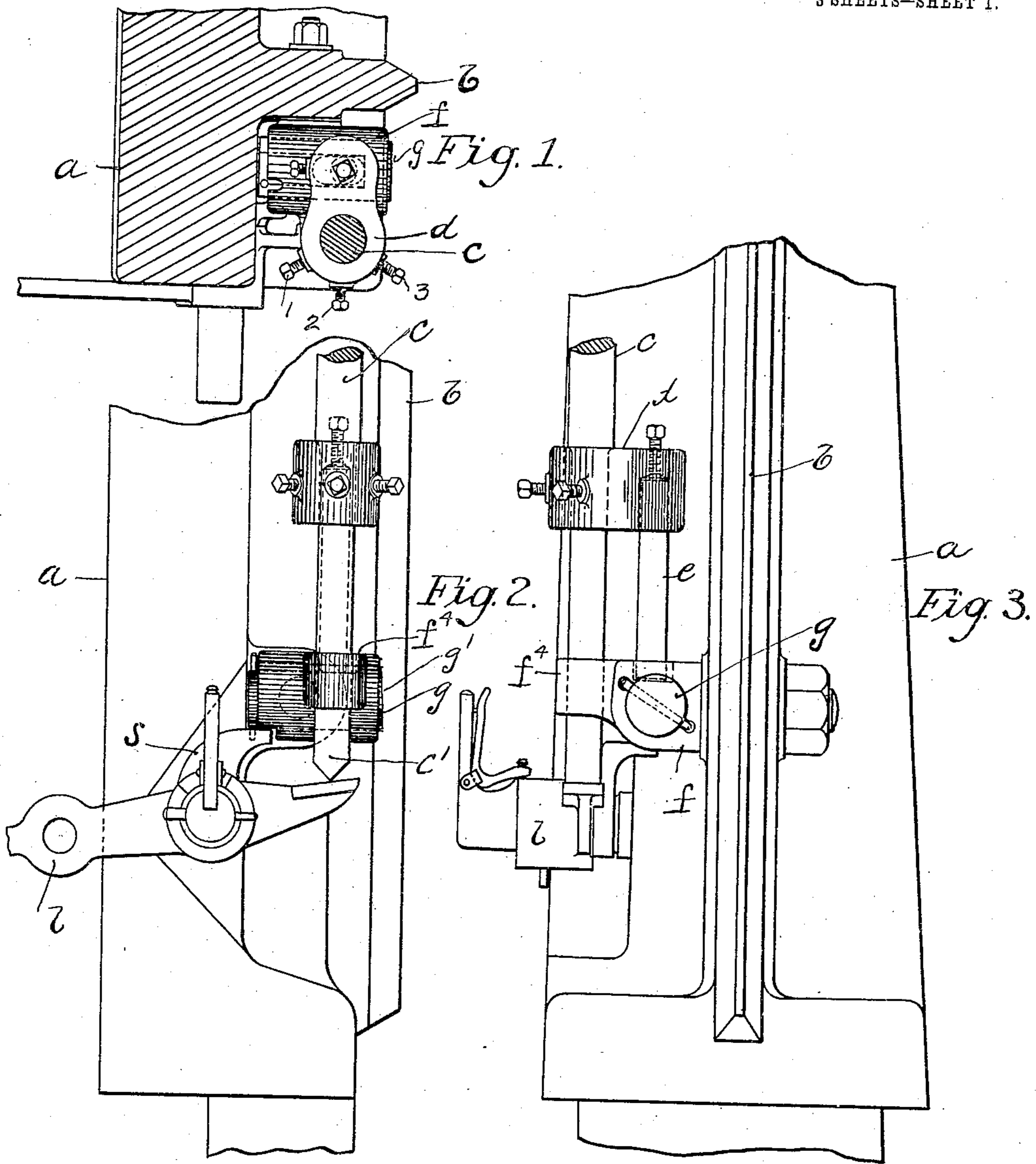


L. G. BAYRER.
 DROP PRESS AND ATTACHMENT THEREFOR.
 APPLICATION FILED APR. 11, 1907.

915,012.

Patented Mar. 9, 1909.
 3 SHEETS—SHEET 1.



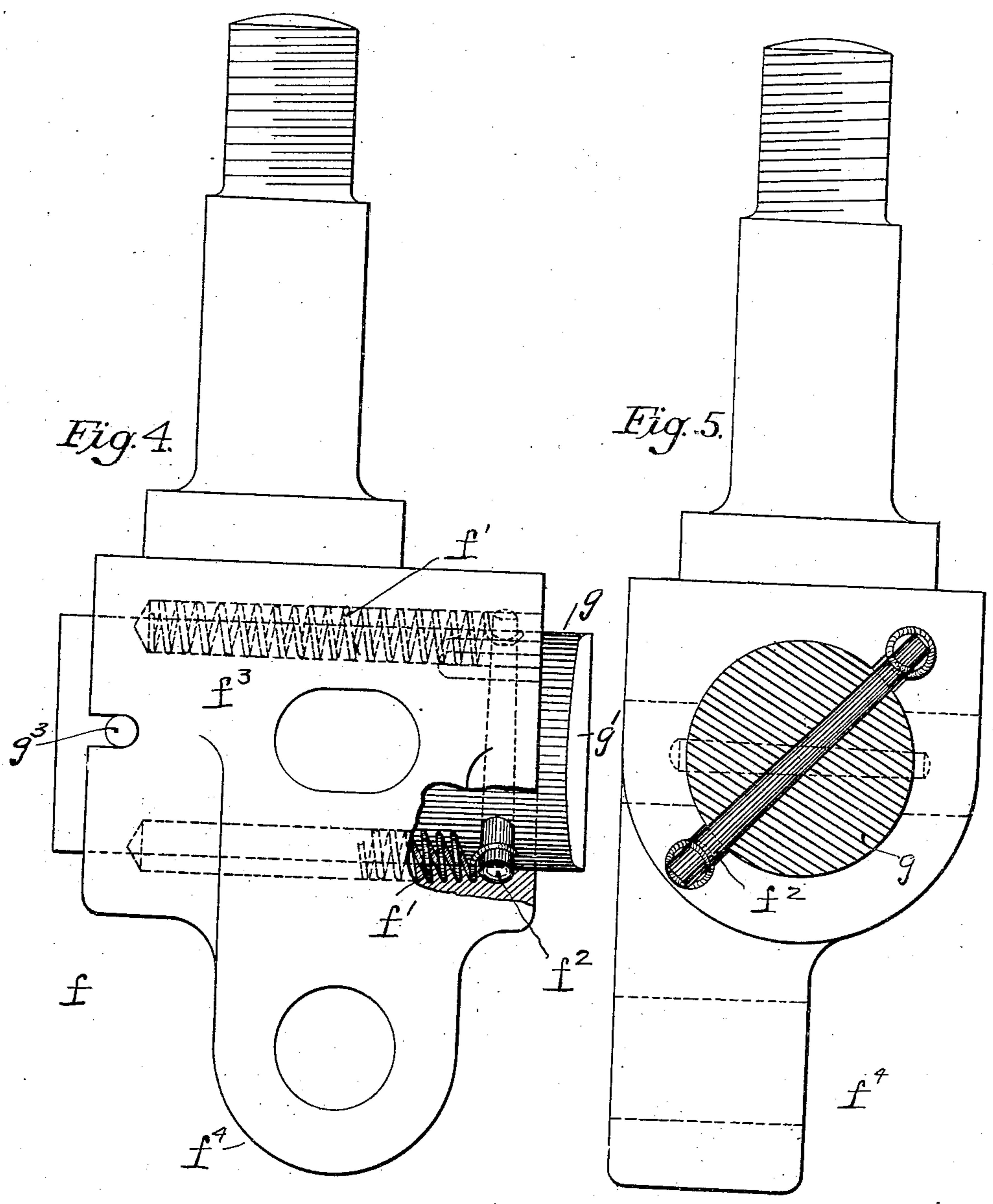
Witnesses.
 W. F. Lakin.
 J. H. Lakin.

Inventor.
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 per: H. E. Hart
 Attorney.

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Witnesses.
W. F. Lakin
A. Heimsahl

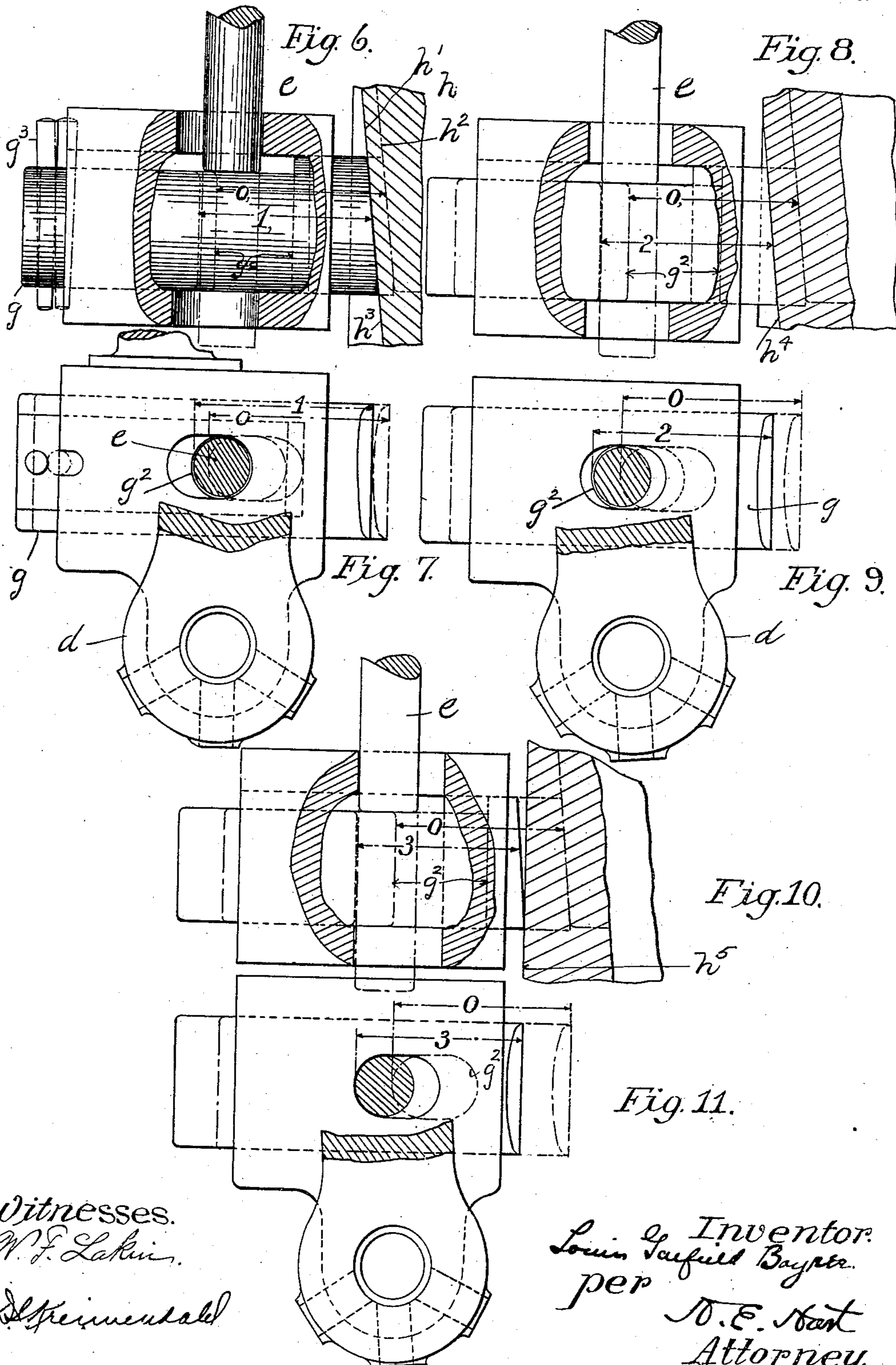
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3 SHEETS—SHEET 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

LOUIS GARFIELD BAYRER, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE BILLINGS & SPENCER COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

DROP-PRESS AND ATTACHMENT THEREFOR.

No. 915,012.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed April 11, 1907. Serial No. 367,663.

To all whom it may concern:

Be it known that I, LOUIS GARFIELD BAYRER, citizen of the United States of America, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Drop - Presses and Attachments Therefor, of which the following is a specification.

As is well known, in machines of this character the upper die is raised to the top of the machine and after a piece of metal has been placed on the lower die the upper die is released and allowed to drop, operating in conjunction with the lower die to form the piece of metal to the desired shape. This upper die is fastened in a hammer which is secured to a board, and suitable rollers, operated by cams, are brought into engagement with this board, after the hammer has dropped, to raise it to the top of the machine. The tripping mechanism which throws these rolls into engagement with the board is actuated by the hammer when it reaches the bottom of its stroke and it is a novel form of tripping mechanism which constitutes the herein described invention.

In the drawings:—Figure 1 is a plan view of the invention shown as attached to the left hand column (partly shown in section) of the press. Fig. 2 is a side elevation of the parts as shown in Fig. 1. Fig. 3 is a front elevation looking toward the inner side of one of the columns. Fig. 4 is a detail in plan view on enlarged scale of the dog which supports the plug which controls the tripping mechanism. Fig. 5 is a side view of the same part which is shown in Fig. 4. Fig. 6 is a diagrammatic view partly in section of the parts constituting the tripping device, showing the parts in the first position. Fig. 7 is a plan view thereof. Fig. 8 is a view similar to Fig. 6, but showing the parts in the second position. Fig. 9 is a plan view thereof. Fig. 10 is a view similar to Fig. 6, but showing the parts in the third position. Fig. 11 is a plan view thereof.

Referring to the drawings, and particularly to Figs. 1, 2 and 3 thereof, *a* denotes a part of the column of the machine and *b* the guideway controlling the movement of the hammer. It is to be understood of course that the form of machine is the well known type having the base and two uprights with opposing guideways between which the up-

per die moves. *c* denotes the friction bar which is secured at the head of the machine to the cams or other devices which move the rolls toward each other in order that they may grip the board to raise the die. To this friction bar *c* is secured a dog *d* provided with proper screws, as 1, 2, 3, to secure it to the bar. This dog *d* projects to the rear of the friction bar *c* and carries the stop-pin *e* which projects downwardly therefrom. Secured to the column *a* is the friction bar lug *f*, shown in Figs. 1, 2 and 3 and in detail in Figs. 4 and 5. This lug *f* has a horizontal bore to receive the knock-off plug *g* which is flattened on its top, as clearly shown in Figs. 6, 8 and 10, and on this flat top normally rests the stop-pin *e*. The front face of this plug *g* is beveled, as indicated at *g'*, and one side of the hammer *h* is also beveled on the same angle, as indicated at *h'*. This plug *g* is adapted for endwise movement in the lug *f* under the influence of the hammer as it descends, it being normally forced to its forward position by the springs *f'* which bear against a pin *f''* passing through the plug. The friction bar lug has an elongated opening *f'''* through its upper side so that the stop-pin can pass through this opening and rest on the plug. The plug also has an elongated opening, indicated at *g''*, extending vertically through it and in registering position with the opening *f'''* in the top of the friction bar lug.

The operation of the device is as follows. Referring to Figs. 1, 2, 3, when the hammer is in its raised position and before it reaches its lowest position the stop-pin *e* carried by the lug *d* rests on the flat top of the plug *g* overlying the edge of the opening *g''*. The plug is in its forward position and held there by the springs *f'* *f''*. As the hammer descends its beveled face engages the beveled face *g'* of the plug *g* and forces this plug back through the friction bar lug *f* until the stop-pin drops down through the opening *g''* in the plug *g*. This of course permits the friction bar *c* to drop and throws the cams which actuate the rolls, causing them to grip the board and raise the hammer to the top of the machine. The friction bar *c* and the stop-pin *e* rise with the hammer and as soon as the stop-pin passes out of the opening *g''* in the plug the plug is thrown forward by the spring and the stop-pin *e* comes to rest again on the flat top of the plug *g*.

Machines of this character are designed to take dies of different thicknesses. A pair of thin dies will of course require a long stroke of the hammer in order to bring the dies together. A thicker pair of dies require a shorter downward stroke of the hammer. It is apparent that some means of adjustment must be provided so that the friction bar and the stop-pin can be released at the proper time, that is to say just as the dies come together, so that the hoisting mechanism for the upper die can be thrown into operation. I accomplish this result by making the dog d adjustable on the friction bar c so that it can be swung to different positions and locate the stop-pin e at varying distances from the edge of the opening g^2 through the plug g , thus requiring a greater or less movement of the plug and a greater or less downward movement of the hammer which actuates the plug, in order to release the stop-pin and allow it to drop down through the opening g^2 .

In the diagrammatic views 6, 7, 8, 9, 10 and 11 I have shown the stop-pin adjusted in three different positions. The zero arrows indicate the normal position of the plug and Figs. 6 and 7 show the stop-pin e resting in what will be referred to as the No. 1 position, that is to say, the position where it rests on the top of the plug g nearest the edge of the opening g^2 . This is the position of adjustment when the thickest set of dies is being used as it only requires a slight inward movement of the plug under the influence of the hammer to release the stop-pin e .

Referring now particularly to Figs. 6 and 7, the normal position of the plug is indicated by the zero arrow and the position of the hammer just before it begins to force the plug inward is indicated by the dotted line h^2 . The solid line h^3 indicates the beveled edge of the hammer after it has traveled down far enough so that it rests on the bottom die; the plug is shown in its first position in full lines, the pin being free to drop down through the opening g^2 in the plug.

Referring now to Figs. 8 and 9, the second position of the dog is shown providing for the use of a thinner set of dies. It will be clearly seen in these figures that the stop-pin e has a considerable wider bearing on the top of the plug g in this second position than

it has in the first position indicated in Figs. 6 and 7. When the die has traveled downward to the position indicated by the solid line h^4 the plug is driven back to the position indicated by the arrow 2, leaving the stop-pin e free to drop down through the plug.

Referring now particularly to Figs. 10 and 11 there is shown the condition where thin dies are used, the stop-pin having a still greater bearing on the top of the plug g , consequently requiring a greater inward movement of the plug in order to free the stop-pin. The solid line h^5 indicates the edge of the hammer as the plug is driven in to its farthest extent as indicated by the arrow 3. A pin g^3 passes through the rear end of the plug g limiting its forward movement.

Referring back to Figs. 2 and 3 it will be seen that the friction bar c extends through and below the dog d as indicated at c' , its end passing through a hole in a projection f^4 from the friction bar lug. When it is desired to operate the drop by a treadle the lever l is swung into position so that the end c' of the friction bar c rests on it as indicated in Figs. 1 and 2, but when the drop is to be run continuously, being tripped by the above described tripping mechanism the lever l is swung to one side by the switch indicated at s so as to allow the friction bar c free play up and down.

I claim as my invention:—

In a drop press the combination with the frame of the machine, a hammer movable on suitable guide-ways, and a friction bar, of a dog mounted on said friction bar, a stop-pin carried by said dog and projecting from the under side thereof, a knock-off plug suitably supported and adapted for endwise movement under the influence of the descending hammer, said plug normally supporting said stop-pin in raised position, said dog being mounted on said friction bar for adjustment rotarily with respect thereto to vary the point of support of said pin on said plug whereby the time of disengagement of said pin from said plug may be varied.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS GARFIELD BAYRER.

Witnesses:

L. E. BERKOVITCH,
H. E. HART.