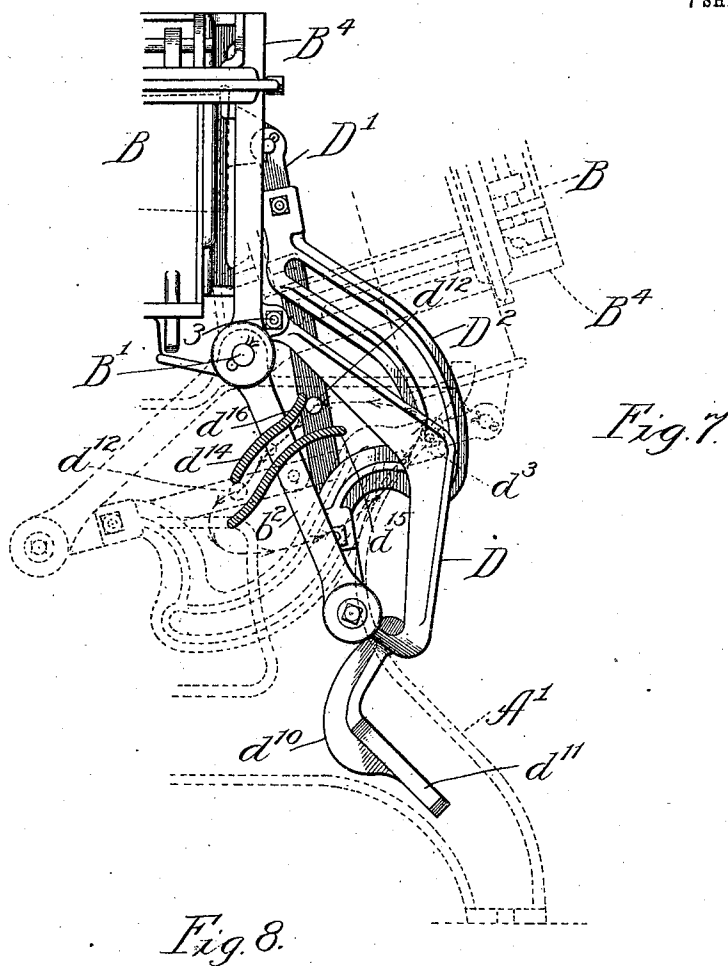
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APPLICATION FILED AUG. 24, 1907.

934,112.

Patented Sept. 14, 1909.

7 SHEETS—SHEET 7.



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UNITED STATES PATENT OFFICE.

CHARLES R. WALTER, OF FREDERICKTOWN, OHIO, ASSIGNOR TO THE J. B. FOOTE
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BLOCK-FORMING MACHINE.

934,112.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed August 24, 1907. Serial No. 389,983.

To all whom it may concern:

Be it known that I, CHARLES R. WALTER, a citizen of the United States, residing at Fredericktown, in the county of Knox and State of Ohio, have invented a new and useful Block-Forming Machine, of which the following is a specification.

My invention relates particularly to block-forming machines of the type employing automatically retracted cores; and my primary object is to provide a machine of this character of greater simplicity of construction and of easier operation than any heretofore known.

The invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Figure 1 represents a side elevational view of my improved block-forming machine with the core retracted to permit the lower portion of the mold to be filled; Fig. 2, a view of the same principally in plan and partly in section; Fig. 3, a section taken as indicated at line 3 of Fig. 2, the core being in its operative position, however; Fig. 4, a similar section showing the mold tipped onto one of its sides and the core in the position which it occupies after having been automatically retracted; Fig. 5, a section taken approximately as indicated in line 5 of Fig. 4 after the mold has been thrown open to permit the pallet (and block, not shown) to be removed; Fig. 6, a rear elevational view of the machine, the dotted lines serving to show the manner in which the main portion of the mold is supported in the position shown in Fig. 5; Fig. 7, a broken detail view illustrating a modification of the core-retracting means; and Fig. 8, a broken front elevational view of the core-retracting link or lever shown in Fig. 7.

In the construction illustrated, in Figs. 1 to 6, inclusive, A represents a frame comprising end standards A^1 A^2 and a connecting member A^3 ; B, a mold connected at or near one of its lower longitudinal corners, by a pivot B^1 , to the frame, and comprising arms B^2 pivotally connected at their front ends with the pivot or trunnion B^1 , a rear side plate B^3 rigidly connected with the free ends of the arms B^2 in a manner to be presently described, a front side plate B^4 to which is applied the pallet B^5 and which is connected at its lower edge with the pivot B^1 , bottom plate B^6 rigidly secured with re-

lation to the arms B^2 and the rear side plate B^3 , and end plates B^7 equipped at their lower edges with hooks or studs b entered in sockets b^1 provided therefor at the extremities of the bottom plate B^6 ; C, C, a pair of hand-levers connected by pivots c with the rear side of the mold and adapted to swing in a plane parallel with the rear side of the mold; C^1 , C^1 , a pair of cams secured to the frame in the rear of and beneath the mold, and serving, in connection with the hand-levers C, to lock the mold in the closed condition; C^2 , C^2 , yoke-form combination links and locking members connected by pivots c^1 with the levers C and connected by pivots c^2 with the end plates of the mold; D, a core normally extending through apertures in the front and rear plates of the mold, as shown in Fig. 3; D^1 , a link or member connected at its upper end, by a pivot d , with the front end of the core, and connected at its lower end, by a pivot d^1 with a downward extension b^2 of the front plate B^4 of the mold; D^2 , D^2 , a pair of cams rigidly connected with the member D^1 at the lateral edges thereof; D^3 , a foot-lever having arms d^2 connected at their rear ends by pivots 3 with lugs projecting forwardly from the front mold-plate B^4 near the pivot thereof, said arms d^2 being equipped with cam studs d^3 which enter the cam slots d^4 of the cams D^2 ; and D^4 , D^4 , a pair of relatively short levers connected by pivots d^5 with lugs carried by the cam members D^2 , said levers D^4 having cam ends d^6 which bear normally against the front surface of the mold-plate B^4 and having relatively long arms d^7 which normally engage studs d^8 carried by the arms d^2 of the foot-lever D^3 , as illustrated in Fig. 3.

The frame A may be of any approved construction. Preferably it is of the form shown in the drawings, and the end standards A^1 are equipped with shoulders a which support the rear portion of the mold in the normally upright position of the mold, and are equipped with shoulders a^1 which support the mold when the latter is turned to rest upon its front side, the position shown in Fig. 4. The cross member A^3 is engaged by the foot lever D^3 while the mold is being turned to the position in which it rests upon its side, and the foot lever is thereby actuated to automatically withdraw the core from the mold, the weight of the mold and

core aiding in effecting retraction of the core.

The mold B may vary in its details of construction. The construction illustrated is preferred. The rear plate B³ of the mold is equipped at its lower corners with depending lugs b³ provided with out-turned studs b⁴ which are received by perforations in the adjacent ends of the arms B². The arms B² are equipped adjacent said perforations with upwardly extending members b⁵ which engage lugs b⁶ on the rear surface of the plate B³. The bottom plate B⁶ is equipped on its lower surface near its ends with depending flanges b⁷, as best shown in Fig. 3, and said flanges are provided with slots or openings b⁸ which receive bolts b⁹ which pass through slots b¹⁰ in the arms B², as best shown in Fig. 1. As shown in Fig. 3, the rear edge of the bottom plate B⁶ bears against the inner surface of the rear plate B³, thereby pressing the plate B³ against the members b⁵ of the arms B² and maintaining a rigid relation between the rear plate, the bottom plate and said arms B². The studs b carried by the lower edges of the end plates B⁷ pass loosely through the sockets or perforated lugs b¹ and are secured by cotter pins b¹¹. The construction is such as to permit the upper edges of the end plates to swing outwardly to a limited extent, as shown in Fig. 5. The front and rear mold-plates are provided with core openings b¹², and the pallet B⁵ is provided with a registering core opening b¹³.

As will be understood from Figs. 4 and 5, the pallet B⁵ is provided on its front side with flanges b¹⁴ which embrace lugs b¹⁵ with which the front plate B⁴ is provided on its rear side. As shown in Fig. 5, the pallet is provided at its ends with extensions which are formed to provide handles b¹⁶, it being understood, that the handles project outside of the ends of the mold in the closed condition of the mold. From the description given, it will be understood that the bottom plate B⁶ is readily removable to facilitate the use of bottom plates with different patterns or configurations on their inner surfaces, according to the facing design or configuration which it is desired to give to the block.

As best shown in Fig. 6, the hand levers C have extensions beneath the pivots c which are equipped with beveled surfaces or cams c³ adapted to engage the cams C¹ and lock the levers in the position shown in Fig. 6, thereby locking the mold in the closed condition when the mold occupies the upright position. When the principal part of the mold occupies the oblique position shown in Fig. 5, the mold is thus supported by the lower extremities of the levers C resting upon the upper surface of the cam members C¹, as indicated by the dotted lines in Fig. 6. The cam members C¹ are carried by a cross

frame member c⁴, being adjustably connected therewith by bolt-and-slot connection c⁵, as shown in Figs. 3 and 6. Each combination link and locking member C² is of the yoke form shown, having a web or base member c⁶ extending outside of the upper portion of the adjacent end plate B⁷, an arm c⁷ joined to the adjacent lever C by the pivot c¹, and an arm c⁸ adapted to embrace a lug or projection c⁹ carried by the adjacent end of the front mold-plate B⁴. Each arm c⁸ is provided with a set-screw c¹⁰ which bears against the lug c⁹. As appears from Fig. 1, the lugs c⁹ are so disposed as not to interfere with the handles b¹⁶ of the pallet. The web c⁶ of each member C² is provided with inwardly projecting lugs c¹¹ which are connected with the adjacent pivot c² carried by the adjacent upper portion of the corresponding end plate B⁷ of the mold.

The core D is preferably of the hollow construction shown, and it will be understood that one or more cores may be employed, according to desire. The cam slots d¹ have enlargements d⁹ at their lower ends, the purpose of which is to permit the foot lever D³, through the medium of the stud d⁸ to actuate the levers d⁷ at the instant of starting to withdraw the core, before the studs d³ engage the walls of the cam slots d¹ to complete the movement of withdrawal. This expedient provides for a greater leverage upon the core at the instant of starting the retraction thereof, the instant when the greatest power must be applied. The central portion of the cross member A³ of the frame is bowed rearwardly and serves as a cam which engages the surface d¹⁰ of the foot lever D³ during the movement of partial inversion of the mold. The foot lever, viewed in side elevation, is preferably of the angular form shown, and is equipped at its lower end with the pedal d¹¹.

The operation will be readily understood from the foregoing detailed description. Assuming the mold to be in the upright position shown in Fig. 1, with the levers C engaging the cams C¹ as indicated by the full lines in Fig. 6, the mold may be filled with the concrete material to approximately the level of the lower walls of the core openings, and the foot lever D³ may then be depressed to force the core into the mold. Thereupon, the operation of filling the mold may be completed, after which the operator, by grasping the hand levers C, may swing the mold forwardly upon its pivot B¹, until the mold rests upon the stops a¹ of the frame, in which position the front plate B⁴ of the mold and the pallet B⁵ occupy a horizontal position. The hand levers may then be swung apart, thus separating the end plates B⁷ and disengaging the yokes C² from the front plate B⁴. The mold may then be swung upwardly to the oblique position shown in Fig. 5, in which

position the lower ends of the levers C will rest upon the members C'. This operation leaves the pallet and the block resting thereon free to be lifted from the front plate (now in a horizontal position) of the mold. A fresh pallet may then be placed upon the inner surface of the front plate of the mold, and the operator, again grasping the hand levers, may swing the main portion of the mold until the hand levers occupy the approximately horizontal position shown in Fig. 4, whereupon the hand levers may be swung toward each other, thus bringing the locking members C² again into operative engagement with the front mold-plate B⁴, whereupon the mold may be swung upwardly and backwardly, as a unit, upon the pivot B¹ until it occupies the position shown in Figs. 1 and 6, in which position the cams C' engage the hand levers C, thereby insuring rigidity of the parts of the mold. It should be stated that while the mold was being swung forward upon its pivot the foot lever B³ was brought into engagement with the cross member A³ of the frame, thereby, in the initial portion of the operation operating the levers d', thus prying the core loose, after which the studs d³ operated upon the walls of the cam slots d⁴, thereby completing the movement of retraction of the core. It should be observed that the weight of the core aids in the automatic retraction of the core.

In the construction shown in Figs. 7 and 8, the supplemental levers D⁴ are dispensed with, the link or lever D¹ is equipped at its lateral edges with studs or cam-pins d'², and the end-standards of the frame are equipped with cams d'³ adapted to engage said cam-pins, during the forward tilting of the mold, and effect withdrawal of the core. Each cam d'³ has a rear wall d'⁴ and a front wall d'⁵, affording between them a groove for the cam-pin. The wall d'⁴ has a curve d'⁶ which is struck about the axis B¹ and the cam departs, at first, very gradually from the circle and then more abruptly, so that, in starting the core, but little power is required. The lower or front wall d'⁵ serves to prevent the core from falling abruptly in the event that the connections become worn or loose, in which event the core might otherwise fall under its own weight after being partially withdrawn. The cams are short enough to permit the cam-pins to clear and pass in front of the walls d'⁵ in the return movement. After the mold has been righted and partially filled, the core may be inserted by the use of the foot-lever D³, as in the first-described construction.

From the description given, it is evident that the core is carried with the mold during the movement of turning the mold through a quarter revolution to bring its front side to a horizontal position, and that during the

final operation of this movement, the automatic retraction or longitudinal movement of the core is effected. When the mold is returned to the upright position, the core necessarily is carried back with it, but is left in the retracted position which is desirable to enable the lower portion of the mold to be filled with concrete before the core is again inserted.

The foregoing detailed description has been given for clearness of understanding only, and no undue limitation is to be understood therefrom.

What I regard as new, and desire to secure by Letters Patent, is—

1. The combination of a mold mounted to swing upon an axis and having a pivoted side plate provided beneath its pivot with a downward extension, a core extending through said side plate, a link connecting said core with said downward extension, cams connected with said link, a lever having engagement with said cams, and means engaged by said lever during the operation of turning the mold upon its axis, whereby automatic retraction of the core is effected.

2. In a machine of the character described, the combination of a mold mounted to swing upon an axis, a core, a link connected with said core and equipped with cams, a lever co-acting with said cams, means for arresting the movement of said lever during the swinging of the mold upon its axis, and means for imparting initial movement to the core before said cams are operatively engaged.

3. In a machine of the character described, the combination of a mold mounted to swing upon an axis adjacent to one corner thereof, said mold having a front side plate and end plates adapted to swing with relation to the bottom plate, a pair of hand levers pivoted to the rear of the mold adapted to swing with relation to the rear plate of the mold, and combination links and locking members connected with said hand levers and with said end plates and adapted to engage the front side plate of the mold, for the purpose set forth.

4. In a machine of the character set forth, the combination of a mold having relatively movable side plates and end plates, said mold mounted to swing as a unit upon an axis, a pair of levers pivotally mounted on the rear of said mold, means for locking the mold-plates together, operated through the medium of said levers, and cams adapted to engage said levers and maintain them in rigid relation when the mold is in the upright position, for the purpose set forth.

5. In a machine of the character set forth, the combination of a frame, a mold pivotally supported thereon and having a bottom plate and a rear plate fixed with relation to each other and having end plates and a front

plate adapted to swing about their lower portions, a pallet applied to the inner surface of the front plate, said front plate and pallet being apertured, a core movable through said front plate and said pallet, core-retracting means connected with the front end of the core, a pair of hand levers pivotally connected with the rear plate of the mold, and connections between said hand levers and said end plates.

6. In a machine of the character set forth, the combination of a frame, a mold pivotally supported thereon and having a bottom plate and a rear plate fixed with relation to each other and having end plates and a front plate adapted to swing about their lower portions, a pallet applied to the inner surface of the front plate, said front plate and pallet being apertured, a core movable through said front plate and said pallet, core-retracting means connected with the front end of the core, a pair of hand levers pivotally connected with the rear plate of the mold, connections between said hand levers and said end plates, and cam members engaging said levers when the mold is in the upright position.

7. In a machine of the character set forth, the combination of a frame, a mold pivoted thereon and having a bottom plate and rear plate fixed with relation to each other and having swinging end plates and front plate, a core extending through the front plate, core-retracting means connected with the front end of said core, a pair of levers pivotally mounted on the rear plate of the mold, and combination links and locking members connected with said levers and with said end plates and having means for lockingly engaging the front mold-plate, for the purpose set forth.

8. In a machine of the character set forth, the combination of a mold mounted to swing on a pivot, said mold having a bottom plate and a rear plate fixed with relation to each other and having swinging end plates, a pair of hand levers pivotally mounted on the rear plate to swing in a plane parallel with the rear plate, connections between said hand levers and said end plates, and means carried by the frame serving to lockingly engage said hand levers when the mold is in the upright position.

9. In a machine of the character set forth, the combination of a frame, a mold pivoted thereon and having a bottom plate and a rear plate fixed with relation to each other and having swinging end plates and front plate, said front plate provided beneath its pivot with an extension, a core, a link connecting the front end of said core with the extension of said front plate, a lever pivotally connected with the frame, and cam connections between said lever and said link.

10. In a machine of the character set forth,

the combination of a frame, a mold pivoted thereon and having a bottom plate and a rear plate fixed with relation to each other and having swinging end plates and front plate, said front plate provided beneath its pivot with an extension, a core, a link connecting the front end of said core with the extension of said front plate, a lever pivotally connected with the frame, cam connections between said lever and said link, and a frame member adapted to engage said lever during the movement of turning the mold from its upright position.

11. In a mold for a machine of the character set forth, a mold-plate provided with a pivot and with a core receiving perforation above said pivot and an extension beneath said pivot provided with link-attaching means, for the purpose set forth.

12. In a block-forming machine, the combination of a mold adapted to swing forwardly about an axis near its lower front corner, a core extending through the front mold-plate thereof and adapted to be carried with the mold during the swinging movement thereof, a link connected with said core, a cam connected with the frame and serving to retract said core during the operation of turning the mold upon its pivot, and means for thrusting the core again into the mold after the mold has been returned to an upright position.

13. In a brick-forming machine, the combination of a pivoted mold, a core extending thereinto, a link connected with said core and equipped with cam-projections, cams carried by the frame of the machine and adapted to engage said cam-projections during the operation of turning the mold upon its pivot, cams connected with said link, and a lever connected with said last-named cams and operative to thrust the core into the mold after the mold has been returned to an upright position.

14. In a block-forming machine, the combination of a mold adapted to swing forwardly about an axis near its lower front corner, a core extending through the front mold-plate thereof and adapted to be carried with the mold during the swinging movement thereof, a downward projection connected with the front mold-plate, a link connecting said core with said projection, cam-projections carried by said link, frame-carried-cams adapted to engage said cam projections during the operation of turning the mold on its pivot, thereby to withdraw the core, cams carried by said link, and a foot-lever equipped with cam-projections engaging said last-named cams, for the purpose set forth.

15. The combination of a pivoted mold, a core extending thereinto, a link connected with said core and equipped at its lateral edges with cam-studs, and cams mounted on

the frame of the machine beneath the front portion of the mold and adapted to engage said cam-studs during the operation of turning said mold upon its pivot, whereby automatic withdrawal of said core will be effected.

16. In a block-forming machine, the combination of a pivoted mold, a core extending thereinto, a link connected with said core and equipped with cam-studs, cams carried by the frame of the machine and adapted to engage said studs during the operation of turning the mold upon its pivot, said cams having front and rear walls, whereby sudden

dropping of the mold is prevented and said cams being short enough to permit said cam-studs to pass completely therethrough during the operation of turning the mold to a position in which it will rest upon its side, whereby the cam-studs will clear the cams in the return movement of the mold, and means for thrusting the core again into the mold after the mold is righted.

CHARLES R. WALTER.

In presence of—

H. M. EGGLESTON,
HERMIT B. REYNOLDS.