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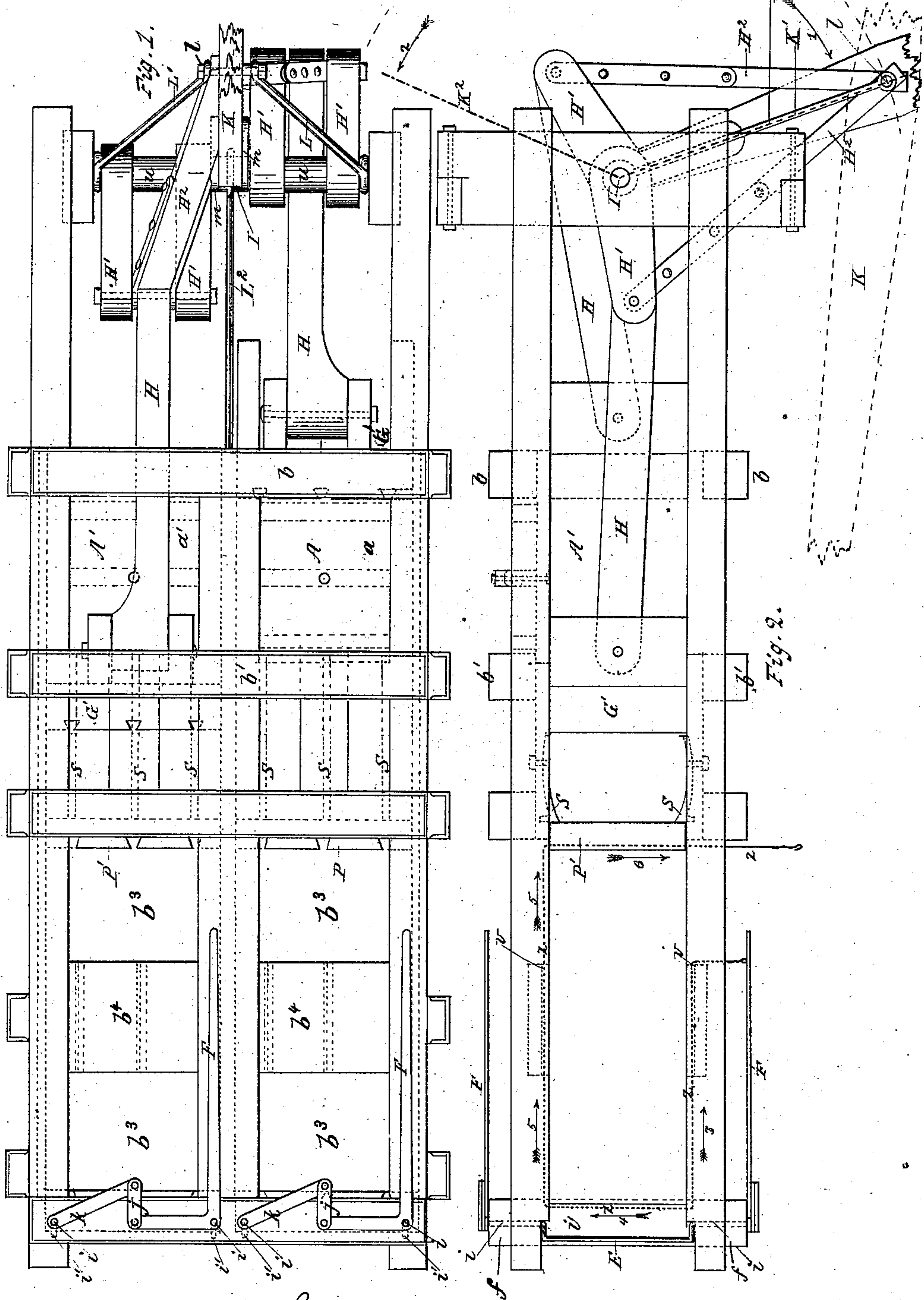
4 Sheets—Sheet 1.

J. LA DOW.

DUPLEX BALING PRESS.

No. 294,638.

Patented Mar. 4, 1884.



Witnesses:

Charles Seiskirk
Alex. Seiskirk Jr.

John La Dow
Inventor.

By His Attorney Alex. Seiskirk

(No Model.)

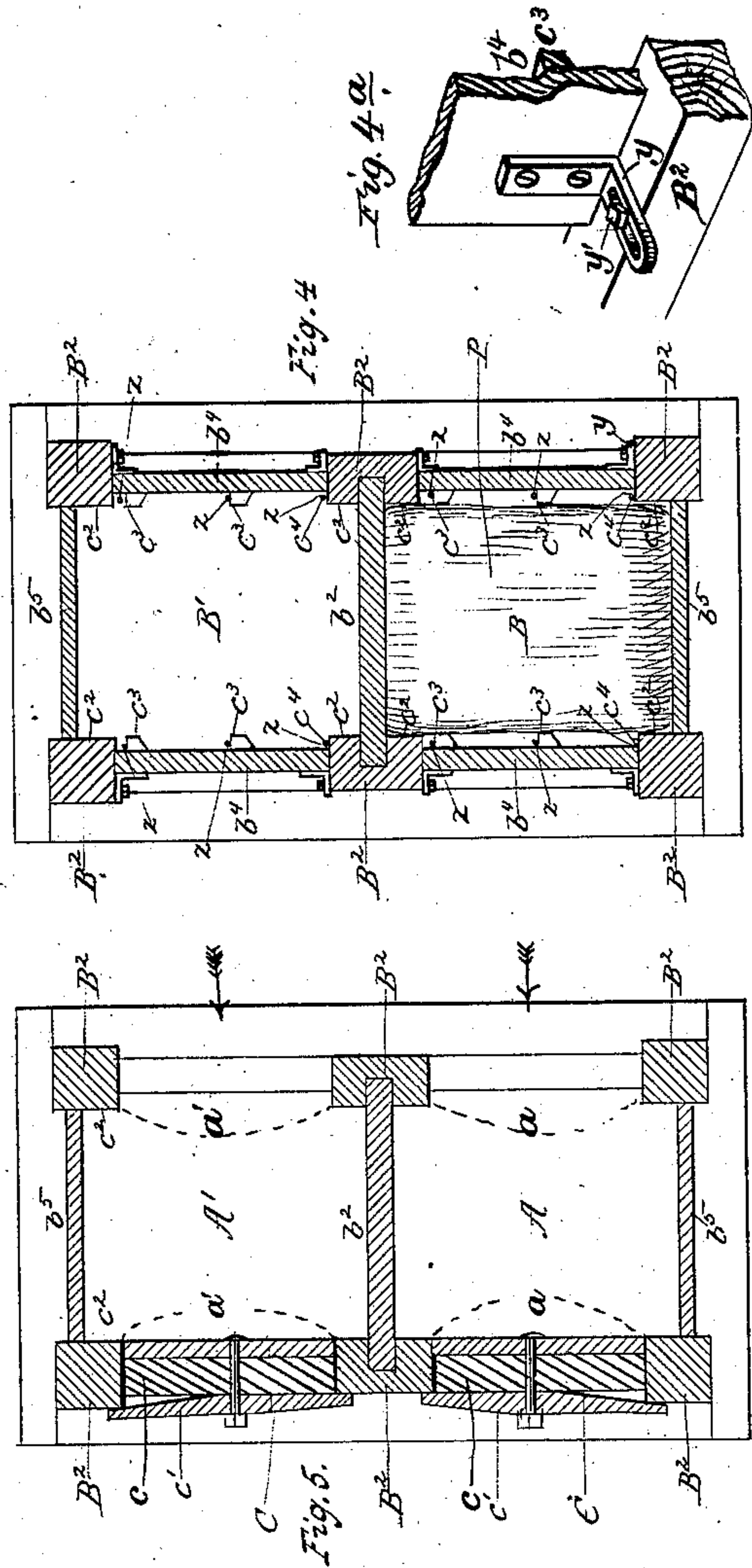
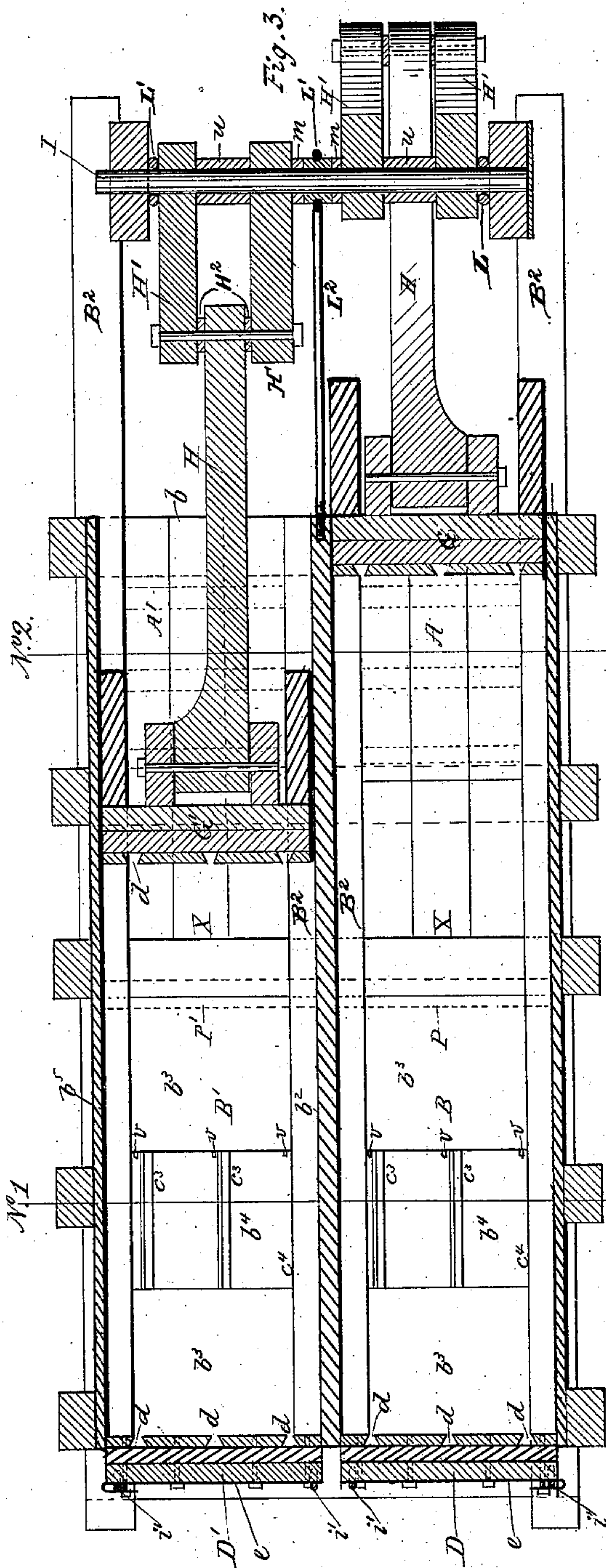
4 Sheets—Sheet 2.

J. LA DOW.

DUPLEX BALING PRESS.

No. 294,638.

Patented Mar. 4, 1884.



Witnesses: Charles Siskin
Alex. Siskin Jr.

John La Dow
Inventor
by his Atty Alex. Siskin

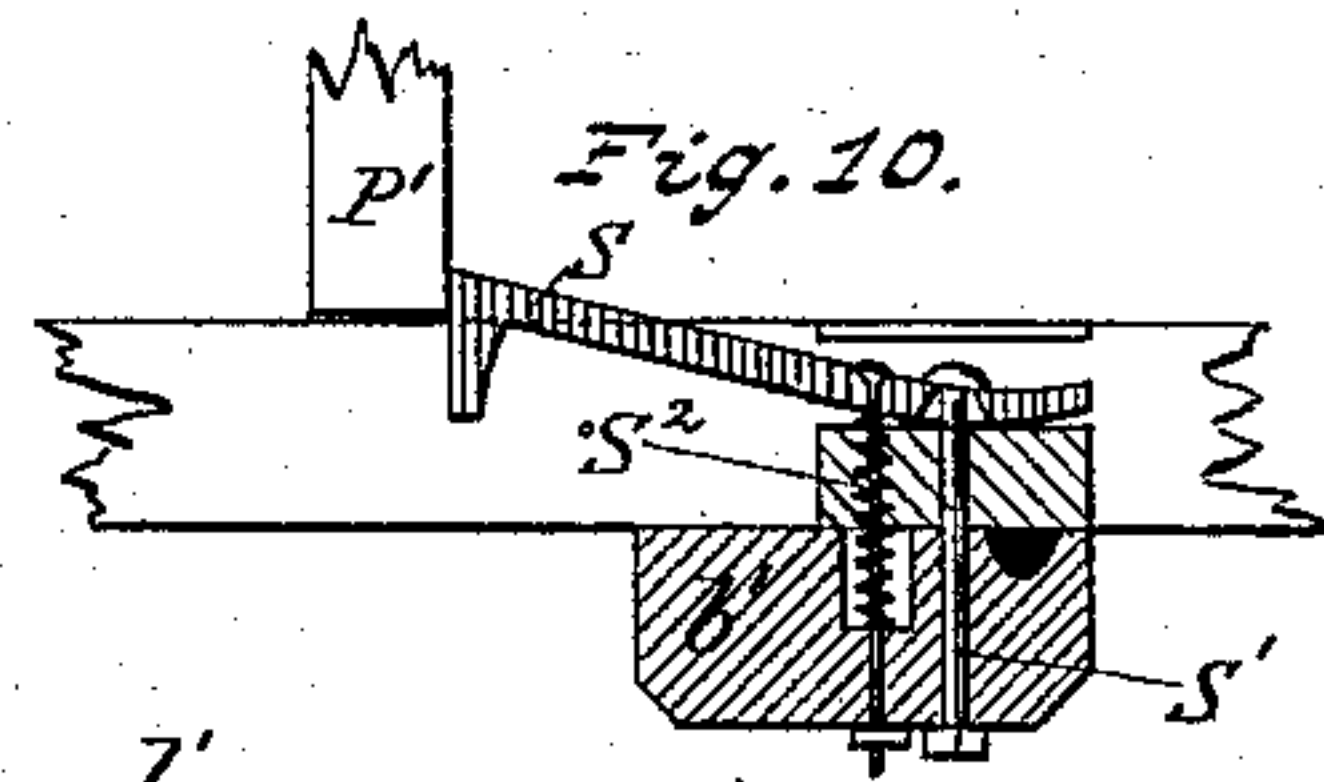
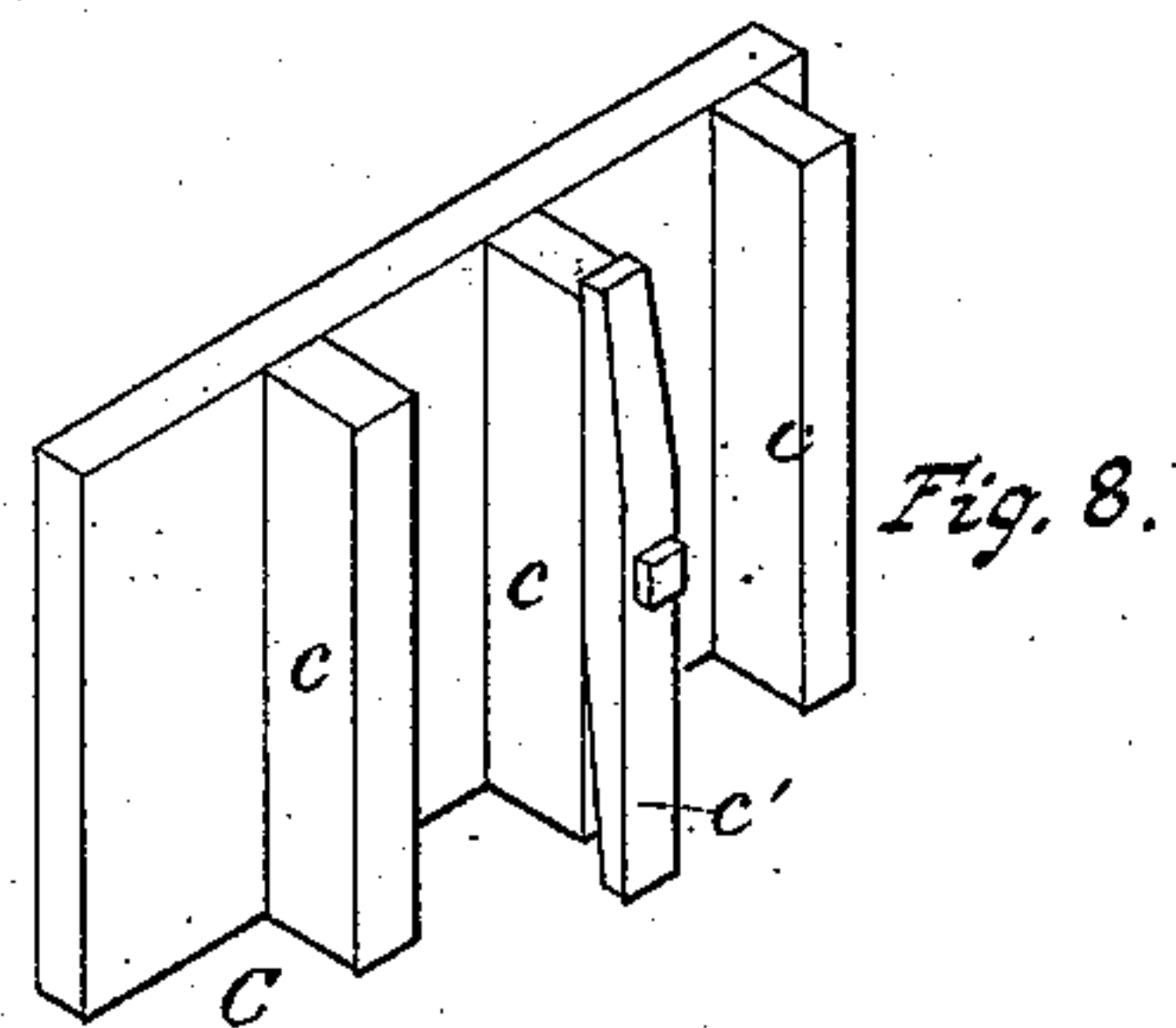
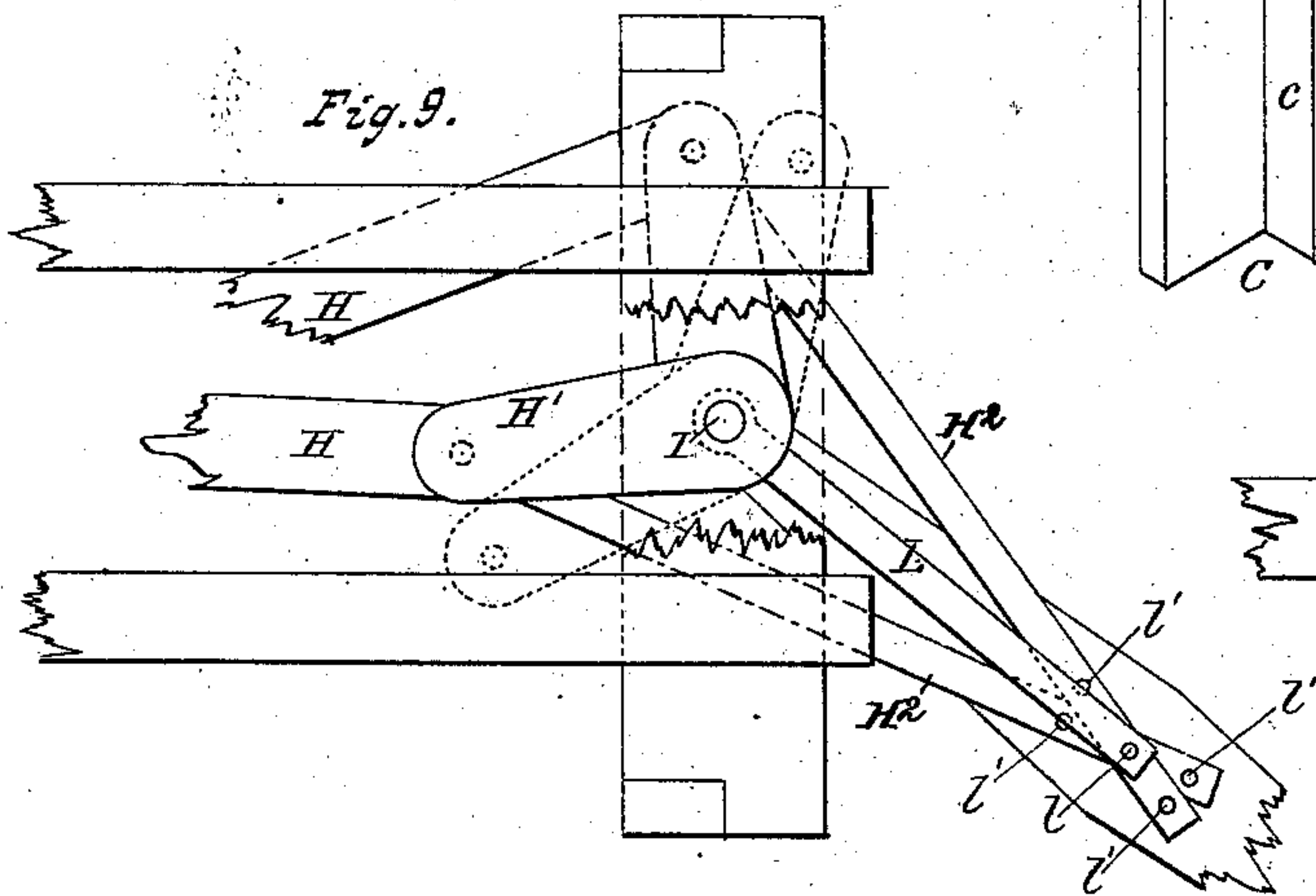
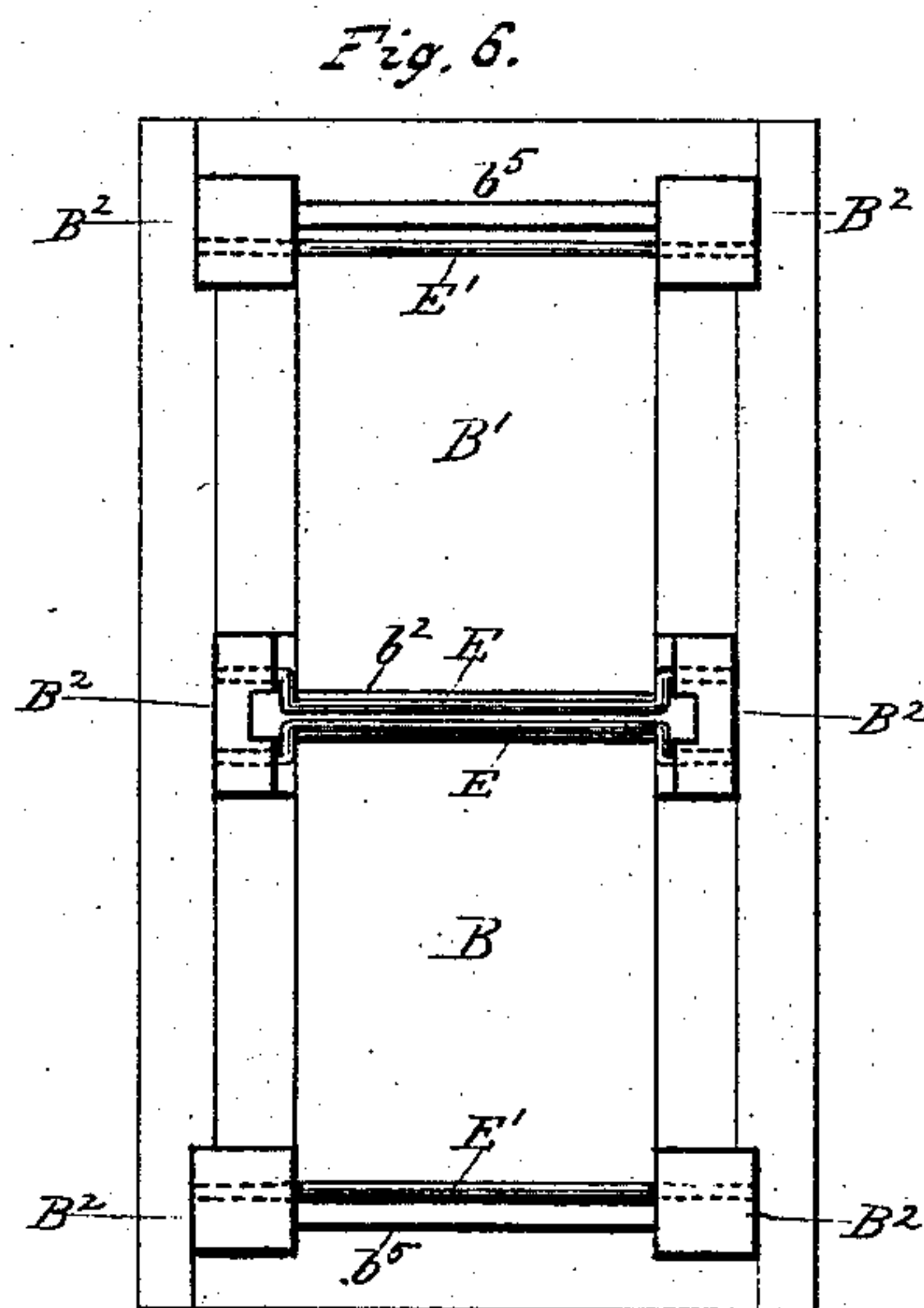
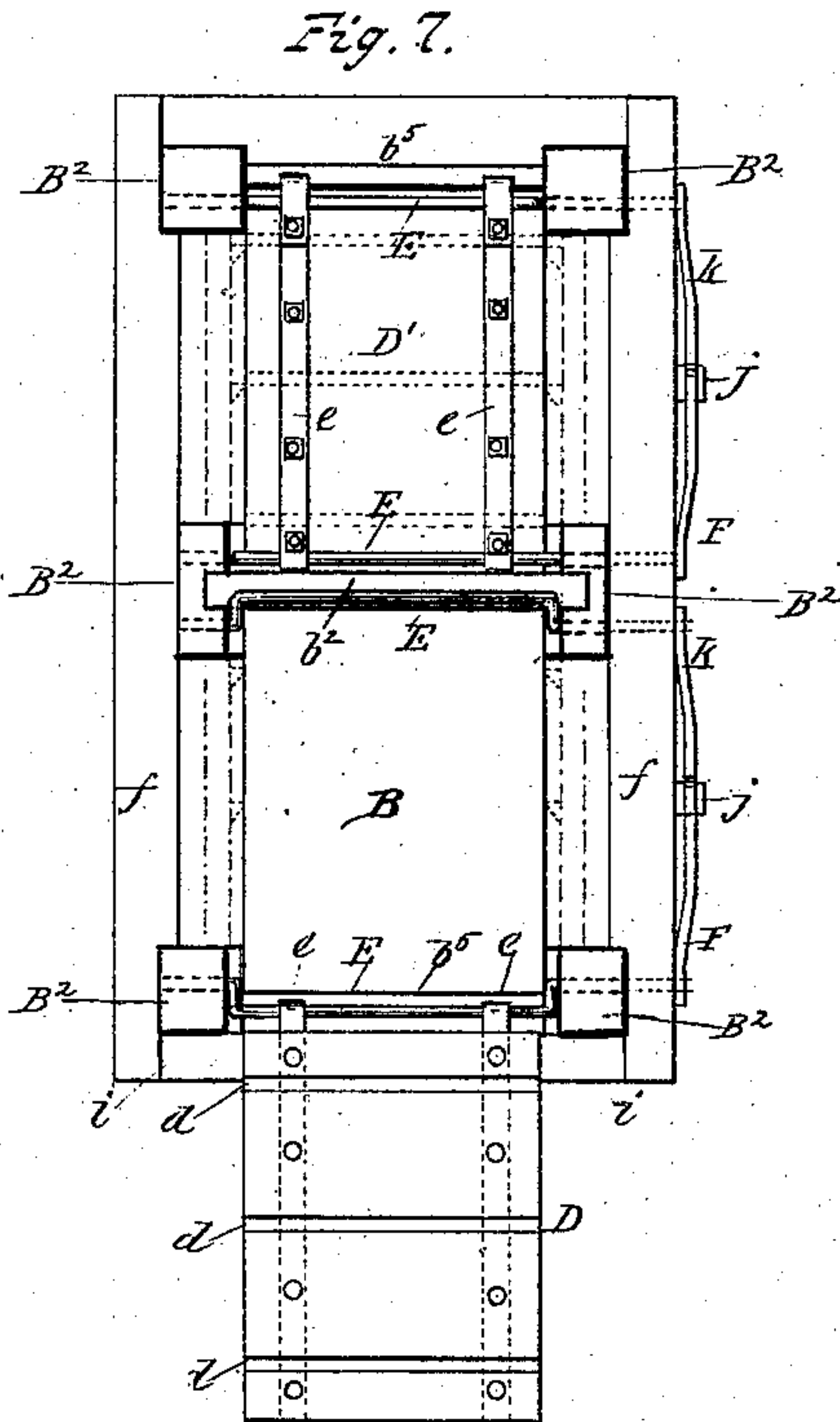
(No Model.)

4 Sheets—Sheet 3.

J. LA DOW.
DUPLEX BALING PRESS.

No. 294,638.

Patented Mar. 4, 1884.



Witnesses: *Charles L. Smith*
Alex. Selkirk Jr.

John La Dow
Inventor.
His Atty Alex. Selkirk.

(No Model.)

4 Sheets—Sheet 4.

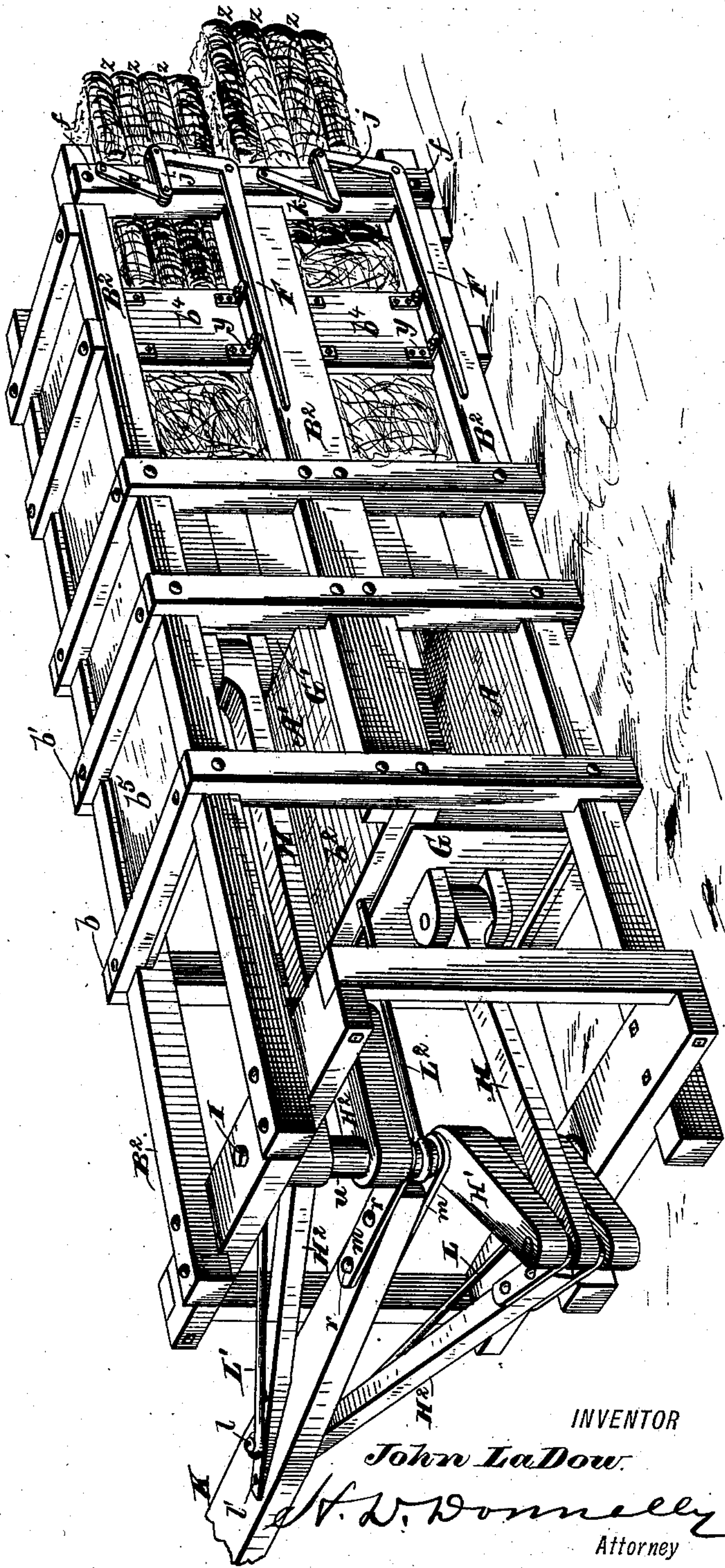
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Fig. 11.



WITNESSES

Robert Everett.

George W. Rea.

INVENTOR

John LaDow.

A. W. Donnelly
Attorney

Attorney

UNITED STATES PATENT OFFICE.

JOHN LA DOW, OF ALBANY, NEW YORK.

DUPLEX BALING-PRESS.

SPECIFICATION forming part of Letters Patent No. 294,638, dated March 4, 1884.

Application filed June 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN LA DOW, a citizen of the United States, and residing in the city and county of Albany and State of New York, have invented certain new and useful Improvements in Duplex Baling-Presses, of which the following is a specification.

My invention relates to certain improvements in the class of baling-presses in which two adjoining baling-chambers and platen-chambers and two platens are operated by means of a system of toggle-levers and sweep-lever in alternate directions, for forming two bales in the same press by alternate action of parts; and it consists in the construction, combination, and arrangement of parts herein-after particularly described and set forth.

The objects of my improvements are to produce a simple duplex press which will be cheaply constructed, durable, and powerful in its operating parts, and be capable of forming and pressing two bales simultaneously without lost motion or time.

I attain these objects by means of the devices and modes of construction and arrangement of parts illustrated in the accompanying drawings, in which the same letters of reference indicate like parts throughout the several views.

Referring to the drawings, Figure 1 represents a side elevation of my improved press. Fig. 2 is a horizontal view from above, or plan view, with the upper planking of the press removed to show the partition-wall. Fig. 3 is a longitudinal vertical sectional elevation. Fig. 4 is a cross-sectional view taken at line No. 1 in Fig. 3. Fig. 4^a is a detail view, showing the adjustable division-pieces. Fig. 5 is a cross-sectional view taken at line No. 2 in Fig. 3. Fig. 6 is an end view of the discharge end of the press, with doors removed. Fig. 7 is a view of the rear end of the press and doors. Fig. 8 is a perspective view of the interchangeable and removable devices for closing the feed-openings of the press. Fig. 9 is a plan view of the toggle-lever mechanism and its adjuncts, and illustrates the manner in which one limb of each toggle-lever may have its angle changed in relation to the sweep-lever. Fig. 10 is a plan view of one of the retaining-dogs, on an enlarged scale, illustrating its con-

struction and arrangement. Fig. 11 is a perspective view of the press.

Referring again to the drawings, A represents the lower, and A' the upper, platen-chamber; B, the lower, and B' the upper, baling-chamber. The opposite vertical sides of platen-chambers A A' are each provided with feed-openings *a* and *a'*, made each with dimensions equal to that of the other, and through said openings (when unclosed by closing-boards) the material to be pressed will be introduced into the respective platen-chambers said openings communicate with. Two closing-boards, C, Figs. 5 and 8, are provided for closing feed-openings when required. The said closing-boards are each made of a width corresponding with the vertical extension of said feed-openings, and of a length which will extend its end portions past vertical girts *b* and *b'*, and have bearing against the inner side surfaces of the same, and is stiffened by cleats *c* and provided with a button, *c'*, or other retaining device for holding it in place. Said closing-boards are inserted into place in said feed-openings from the inner side of said platen-chambers, and secured by button *c'*, being turned so as to engage with the frame-work of the press, as shown. In Fig. 5 the two closing-boards are shown to close the left-hand side of the press, in which case the material will be fed into the platen-chambers through the right-hand openings, *aa'*, and when it is desirable to feed into said chambers from the left-hand side the said closing-boards will be transferred to the right hand side openings. By means of the said side openings and said interchangeable closing-boards all necessity of shifting the press or extra shifting of the hay or straw is avoided, so that the press may be planted between two stacks or two bays and be in convenient situation for introduction of the material to be pressed. The length of the platen-chambers is such that there will be a chamber or space, X, in the chambers between the face of the platens when they are at the end of their compressing-stroke and the adjacent ends of the baling-chambers, in which space the sections of the bales will be formed before being thrust into the baling-chambers. Baling-chambers B B' are situated one above the other, and separated from each other by

partition-wall b^2 , which extends through the full length of the press-box, separating also the platen-chambers A A', as shown in Fig. 3, in this class of press, and leave the sides open and introduce a division-plate in each open side, so as to form duplex openings b^3 , Figs. 1 and 3, in each side. The duplex openings are shown applied to the vertical sides of the baling-chamber; but they may be applied to the horizontal sides of a baling-chamber whether a single chamber be used or two chambers employed side by side in a press. These duplex openings occupy a rear and forward portion of each of the oppositely-disposed sides of the baling-chamber, and are separated by the division-pieces b^4 , as shown. These division-pieces are made of stout pieces of wood, which are framed into or are secured to the frame-timbers of the press, and extend vertically across the sides of the baling-chambers, and are made with a width nearly or about equal to one-third of the entire length of said chambers, as shown, or may be made movable, as shown in Fig. 4^a; and they are each made to be in situation relatively offsetting from the vertical plane of the inner side surfaces, c^2 , of longitudinal timbers B^2 , as shown in Fig. 4. Secured to the inner side surfaces of these division-pieces b^4 are ledges c^3 , which ledges, with the upper surface, c^4 , of the lowermost timbers, B^2 , of each baling-chamber, form shelves for temporarily supporting the wire bands Z while they are being placed around a pressed bale, P, within the baling-chamber. These ledges c^3 and upper surface, c^4 , will in number be equal to the number of grooves in the platen-heads G G' and the rear end grooves of the respective baling-chambers. These division-pieces b^4 with bearing-ledges c^3 may be made movable, so that each two opposite ones may be moved toward and from each other, so as to be set nearer to or farther from the bale, as may be required. I prefer to do this by means of slotted brackets y , secured to the ends of said pieces, and bolts y' , passing through the timbers B^2 and working in the said slots, as shown in Fig. 4^a. The frame-timbers B^2 have portions of their vertical inner side surfaces, c^2 , made to form, with the horizontal walls b^2 and b^3 , resisting-surfaces to the sides of the bale, as illustrated in Fig. 4, and serve to steady the sections of the bale when being compressed together and when moving rearward in their respective baling-chambers. The rear or discharge ends of said baling-chambers are each closed by a door, the lower chamber, B, by door D, and the upper chamber, B', by door D'. I prefer to hinge the lower door D at the rear end of chamber B by loop-hinges e , attached to a rod, so that said door will be capable of being folded downward, and the door D' to the chamber B' will be likewise hinged to a bar or rod, so as to be thrown upward, as illustrated in Fig. 7 of the drawings. The inner sides of said doors are provided with grooves d , made correspondingly in line with cleats c^3 and grooves in

platens G G', as shown in Fig. 3. If preferred, the said doors may be hinged from the vertical sides at the rear ends of the baling-chambers; or they may be detachable from the same and be placed in position by the hand of the operator to close said rear ends. These doors operate as resisting-surfaces, against which the material within the baling-chambers is pressed and held after being pressed until the bales have been tied off or banded.

Extending horizontally across the rear open ends of the baling-chambers are eccentric locking-bars E, arranged in pairs, one pair facing the rear opening of chamber B and the other pair facing the rear opening of chamber B', as shown. The said locking-bars are shown in Figs. 1, 2, and 7, and have their outer crank-formed ends, i , pivoted in the timbers B^2 , with one end passed through the vertical rear end girts, f , while the throws of their middle or eccentric portions, i' , are made to be in direction rearward when in normal position, as shown in Figs. 1 and 2. To one end of the lowermost locking-bar of each pair is fixed an angular lever, F, and the short end of each of said angular levers is pivoted to a link, j . The link is pivoted at its opposite end to lever or arm k , which is fixed to the uppermost locking-bar of each pair, as shown. By means of said angular levers and their connected links and lever-arms each pair of locking-bars will be made to bear against the outer sides of the end boards D D' of the respective baling-chambers, when said angular levers are forced downward, or released from the same when said angular levers are forced upward. Door D is shown to be hinged to the lowermost bar of the lower pair, and door D' to the uppermost bar of the upper pair.

Arranged in the sides of the chamber portion X of each platen-chamber are retaining-dogs s . (Shown by dotted lines in Figs. 1 and 2 and by full lines in Fig. 10.) The said dogs have each of their rear ends made of a bent or rocker form, and are held in place from shifting by bolts s' and supported forward of said bolt by spring s^2 , as shown in Fig. 10. When the material to be pressed is crowded against the inner side surfaces of said dogs, said dogs will yield outward to permit a ready passage of the said material, or a division-board, (if such a board is used.) After the passage of said material or division-board, the free end of said dogs will be forced inward by spring s^2 , and will hold against said material or board to prevent their being moved back.

Working in the lower platen-chamber, A, is platen G, and with platen-chamber A' is platen G'. The mechanism operating each said platen in its platen-chamber consists of toggle-levers H H', arranged one on a plane above the other. The lowermost one of said toggle-levers is pivoted about central with the lower platen, G, and the uppermost one to the upper platen, G', in the same manner. The said two toggle-levers are made each equal to the

other, and have each a long limb, H , pivoted at one end to its platen and its opposite end pivoted to the short limb H' , and also to connecting-bar H^2 , which has its forward end pivoted to sweep-lever K . The short limb H' of each toggle-lever is pivoted at one end to long limb H and connecting-bar H^2 , and its opposite end to the fixed vertical shaft I . The said two toggle-levers are arranged so that their long limbs H H will each be at an opposite angle in relation to that of the other, and their short arms H' H' are fixed in relation to the vertical shaft I , so as to be radial therefrom, and also in opposition to each other, as shown. The sweep-lever K is also pivoted to the fixed vertical shaft I by means of the coupling-plates m m —one above and one below—and bolts n n , so as to vibrate or swing on the said shaft in either direction, and it is held braced from said vertical shaft by means of rods L L' , pivoted each at its rear end to said vertical shaft, the rod L to the lower end portion of the same, and rod L' to the upper end portion thereof, as shown. The opposite or forward ends of said rods are connected to sweep-lever K by means of the coupling-bolt l , by which also connecting-bars H^2 H^2 are pivoted to said sweep-lever. A rod, L^2 , is connected at one end to the shaft I and at the other end to some suitable part of the press, and is designed to brace the shaft against the strain to which it may be subjected from the connection of the other parts thereto.

By the above manner of constructing and arranging the toggle-levers H H' , and connecting the same with their respective platens G G' and fixed vertical shaft I and connecting-bars H^2 , I dispense with the use of a double-crank shaft and also with a cross-head, as heretofore used, and am enabled to employ (as a stationary resisting device) a simple stationary vertical shaft, with which the short limbs of both toggles will be pivoted, as also the rear end of the sweep-lever. By means of the coupling-bars H^2 H^2 being each pivoted to the pintle which hinges the short and long arms of the toggle-levers together, the vertical shaft is relieved of torsional strain as the crowding force on the toggle-levers is exerted more or less endwise on the long limb of the lever, and also exerted on the outer end of the short limb in a direction best calculated to brace the same from yielding before the resistance which the toggle-levers must each overcome when pressing the platens against the material in the respective baling-chambers.

By the above-described form of construction and arrangement of the toggle-levers one with the other and their coacting parts, the lines of the limbs of each toggle-lever when straightened out or contracted to their full extent will be prevented from being brought coincident with each other or locking past their center of pivots for the reason that the inner side surfaces of the long arm of the contracted toggle-

lever will have a bearing against a side of vertical shaft I , (or the sleeve u on the same,) and hold said long limb from passing to a line coincident with the line of the short limb of said toggle, and will thereby hold the sweep-lever from being carried onward to a point which would force the straightened limbs of the other toggle-lever to such relative positions one with the other as to make their lines coincident. By these means the sweep-lever is made to be free from rebound or sudden reactive impulse when the animals operating the same are being turned and the sweep is being reversed in its direction of movement.

The manner in which the several parts of my improved baling-press operate is as follows, viz: The feed-openings a a' at one side of the press-body will be first closed by closing-boards C , and the animal to operate the press will be hitched to the outer end of the sweep-lever K . End-closing doors D D' will be moved in place in the rear end of each platen-chamber, and the angular levers F will be each thrown to position shown in Fig. 1, when the eccentric portions of locking-bars E of each pair will be thrown toward each other, so as to be in position to have bearing on the rear side of the end-closing doors D D' . When the sweep-lever K is moved in direction of arrow 1 to position of dotted lines K' in Fig. 1, the upper platen, G' , will be thrust back to the rear end of its platen-chamber, and the lower platen will be drawn forward to the forward end of its chamber, and as the animal is being turned to reverse the direction of movement of sweep K the operator will introduce the hay or other material into the lower platen-chamber through the unclosed side opening a , as indicated by arrow in Fig. 5. When the sweep-lever has been moved by the animal in direction of arrow 2 from position of dotted lines K' to that of dotted lines K^2 in Fig. 2, the upper toggle-lever H H' will be so operated as to move the upper platen forward, while the lower toggle-lever H H' will be operated so as to crowd the hay within the lower platen-chamber back into the lower baling-chamber in a somewhat compacted form, and past the retaining-dogs s . While the animal is being turned for moving the sweep-lever back to position K' , the operator will introduce a charge of hay into the upper platen-chamber through the upper feed-opening a' , in direction of arrow, and as the sweep-lever is being moved in direction of arrow 1 and from position of dotted lines K^2 to those of K' , the lower platen will be drawn forward by the lower toggle-lever, and the upper platen will be thrust back and crowd the charge of hay rearward and into the upper baling-chamber, to be held by the retaining-dogs s s of said chambers. A repetition of these operations will be made, charges of hay will be made alternately into the upper and lower platen-chambers, and the sweep-lever will be moved alternately in direction of ar-

rows 1 and 2 until both baling-chambers have been filled with compacted sections of a bale, when a partition-board may be introduced into the respective platen-chambers through their
 5 respective feed-openings (when the platens are in situation forward) in the usual manner, and the operation of introduction of other charges of hay into the platen-chambers will be continued. The sweep-lever will then be drawn
 10 to position of dotted lines k^2 , and will force the lower platen back against the several charges in front of a partition-board in the lower baling-chamber, and also exert a great pressing force on the several sections of the forming bale held
 15 between the rear-end closing door and a partition-board or grooved platen-head, G, if the partition-board is dispensed with. The sweep-lever will be held in position K^2 until the operator has tied off the bale in the lower baling-
 20 chamber. The position of the sweep-lever will then be changed to that of K' , when the several sections of the forming bale in the upper baling-chamber will be compressed between upper door D, and a partition-
 25 board, if used, on grooved platen, when the bale will be tied off. In tying off the bale formed in the baling-chamber, the operator will, in a direction indicated by arrow No. 3, insert between the inner side surface of division-piece b^4 (at one of the sides of the baling-
 30 chamber) and the outer side surface of bale P tie-bands $z z z$, with the tie-bands supported on ledges c^3 and the upper surface, c^4 , of timbers B^2 , until some four or more inches of the inserted end portions of the band is made to
 35 project past the front edge of division-piece b^4 , when these projecting portions of the band will be turned outward and made to engage in narrow notches $v v$, provided in the forward
 40 edges of said division-piece. (Shown in Figs. 2 and 3.) The operator will then pass the opposite end portions of the tie-band through the slots in the rear-end closing-doors D (or
 45 D') in direction of arrow 4 in Fig. 2, and thence forward in direction of arrow 5, and between the opposite side division-piece b^4 , and the bale with the wires supported upon ledges
 50 $c^3 c^3 c^4$, and thence across the baling-chamber in direction of arrow 6, and through the slots in the follower or division-board P', until their
 55 hooking ends are completely passed through, as indicated and shown by dotted and full lines $z z z$ in Fig. 2, when the two ends of each of said tie-bands will be connected in the usual man-
 60 ner, when the compressing of the bale is fully completed. Angular levers F will be thrown upward, and eccentric locking-bars will be turned open and release doors D D', when the lower one will be thrown down and the upper
 65 one up. The sweep-lever will then be operated alternately in direction of arrows 1 and 2, and charges of hay will be introduced alternately in lower and upper platen-chambers, to be carried back by the alternate movements

dogs, and as each charge of material is thrust back the tied-off bales will be gradually worked
 backward and out from their respective baling-chambers. As soon as the tied-off bales
 have been fully delivered, doors D D' will be
 70 again closed and secured, when the operation of charging the press with material and the moving of the sweep-lever will be resumed and continued until the other bales are formed and
 tied off in the manner before described. 75
 These several operations being continued, a greater amount of hay may be pressed in a given time than is ordinarily done, and the bales thus formed will be made to be more
 compact than bales are made which are
 80 merely pressed under resistance against another bale, and without the resistance offered by an end-closing board or door. When the sweep-lever is operated alternately in direc-
 85 tion of arrows Nos. 1 and 2, said sweep-lever will swing on or from vertical shaft I, and at each movement in direction of arrow 1 will force the upper coupling-bar H^2 against
 the hinged connection ends of the long and short limbs of the uppermost toggle-lever H
 90 H' , and cause said limbs to gradually straighten out and thrust the upper platen, G', rearward, while at the same time the lower coupling-bar H^2 will be made to draw on the piv-
 95 oted ends of the limbs of the lower toggle-lever H H' , and gradually contract the same until checked by the vertical shaft striking
 against the inner side of the long limb of said lower toggle-lever. This will also check the
 100 limbs of the upper toggle-lever from being fully straightened out, so that all liability of the limbs of either toggle-lever being brought to
 act at their centers will be obviated. When the sweep-lever is moved in direction of arrow 2,
 105 lower coupling-bar H^2 will be made to gradually straighten out the lower toggle-lever, and upper coupling-bar H^2 gradually contract
 the upper toggle-lever, and in a like manner the said toggle-levers will be prevented from
 110 being brought to act on their centers of motion. This prevention by the vertical shaft I of the toggle-levers becoming set past or on the
 centers of motion removes all liability of the sweep-lever to rebound and endanger the ani-
 115 mal when having the direction of movement of said sweep-lever reversed, and all liability
 of sudden concussions of the limbs of the toggle-levers is wholly removed.

When the press is to be transported from place to place, or to be stored away, the bolts
 120 $n n$ will be removed from the sweep-lever at its plates $m m$, and the sweep-lever (having been previously turned to one side) will be
 swung on coupling-bolt l to one side of the body of the press, as indicated by dotted lines
 125 in Fig. 2.

By means of the above-described improvements the duplex press is made to be more
 convenient for feeding the charges of material to the press, as that operation may be per- 130

formed from either side, while the press is standing in the same position, between two stacks or bays.

The operation of tying off the bales is made to be more easy and convenient than when done in a vertical direction through slots arranged so that the ties can be passed through them from the bottom to the top of the baling-chamber, as heretofore practiced in duplex presses.

By the employment of a sweep-lever and the two sets of toggle-levers, which are each operated but once at each full vibration of said lever, I am enabled to exert great pressure on each bale, and also give ample time (at the time of changing the direction of movement of the sweep-lever) for feeding the material to be pressed into the feed-openings alternately, as above described; and by means of bars H^2 , H^2 , branching from the sweep-lever and being pivoted to the joints of the toggle-lever as they are above described as being arranged, all torsional strain on vertical shaft I is avoided, and the toggle-levers are made to have the force of the sweep-lever more effectively applied.

If preferred, the upper and lower eccentric locking-bars, E E, at the rear end of the baling-chamber, may be dispensed with, and simple straight bars E' E' may be substituted, as shown in Fig. 6. In such a case links j and arms k may also be dispensed with. Simple levers F F may be employed to turn the other eccentric locking-bars E, which will be retained.

In some cases it may be desirable to change the angle of the levers H and H' of the toggle mechanism to a relatively less angle with each other, for the purpose of lessening the length of the throw of the platens and also lessening the length of the movement of sweep-lever K, so that the press may be operated on a barn-floor or at a side of a building. I would, therefore, provide in bars H^2 H^2 , Fig. 9, a series of two or more holes, l l , adapted to receive the pin or bolt l for changing the angle of said lever.

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

1. A baling-chamber provided in each of two of its oppositely-located sides with a duplex opening and a division-piece located between the two openings comprising said duplex openings of the side and facing said baling-chamber.

2. The combination, with a baling-chamber having each of two of its oppositely-located sides made with duplex openings, of an adjustable division-piece provided with tie-band-supporting ledges.

3. The combination, with a baling-chamber which has each of two of its oppositely-located sides made to consist of duplex openings, a rear-end closing-door provided with grooves for receiving tie-bands, and a follower or partition-piece or a platen provided with similar grooves,

of division-piece b^4 , provided with tie-band-supporting ledges.

4. The combination, with a pressing-chamber, a platen, and a division-board or follower, provided with grooves, of a baling-chamber, which is provided with a rear-end-closing door provided with corresponding grooves, and a division-piece provided with tie-band-supporting-cleats, which are located at each of two of its oppositely-located sides, and made to separate the duplex openings of said sides.

5. In a duplex baling-press, the combination and arrangement, with a pressing mechanism which is adapted to move two platens simultaneously, but in opposite directions and alternately, of two baling-chambers, which are arranged one above the other, each provided with oppositely-located duplex openings and division-piece b^4 , provided with ledges c , made in their respective vertical sides.

6. In a baling-press, the combination, with platen-chamber A or A', having feed-openings a a' made in both vertical sides thereof, of the removable and interchangeable closing-board C, whereby either of the vertical sides of said chamber or chambers will be closed at will, while the opposite side will be open, substantially as and for the purpose set forth.

7. In a baling-press, the combination, with a baling-chamber and an end-closing board or door fitting in said chamber, and provided with tying-off grooves or recesses, of eccentric locking-bars E E, connected together by angular lever F, link j , and arm k , so that said bars will be moved simultaneously and in opposite directions for operations with said end-closing board or door, substantially as and for the purposes set forth.

8. In a baling-press, the combination, with platen G, (or G'), adapted to be moved in a reciprocating manner in a platen-chamber, of a toggle-lever having limbs of unequal length in which its long and short limbs will be each pivoted to the other, and also to bar H^2 , coupled with a sweep-lever, with the thrusting end of the long limb pivoted to said platen, and the stationary end of the short limb pivoted to a vertical shaft, and a sweep-lever also pivoted to or from said vertical shaft, substantially as and for the purpose set forth.

9. In a duplex baling-press, the combination, with vertical shaft I, of sweep-lever K, having bars H^2 H^2 branching therefrom and pivoted each to a toggle-lever of a pair which are arranged one above the other and made with like unequal length of limbs H and H', in which the long limbs of each will have a hinged connection with a platen, and the short limbs of each will have a pivoted connection with said vertical shaft, and both limbs of each toggle-lever will be pivoted together, and also to one of said coupling-bars H^2 , substantially as and for the purpose set forth.

10. In a baling-press operated by a sweep-

lever, the combination, with said sweep-lever and the vertical shaft I, of coupling-bars H^2 H^2 , having each a pivoted connection with a toggle-lever, connecting-bolt l , and coupling-plates m m , secured to the rear end of said sweep-lever in a detachable manner, whereby said sweep-lever may, at will of the operator, be made to have a rigid connection with its branch arms and with an arm of each of said toggle-levers and the vertical shaft, and be disconnected from said vertical shaft, and have a flexible connection with each said coupling-bars, and be swung against a side of the press-

body, all substantially as and for the purpose set forth. 15

11. In a baling-press, the combination, with a sweep-lever and toggle-limbs, H H' , of coupling-bars H^2 H^2 , provided with a series of pinning-holes, l' l' , and pin or bolt l , whereby said toggle-limbs may be adjusted at different angles, as set forth. 20

JOHN LA DOW.

Witnesses:

RICHARD P. DUMARY,

CHARLES SELKIRK.