

No. 780,484.

PATENTED JAN. 17, 1905.

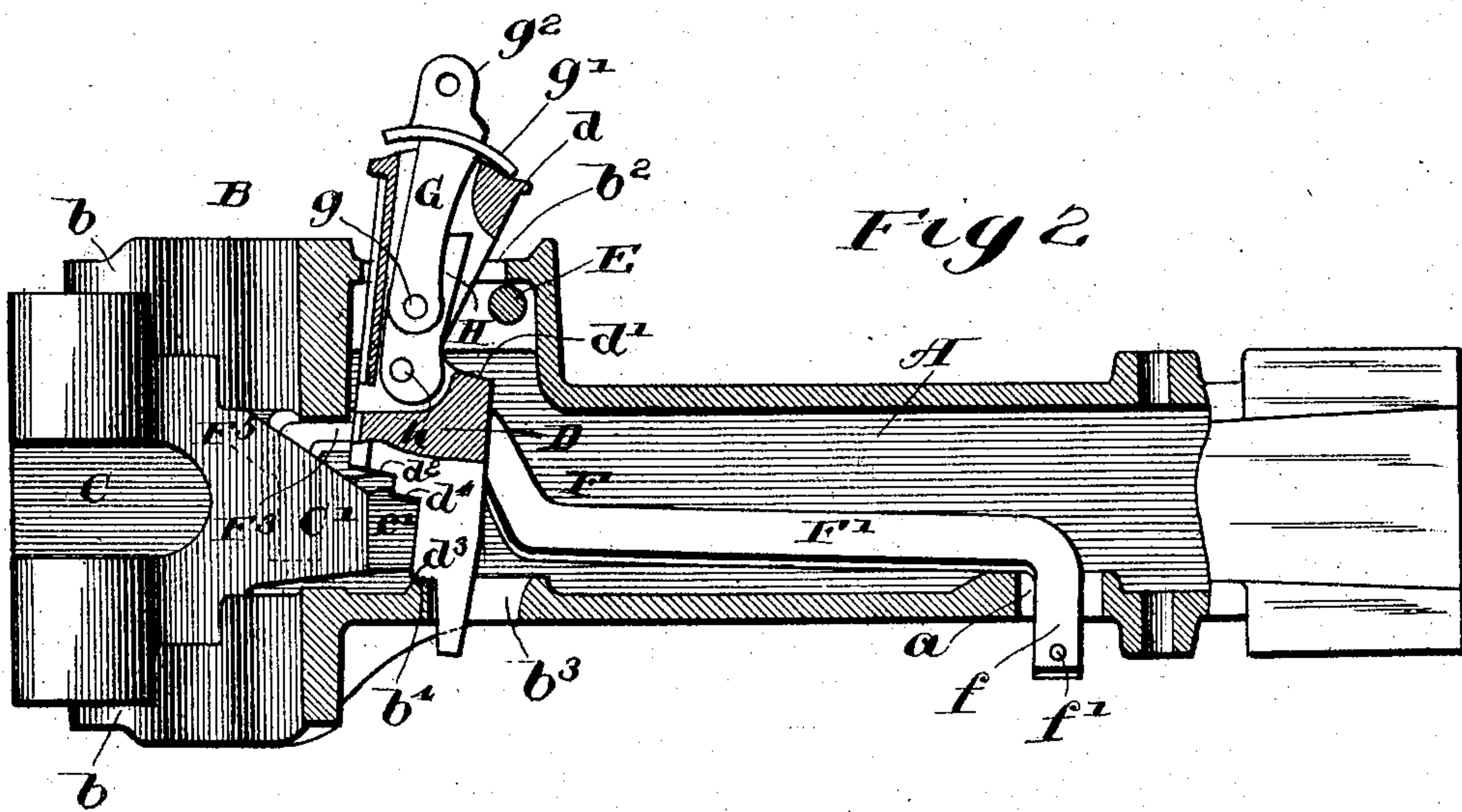
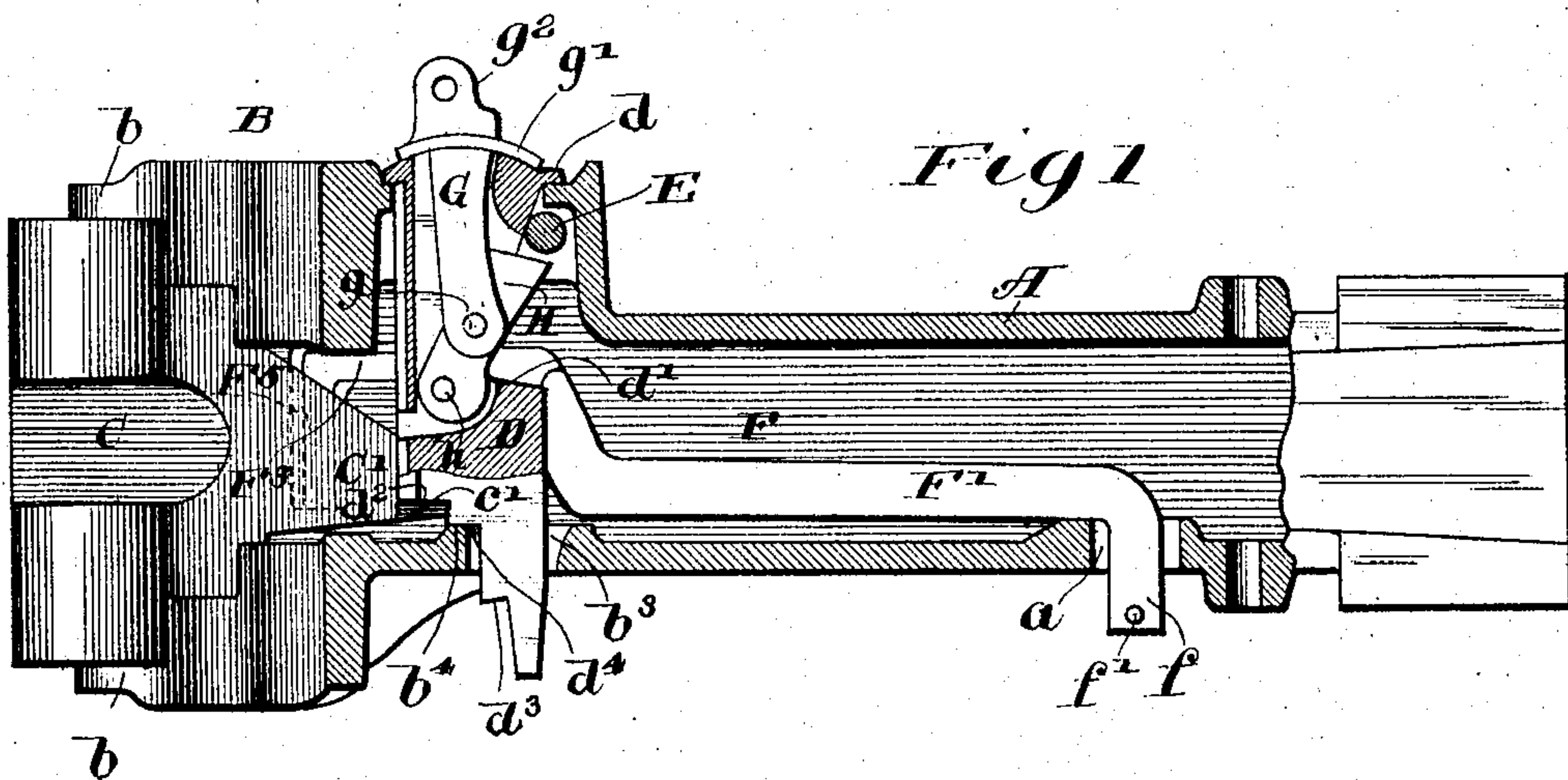
J. A. HINSON, DEC'D.

M. HINSON, ADMINISTRATRIX.

CAR COUPLING.

APPLICATION FILED DEC. 4, 1902.

3 SHEETS—SHEET 1.



Witnesses:-

Carl H. Crawford
William H. Hall

Inventor:-

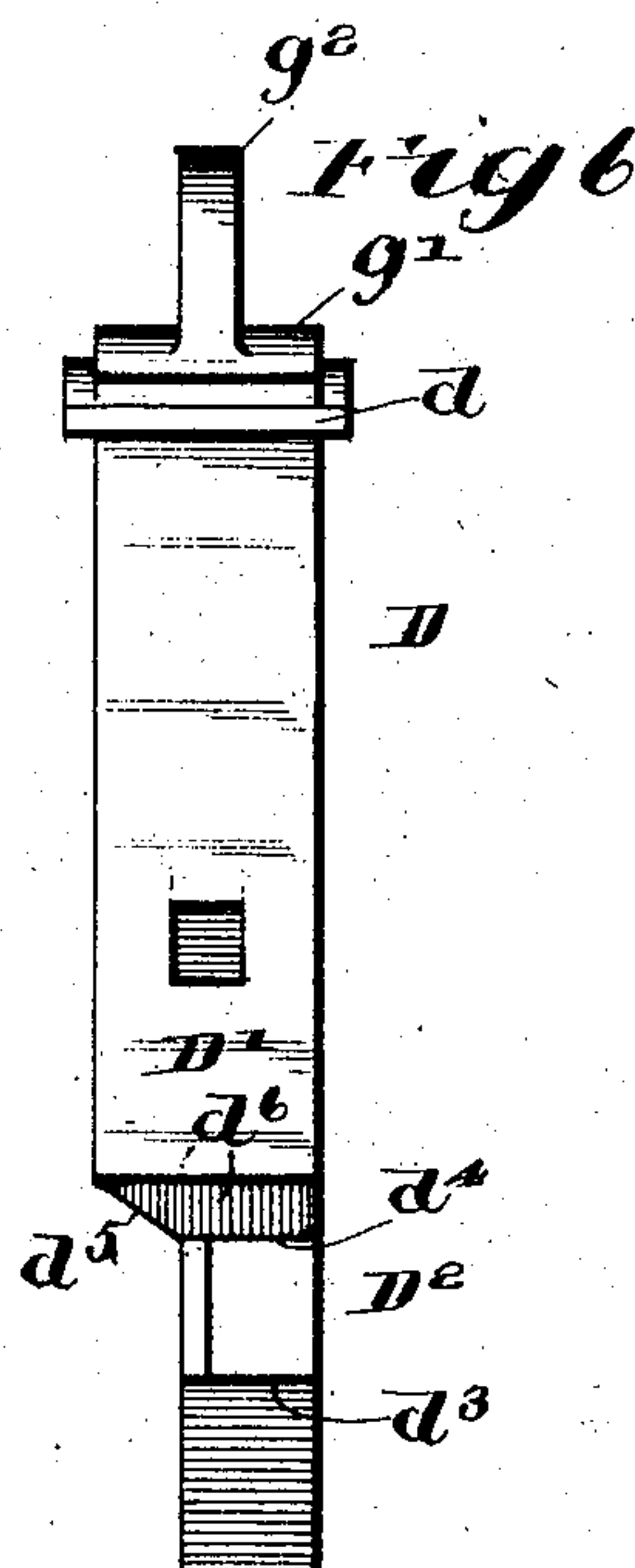
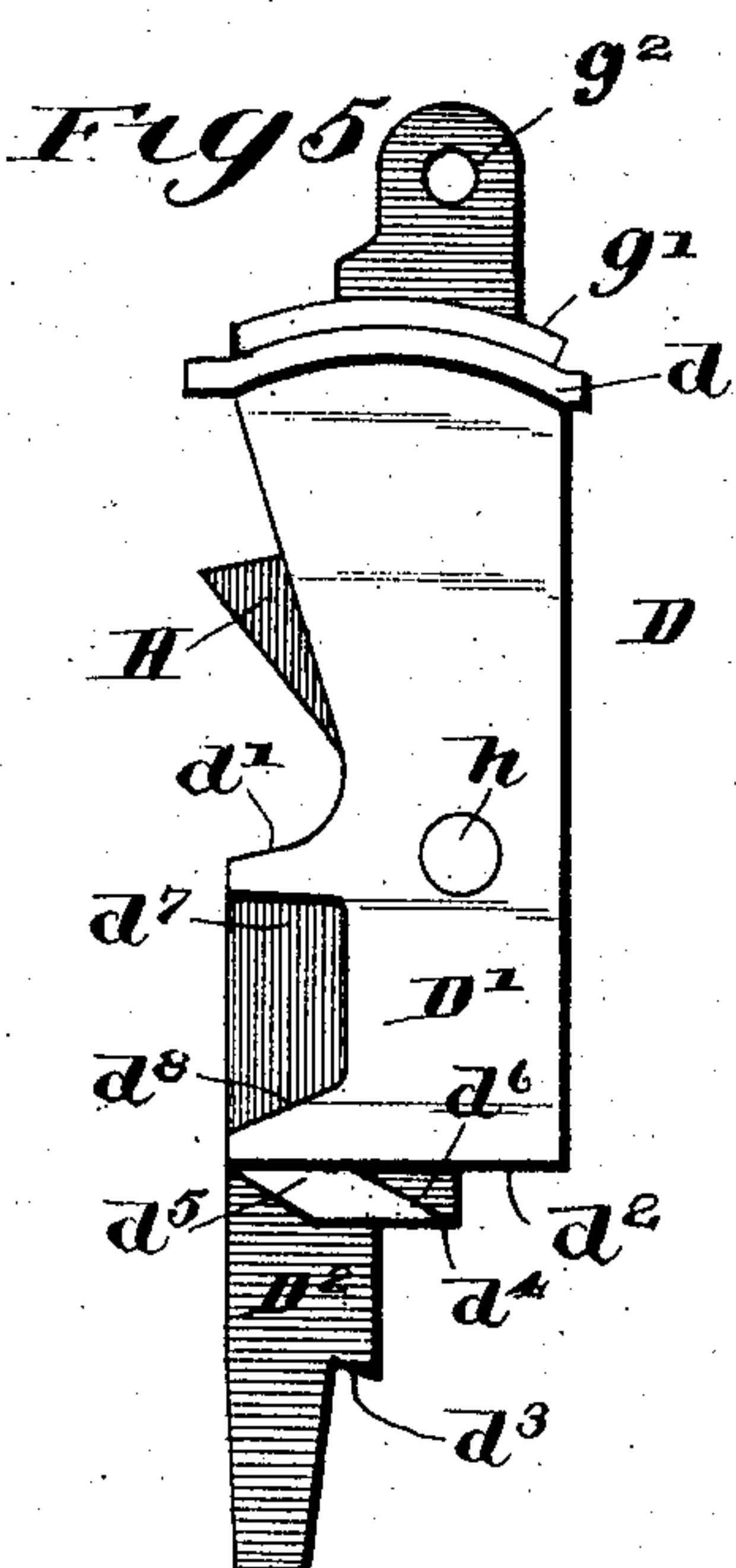
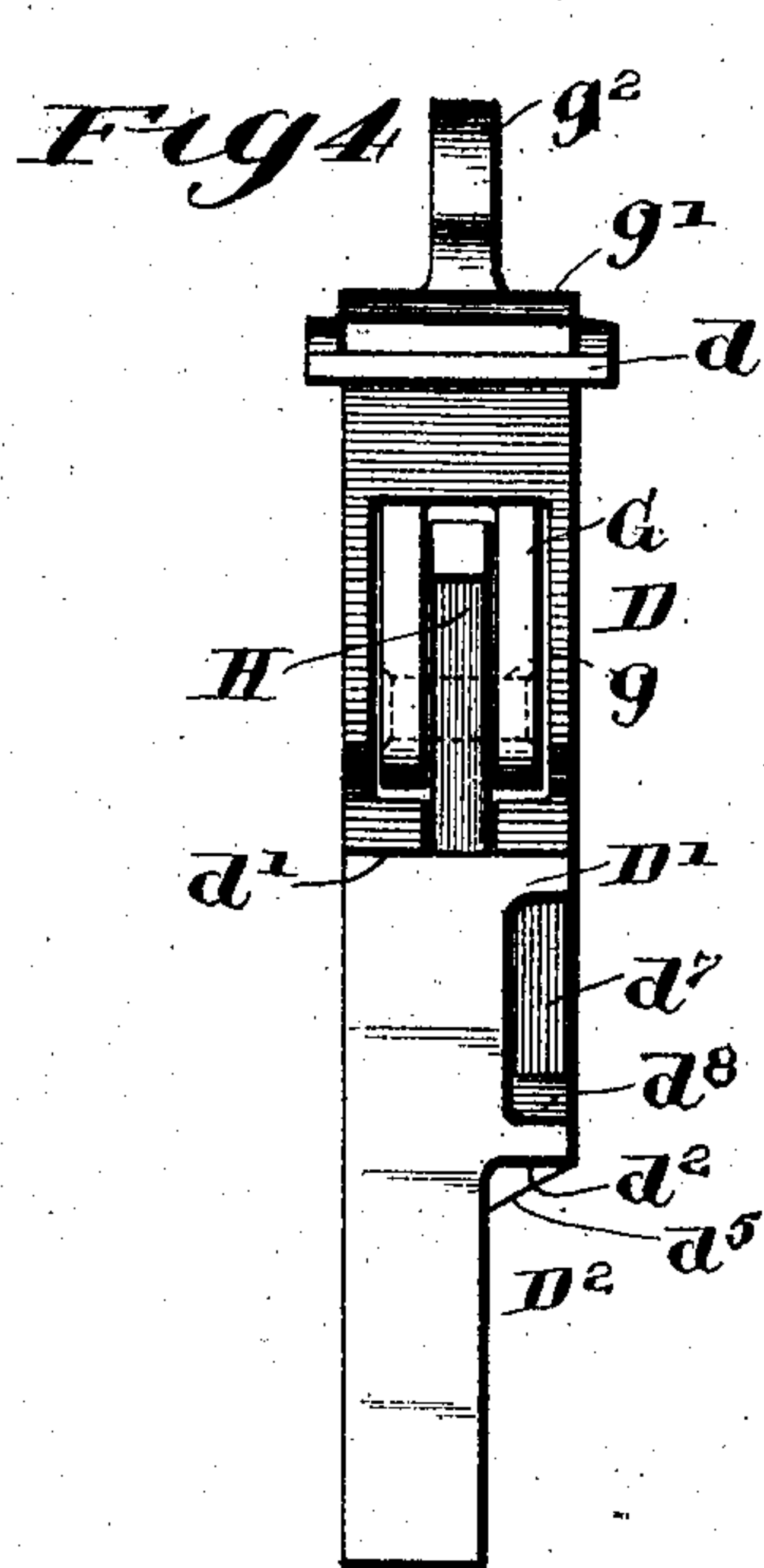
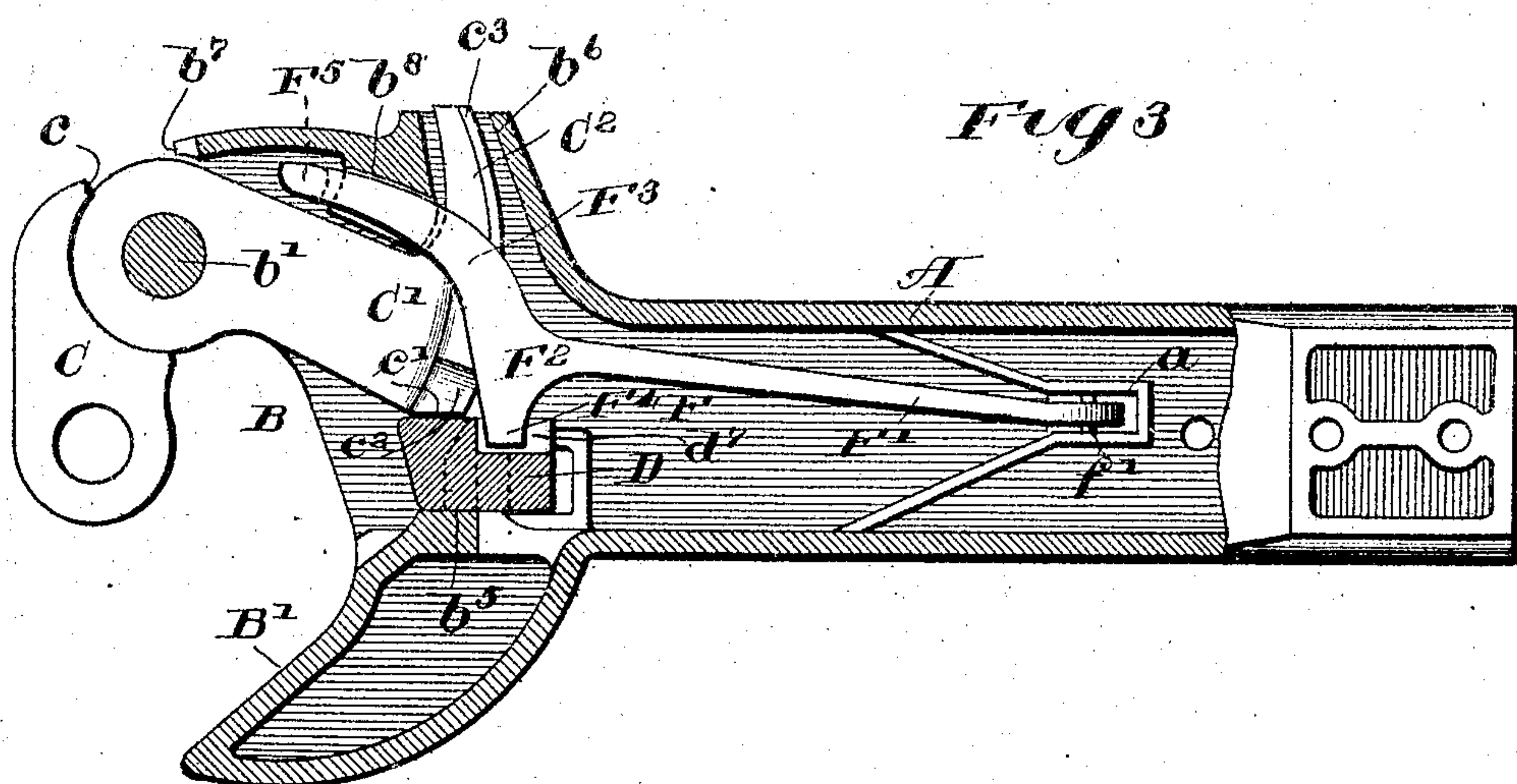
James A. Hinson
by Poole & Brown
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Witnesses:
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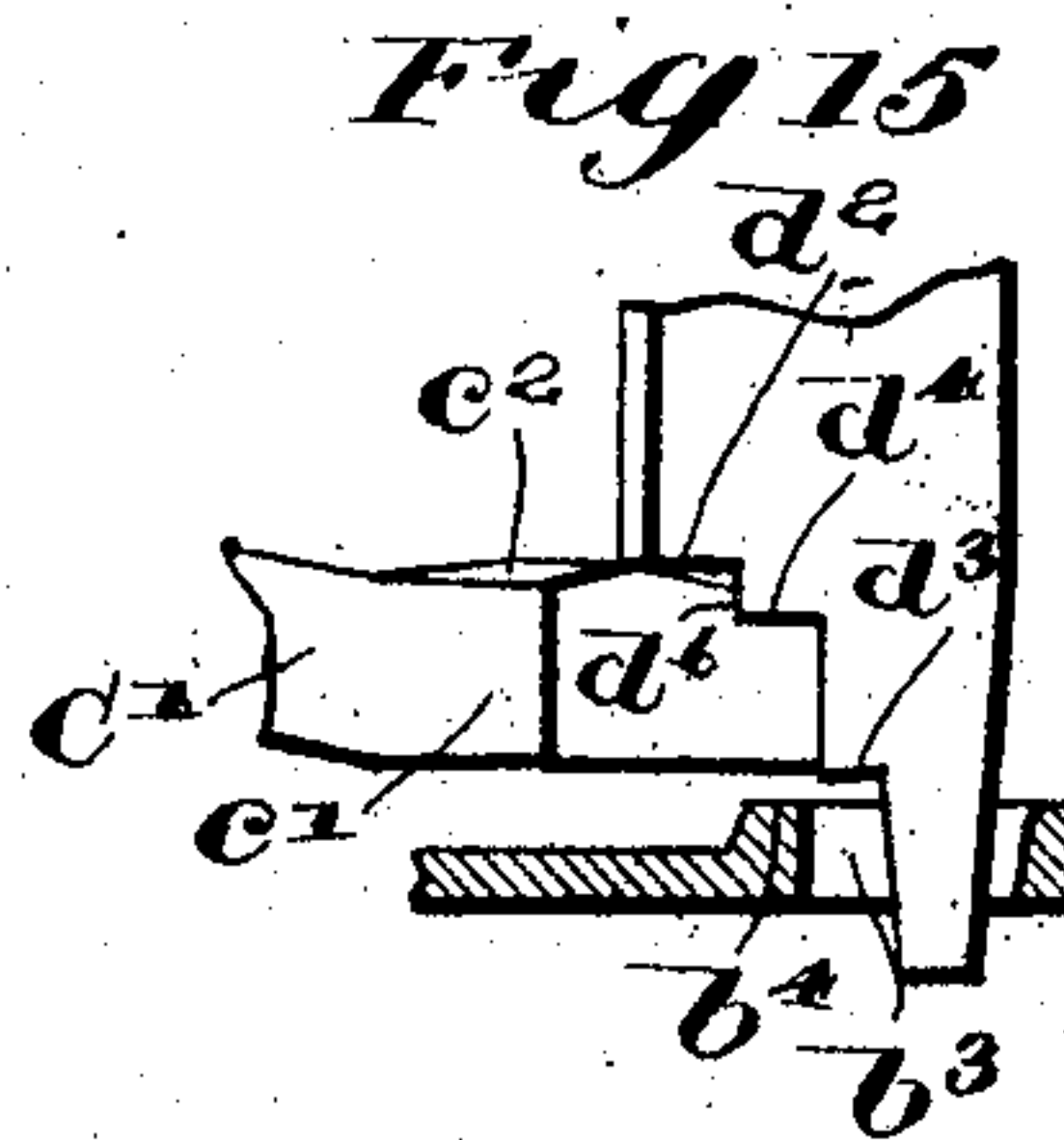
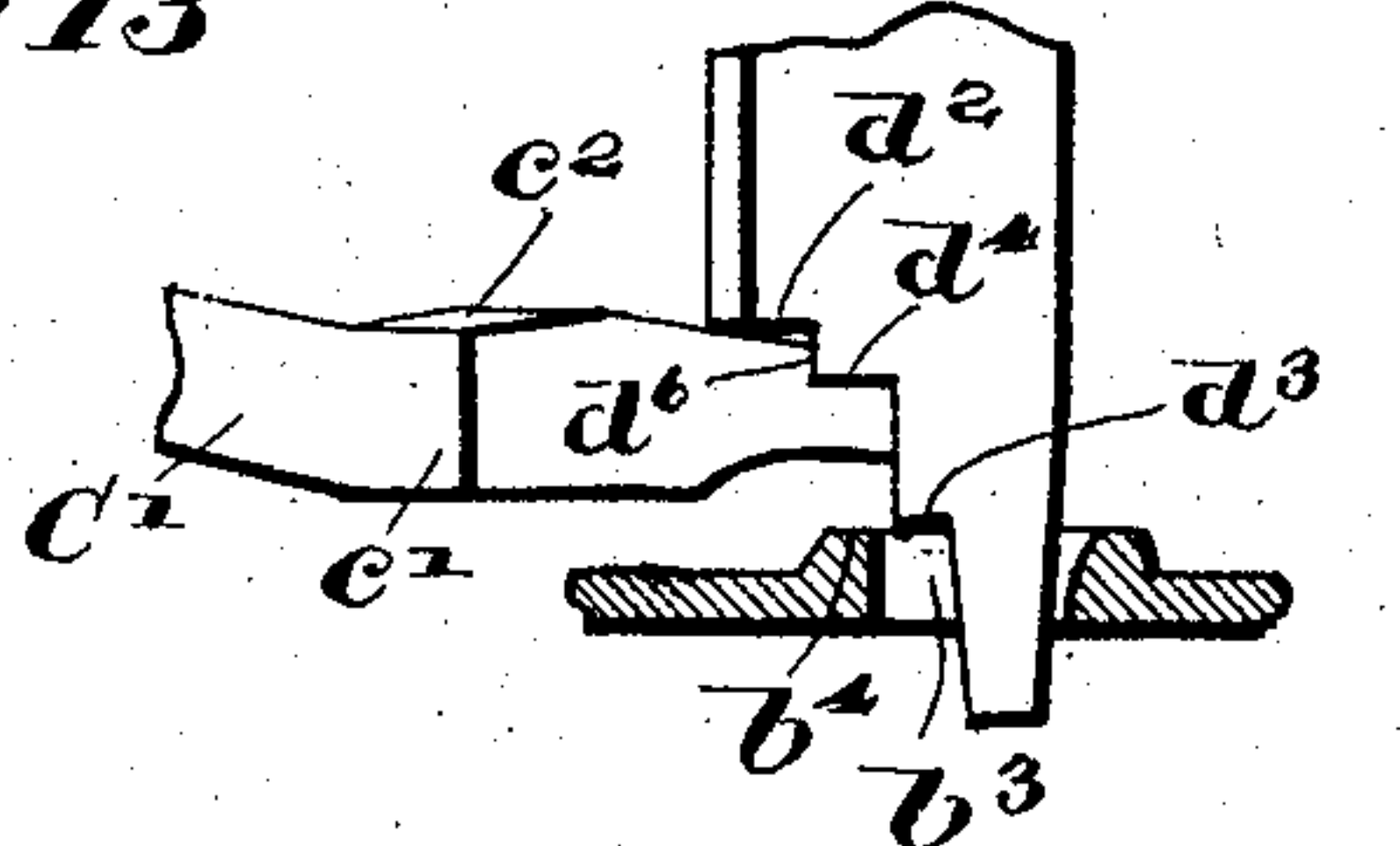
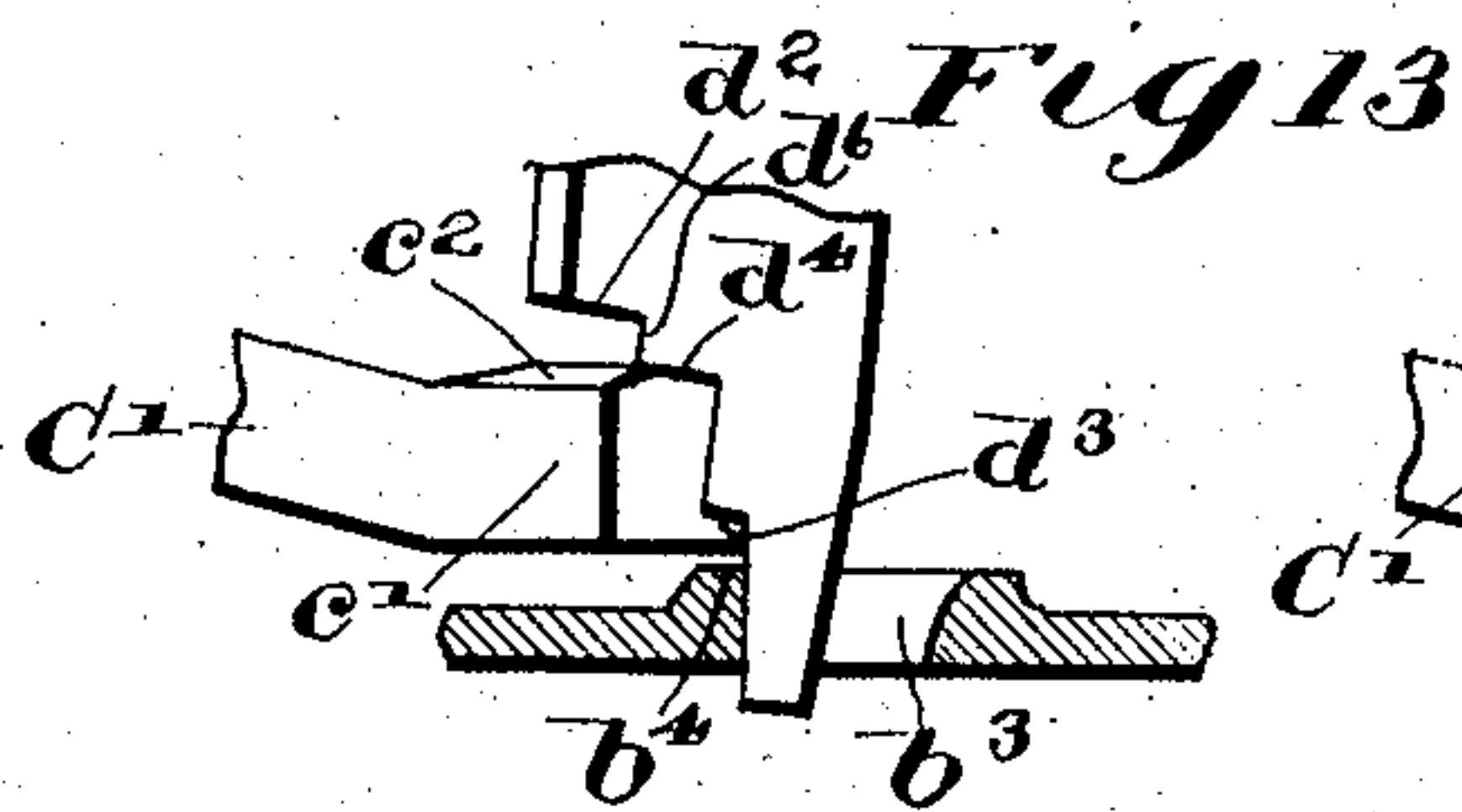
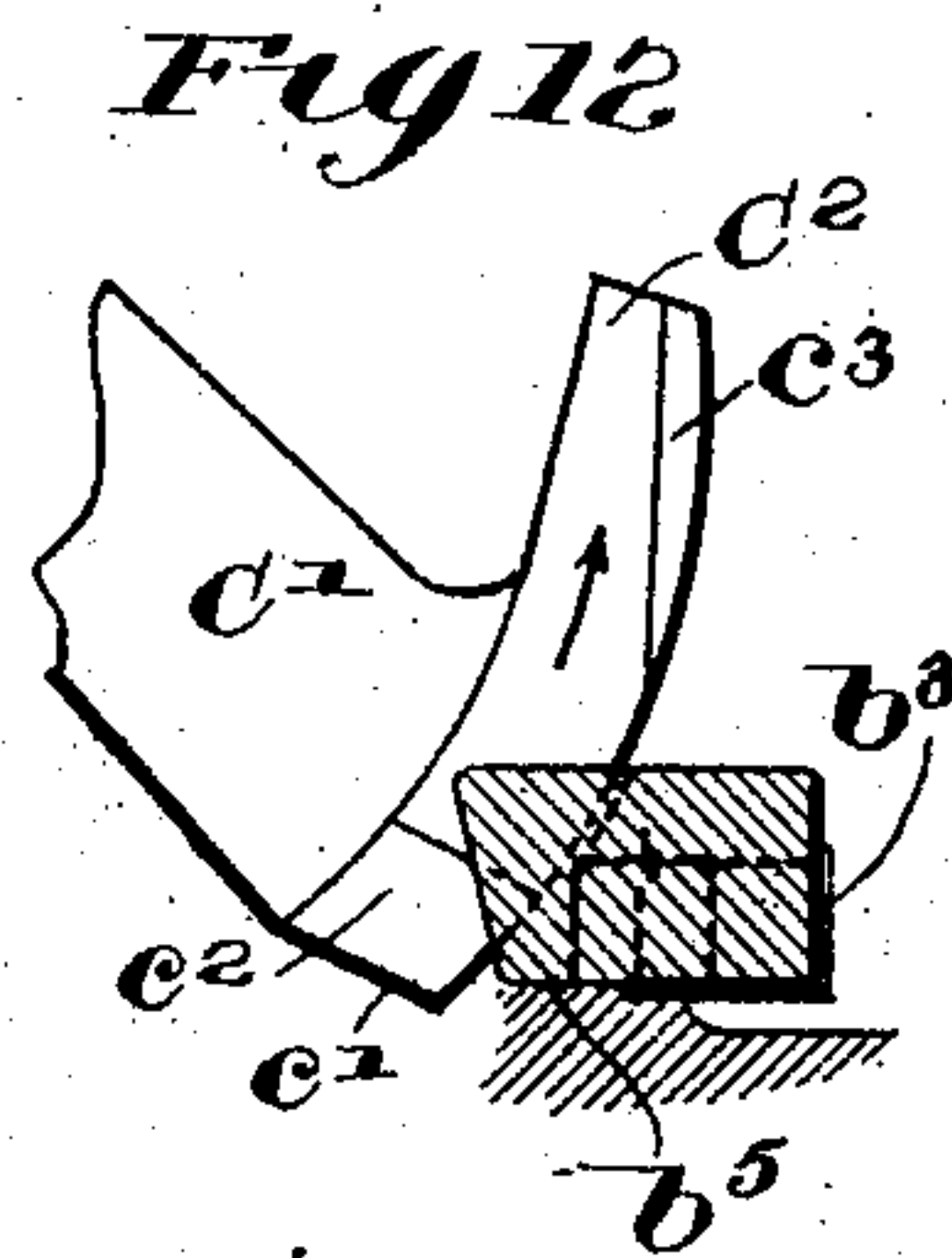
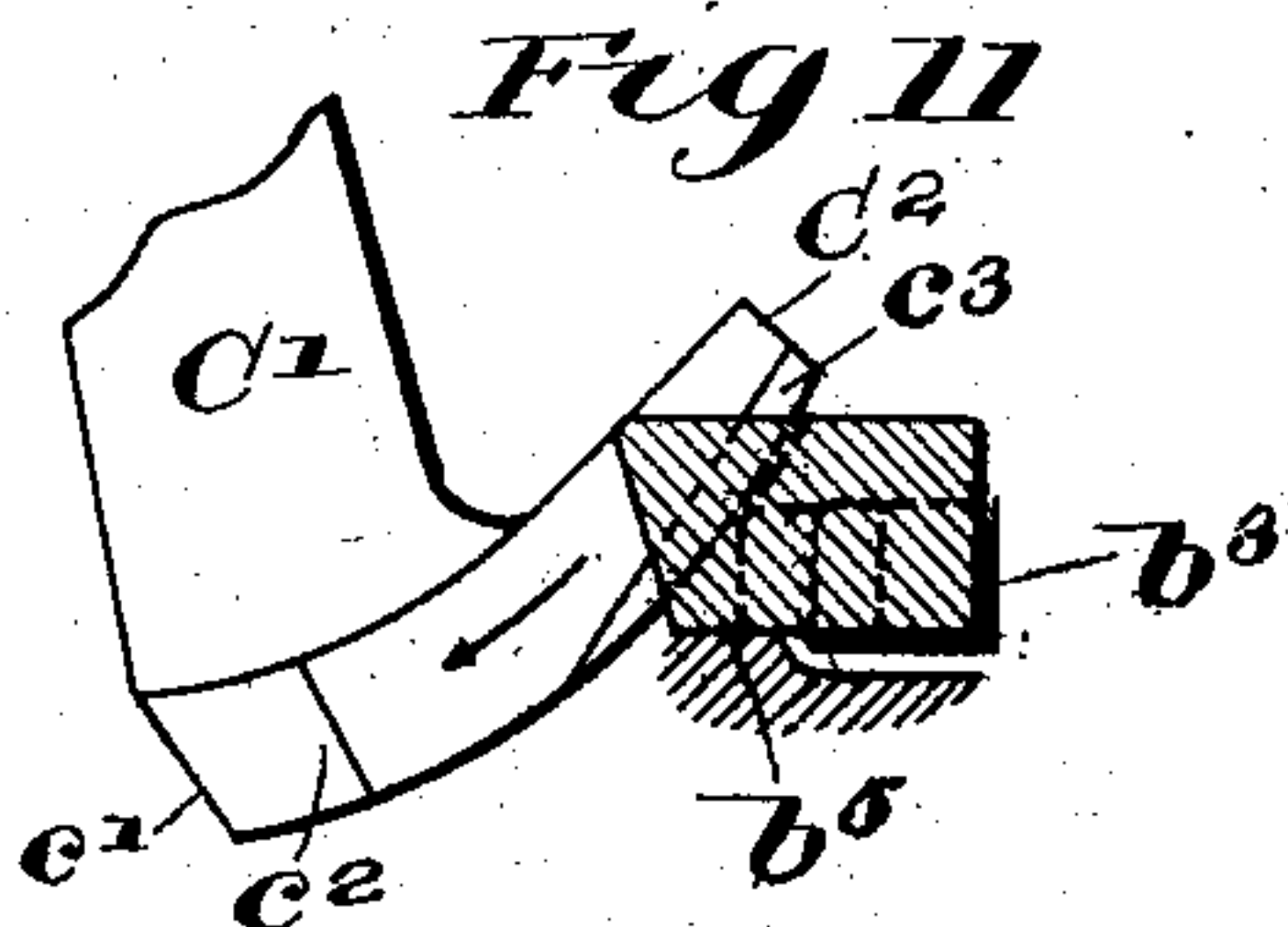
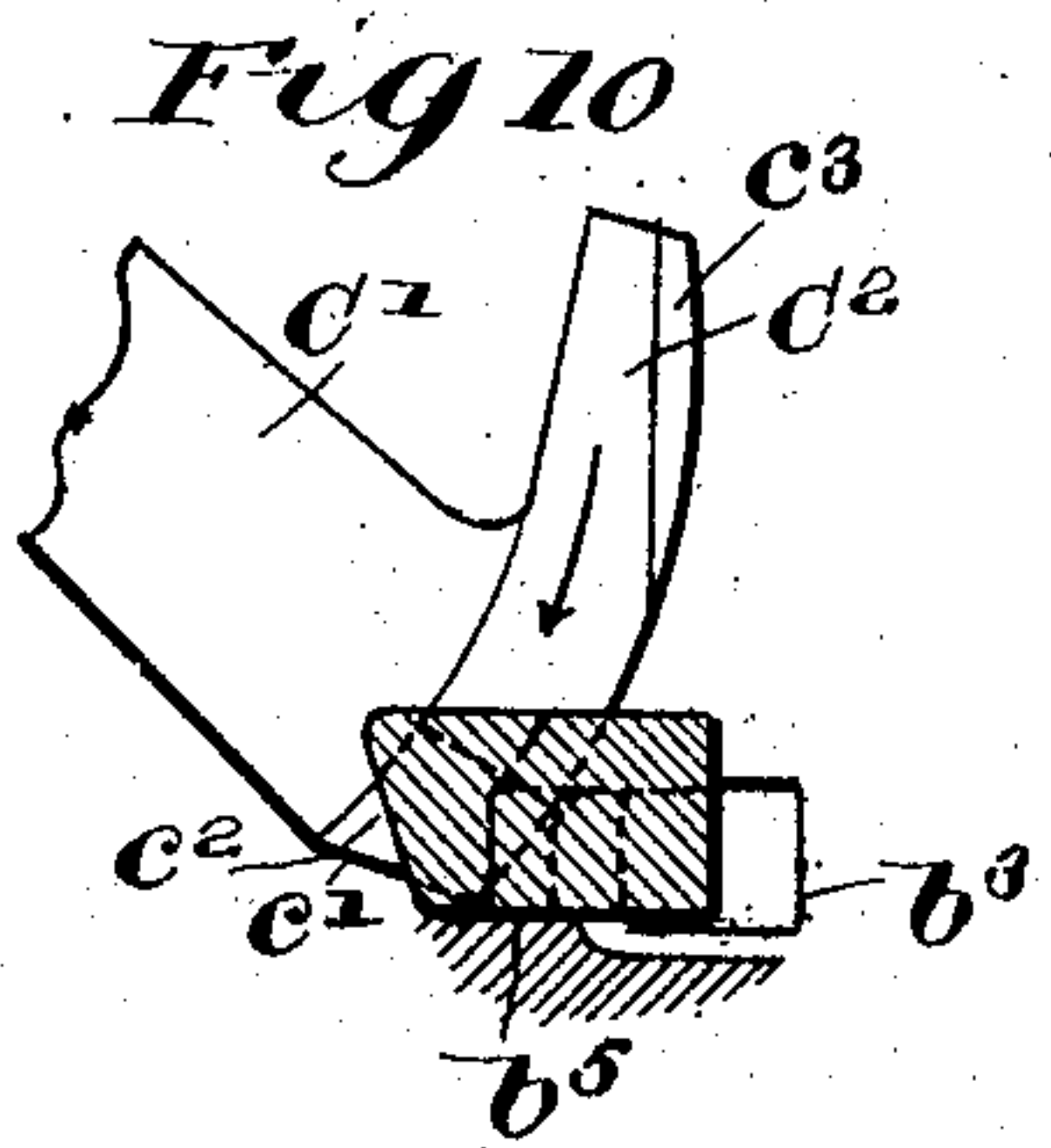
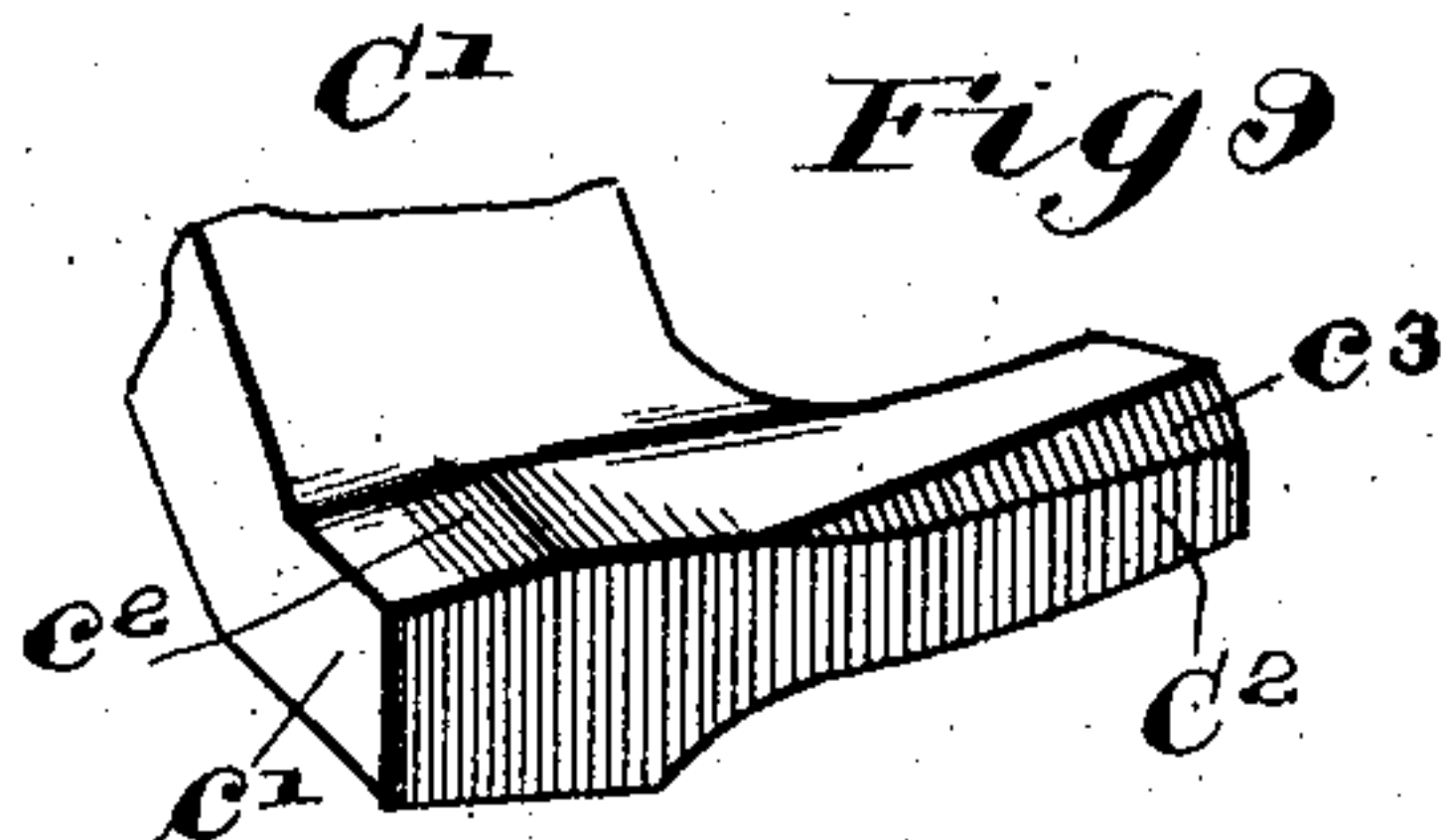
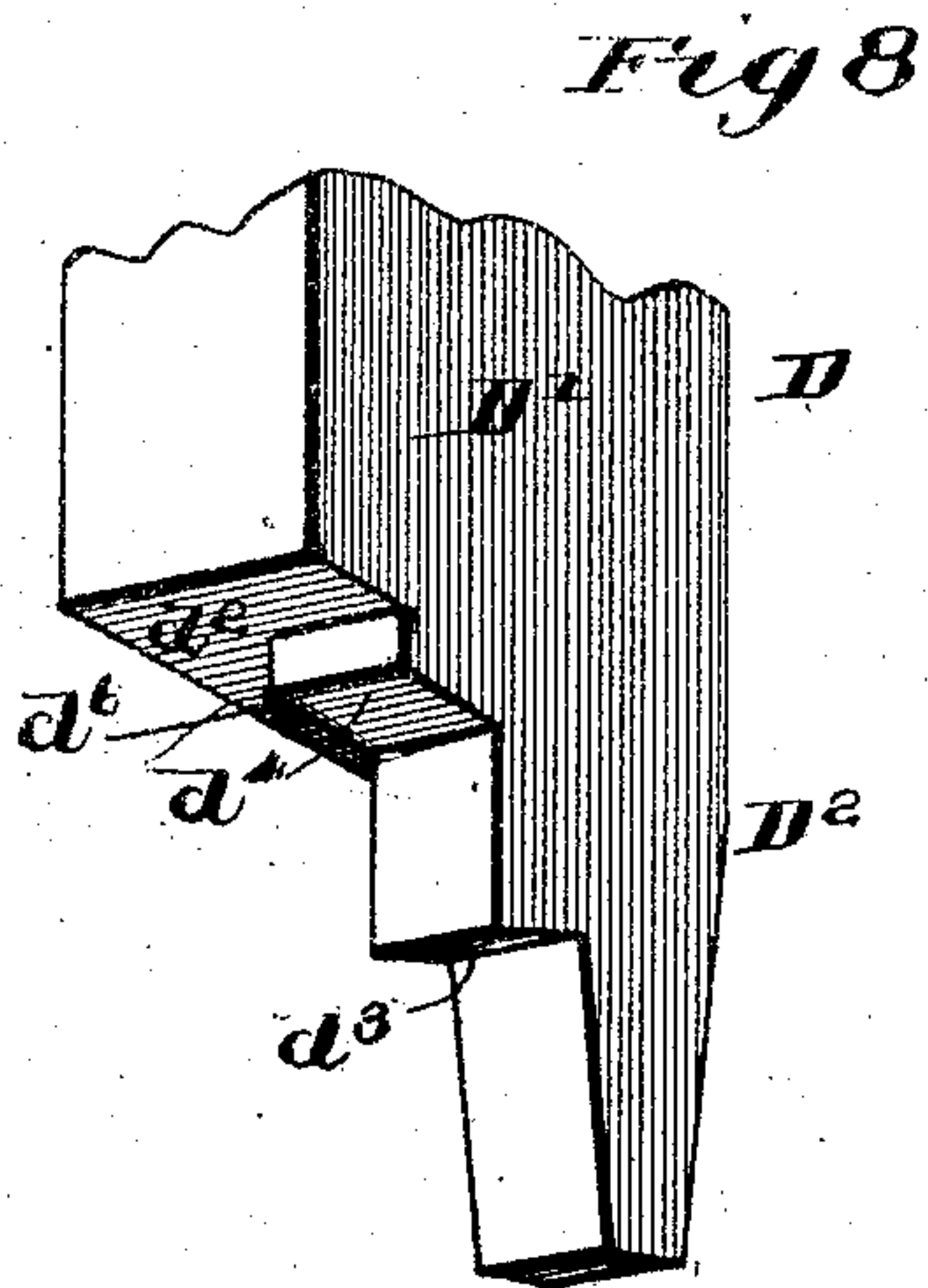
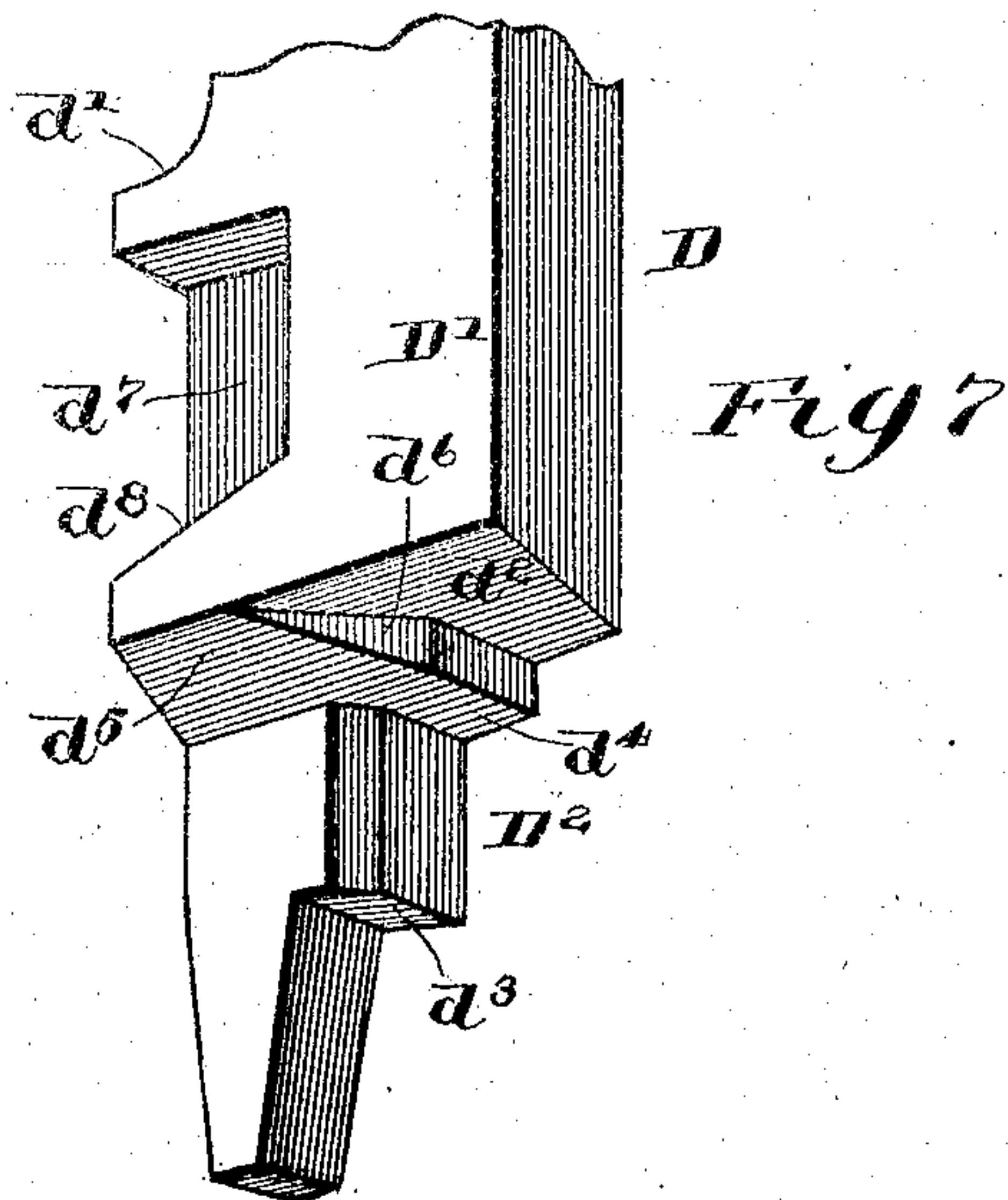
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CAR COUPLING.
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3 SHEETS—SHEET 3.



Witnesses:-
Carl H. Crawford
William Hall

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UNITED STATES PATENT OFFICE.

JAMES A. HINSON, OF CHICAGO, ILLINOIS; MARGARET HINSON ADMINISTRATRIX OF SAID JAMES A. HINSON, DECEASED.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 780,484, dated January 17, 1905.

Application filed December 4, 1902. Serial No. 133,867.

To all whom it may concern:

Be it known that I, JAMES A. HINSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Couplers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in car-couplers; and the invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a partial longitudinal vertical section of a coupler embodying my improvements, certain parts of the device being broken away to better illustrate other parts thereof. Fig. 2 is a similar view with parts of the device in changed positions. Fig. 3 is a partial horizontal longitudinal section of the coupler, showing the knuckle in its closed position. Fig. 4 is a rear elevation of the knuckle-locking pin. Fig. 5 is a side elevation of the knuckle-locking pin. Fig. 6 is a front elevation thereof. Figs. 7 and 8 are perspective views of the lower end of the locking-pin. Fig. 9 is a perspective view of the knuckle-tailpiece. Figs. 10, 11, and 12 are detail sectional plan views of the lower part of the locking-pin and the knuckle-tailpiece, showing different positions of said parts. Figs. 13, 14, and 15 are detail side views of the lower end of the locking-pin and the knuckle-tailpieces, showing said parts in the positions shown, respectively, in Figs. 10, 11, and 12.

As shown in said drawings, A designates a hollow draw-bar; B, a hollow draw-bar head; C, a horizontally-swinging knuckle which is pivoted to and between forwardly and laterally projecting arms b on one side of said draw-head by means of a vertical pin b' , and B' a guide arm or guard projecting laterally and forwardly from the other side of the head. Said knuckle C is provided with a tailpiece C', which extends rearwardly between the arms b of the draw-head and into the interior of the head, as shown in Fig. 3.

D designates a locking-pin which passes downwardly through openings b^2 b^3 in the top and bottom walls of the draw-head, said openings being located in a manner to hold the locking-pin at one side of the knuckle-tailpiece and when said pin is in its lowermost position and the knuckle closed to lock said knuckle from swinging outwardly on its pivot. The locking-pin is provided at its upper end with a flange d , which projects over the upper wall of the draw-head and serves to limit the downward movement of the locking-pin. Said locking-pin is provided in the upper part of its rear edge with a notch or recess, at the bottom of which is formed an upwardly-facing shoulder d' , adapted for contact with a horizontal stop-bolt E at the rear of the opening b^2 , as shown in Fig. 1, said shoulder by its contact with the bolt preventing the complete withdrawal of the pin from the draw-head. The pin D is cut away at its front edge and at its side nearest the knuckle-tailpiece, so as to form a downwardly-facing shoulder d^2 , forming a larger upper portion D' and a smaller lower portion D², which latter is adapted to pass through the opening b^3 in the lower wall of the head. The lower or smaller end of the locking-pin is notched or cut away on its front face, so as to form a second downwardly-facing shoulder d^3 , which is adapted to engage a supporting surface or shoulder b^4 , located on the lower wall of the draw-head at the front margin of the opening b^3 , when the locking-pin is elevated so as to bring its wider upper part above the tailpiece of the knuckle and the lower end of the pin is thrown forward so as to bring the pin into an inclined position, as shown in Fig. 2. When the locking-pin is in its lowermost position and the knuckle closed, the larger upper part thereof stands in the path of the tailpiece of the knuckle and serves as a stop to prevent the knuckle from opening or swinging outwardly, the said upper part of the pin at this time resting against a lateral bearing-surface b^5 , Fig. 3, by which the pin is rigidly held from movement under the pressure of the knuckle-tailpiece therein. The knuckle-tailpiece is provided with a flat

surface c' , which engages the side face of the upper part of the locking-pin when the tailpiece occupies its innermost position and when the pin is in its lowermost position. When the locking-pin is raised to bring the larger part thereof above the level of the tailpiece of the knuckle, said knuckle is free to swing outwardly in a manner to open the coupler, the tailpiece passing at this time below the shoulder d^2 of the locking-pin. The rear end of the knuckle-tailpiece is provided with a lateral projection C^2 , which is curved concentrically with the pivot of the knuckle and which when the knuckle is in its closed position occupies a lateral opening b^6 in the head at the rear of the hinge of the knuckle, as shown in Fig. 3. When the knuckle is in its open position, as shown in Fig. 4, said projection is located below and engages the shoulder d^2 of the locking-pin and serves as a support for the locking-pin, as more clearly shown in Fig. 4, it being understood that the projection does not pass out of engagement with the pin when the knuckle is fully open. It follows from this construction that when said locking-pin is raised, with the larger upper part D' thereof above the tailpiece of the knuckle, and said knuckle is opened the extension C^2 of the tailpiece thereof supports the locking-pin in its elevated position. When, therefore, the knuckle is swung inwardly into its closed position, the pin is held in its elevated position by said extension and the tailpiece of the knuckle until said tailpiece has passed the larger upper end of the locking-pin and reached the position shown in Fig. 3, after which the locking-pin drops and automatically locks the knuckle in its closed position. The said knuckle is provided on its outer curved surface with a stop-shoulder c , which is adapted to engage when the knuckle is fully opened, as shown in Fig. 3, a stop-surface b^7 , formed on the head to limit the opening movement of the knuckle. The locking-pin is provided below the level of the shoulder d^2 with a secondary shoulder d^4 , which is located in position to engage the top surface of the lateral projection C^2 of the tailpiece of the knuckle when the lower end of the pin is thrown forward in position to bring the shoulder d^3 over the supporting-surface b^4 ; but said shoulder extends forwardly and laterally from the smaller lower part D^2 of the pin such distance only that when the pin is in its vertical position said shoulder d^4 will stand at the rear of and free from the said extension of the tailpiece. The shoulder d^4 is so arranged with respect to the top surface of the tailpiece and its extension C^2 that when the latter engages the shoulder (which occurs only when the lower end of the pin is thrown forward) the pin will be supported by the tailpiece and the shoulder d^3 on the smaller lower part of the pin, will be a short distance above and free from the supporting-surface

b^4 . The shoulder d^4 will be in position to be engaged by the tailpiece and its extension C^2 when the pin is lifted by hand and its lower end is thrown forward so as to bring the shoulder d^3 over the surface b^4 , and the pin is supported by said surface. When the pin is thus supported and the knuckle is closed, the tailpiece in the outward movement of the knuckle enters beneath the shoulder d^4 and lifts the pin slightly, so that during the outward swing of the knuckle the pin will be supported by the extension C^2 of the tailpiece. To facilitate the engagement of the tailpiece with the shoulder d^4 , both of said parts are preferably beveled or inclined on their margins which first come in contact in the outward movement of the knuckle, the top of the knuckle-tailpiece being shown as having a beveled surface c^2 adjacent to its end surface c' and the pin as having a beveled surface d^5 , Fig. 7, located at the side of the shoulder d^4 nearest the tail of the knuckle. The shoulder d^4 and its beveled part d^5 are shown as cut away obliquely, so as to form a vertical shoulder d^6 , which is parallel with the outer curved edge of the knuckle-tailpiece and its extension C^2 , said shoulder being located at such distance from the lower part of the pin that when the latter is in its upright position the said shoulder will stand inside of and free from the curved rear edge of the tailpiece and its extension, which at such time will bear against the main shoulder d^2 . From the above it will be understood that the shoulder d^4 bears or rests upon the rear marginal part of the extension C^2 of the knuckle-tailpiece when the knuckle is being opened. As a further improvement I provide the said extension C^2 at the rear edge of its top surface with a downwardly and rearwardly beveled surface c^3 , adapted for contact with the forward or lateral margin of the said shoulder d^4 . Said beveled surface c^3 extends from the free end of the extension C^2 a considerable distance inward, as shown in Fig. 9, and these parts are so arranged that when the pin is in its inclined position and is supported on the extension C^2 by contact of the shoulder d^4 of the pin with the top surface of said extension, as the knuckle is swung outwardly and the beveled surface c^3 comes beneath the said shoulder d^4 the forward margin of the shoulder will come into bearing on the said beveled surface, and the latter will deflect or throw rearwardly the lower end of the pin as the latter descends or slides downward on the beveled surface through its own weight, the descent of the pin occurring as soon as the shoulder d^4 passes from the flat top of the extension C^2 to the beveled surface c^3 . By the action of the said beveled surface the lower end of the pin will be thrown rearwardly far enough to bring the pin into its vertical position and to carry the lower shoulder d^3 away from the surface b^4 , the pin at this time, however, being supported by

contact of its main downwardly-facing shoulder d^2 with the top of the tailpiece extension C^2 . When the pin has thus been brought into its upright position by the action of the beveled surface c^3 , if the tailpiece of the knuckle is again swung rearwardly its rear edge will come into position for contact with the vertical shoulder d^6 , so that no forward movement of the lower end of the pin can take place during the inward swing of the knuckle and the pin will be held in its upright position and ready to descend into its locking position as soon as the knuckle-tailpiece shall have passed from beneath the same. The operation of these parts will be better understood by reference to Figs. 10 to 15 of the drawings. The locking-pin is shown in Figs. 1 and 3 in its position for locking the knuckle. When the pin is lifted to release the knuckle, its lower end is thrown forward, so that the shoulder d^3 rests upon the surface b^4 at the front of the opening b^3 , and the pin is thereby supported in its elevated position, as seen in Fig. 2. The parts are then in position for uncoupling, the knuckle-tailpiece being free to swing outwardly. After the tailpiece has moved a short distance the parts will be in the position shown in Figs. 10 and 13, the lower end of the knuckle at this time being still in its forward position with the secondary shoulder d^4 overlapping the tail of the knuckle, which by the action of the beveled surface c^2 on the tailpiece will have lifted the pin far enough to free the lower shoulder d^3 of the pin from the bottom of the draw-bar, as clearly seen in Fig. 13, so that the weight of the pin will then be supported by the tailpiece. Figs. 11 and 14 show the positions of the parts when the knuckle has nearly completed its outward swing in its opening movement and the beveled surface c^3 on the tailpiece extension has come beneath the forward edge of the secondary shoulder and the pin has descended until the main shoulder d^2 rests on the tailpiece extension and its lower end has been thrown backwardly, (by the action of the said beveled surface c^3 of the tailpiece extension on the edge of the secondary shoulder d^4), so as to bring the pin into its vertical position. The vertical shoulder d^6 at the forward edge of the secondary shoulder now stands at the rear of the path of the knuckle-tailpiece, as seen in Fig. 11, while the lower shoulder d^3 of the pin is at the rear of and free from the supporting-surface b^4 of the draw-head and the pin is in position to descend when no longer supported by the knuckle-tailpiece. So long as the knuckle is open the pin is supported by the tailpiece extension. When the knuckle is swung inwardly in the act of coupling, the parts during the inward swing of the tailpiece occupy the positions shown in Figs. 12 and 15. At this time the pin is upright, the main shoulder d^2 rests on the top of the tailpiece or its extension, and the vertical shoulder d^6 is at the

rear of the rear curved edge of the tailpiece and serves to positively hold the pin in its upright position, any forward movement of the lower end of the pin being prevented by contact of the vertical shoulder d^6 with the said curved rear edge of the tailpiece and its extension. The pin remains in the position shown in Figs. 12 and 15 until the knuckle is closed and the end surface c' of the tailpiece passes from beneath the main shoulder d^2 of the pin, when the latter drops in front of the tailpiece, and the latter is thereby locked.

From the above it will be seen that after the pin has been lifted by hand the operation of the coupler is entirely automatic and that through the movement of the knuckle-tailpiece the pin will be automatically and positively placed and held in position to fall by gravity behind the knuckle-tailpiece as soon as the knuckle reaches its closed position.

F designates as a whole an actuating member which coöperates with the locking-pin in such manner as to swing the knuckle outwardly when the pin is lifted to bring the shoulder d^2 thereof above the level of the tailpiece of the knuckle. Said actuating member is constructed and operates generally in the same manner as that shown in my prior application for patent, Serial No. 109,832, filed June 2, 1902. Said actuating member extends from front to rear of the bar and head and embraces a rearwardly-extending shank F' , which is located in the hollow draw-bar and is provided at its rear end with a downturned part f , which extends downwardly through an opening a in the bottom wall of the draw-bar. Said shank is held from rising by means of a cross-pin f' extending transversely through said downward extension of the shank. The opening a is made considerably longer and wider than the downturned part of the shank, thereby affording a loose connection between the said member and the draw-bar wall such as to permit the forward end of the member to be rocked or twisted about its longitudinal axis, as will hereinafter more fully appear. The forward end of said member consists of a flat horizontal web portion F^2 , which is located at one side of the locking-pin and over the knuckle-tailpiece, a forwardly and laterally curved arm F^3 , which has rocking engagement in a bearing socket or recess b^8 in the wall of the draw-bar head at the rear end of the knuckle-hinge, a lug or projection F^4 on the side of the member remote from the bearing-arm F^3 , which is adapted to engage a horizontal transverse groove d^7 in the adjacent side of the locking-pin, and a knuckle-actuating arm F^5 , depending from the bearing-arm F^3 . When the locking-pin is in its lowermost position, the actuating-arm F^5 occupies a vertical position parallel with the adjacent face of the tailpiece and located a distance to one side of the tailpiece. By reason of the engagement of the locking-pin with the

actuating member on the side of the latter remote from the bearing-arm F^3 the lifting of said locking-pin acts to rock the said member in the bearing b^8 , (the loose connection of said member with the wall of the draw-bar permitting such action,) and said rocking movement of the bearing-arm serves to swing the lower end of the knuckle-actuating arm F^5 toward and in engagement with the tailpiece of the knuckle in a manner to throw the knuckle to its open position when the locking-pin is completely raised, the widened upper part of the locking-pin being at this time raised above the tailpiece of the knuckle.

As a further improvement in knuckle-actuating devices of this general character or in which the lifting of the pin gives movement to an actuating member which operates the knuckle I provide the pin with a bearing surface or shoulder for contact with the actuating member, which bearing-surface is so shaped or inclined that it will have a cam action tending to throw the lower end of the pin forwardly as the pin is raised. The forward movement of the lower part of the pin thus produced brings the lower shoulder d^3 of the pin over the supporting-surface b^4 on the draw-head at the forward margin of the opening b^3 , so that the pin is thrown automatically and positively by the act of lifting said pin into its inclined position or that in which it is held or supported with its larger upper part above the knuckle-tailpiece. As shown in the drawings, an inclined shoulder d^8 for contact with the knuckle-actuating member is formed at the bottom of the notch d^7 , which is provided for engagement of the arm F^4 of said actuating member with the pin. As clearly seen in Fig. 5, the inclined shoulder d^8 slopes downwardly and rearwardly, so that when the pin is lifted it will act on the said arm F^4 in a manner to throw forwardly the lower end of the pin.

Means are provided for preventing the locking-pin from accidentally rising through shocks or jars a distance sufficient to permit the release of the knuckle-tailpiece. Said means is made as follows: G indicates a lifting-bar which is located in an upwardly-opening pocket or recess in the upper end of the locking-pin, and H a stop-latch, which is also located in said pocket and is pivoted at its lower end to the pin by means of a horizontal transverse pivot-pin h . The upper free end of the stop-latch is adapted to swing rearwardly through a slot or opening in the rear face of the pin and when it projects from the rear face of the pin comes into position beneath the stop-pin E. The lifting-bar is pivoted to the stop-latch by means of a pivot-pin g , which engages the stop-latch at a point above its pivot. The lifting-bar is provided near its upper end with a flange g' , which rests on the top of the locking-pin when the bar is at the lower limit of its movement. The

parts are so arranged that when the lifting-bar is at the lower limit of its movement the stop-latch will be rearwardly inclined, the pivots g and h being in such relation that the weight of both the lifting-bar and stop-latch will tend to throw the stop-latch rearwardly or into its locking position with the pivot g at the rear of the pivot h , as seen in Fig. 1. When, however, the lifting-bar is drawn upwardly, the pivot g will be carried into vertical alinement with the pivot h , and the upper end of the stop-latch will be thereby drawn inwardly and out of position for engagement with the stop-pin E. It follows from the above that the stop-latch will remain in position to block any upward movement of the locking-pin, except when the lifting-bar is drawn upward to lift the pin, in which case the stop-latch will be first drawn in and the coupling-pin then bodily lifted to bring its wider upper part above the knuckle-tailpiece, and thereby free the knuckle. In lifting the locking-pin by the devices usually employed for this purpose the draft on the upper end of the lifting-bar is usually applied in an inwardly or rearwardly as well as upwardly direction, and as the rearward movement of the upper end of the lifting-bar acts to throw its lower end forward the stop-latch will be released from the stop-pin by a very slight upward movement of the lifting-bar. To make more certain and positive the action of these parts, a construction is provided as follows: The flange g' of the said bar is extended to a considerable distance rearwardly from the bar and is adapted to bear at its rear edge on the top of the pin at a point at the rear of the bar. As a result of this construction, when the bar rests in its normal position the weight of the bar, together with the engagement of the rear edge of the flange g' with the top of the locking-pin, will act to hold the lower end of the lifting-bar rearwardly, and thus retain the upper end of the stop-latch in its rearward or locking position. When, however, an upward pull is exerted on the upper end of the lifting-bar, the gravity of the bar will tend to throw its lower end forward, the bar at this time rocking or tilting on the rear edge of the flange g' , which rests in the locking-pin. To facilitate this movement of the lifting-bar, the upper part of the lifting-bar above the flange g' is shown as set forward of the body of the bar so as to bring the eye g^2 , which is engaged by the lifting means, forward of the center of gravity of the bar, this arrangement of the eye g^2 tending to tilt the bar so as to carry its lower end forward when the bar is suspended by means engaging said eye g^2 . As a result of the construction described the weight of the coupling-pin holds it normally with its lower end at the rearward limit of its movement, and an upward or a rearward and upward pull on the upper end of the bar tilts or rocks the same so as to throw its lower

end forward and throw the upper end of the stop-latch from under the stop-pin E. The stop-latch may thus be thrown into its releasing position by a very slight upward movement of the lifting-bar, and the immediate and certain movement of the stop-latch necessary for releasing the locking-pin is thus effected in the preliminary movement of the lifting-bar when a lifting pull is exerted on said lifting-bar for drawing up the locking-pin to release the knuckle.

I claim as my invention—

1. The combination with a draw-bar head, of a horizontally-swinging knuckle provided with a rearwardly-directed tailpiece, and a locking-pin the lower end of which is movable forwardly and rearwardly, when the pin is raised to bring the pin into supporting engagement with and to release it from a part on the draw-bar head, and which is provided with a main downwardly-facing shoulder to engage the top surface of the tailpiece and with a secondary downwardly-facing shoulder below the level of the said main shoulder, said secondary shoulder being so arranged that it will extend over and engage the top surface of the tailpiece when the lower end of the pin is thrown toward said tailpiece, and will stand at the rear of the tailpiece when the lower end of the pin is thrown away from the same.

2. The combination with a draw-bar head, of a horizontally-swinging knuckle provided with a rearwardly-directed tailpiece, and a locking-pin, said pin being provided with an enlarged upper part and a smaller lower part, with a main, downwardly-facing shoulder at the lower end of said enlarged upper part of the pin, with a lower downwardly-facing shoulder on the front face of said smaller lower part of the pin adapted to engage a supporting-surface on the draw-head, and with a secondary shoulder located below the level of the said main shoulder; said secondary shoulder being so located and arranged that it will extend over and will be in position to engage the top surface of the knuckle-tailpiece when the lower end of the pin is thrown forward to bring the lower shoulder over said supporting-surface and will stand at the rear of said tailpiece when the lower part of the pin is thrown back to bring the said lower shoulder to the rear of said supporting-surface.

3. The combination with a draw-bar head, of a horizontally-swinging knuckle provided with a rearwardly-directed tailpiece having a lateral, curved extension, a locking-pin provided with an enlarged upper part and a smaller lower part, with a main downwardly-facing shoulder at the lower end of said larger upper part, with a lower, downwardly-facing shoulder on the front face of said smaller lower part and with a secondary, downwardly-facing shoulder located below the level of said main shoulder, said secondary shoulder being so located that it will extend over and be in

position to engage the top surface of the said tailpiece and its curved extension when the lower end of the pin is thrown forward in position for the engagement of the lower shoulder with a supporting-surface on the draw-bar head, and will stand at the rear of said tailpiece and its curved extension when the lower end of the pin is thrown rearwardly to bring the lower shoulder to the rear of said supporting-surface on the draw-bar head.

4. The combination, with a draw-bar head, of a horizontally-swinging knuckle provided with a rearwardly-directed tailpiece having a lateral, curved extension, a locking-pin provided with a larger upper part and a smaller lower part, said pin having a main downwardly-facing shoulder at the lower end of said larger upper part, a lower downwardly-facing shoulder on said smaller lower part and a secondary downwardly-facing shoulder located below the main shoulder at the lower end of the larger upper part, said secondary shoulder being so located that it will extend over and rest upon the said tailpiece and its curved extension when the lower end of the pin is thrown forward in position for engagement of the lower shoulder with a supporting-surface on the draw-bar head, and will stand at the rear of said tailpiece and its lateral extension when the lower end of the pin is thrown rearwardly to bring the said lower shoulder to the rear of the said supporting-surface, said tailpiece being provided with a beveled surface to effect the lifting of the pin when the tailpiece comes into engagement with the secondary shoulder.

5. The combination with a draw-bar head, of a horizontally-swinging knuckle provided with a rearwardly-directed tailpiece having a lateral, curved extension, a locking-pin provided with an enlarged upper part and a smaller lower part, said pin being provided with a downwardly-facing shoulder at the lower end of said larger upper part, with a lower, downwardly-facing shoulder on the front face of said smaller lower part and with a secondary, downwardly-facing shoulder located below the level of the main shoulder, said secondary shoulder being so located that it will extend over and be in position to engage the top surface of the said tailpiece and its extension when the lower end of the pin is thrown forward in position for the engagement of the said lower shoulder with a supporting-surface on the draw-bar head, and will stand at the rear of said tailpiece and its extension when the lower end of the pin is thrown rearwardly to bring the lower shoulder to the rear of the supporting-surface on the draw-bar head, said secondary shoulder being provided with a vertical face or shoulder adapted for engagement with the rear edge of the tailpiece and its extension, to hold the lower end of the pin from forward movement, when the main shoulder is resting

upon the top surface of said tailpiece and its extension.

6. The combination with a draw-bar head, of a horizontally-swinging knuckle provided with a rearwardly-directed tailpiece having a lateral, curved extension, and a locking-pin the lower end of which is movable forwardly and rearwardly, when the pin is raised, to bring the pin into supporting engagement with and to release it from a supporting part on the draw-bar head, said pin being provided with a main downwardly-facing shoulder and with a secondary shoulder located below the level of the main shoulder and which is so arranged that it will extend over and engage the top surface of the tailpiece and its extension when the lower end of the pin is thrown toward the tailpiece and will stand at the rear of the tailpiece and its extension when the lower end of the pin is thrown backwardly away from the same, and said extension of the tailpiece being provided with a downwardly and rearwardly inclined beveled surface adapted to act on the said secondary shoulder in such manner as to throw the lower end of the pin rearwardly when the tailpiece is swung outwardly in the opening of the knuckle.

7. The combination with a draw-bar head, of a horizontally-swinging knuckle provided with a rearwardly-directed tailpiece having a lateral, curved extension, a locking-pin provided with a larger upper part and a smaller lower part, said pin having a main, downwardly-facing shoulder at the lower end of said larger upper part, a lower downwardly-facing shoulder on the front face of said smaller lower part and with a secondary, downwardly-facing shoulder located below the main shoulder at the lower end of the larger upper part, said secondary shoulder being so located that it will extend over and rest upon the top surface of said tailpiece and its curved extension when the lower end of the pin is thrown forward in position for the engagement of the lower shoulder with a supporting-surface on the draw-bar head, and will stand at the rear of said tailpiece and its extension when the lower end of the pin is thrown rearwardly to bring the lower shoulder to the rear of the said supporting-surface, said lateral extension of the tailpiece being provided at its rear edge with a downwardly and rearwardly inclined beveled surface adapted for engagement with the margin of the secondary shoulder when the knuckle is swung outwardly, and acting to throw the lower end of the pin rearwardly and into position for contact of the main shoulder with the tailpiece and for the descent of the pin when the tailpiece, in the inward movement of the knuckle, passes from beneath the said main shoulder.

8. The combination with a draw-bar head, of a horizontally-swinging knuckle provided with a rearwardly-directed tailpiece having a lateral, curved extension, a locking-pin pro-

vided with a larger upper part and a smaller lower part, said pin having a main, downwardly-facing shoulder at the lower end of said larger upper part, with a lower, downwardly-facing shoulder on the front face of said smaller lower part and with a secondary downwardly-facing shoulder located below the said main shoulder, said secondary shoulder being so located that it will extend over and rest upon the top surface of said tailpiece and its curved extension when the lower end of the pin is thrown forward in position for the engagement of the lower shoulder with a supporting-surface on the draw-bar head, and will stand at the rear of said tailpiece and its curved extension when the lower end of the pin is thrown rearwardly to bring the said lower shoulder to the rear of said supporting-surface, said extension of the tailpiece being provided with a rearwardly and downwardly beveled surface adapted for engagement with the secondary shoulder when the knuckle is swung outwardly, and said secondary shoulder being provided with a vertical face adapted for contact with the rear face of the knuckle-tailpiece and its curved extension to hold the lower end of the pin from forward movement when the said main shoulder rests upon the said tailpiece and extension.

9. The combination with a draw-bar head, of a horizontally-swinging knuckle having a rearwardly-directed tailpiece, a locking-pin which is lifted to release the knuckle and the lower end of which is movable forwardly and rearwardly to bring the pin into supporting engagement with and to release it from a supporting part on the draw-bar head and a horizontally-rocking actuating member having on one side an arm which has bearing engagement with the head and a depending knuckle-actuating arm on said bearing-arm, said pin being provided with an upwardly-facing, rearwardly-inclined shoulder for contact with the side of the actuating member remote from the knuckle-actuating arm, whereby, when the pin is lifted, the knuckle-actuating member operates both to open the knuckle and to throw forward the lower end of the coupling-pin.

10. The combination with a draw-bar head, of a horizontally-swinging knuckle having a rearwardly-directed tailpiece, a locking-pin which is lifted to release the knuckle and which is provided with an upper larger and a lower smaller part, with a main shoulder at the lower end of the smaller part and a lower shoulder on the front face of the lower, smaller part, said pin being movable forwardly and rearwardly at its lower end when the pin is raised, to bring the said lower shoulder into supporting engagement with and to release said shoulder from a supporting-surface on the draw-head, a horizontally-rocking actuating member having on one side an arm which has bearing engagement with the head and a depending knuckle-actuating arm on said bear-

ing-arm, said pin being provided with an upwardly-facing, rearwardly-inclined shoulder for contact with the side of the actuating member remote from the knuckle-actuating arm, whereby, when the pin is lifted, the knuckle-actuating member operates both to open the knuckle and to throw forward the lower end of the pin to bring the lower shoulder thereon in position for engagement with the said supporting-surface on the draw-head.

11. The combination with a draw-bar head, a horizontally-swinging knuckle provided with a tailpiece, a locking-pin having a part which is located in the path of the tailpiece, a stop-latch pivoted at its lower end to the locking-pin and adapted to engage at its upper end a stationary stop on the head and a lifting-bar pivoted to the stop-latch at a point above the pivot of the latter.

12. The combination with a draw-bar head, a horizontally-swinging knuckle provided with a tailpiece and a locking-pin having a part which is located in the path of the tailpiece, a stop-latch pivoted at its lower end to the locking-pin and adapted to swing at its upper end rearwardly from the locking-pin to engage a stationary stop on the head, a vertically-movable lifting-bar pivoted at its lower end to the stop-latch at a point above the pivot of the latter, said lifting-bar being provided with a rearwardly-projecting flange adapted to bear upon the top of the locking-pin at the rear of the lifting-bar.

13. In a car-coupler a knuckle having a tailpiece arranged to lift the lock under the opening movement, to support the same while open and to move said lock into alinement with its seat under the opening movement of the knuckle.

14. In a car-coupler a knuckle having a tailpiece arranged to lift the lock under the opening movement, to support the same while open and to move said lock into alinement with its seat under the opening movement of the knuckle and to release said lock and permit it to drop into its locking position at the end of the closing movement of the knuckle.

15. In a car-coupler a shelf or ledge adapted to support the lock in a slightly-elevated position and a knuckle having a tail operating to support the same during the opening movement thereof and to move the lock back into alinement with its seat at the end of the opening movement of the knuckle.

16. In a car-coupler a shelf or ledge for supporting the lock in a position above its locking position and a knuckle having a tailpiece

operating to lift the said lock still higher and to support the same during the principal part of the opening movement of the knuckle at the highest level of said lock and permitting the lock to move into alinement with its seat and to slightly drop at the end of the opening movement of the knuckle.

17. In a car-coupler a shelf or ledge for supporting the lock in a position above its locking position and a knuckle having a tail operating to further lift said lock from said ledge or shelf and to support it in its uppermost position during the greater part of the opening movement of the knuckle, said tail of the knuckle being provided with an inclined shoulder permitting the knuckle to move by gravity into line with its seat at the end of the opening movement of the knuckle, said lock being supported by the tail of the knuckle in the latter position and being dropped off the tail into its locking position at the termination of the closing movement of the knuckle.

18. In a car-coupler a shelf or ledge for supporting the lock in a slightly-elevated position, and a knuckle having a tailpiece operating to lift said lock during the movement of the tail past the lock, said tail having an inclined shoulder arranged to permit the lock to be moved by gravity into alinement with its seat.

19. In a car-coupler a shelf or ledge for supporting the lock in a slightly-elevated position and a knuckle having a tail operating to lift said lock from said shoulder, said tail being so constructed and arranged as to permit the knuckle to be moved by gravity into alinement with its seat during the opening movement of the knuckle and to be dropped off said tail in the closing movement of the knuckle.

20. In a car-coupler the combination with the draw-head and a knuckle pivoted therein, of a vertically-movable locking-pin for said knuckle adapted in its movement to the unlocking position to engage a ledge on the draw-head and to be retained thereby in its unlocking position, and means whereby said locking-pin is lifted and disengaged from said ledge by the movement of the knuckle on its pivot past said locking-pin and moved into alinement with its seat.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 2d day of December, A. D. 1902.

JAMES A. HINSON.

Witnesses:

C. CLARENCE POOLE,
WILLIAM L. HALL.