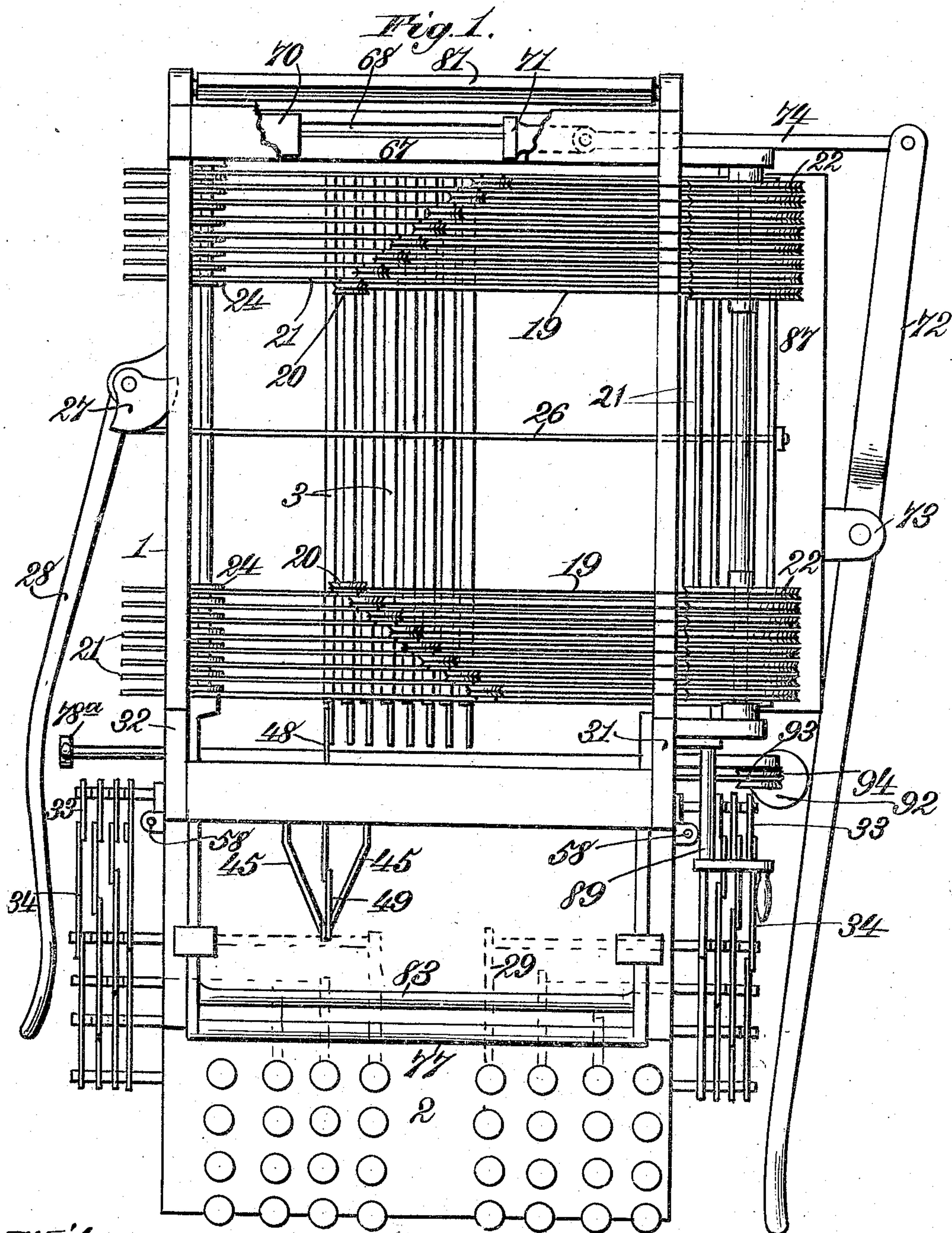


B. CADE.  
COMPOSING AND LINE CASTING MACHINE.  
APPLICATION FILED AUG. 10, 1908.

920,021.

Patented Apr. 27, 1909.  
6 SHEETS—SHEET 1.



Witnesses:  
Robert Everett,  
J. B. Keiser

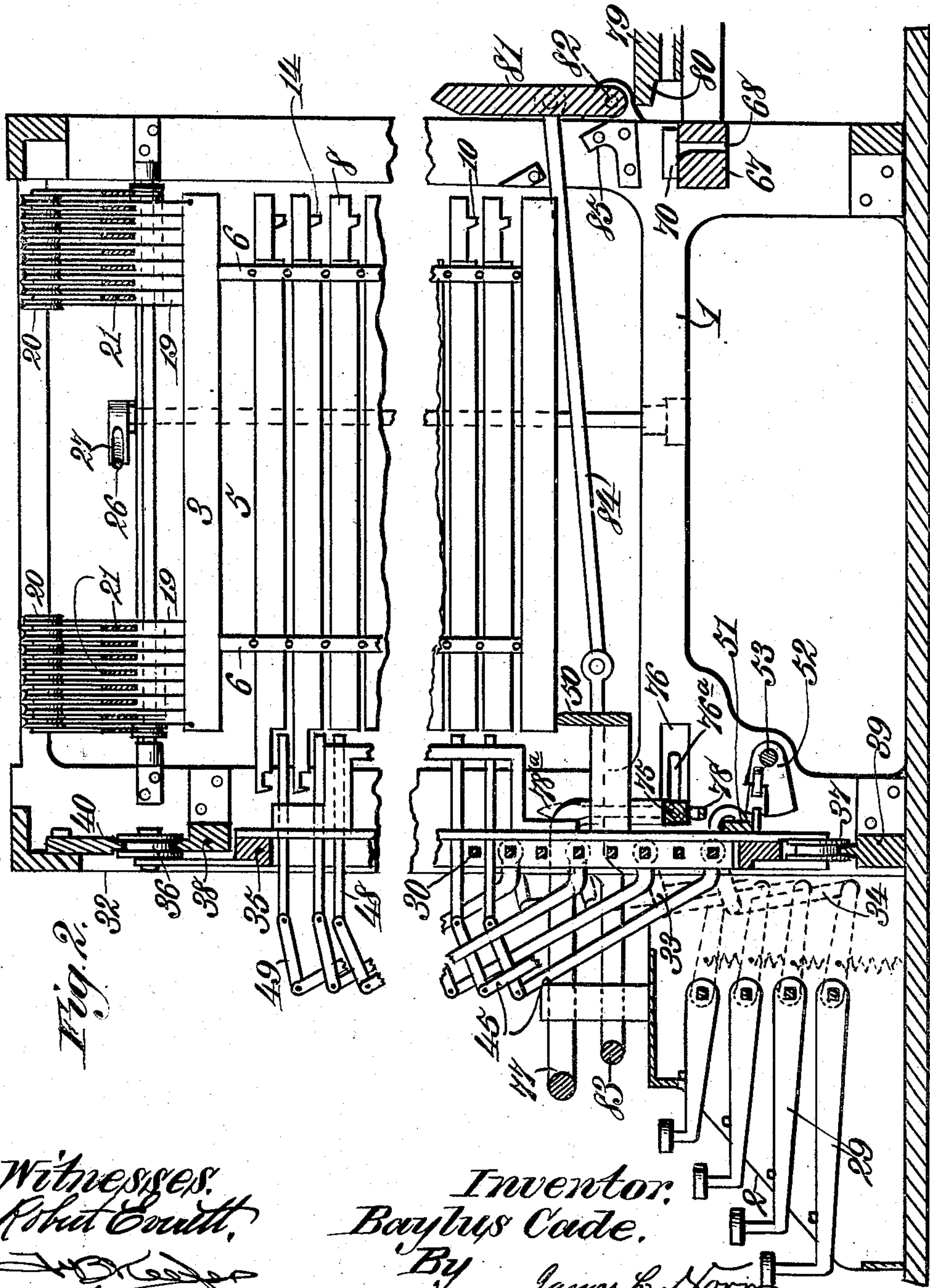
Inventor:  
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By James L. Norris  
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COMPOSING AND LINE CASTING MACHINE.  
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6 SHEETS—SHEET 2.



Witnesses:  
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Inventor:  
Baylus Cade.  
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Att'y.

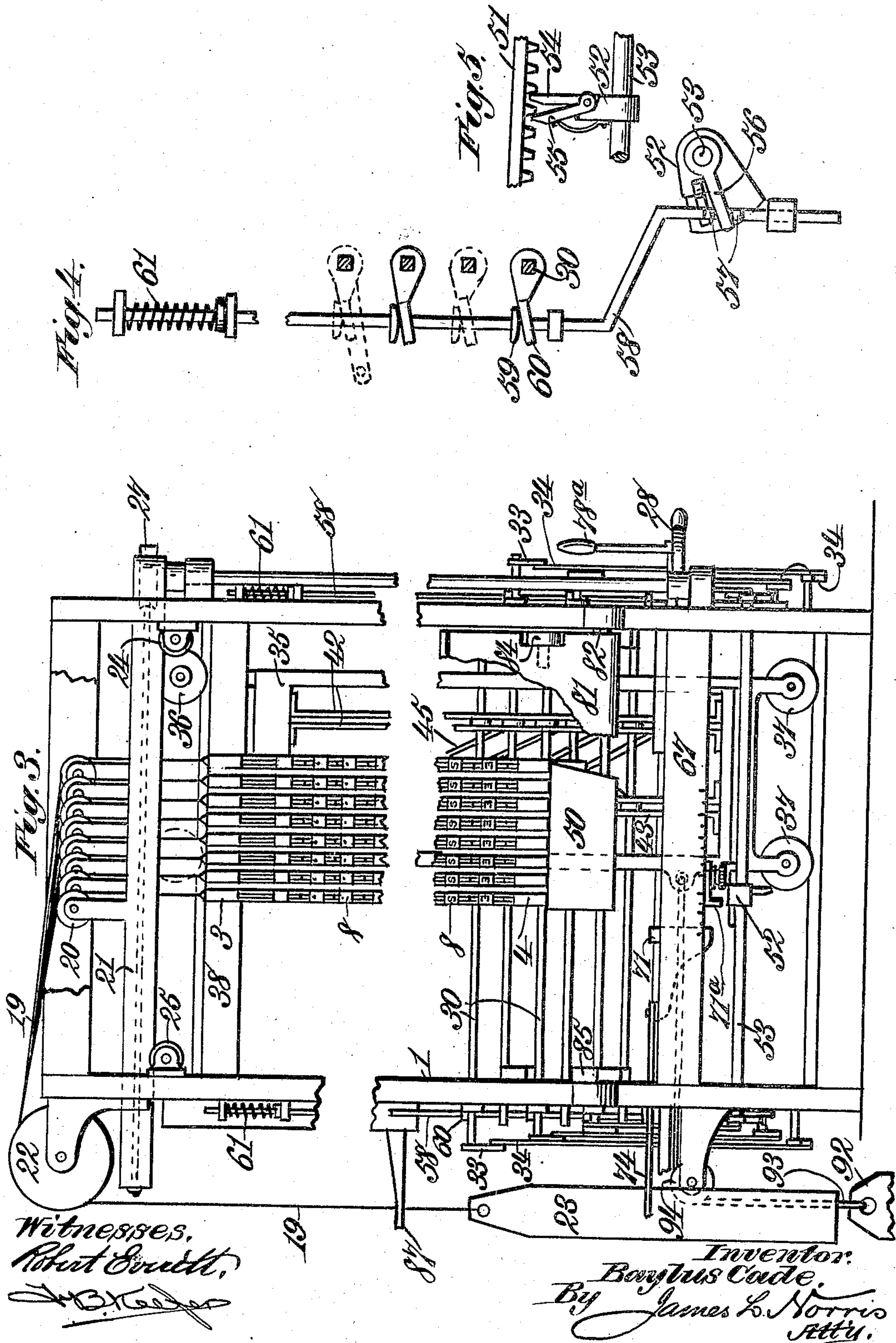


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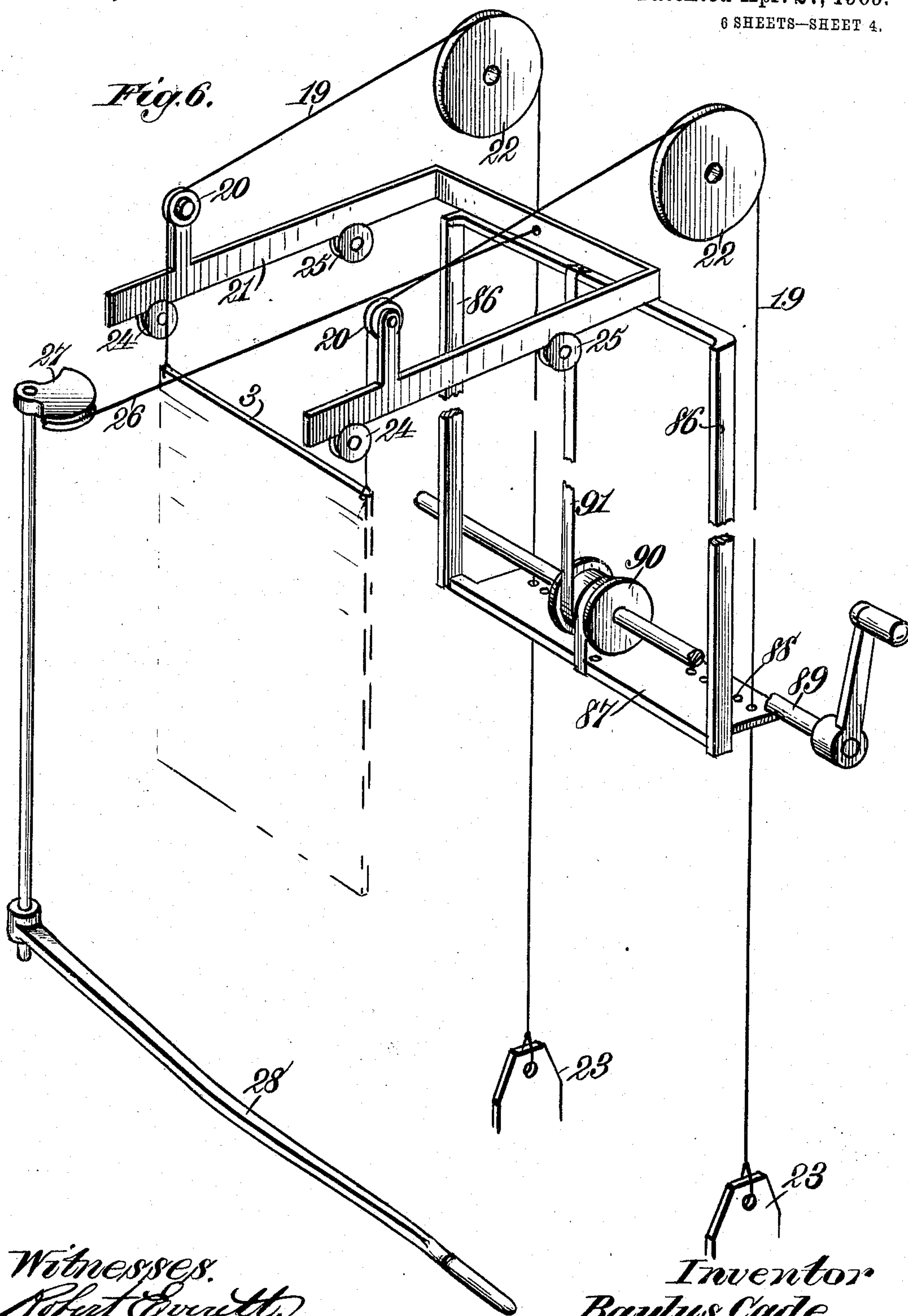
6 SHEETS—SHEET 3.



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920,021.

Patented Apr. 27, 1909.  
6 SHEETS—SHEET 4.



Witnesses.  
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*Atty.*

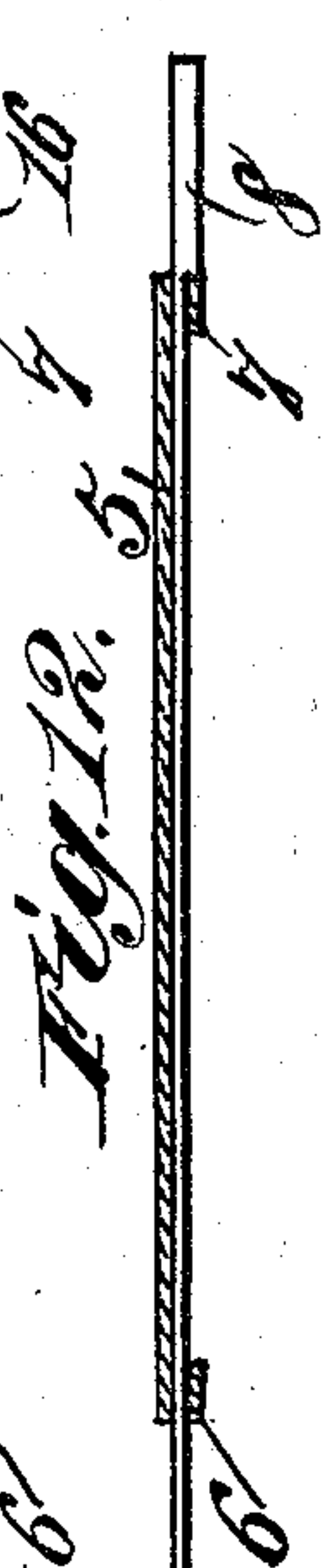
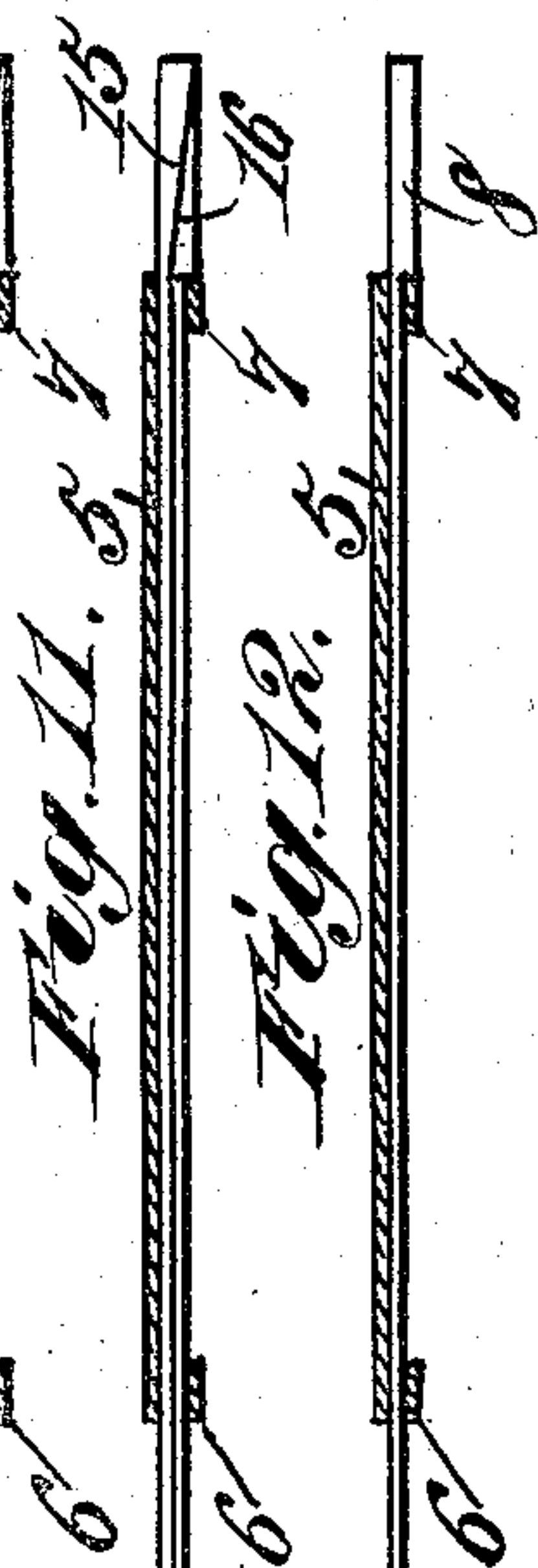
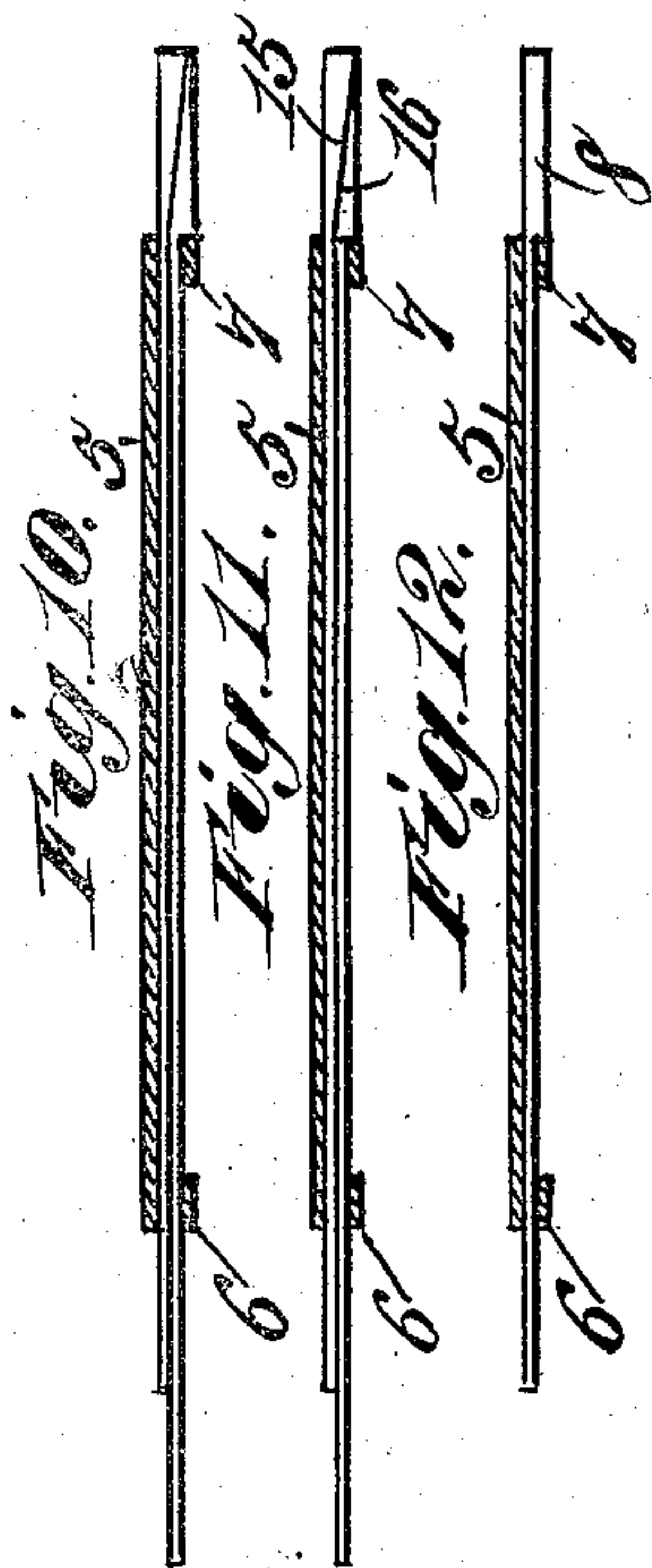
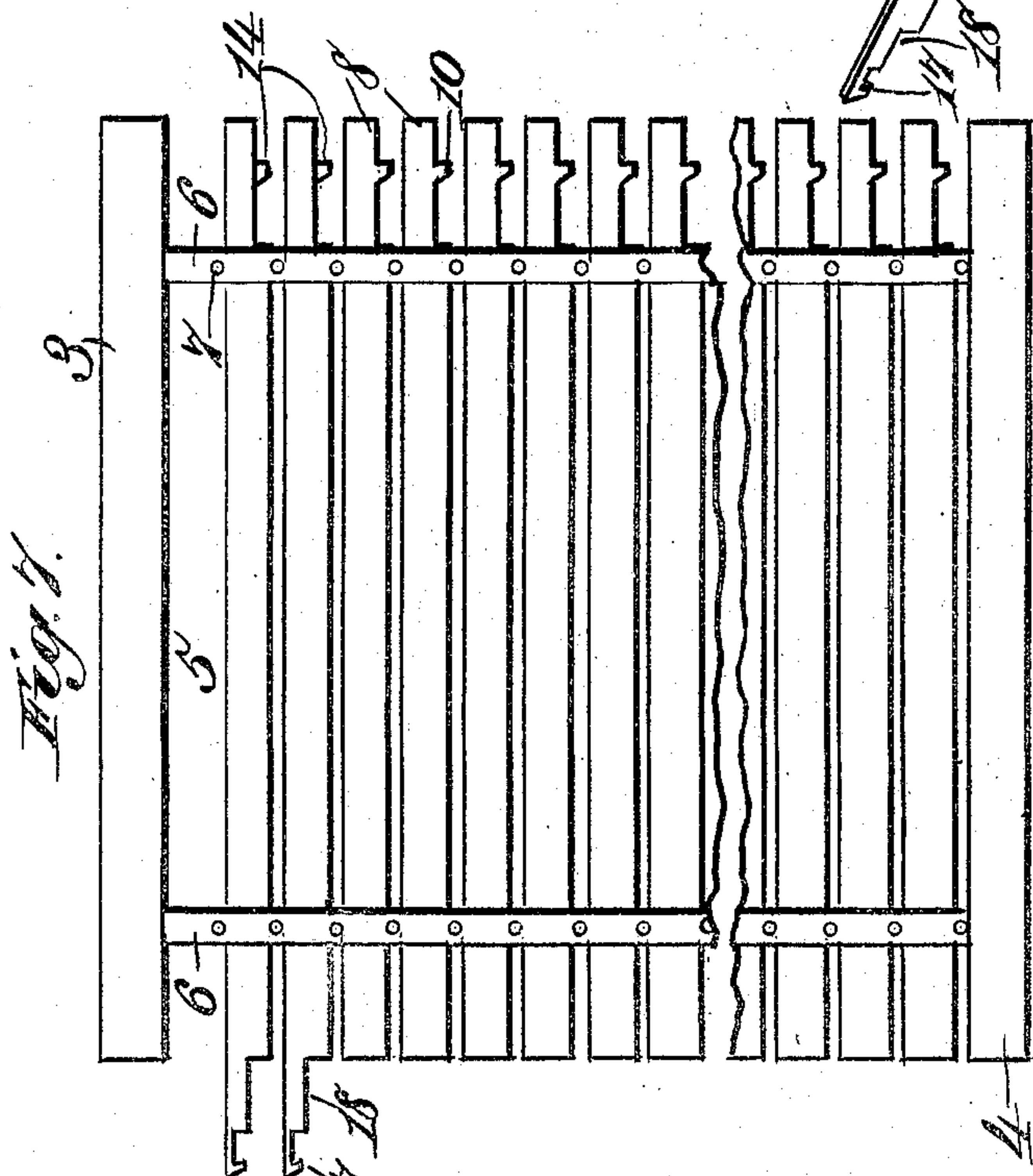
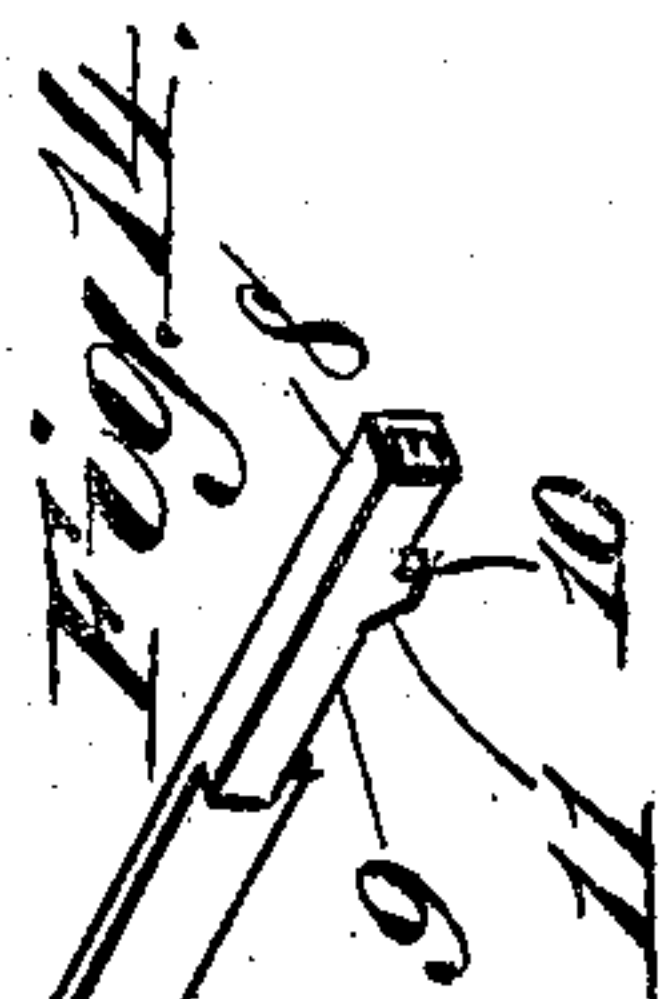
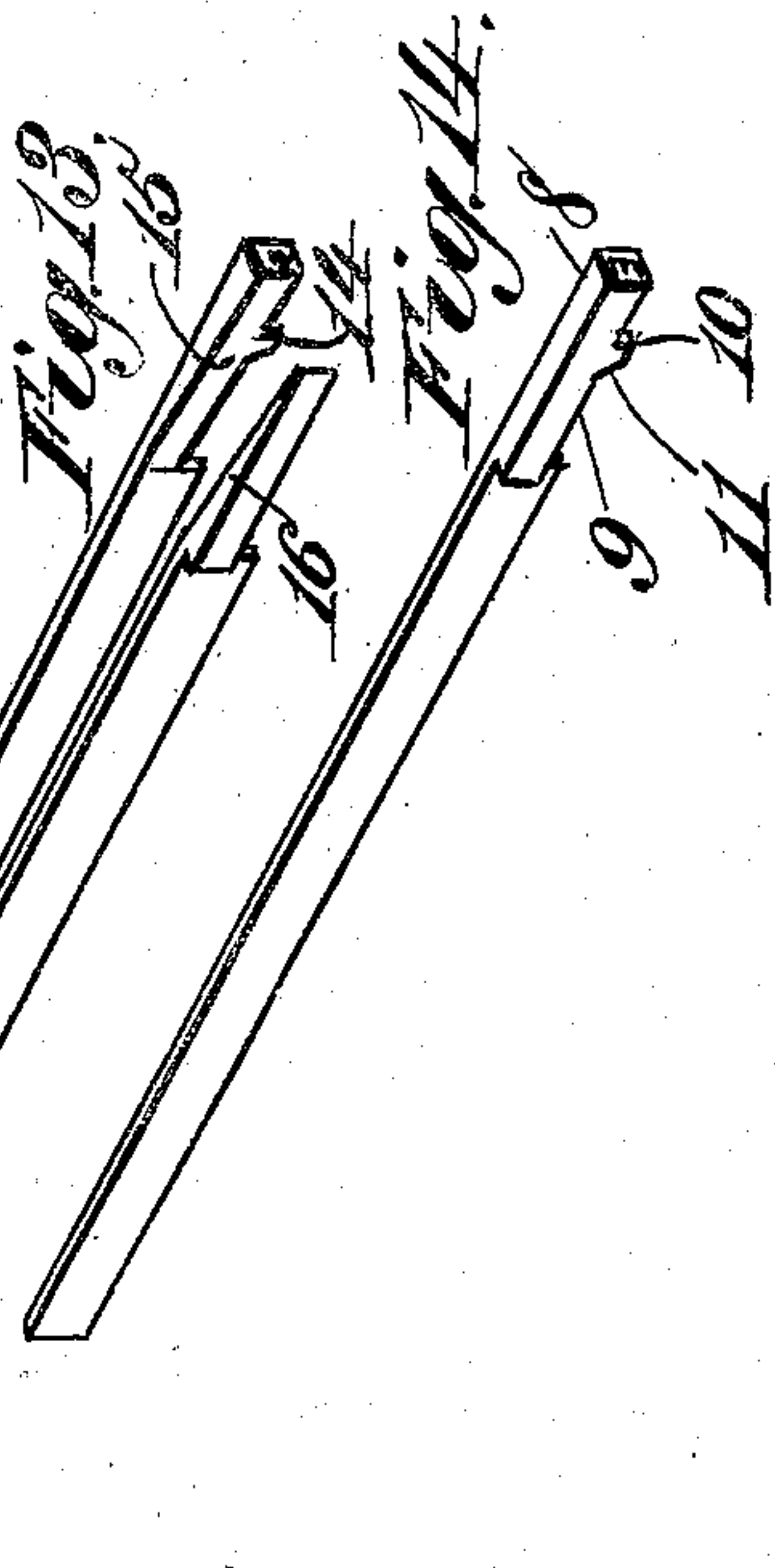
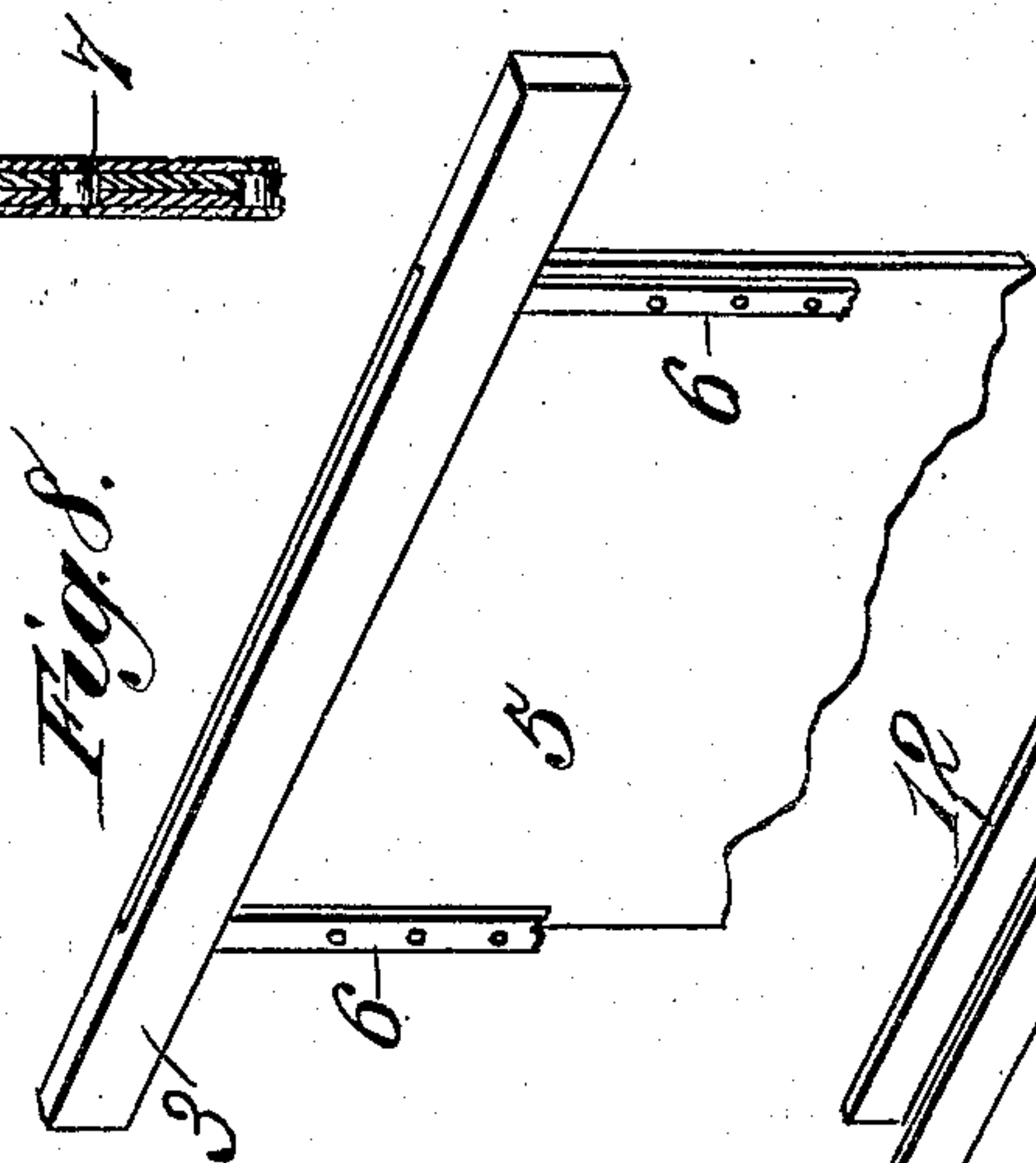
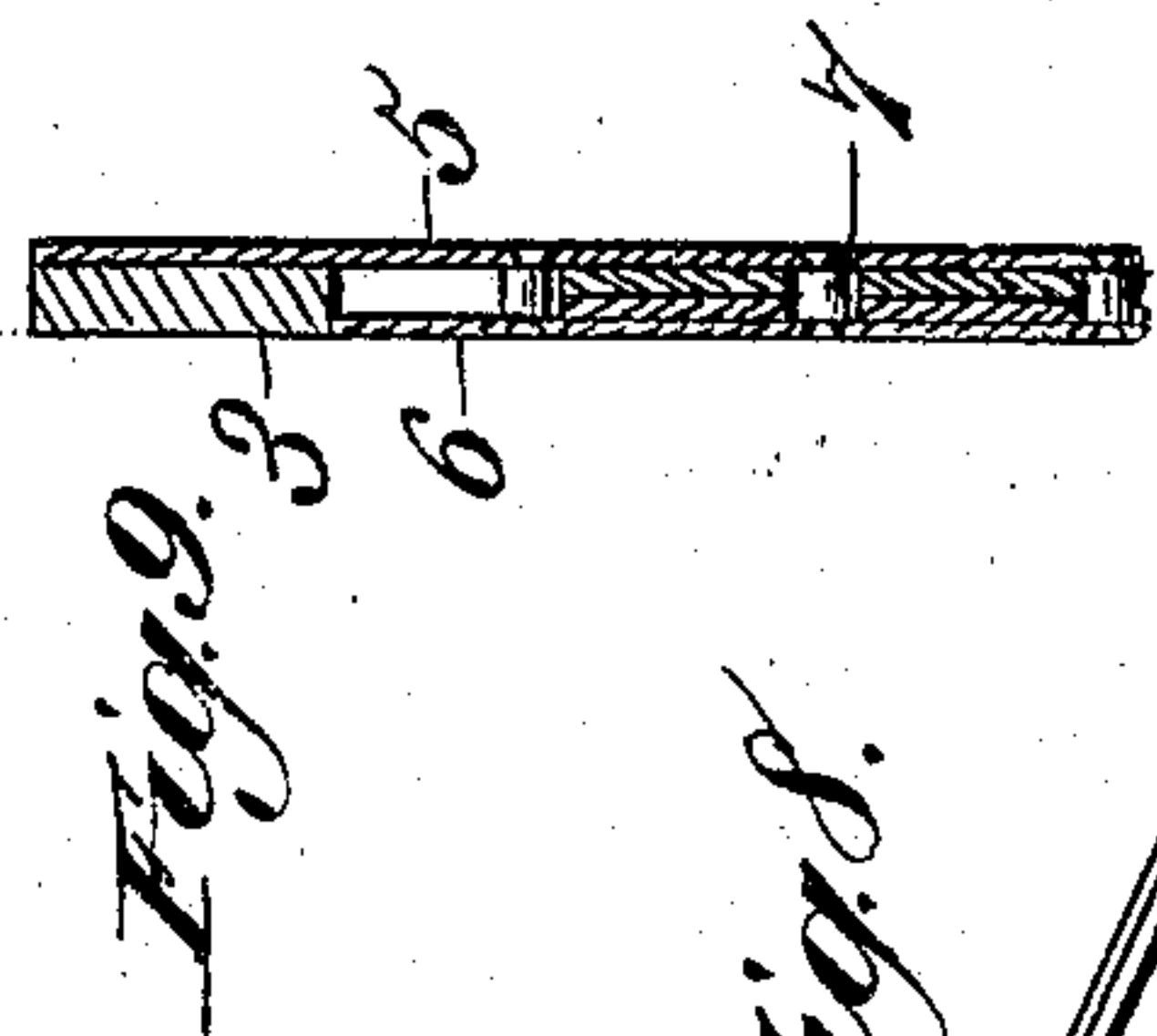


B. CADE.  
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920,021.

Patented Apr. 27, 1909.

6 SHEETS—SHEET 5.



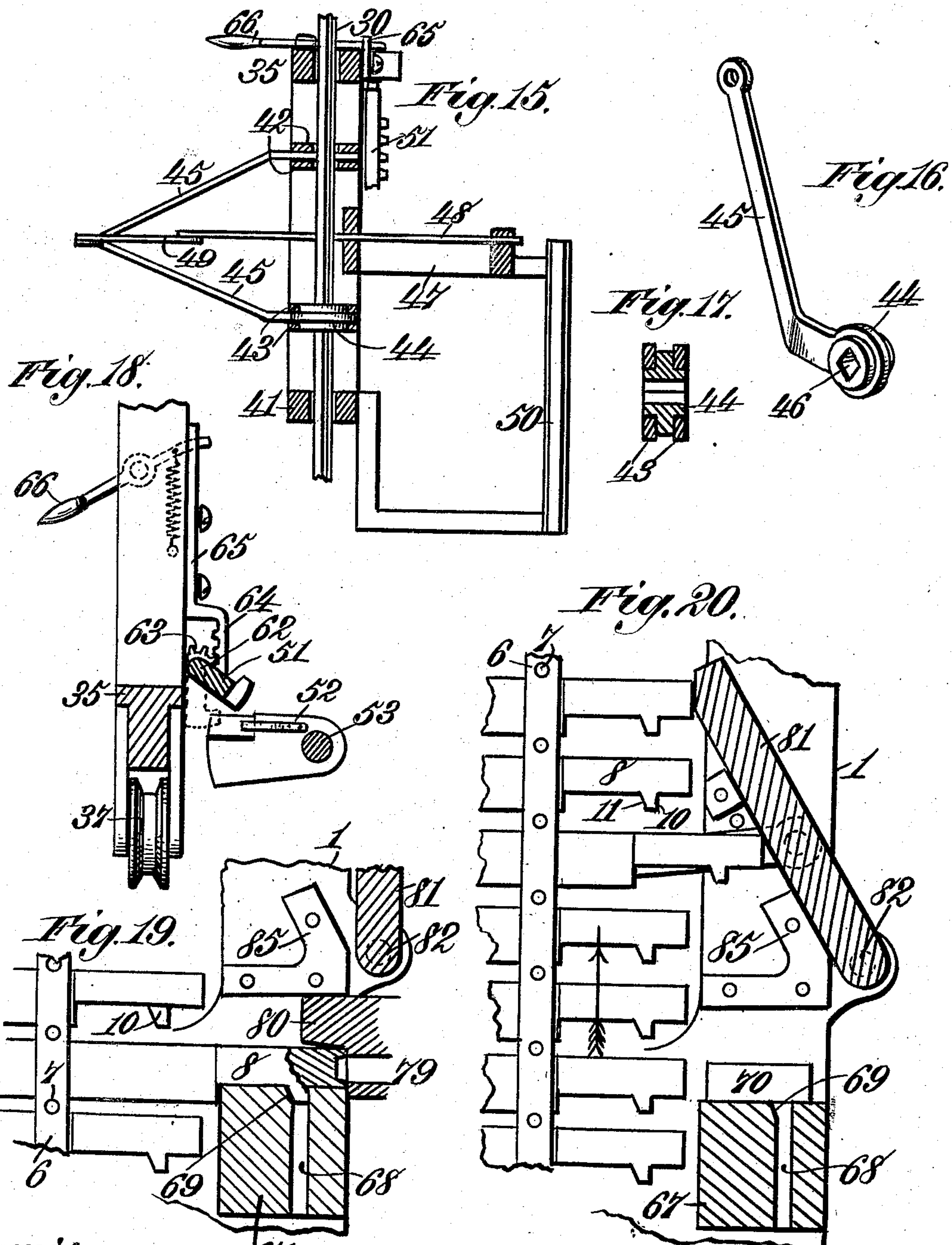
Witnesses:  
Robert Courtt.  
J. B. G.

Inventor:  
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By James L. Norris  
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B. CADE.  
COMPOSING AND LINE CASTING MACHINE.  
APPLICATION FILED AUG. 10, 1908.

920,021.

Patented Apr. 27, 1909.  
6 SHEETS—SHEET 6.



Witnesses.  
Robert Gruett.  
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By *James L. Norris*  
*[Signature]* Atty.



# UNITED STATES PATENT OFFICE.

BAYLUS CADE, OF SHELBY, NORTH CAROLINA.

COMPOSING AND LINE-CASTING MACHINE.

No. 920,021

Specification of Letters Patent.

Patented April 27, 1909.

Application filed August 10, 1908. Serial No. 447,784.

*To all whom it may concern:*

Be it known that I, BAYLUS CADE, a citizen of the United States, residing at Shelby, in the county of Cleveland and State of North Carolina, have invented new and useful Improvements in Composing and Line-Casting Machines, of which the following is a specification.

My present invention relates to improvements in linotype machines of the type wherein the matrices are composed by manipulation of the key-board and a line of type is cast directly from the matrices, and it has for its object primarily to simplify the construction and facilitate the operation of machines of this character whereby the rapidity of operation may be increased and the opportunities for error minimized, the present improvements having reference particularly to the construction of the matrices and spacers, the means for mounting them in their carriers, the mode of selecting the matrices and composing them preparatory to the casting of a line of type directly therefrom, and the mechanism for restoring the matrices and spacers after each casting operation.

More specifically, the invention consists primarily in providing a set of suspended carriers each movable independently of the others and provided with a set of matrices bearing characters in intaglio thereon and corresponding to the characters of a font, these matrices being movably mounted on their respective carriers so as to permit the desired matrix of each carrier to be selected by manipulation of the key-board and then brought into composed position by a movement of its respective carrier, the motion of which carrier is controlled automatically according to the particular matrix thereof which has been selected, means being provided for compacting the several carriers and for locking up the line of matrices preparatory to the casting of the line of type therefrom.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing: Figure 1 is a plan view of a composing and a line casting machine constructed in accordance with my present invention; Fig. 2 represents a vertical section through the machine shown in

Fig. 1, the middle portion of the machine being broken away for convenience of illustration; Fig. 3 is a rear elevation of the machine as shown in Figs. 1 and 2; Figs. 4 and 5 are detail views of the escapement mechanism for controlling the movement of the matrix selecting carriage; Fig. 6 is a perspective view showing the means for supporting a matrix carrier and also the means for compacting the carriers preparatory to the locking up of the line of matrices; Fig. 7 is a side elevation of one of the matrix carriers showing the matrices mounted therein; Fig. 8 is a perspective view of the upper edge of the carrier shown in Fig. 7; Fig. 9 is a detail sectional view of the upper portion of the carrier as shown in Fig. 8; Figs. 10 and 11 represent sectional views through the carrier showing respectively the locking wedges used in connection with the spacers and punctuation marks; Fig. 12 is a sectional view similar to the two preceding views showing one of the matrices; Fig. 13 is a perspective view of the wedge members of the matrix shown in Fig. 11; Fig. 14 is a perspective view of one of the matrix bars shown in Fig. 12; Fig. 15 is a detail sectional view of the matrix selecting carriage; Fig. 16 is a perspective view of one of the plunger operating arms which is movable with the carrier and serves to select the appropriate matrix; Fig. 17 is a detail sectional view showing the manner of mounting this arm in the carriage; Fig. 18 is a detail view of the lower portion of the carriage showing a device for releasing the escapement bar to permit a return movement of the carriage; Fig. 19 is a detail sectional view showing the line of matrices and the mold in casting position; and Fig. 20 is a detail view showing the device for returning the matrices to their respective places in the carriers during the restoring movement of the latter.

Similar parts are designated by the same reference characters in the several views.

My present invention has reference particularly to the means for mounting the matrices and for selecting and assembling the line of matrices preparatory to the casting of the line of type therefrom, and in the accompanying drawings, I have shown one specific embodiment of my invention which is capable of use for accomplishing these purposes. It will be understood, however, that I have shown one form only of my invention and that the same is not necessarily so limited, as certain changes in the detail construction of



the parts and in the arrangement thereof may be made in order that the invention may be applied to the best advantage in each particular case.

5 In the present instance, the machine comprises a suitable supporting frame 1 having a keyboard 2 preferably at the front and is adapted to receive, preferably at the rear, suitable casting mechanism which mechanism, however, is not involved in the present invention and therefore I have considered it sufficient to illustrate merely the mold in its proper relation to the matrix supporting rail and the line of matrices thereon.

15 According to the present invention, sets of matrices are used which sets correspond in number to the number of characters and spaces which are to be contained in the line of type, each set of matrices having characters thereon corresponding to the characters of a type font and also a spacer, each set of matrices and its accompanying spacer being mounted in a carrier which is shiftable so as to bring the selected matrix into alignment upon the line supporting rail, the position of the selected matrix serving to automatically arrest the movement of its respective carrier during the composing operation. These matrix carriers and the matrices contained therein must be duplicates and the number may be varied as necessary, and in the present instance, each carrier is composed of a frame having upper and lower members 3 and 4 which are connected by a plate 5 and a cooperating pair of strips 6, the plates 5 being preferably mortised or inserted into the rear of the upper and lower rails of the carrier and the strips 6 being preferably arranged flush with the opposite faces of the upper and lower members and are spaced from the plate a distance equal to or slightly greater than the thickness of the matrix bars by means of a set of rivets or equivalent devices 7, the ends of which are preferably countersunk in the plate and strip so as to prevent separation of these parts, and the intermediate portions of the rivets form shoulders so as to prevent collapsing of the strips relatively to the plate. These rivets connect the plate and strips at suitable intervals which are determined according to the width of the matrix bars and they serve as spacers between these bars so as to permit independent sliding movement of the matrices in a longitudinal direction. The matrices 8 of each carrier bear on one end thereof and in intaglio, characters corresponding to the letters of a font and they are of duplicate construction, each having a recessed forward end 9 which is provided at its under side with a positioning lug 10, the latter having an inclined edge 11 at its rear side for a purpose to be hereinafter described. The spacers and the matrices bearing the punctuating characters are each composed of

complemental members 12 and 13, the member 12 having its forward end formed to serve either as a spacer or a matrix and is provided on its under side as in the previous instance with a positioning lug 14, this forward end of the member 12 being also provided with an inclined or wedge-shaped surface 15 which increases in thickness toward its forward end. In those cases where the complemental members 12 and 13 are employed as punctuation matrices, the suitable punctuating character will be formed upon the wider end of the wedge portion on the member 12, as shown in Fig. 13 of the drawing. The member 13 is provided with a reversely arranged cam portion 16 which is adapted to cooperate with the wedge surface 15 when the member 13 is shoved forward, thereby serving to lock the line of matrices as will hereinafter appear. The rear end of the member 13 is provided with a depending operating projection 17, and is also provided with a clearance space 18 to permit the passage of the operating plunger after it has shoved forward the member 12.

90 The matrix carriers are mounted so as to be independently movable in order that the matrices selected in the respective carriers may be brought into position upon the line supporting rail, and any suitable supporting means may be provided for these carriers. In the present instance, each carrier is suspended by means of a pair of cords or cables 19 which are attached to the ends of the upper member 3 of the respective carrier and pass over a pair of pulleys 20 upon an assembling frame 21 and they also pass over a pair of stationary pulleys 22, a pair of weights 23 being attached to the free ends of the cable. The matrix carriers preferably have a normal tendency to move downwardly which motion serves to automatically carry the selected matrix into position upon the supporting rail, and to this end, the matrix carriers sufficiently overbalance their respective counterweights. The assembling frames 21 of the several carriers vary progressively in size and are nested one within the other as shown in Fig. 1, and in order to permit a movement of these several frames in a direction laterally of the machine so as to bring together or compact the several matrix frames preparatory to the locking of the line of matrices, each frame is mounted upon pairs of pulleys 24 and 25. These frames are yoke-shaped and engage the suspending cords of the matrix frames at the right hand side of the machine, and as these frames are moved toward the left, they carry the frames in such direction. This assembling movement is produced in the present instance by means of a cord 26 which passes through the intermediate portions of the several frames 21 and is attached to the outermost frame, the opposite end of this



cord being attached to a segmental pulley 27 which is connected to an assembling lever 28, the latter being preferably mounted at the left hand side of the machine and is arranged in a convenient position to be manipulated by the knee of the operator.

A key-board and associated mechanism is employed for selecting the desired matrices of the several carriers, and it will be understood that a key-board mechanism of any appropriate construction may be employed for this purpose. In the present instance, the key-board 2 is preferably arranged at the front of the machine and is provided with a suitable number of key levers 29 which may be arranged in banks as usual, and these key levers are appropriately connected to a series of horizontally arranged shafts 30, the latter extending transversely of the front of the machine and are rotatably journaled in the uprights 31 and 32 at the front thereof, these shafts being square or otherwise angular in cross-section so as to transmit rotary motion therefrom to the matrix selecting mechanism of the carriage. In the present instance, these shafts 30 are provided at their alternate ends and at points exteriorly of the machine frame with cranks 33 to which the key levers are connected by links 34 whereby one of these shafts will be rotated each time its respective key lever is depressed. A carriage 35 is mounted to travel by a step by step motion from the left hand side of the machine toward the right hand side thereof, this carriage carrying suitable mechanism for selecting a matrix successively from each carrier during the composing operation. In the present instance, this carriage is supported and guided by means of upper and lower wheels 36 and 37 which travel upon the guide rails 38 and 39, a retaining rail 40 being preferably arranged to cooperate with the upper supporting wheels 36 which retaining rail is adjustable or removable so as to permit removal of the carriage when necessary. This carriage is composed of a frame having side members 41 through which the angular shafts 30 pass loosely, pairs of plates 42 and 43 being mounted in the carriage frame and between these pairs of plates are mounted the hubs 44 of a set of plunger-actuating levers 45, the hubs of these levers being journaled between the respective plates so as to permit pivotal movement thereof, and these hubs are provided with angular bores 46 to receive the correspondingly shaped shaft 30 whereby a sliding movement is permitted between the shaft and its respective hub during the traversing movement of the carriage, although a rotation of the shaft will transmit a corresponding pivotal movement to its respective plunger operating lever. In order to accommodate the necessary number of plunger-actuating levers in the frame, these levers are journaled alternately in the respec-

tive pairs of plates 42 and 43. At the rear of the carriage is mounted a plunger-supporting frame 47 in which reciprocate a vertical series of plungers 48, these plungers corresponding in number and in position to the matrix bars and spacers of the matrix carriers while such carriers are supported in their initial positions. These plungers may be operatively connected to the respective actuating levers 45 in any appropriate manner, such for instance, as by a link 49. At the rear of the carriage is also mounted a carrier supporting and releasing bar 50 upon which the lower edges of the several matrix carriers rest when the carriage is in its left hand position or at the beginning of a line, and one end of this bar terminates at a point in immediate proximity to the line of movement of the matrix selecting plungers 48 so that after a matrix has been selected from a carrier and has been pushed forwardly therein, the next step in the movement of the carriage will release this particular carrier and permit it to move downwardly and thus position the selected matrix upon the supporting rail.

The traversing movement of the carriage may be controlled in any appropriate manner, it being provided in the present instance with a rack bar 51 which is arranged to cooperate with a suitable escapement 52 which is mounted upon a rock shaft 53. This escapement is so constructed as to release the carriage and to permit a forward step thereof after the return movement of each key lever, and in the present instance, it is provided with a relatively fixed tooth 54 and a pivoted tooth 55, the pivoted tooth being arranged to engage upon the downward movement of the escapement the same tooth of the rack which the stationary tooth 54 of the escapement engaged during the upward tilting movement of the escapement and thereby permitting a forward step of the carriage which will bring the line of matrix selecting plungers thereon into register with the corresponding matrices of the next carrier to the right in order that the desired matrix may be selected therefrom. This escapement may be actuated in any suitable manner, it being provided in the present instance with an arm 56 which engages between a pair of projections 57 upon an actuating bar 58, the latter being arranged preferably at the side of the machine and is provided with a set of projections 59 which are arranged above a series of crank arms 60 fixed to the outer ends of the shafts 30 so that as each of these shafts is rotated from the key-board to actuate the corresponding plunger upon the carriage, it will elevate this escapement actuating bar so as to operate the escapement, the downward movement of this actuating bar serving to permit a return movement of the escapement during which return movement the car-



riage is permitted to advance one step. A spring 61 is employed to effect the return movement of the escapement actuating bar. In order to permit a return movement of the carriage preparatory to the composing of another line of matrices, the rack 51 is pivoted upon the carriage about an axis 62 and is provided with a gear segment 63 to cooperate with a rack 64 carried by a vertically movable slide 65 upon the carriage, this slide being provided with a pivoted lever or handle 66 by means of which it may be manipulated to release the rack bar from the escapement and thereby permit a return movement of the carriage.

At the rear of the machine is mounted a matrix supporting rail 67 upon which the selected matrices are assembled and supported during the casting operation. This rail is arranged in alignment with the matrices which have been pushed from the respective carriers so that as the latter descend, this rail will act as an abutment to arrest the movement of the matrix and its corresponding carrier. This rail is level upon its upper side so as to provide an alining surface for the assembled matrices and it is also provided with a channel 68 which extends therethrough, which channel is provided at the upper side of the rail with a beveled or inclined edge 69, the positioning lugs 10 and 14 of the matrices or spacers being arranged to enter this channel of the supporting rail and to engage at their inclined sides with the beveled surface 69 of the rail so that the several matrices or spacers will be properly positioned in a transverse direction upon the rail. At one end of this rail is mounted a relatively fixed head block 70 against which the matrix at the extreme left hand end of the line abuts, and toward the opposite end of this rail is mounted a clamp 71 which has a shank which is guided to slide in the channel 68 of the rail, and this clamp is capable of being set at different positions longitudinally of the rail by means of an adjustable gage stop 71<sup>a</sup> so as to gage the length of the line. This clamp may be operated in any suitable manner, a clamp operating lever 72 being provided in the present instance, which is pivoted to a bracket 73 at the right hand side of the machine and is connected to the clamp by means of a link 74, the clamp operating lever being preferably arranged in a convenient position to be engaged by a knee of the operator.

Toward the front of the machine and at substantially the same level as the matrix supporting rail is mounted a wedge-locking rail 75 which is guided to move horizontally in a direction forwardly and rearwardly of the machine in a recess 76 and is provided with an operating handle 77 which is in a position to be conveniently manipulated by the operator. This wedge-operating rail is pro-

vided with a pivoted bail 78, which extends longitudinally thereof and is pivoted to swing about the locking rail 75 as a horizontal axis, this bail being adapted to receive the wedge-operating projection 17 formed upon the wedge members 13 of the bars carrying the punctuation matrix or the spacers when the bail is swung into operative position to unlock the wedges, although during the selection of the matrices the bail is turned downwardly as shown in Fig. 2, a handle 78<sup>a</sup> being attached to the bail for operating it. This wedge-operating bar is located at such a level that when a punctuation matrix or a spacer has been selected and the member 12 thereof has been actuated by the appropriate plunger of the carrier the member 13 which has not yet been operated will carry its projection 17 thereon into a position to be engaged by the wedge-locking bar as the matrix or spacer of the member 12 descends upon the rail 67, and after the necessary number of matrices has been assembled upon the rail to compose the line of type and the clamp has been operated to gage the length of the line, the handle 77 is forced rearwardly, the wedge-locking rail cooperating with the projection 17 upon the wedge members 13 and thereby causing the wedges 15 and 16 to cooperate. As all of the wedges are simultaneously locked, the line of matrices will be expanded so as to fill out the line and these wedges serve to justify the line of type. After the line of matrices has been composed, clamped and locked in the manner just described, the type casting mold 79 may be brought into casting position by any appropriate means, this mold in the present instance being provided with an overhanging ledge 80 which is beveled or inclined at its under side so as to facilitate its passage over the line of matrices and to also insure the proper positioning of the line of matrices upon the rail 67, this ledge serving as an alining rail. While the mold is in cooperative relation with the line of matrices as shown in Fig. 19, the metal may be poured, and after the line of type has been cast, the mold may be retracted and the bail 78 may be turned by the handle 78<sup>a</sup> into a horizontal position to engage the projections 17 of the members 12 for the locking wedges, and by retracting the locking rail 75 by pulling the handle 77, the wedges are unlocked. During the restoring movement of the matrix carriers, the matrices projecting from their ends are automatically returned to their carriers by means of a restoring device 81, the latter embodying a plate which is pivoted at 82 at the rear of the machine and is provided with an operating handle 83 which is arranged so as to be conveniently manipulated by the machine operator, and this handle is connected to the pivoted plate by means of a link 84. This plate is adapted to be tilted into an inclined



position over the matrix supporting rail so as to encounter the projecting matrices and return them to their respective carriers as the latter ascend. In order to support this restoring device in the proper inclined position, a bracket 85 is preferably fixed at each side of the machine frame. After the matrix carriers have been returned to normal position preparatory to the composing of a line of type, the restoring device 81 is returned to a vertical position or a position clear of the descending matrices.

The matrix carriers after the casting of a line of type may be all restored to normal position preparatory to the composing of another line of type by any suitable means, a vertically movable frame 86 being mounted at one side of the machine in the present instance and is provided with a plate 87 having a series of perforations 88 through which the suspending cords or cables 19 of the various matrix carriers pass, and a crank shaft 89 is provided having a drum 90 over which a strap 91 connected to the top and bottom of this frame passes, so that by rotating the crank shaft by means of a crank or other suitable means, this frame 86 will descend. While all of the frames are in normal elevated position, the weights 23 thereof will rest at the same elevation, whereas after the release of these matrix frames, the weights thereof will rest at different levels. By lowering the frame 86, however, until the plate 87 at the bottom thereof engages the tops of all the weights and has depressed them to a predetermined point, it is obvious that all of the matrix carriers connected to these weights will also be restored to their normal elevated position, and after the restoring of the matrix carriers in this manner, the carriage is returned to its initial position, causing the ledge 50 thereon to pass beneath and support the restored carriers. The matrix selecting carriage may be operated in any appropriate manner, such for instance as by means of a weight 92 and a co-operating cord or cable 93 which is attached to the carriage and passes over a pulley 94 at a suitable point on the frame.

In operating a composing and line casting machine constructed in accordance with the present embodiment of my invention, the matrix selecting carriage is arranged at the left hand side of the machine and in this position, the matrix actuating plungers thereon are arranged to register with the corresponding matrices or spacers in the matrix carrier at the left hand side. By manipulating the key-board, the appropriate plunger of the carriage will be actuated, causing it to engage the end of the selected matrix and will slide the same so as to cause the matrix or spacer end thereof to project from the carrier into a position above the supporting rail. Upon the releasing of

the key-board lever, the carriage escapement will release the carriage and permit a forward step of the same, the vertical row of plungers upon the carriage being thereby brought into register with the vertical row of matrices or spacers in the next carrier to the right, and by suitably manipulating the key-board, the desired matrix of this carrier may be selected. The carriage after its release moves toward the right, thereby carrying the ledge 50 in the same direction, the movement of the ledge serving to carry it from beneath the preceding matrix carrier and thus releasing it so as to permit it to descend by reason of its excess in weight, the descending movement of the carrier being arrested, however, when the selected matrix or spacer which projects therefrom engages the supporting rail, and this operation is repeated each time a matrix is selected and the carriage moves forward preparatory to the selection of a matrix in the next succeeding carrier. Should a spacer or punctuation matrix be selected, the plunger of the carriage will engage and move the member 12 only, and upon the next step in the advancing movement of the carriage, this plunger will pass through the opening or cut-away portion 18 of the companion member 13.

After a line of matrices has been composed upon the supporting rail, the assembling lever 28 may be operated by the knee of the operator which operation will cause the frames 21 to engage the cables of the respective matrix carriers and will compact them in a direction toward the left hand side of the machine. The clamp operating lever 72 may then be manipulated by the operator which lever causes the clamp 71 to move toward the head block and to gage the length of the line.

The matrices bearing punctuation marks and the spacers selected in the composing of the line will rest at one end upon the supporting rail, and the wedge-actuating lugs 17 of the complementary members thereof will engage in the groove of the wedge-locking bar, and by forcing this bar rearwardly, these wedge members will be actuated so as to expand the wedges and thus fill out the line of matrices and firmly lock them between the head block and clamp, and by suitably adjusting the mold with reference to the line of matrices, a line of type may be cast therefrom in the usual way. After the cast has been made, the mold may be retracted or removed and the handle 83 is pulled forwardly which tilts the restoring device 81 into an inclined position above the matrix supporting rail, and when the crank shaft 89 is turned so as to lower the frame 86, the matrix carriers will be elevated or restored to normal position, and during this restoring of the several matrix carriers, the matrices



which rested upon the rail will encounter the restoring device and will be thereby returned to their original positions within the respective carriers.

5 I claim as my invention:

1. A composing and line casting machine comprising a set of movable matrix carriers, each having a set of matrices movably mounted relatively thereto, a rail upon  
10 which a line of said matrices is adapted to be assembled, selecting means for setting the matrices of the respective carriers to engage said rail during the movement of the carriers, and a mold to cooperate with the  
15 line of matrices to cast the line of type therefrom.

2. A composing and line casting machine comprising a set of shiftable matrix carriers, each having a set of matrices movably  
20 mounted thereon, a rail upon which a line of the matrices is adapted to be assembled, selecting means for adjusting a matrix of each carrier into a position in alinement with said rail, means for successively releasing the matrix carriers after the selection of  
25 a matrix therein to permit the said matrix to move into engagement with said rail, and a mold for casting a line of type from the composed matrices.

3. A composing and line casting machine comprising a set of shiftable matrix carriers, each having a set of matrices movably mounted thereon, a rail upon which a line  
30 of matrices is adapted to be composed, a carriage having selecting devices arranged to register with the matrices of each carrier and shiftable successively from one carrier to another, and means controlled by the  
35 movement of said carriage for successively releasing the carriers to permit the selected matrices to engage the composing rail, and a mold adapted to cooperate with the matrices to cast a line of type therefrom.

4. A composing and line casting machine  
45 comprising a set of shiftable matrix carriers, each having a set of matrices movably mounted therein, a rail upon which a line of matrices is adapted to be assembled, a carriage having selecting devices arranged to register with the matrices of each carrier and  
50 adapted to adjust a matrix of each carrier into alinement with said rail, means for advancing said carriage so as to cooperate successively with the several matrix carriers, a ledge movable with the said carriage and  
55 adapted to support the matrix carriers and to successively release them after the selection of a matrix therein, means for clamping and locking a line of matrices upon said rail, and a mold to cooperate with a line of matrices to cast a line of type therefrom.

5. A composing and line casting machine comprising a set of movable matrix carriers, each having a set of matrices movably  
60 mounted therein, a rail upon which a line of

matrices is adapted to be assembled, a traversing carriage having a line of selecting devices adapted to register successively with the matrices of the several carriers and for adjusting a matrix of each carrier into aline-  
70 ment with said rail, a key-board mechanism operatively connected to the selecting devices of the carriage, an escapement mechanism releasable upon the return movement of each key lever to permit the carriage to  
75 shift from one carrier to another, means controlled by the traversing movement of the carriage for successively releasing the matrix carriers after a matrix therein has been selected, and means for casting a line  
80 of type from the matrices assembled upon said rail.

6. A composing and line casting machine comprising a set of movable matrix carriers, each having a set of matrices movably  
85 mounted therein, a rail upon which a line of matrices is adapted to be assembled, means for suspending the carriers so as to permit a descending movement thereof when released, selecting means for successively set-  
90 ting a matrix of each carrier so as to engage said rail during the descending movement of its corresponding carrier, means controlled by the selecting means for successively releasing the matrix carriers after the selection  
95 of a matrix therein, means cooperating with the suspending means of the matrix carriers for compacting the same, and means for clamping and locking a line of matrices assembled upon said rail.  
100

7. A composing and line casting machine comprising a set of vertically movably carriers, each having a set of matrices movably  
105 mounted therein, a rail upon which a line of matrices is adapted to be assembled, balancing cords or cables for suspending the matrix carriers and permitting a descending movement thereof when released, selecting means for successively adjusting the matrices of the carriers into alinement with said  
110 rail, means for successively releasing the carriers to permit the selected matrices thereof to move into engagement with said rail, and a mold to cooperate with the line of matrices on said rail to cast a line of type  
115 therefrom.

8. A composing and line casting machine comprising a set of vertically movable matrix carriers, each having a set of matrices  
120 adjustably mounted therein, a rail upon which a line of said matrices is adapted to be assembled, balancing cords or cables for suspending the matrix carriers and for permitting a descending movement thereof when released, selecting means for adjusting  
125 the matrices of the carriers into alinement with said rail, means for successively releasing the carriers to permit the selected matrices to move into engagement with the rail, and means for compacting the matrix car-  
130



riers comprising a set of assembling frames arranged to cooperate with the respective balancing cords and means for simultaneously operating said frames.

9. A composing and line casting machine, comprising a set of movable matrix carriers, suspending cords attached to the respective carriers and provided with balancing weights, a set of matrices mounted in each carrier, a rail upon which the selected matrices of said carriers are adapted to be assembled, selecting means for adjusting the matrices into alinement with said rail, means for successively releasing the carriers to bring the selected matrices into engagement with said rail, and a resetting frame adapted to engage the balancing weights for simultaneously resetting the matrix frames to initial position.

10. A composing and line casting machine comprising a set of movable matrix carriers, each having a set of matrices movably mounted therein, and having positioning lugs upon their undersides, a rail adapted to receive a line of selected matrices and provided with a beveled portion to cooperate with the positioning lugs of the matrices to adjust the latter in a direction transverse to the rail, means for selecting the matrices of the carriers and for adjusting them into alinement with the rail, means for successively releasing the carriers to permit the selected matrices to engage said rail, and a mold to cooperate with the matrices upon the rail to cast a line of type therefrom.

11. A composing and line casting machine comprising a set of movable matrix frames, a set of matrices adjustably mounted in each carrier, a rail upon which the selected matrices are adapted to be assembled, a spacer in each carrier composed of relatively movable members, one having an end adapted to rest upon said rail and provided with a wedge portion, and the other having a complementary wedge portion at one end and a locking projection at its opposite end, selecting means for setting one of said members so as to bring the spacer into alinement with said rail, means for successively releasing the carriers, and a locking rail adapted to engage the wedge locking projections and movable to effect the locking of the wedge portions.

12. A composing and line casting machine comprising a set of matrix carriers arranged

in parallel relation, a set of matrices mounted on each carrier, a rail adapted to receive a line of matrices, a carriage movable transversely of the carriers so as to register successively therewith and having actuating plungers for the carriers, certain of said matrices being composed of complementary members, one of which is provided with a portion to engage said rail, and also having a wedge portion, and the other member having a complementary wedge portion and a wedge locking projection, a portion of the latter member being cut away to permit a shifting movement of the corresponding actuating plunger from one carrier to the next adjacent one, means for successively releasing the carriers after a matrix therein has been selected, and a locking member arranged to cooperate with the wedge locking projection to actuate the same.

13. A composing and line casting machine comprising a plurality of movable matrix carriers, each provided with a set of matrices movably mounted therein, a rail adapted to receive a line of selected matrices, selecting means for adjusting the matrices of the respective carriers into alinement with said rail, means for successively releasing the carriers to permit the selected matrices to engage the said rail, means for restoring the carriers to initial position, and a device for automatically returning the matrices to initial position in their respective carriers during the restoring movement thereof.

14. A composing and line casting machine comprising a plurality of movably mounted carriers, each provided with a set of matrices movably mounted therein, a rail adapted to receive a line of said matrices, a stationary key-board, a set of angular shafts connected to the key-board, a carriage movable longitudinally of said shafts, and provided with selecting devices arranged to register successively with the matrices of the carriers, and means for connecting the selecting devices of the carriage to the respective shafts of the key-board, irrespective of the position of the carriage.

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

BAYLUS CADE.

Witnesses:

CHAS. S. HYER,  
C. A. ROWE.