

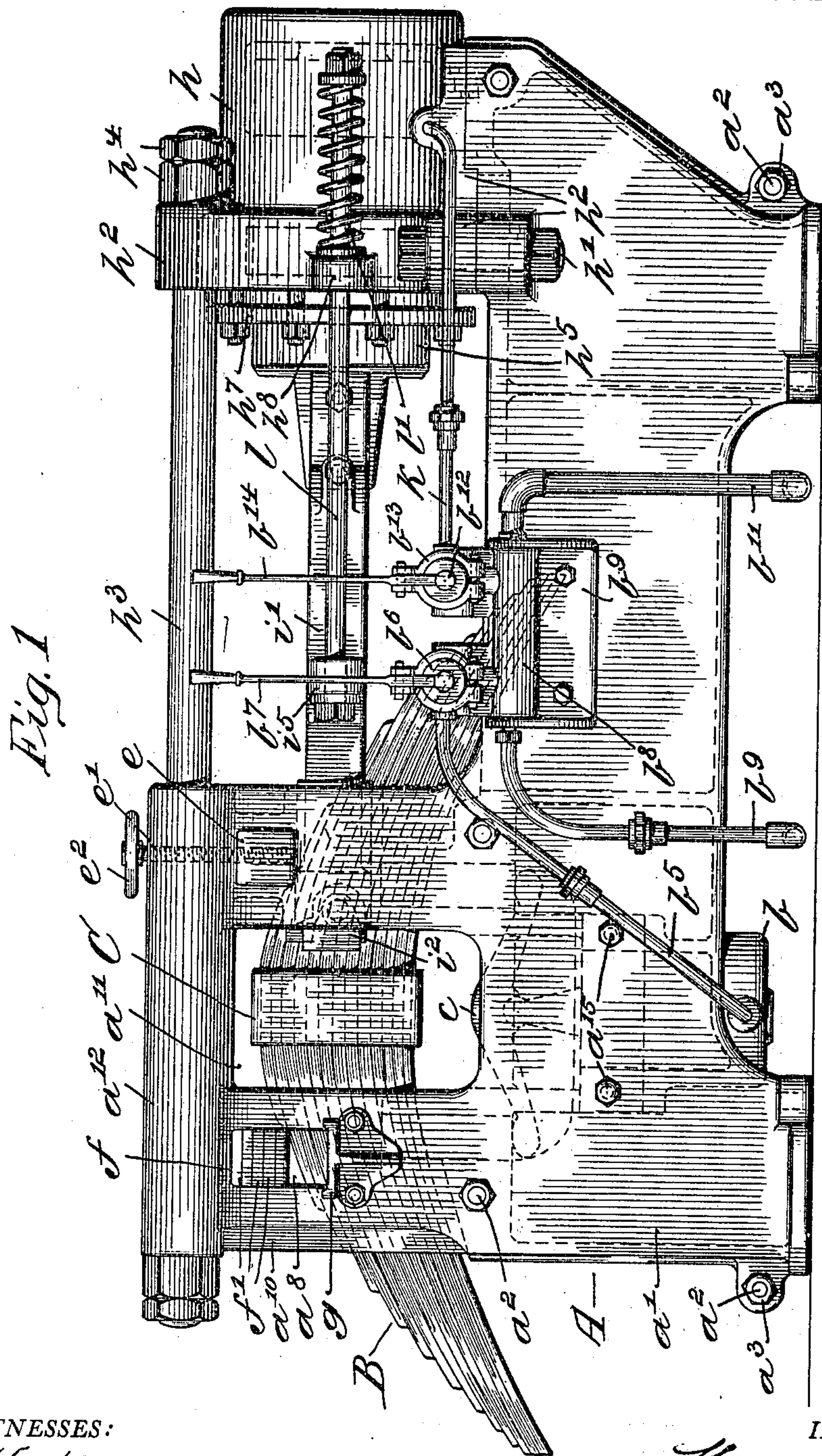
No. 819,871.

PATENTED MAY 8, 1906.

W. EVANS.
HYDRAULIC BAND STRIPPING MACHINE.

APPLICATION FILED SEPT. 25, 1905.

6 SHEETS—SHEET 1.



WITNESSES:
T. J. Hartman.
Wilhelm Focht

INVENTOR
William Evans

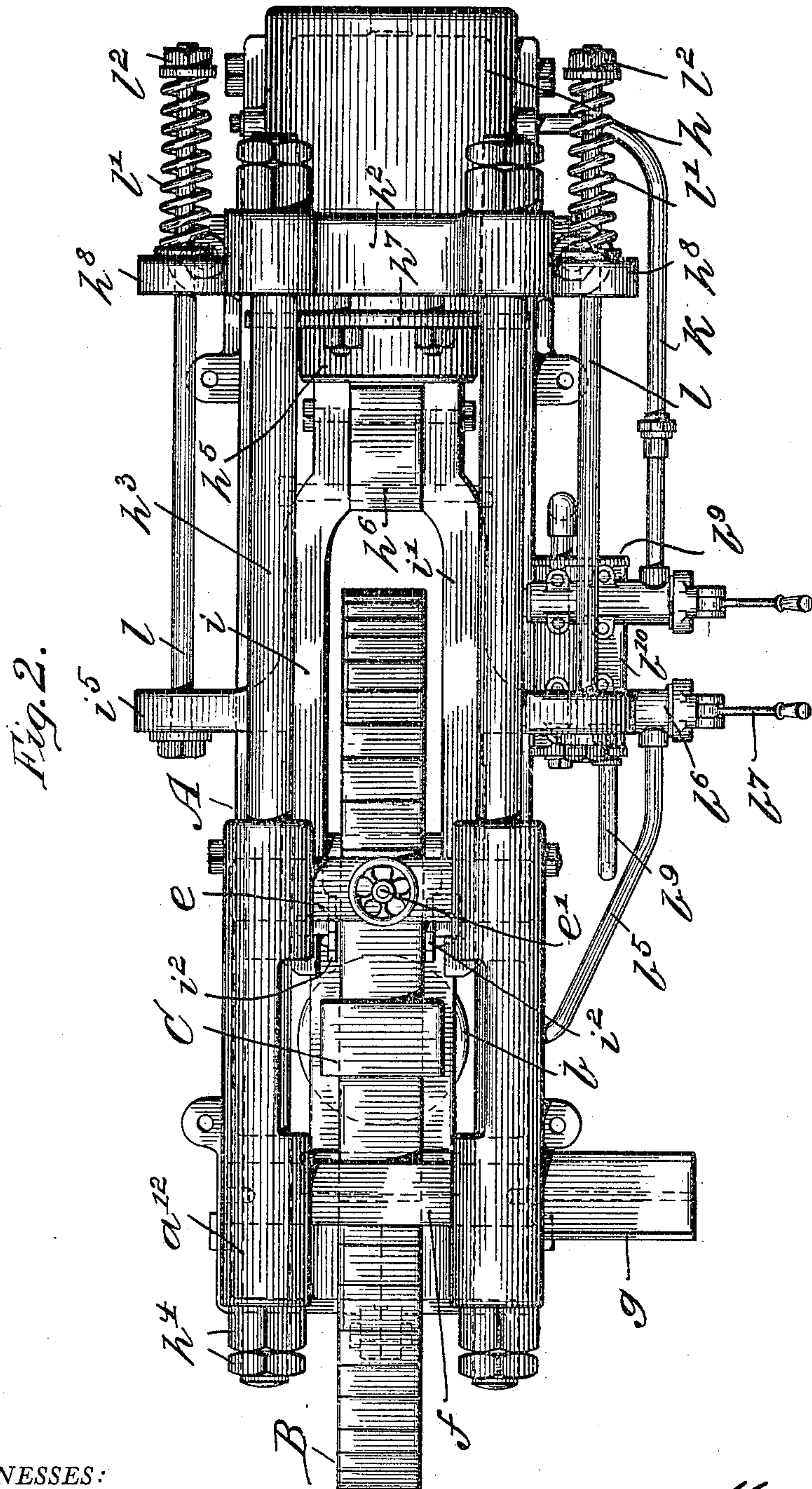
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APPLICATION FILED SEPT. 26, 1905.

6 SHEETS—SHEET 2.



WITNESSES:

F. G. Hartman.

Wilhelm Vogt

INVENTOR

William Evans.

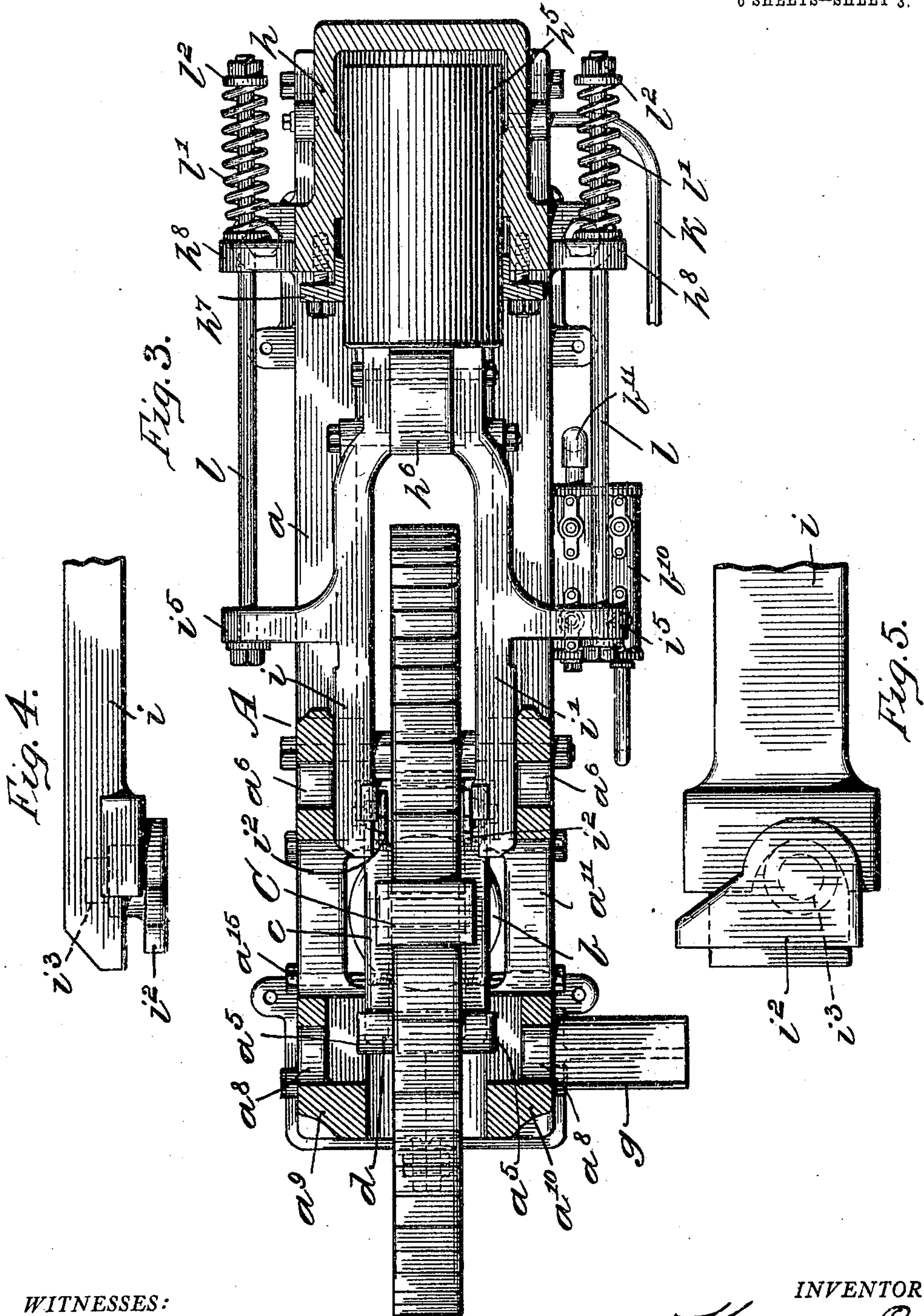
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Wilhelm Vogt

INVENTOR
William Evans

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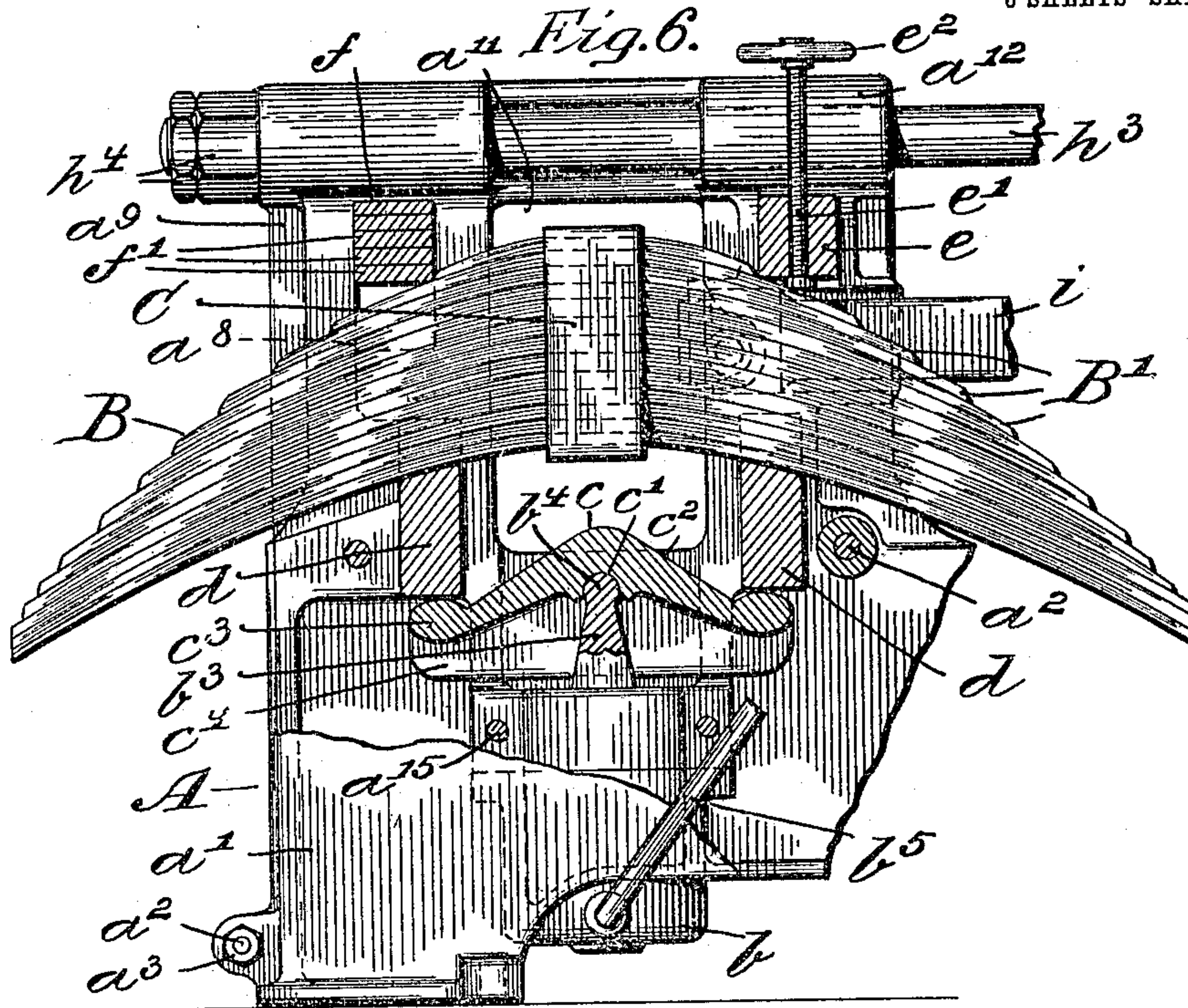
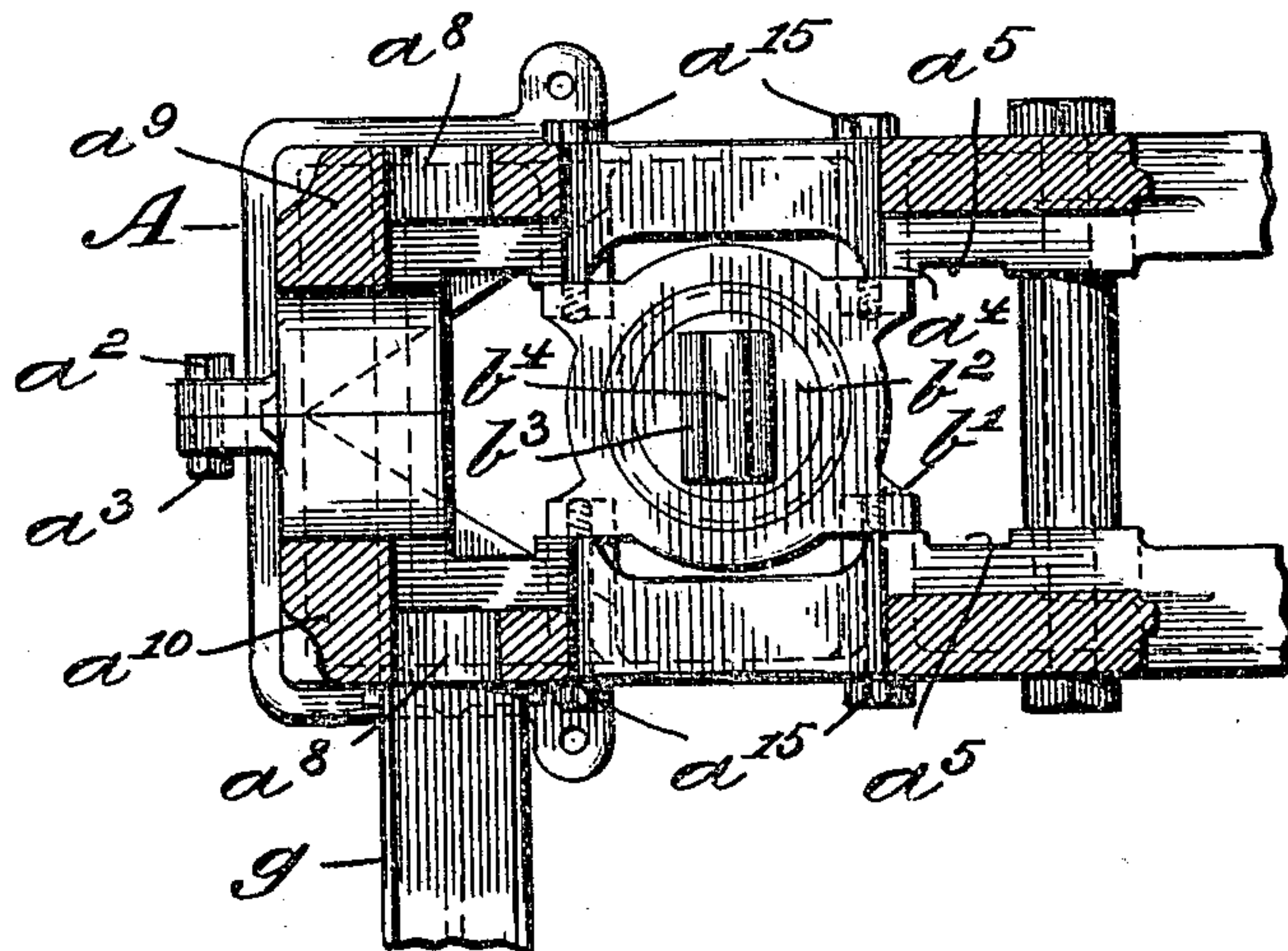


Fig. 7.



WITNESSES:

W. J. Hartman.
Wilhelm Torg

INVENTOR

William Evans.

No. 819,871.

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6 SHEETS—SHEET 5.

Fig. 9.

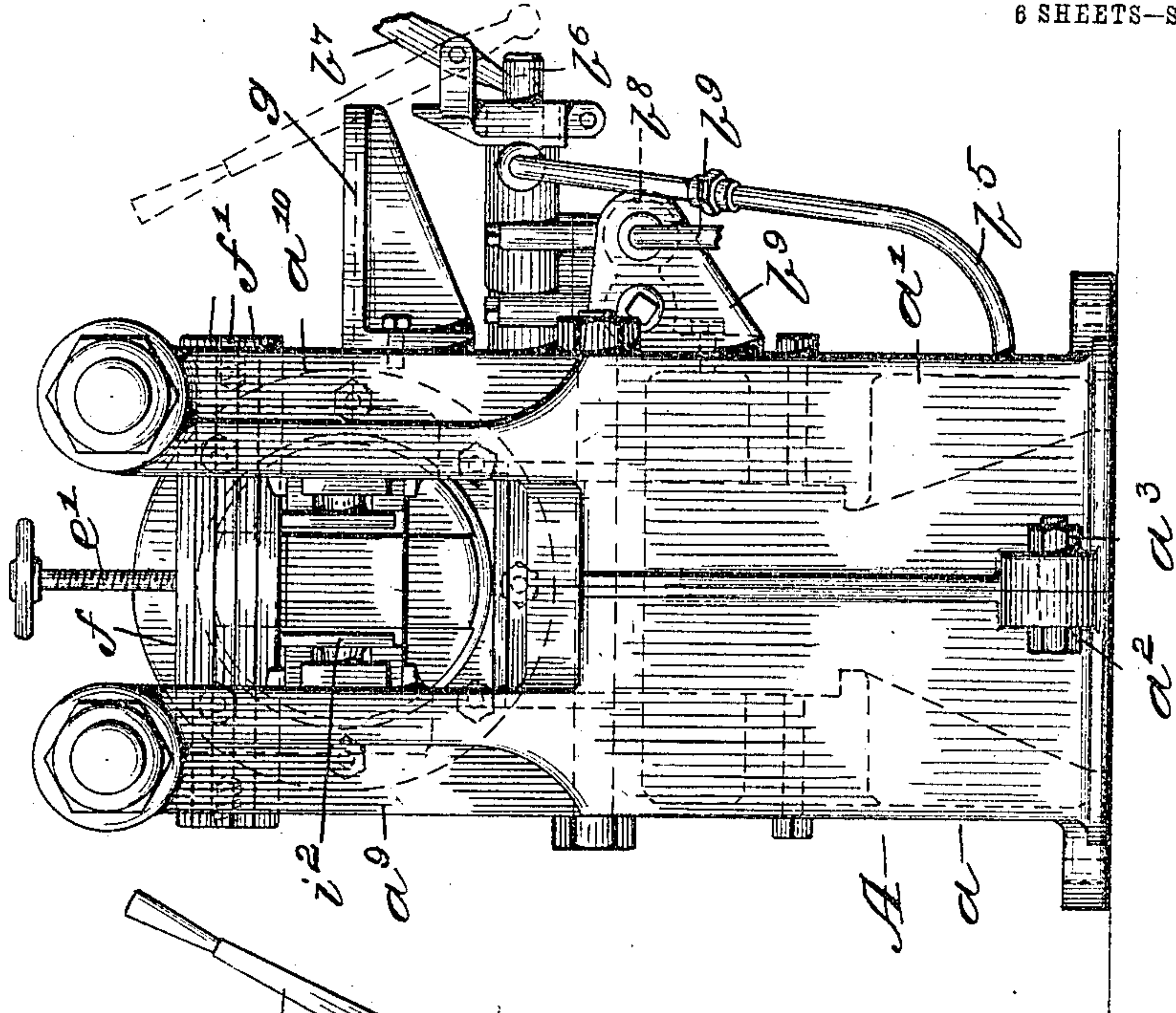
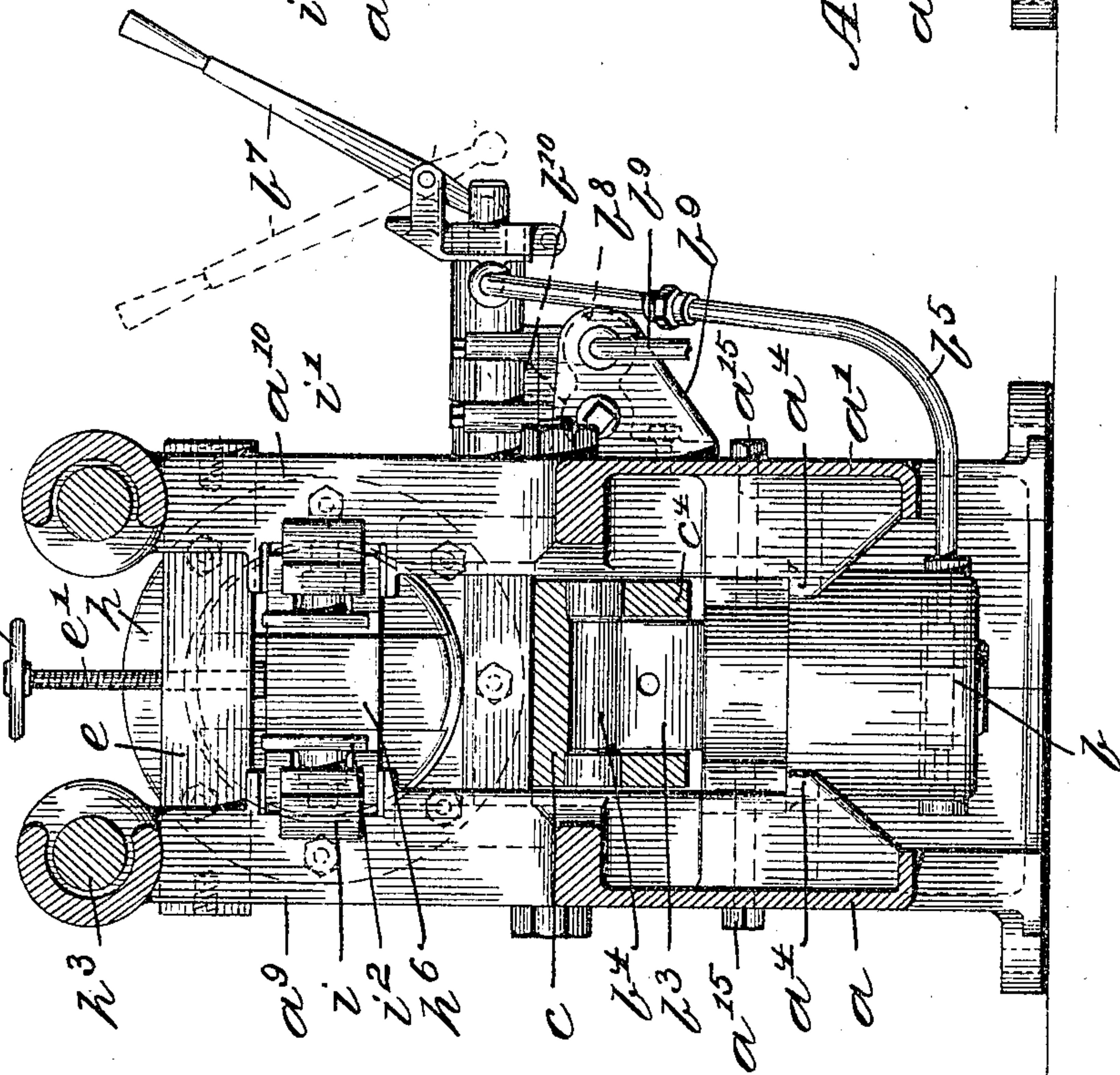


Fig. 8.



WITNESSES:
F. J. Hartman
Wilhelm Vogt

INVENTOR
William Evans

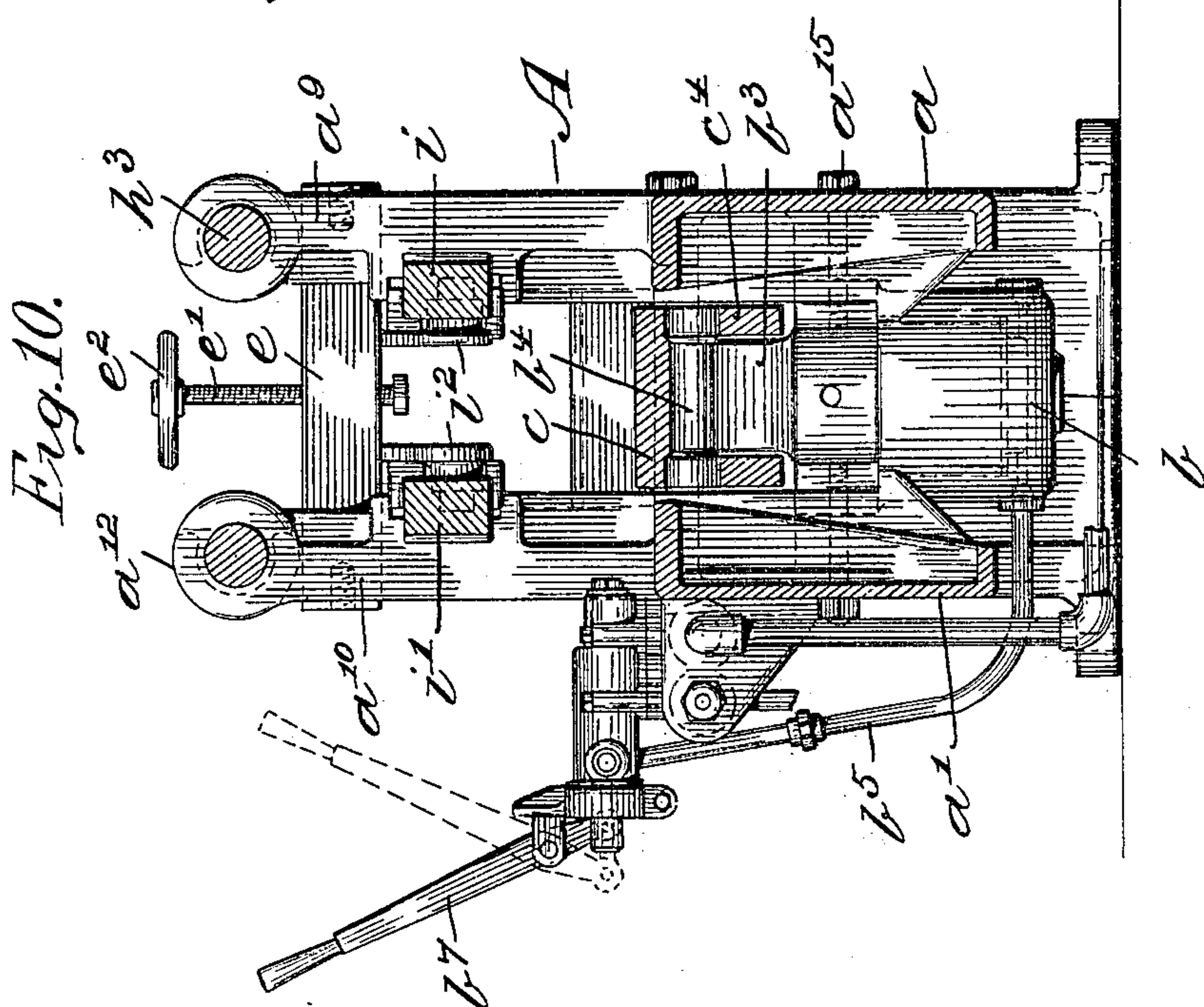
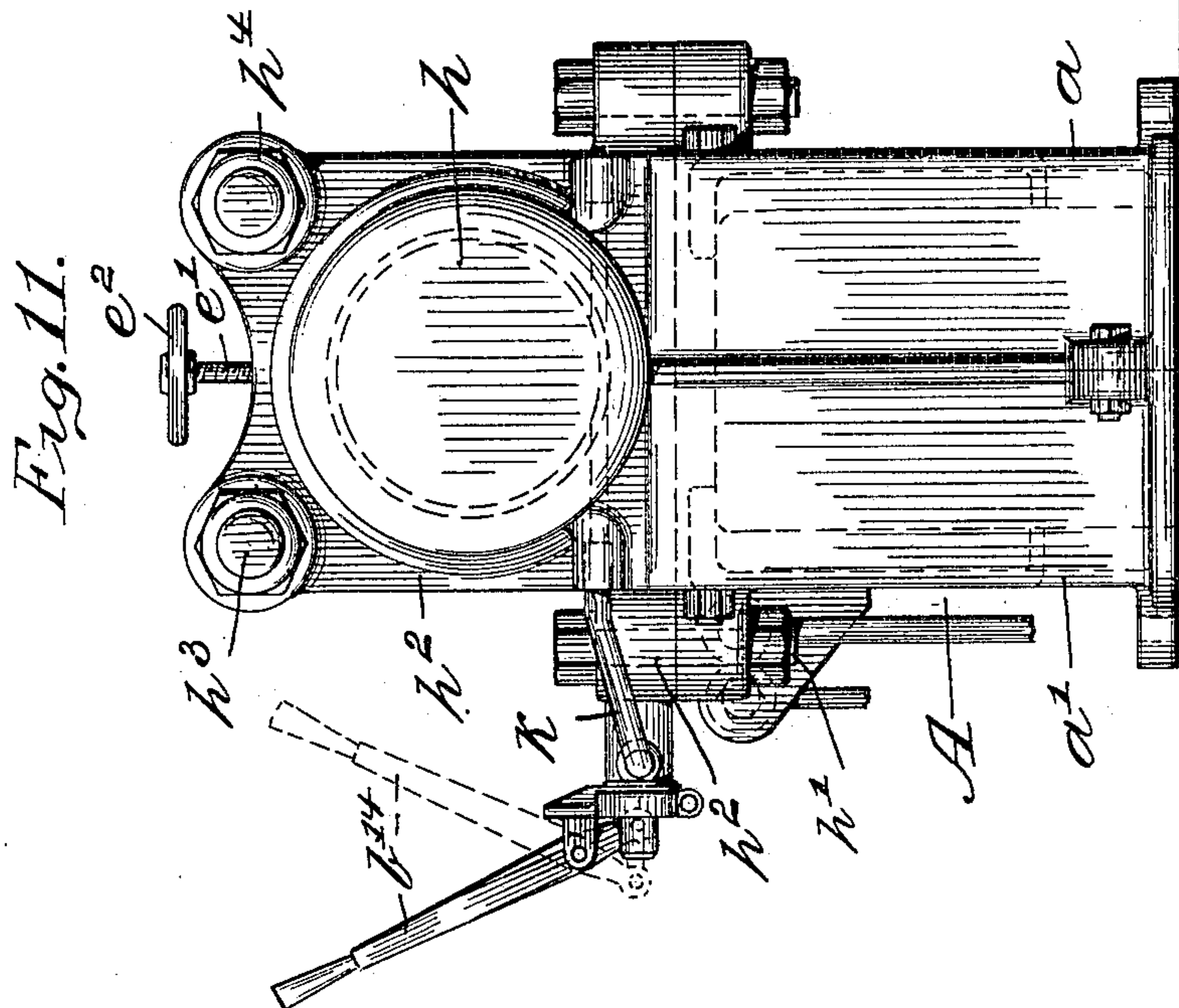
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6 SHEETS—SHEET 6.



WITNESSES:
F. J. Hartman.
Wilhelm Toft

INVENTOR
William Evans.

UNITED STATES PATENT OFFICE.

WILLIAM EVANS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
WILLIAM EVANS, ROBERT EVANS, AND JOHN H. EVANS, OF PHILA-
DELPHIA, PENNSYLVANIA, A FIRM.

HYDRAULIC BAND-STRIPPING MACHINE.

No. 819,871.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed September 25, 1905. Serial No. 279,946.

To all whom it may concern:

Be it known that I, WILLIAM EVANS, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hydraulic Band-Stripping Machines, of which the following is a specification.

My invention has relation to a hydraulic machine for stripping the bands of elliptical springs, especially such as are used on railroad-car trucks, and in such connection it relates to the constructive arrangement of means controlled by hydraulic pressure to remove bands from springs of various sizes and forms.

The principal objects of my invention are, first, to provide a machine with means controlled by hydraulic pressure to clamp and remove bands from springs; second, to provide clamping as well as band-stripping means, with movable heads adapted to engage with their entire surface the spring and its band irrespective of the position the same occupies in the machine; third, to arrange certain of the clamping means removable and adjustable with respect to their diameter to permit of the ready insertion and clamping of springs of varying sizes; fourth, to provide the machine with means to limit the distance of insertion of the springs into the machine; and, fifth, to provide the band-stripping means with mechanism to automatically return the same to a normally inoperative position.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a view illustrating in side elevation the hydraulic band-stripping machine, the manner of clamping the springs and holding the same in position during the stripping operation, the means for automatically returning the stripping means to their normally inoperative position, and means controlling the hydraulic mechanism actuating the clamping and stripping means, all embodying main features of my said invention. Fig. 2 is a top or plan view thereof. Fig. 3 is

a horizontal sectional view of the machine, certain of the clamping means being removed therefrom. Figs. 4 and 5 are detail views enlarged, illustrating, respectively, in top or plan view and in side elevation a portion of the stripping means and a movable head carried by the same. Fig. 6 is a view, partially in vertical section and partially in side elevation, of the left-hand end of the machine, illustrating the spring in a clamped position therein. Fig. 7 is a view, partly in horizontal section and partly in top or plan view, of a portion of the machine shown in Fig. 6, the spring and certain of the clamping means being removed therefrom. Fig. 8 is a cross-sectional view of the left-hand end of the machine, taken in a direction toward the right-hand end thereof. Fig. 9 is a view illustrating in elevation the left-hand end of the machine. Fig. 10 is a cross-sectional view of the left-hand end of the machine, taken in a direction toward the same; and Fig. 11 is a view illustrating in elevation the right-hand end of the machine.

Referring to the drawings, A represents the frame of the machine, preferably consisting of sections a and a' , which by means of bolts a^2 and nuts a^3 are connected with each other, as shown in Figs. 1, 6, 7, 9, and 11. This division of the frame A permits of the ready insertion of a hydraulic cylinder b between the sections a and a' thereof, which cylinder by means of flanges b' , resting upon the projection a^4 , formed integral with the sections a and a' , is supported by the same and is securely held in position on the projection a^4 and within the frame A by bolts a^{15} , passing through the sections a and a' and engaging the projections b' in the manner shown in Figs. 7 and 10. The piston b^2 of the hydraulic cylinder b is provided with an extension b^3 , preferably oblong in cross-section, which terminates in a rounded portion b^4 . The extension b^3 serves as a support for a head c , provided with a depression c' at its under side, which is adapted to receive the rounded portion b^4 of the piston extension b^3 and to form in conjunction therewith a knuckle-joint upon which the head c is evenly balanced and is permitted to assume various angular positions with respect to the piston b^2 , for a purpose to be presently more fully

described. The head c is preferably provided with downwardly-projecting sides c^2 , terminating in bearing portions c^3 , and with strengthening-ribs c^4 , as shown in Figs. 6, 8, 5 and 10. The ribs c^4 by abutting against the projection a^4 limit the downward movement of the piston b^2 and head c , and the preferably rounded bearing portions c^3 are adapted to be brought into engagement with and to raise 10 cross-beams d , having a range of movement in depressions a^5 , formed in the sections a and a' of the frame A, as shown in Figs. 3 and 7 of the drawings. These cross-beams d serve as a support for a spring B, from which the 15 band C is to be removed. The spring B, introduced into the standard A and between the extension a^9 and a^{10} of the sections a and a' by means not shown, is placed upon the cross-beams d . In order to limit the introduction of the spring B in the machine, a 20 cross-beam e , preferably engaging openings a^6 , arranged in the extensions a^9 and a^{10} of the sections a and a' , is provided with a spindle e' , having a hand-wheel e^2 , which by extending into the path of the spring B and by engaging a plate B' thereof, is adapted to arrest the inward movement of the spring B when the band C thereof is brought into a 30 substantially central position with respect to openings a^{11} , arranged in the extensions a^9 and a^{10} and to the hydraulic piston b^2 . Before, however, the spring B is introduced into the frame A of the machine a cross-beam f , preferably formed of sections f' , has 35 been removed from the frame A by sliding the same out of engagement with openings a^8 , arranged in the extensions a^9 and a^{10} .

In order to facilitate the withdrawal of the cross-beam f , the frame A is provided with a 40 bracket g , which serves as a support for the beam f , during its partial disengagement from the standard A, as will be readily understood in conjunction with Figs. 1, 3, and 9 of the drawings. After the spring B has assumed its proper position on the beams d , the 45 projecting end of the spindle e' is withdrawn from the cross-beam e , and the cross-beam f is reinserted in the openings a^8 of the frame A. Water under pressure is now introduced 50 in the cylinder b by means of a pipe b^5 , connected with a valve b^6 , actuated by a handle b^7 , which valve b^6 communicates with a chamber of a receptacle b^8 and by means of a pipe b^9 is connected with any suitable source of water- 55 supply held under pressure. (Not shown.)

As shown in Figs. 1, 8, and 9, the receptacle b^8 is preferably formed integral with a bracket b^9 , which is removably secured to the frame A. As soon as the water under pressure enters the cylinder b the piston b^2 thereof and head c carried by the same is raised and the latter brought with its bearing-surfaces c^3 into engagement with the cross-beams 60 d , thus raising the same and the spring B,

resting thereon, as well as the sectional cross- 65 beam f , until the beam f has reached the ends of the openings a^8 and cannot be raised any farther therein. At this time the spring B has also been brought into engagement with the cross-beam e and owing to its outline 70 projects a certain distance between the same and rests in the present instance with the uppermost blade of the series of blades B between the lower inner edges of the beams f and e . The spring B is thus securely and 75 immovably clamped between the cross-beams d , e , and f and is held in this position by the head c and piston b^2 until released therefrom by the actuation of the valve b^6 . 80 When the spring B assumes an oblique position in the frame A by being brought into engagement with the beams e and f , which position is due to the particular shape of the spring or to the removal of a portion of the blades B' thereof through breakage, the head 85 c of the piston extension b^3 by swinging on its fulcral point b^4 will adapt itself to the oblique position of the spring B, and thus hold the same securely clamped by equally distributing the pressure exerted by the piston b^2 on 90 the head c to the beams d and by the same and spring B to the beams e and f . By extending the spindle e' more or less into the frame A springs of various diameters and sizes may be securely prevented from being 95 too far inserted into the frame A, and at the same time springs B may be placed therein, which require beams of less diameter than the beam f shown, which diameter in the present instance may be reduced by removing 100 one or more of the sections f' , constituting the beam f . The band C of the spring B is now held in a position in which the same can be removed therefrom, and the preferred mechanism employed to accomplish this result is as follows: 105

As shown in Figs. 1 and 11, to the sections a and a' of the frame A by means of bolts h' , passing through a flange h^2 , is removably 110 secured a hydraulic cylinder h . At its upper end the cylinder h by means of rods h^3 and nuts h^4 , engaging the threaded ends thereof, is securely connected to the extensions a^9 and a^{10} of the sections a and a' by conducting the 115 rods through sleeves a^{12} , formed integral with the extensions a^9 and a^{10} and through the flange h^2 of the cylinder h . The piston h^5 of the cylinder h is provided with an extension h^6 , to which in the present instance are bolted 120 pusher-arms i and i' , partially surrounding the spring B and terminating a certain distance from the band C thereof. As shown in Figs. 4 and 5, each of the pusher-arms i and i' is provided with a head i^2 , having a 125 trunnion i^3 loosely engaging depressions arranged in the arms i and i' . The piston h^5 by means of a gland h^7 is rendered water-tight in the cylinder h , and when water under pres-

sure is introduced into the same the piston h^5 and its arms i and i' are moved toward the spring B, and by this movement the heads i^2 are brought into engagement with the band C by forcing the same forward, and thus stripping the band from the spring B. If by this forward movement the band C is not completely removed from the spring B, the same is lowered and again slightly shifted forward toward the cylinder h and then re-clamped, which forward movement may again be limited by the spindle e' of the cross-beam e . After the spring B is again locked in its shifted position, the band C is now completely removed from the same by the pusher-arms i and i' . In the same manner as hereinbefore described, in conjunction with the head c , the heads i^2 of the pusher-arms i and i' will adjust themselves to any angular position the band C may occupy with respect to the arms i and i' , and thus the force transmitted to the heads i^2 by the arms and piston h^5 will be evenly distributed over the surface of the band C, engaged by the heads i^2 . The water under pressure is introduced into the cylinder h by a pipe k , connected with a receptacle b^{10} , which by means of a pipe b^{11} is connected with a suitable source of water-supply. (Not shown.) The housing b^{13} of the slide-valve b^{12} , actuated by a handle b^{14} and controlling the entrance of water into the cylinder h , is bolted in the same manner as the valve b^6 to the receptacle b^{10} and is thus removably connected therewith. As soon as by the proper operation of the valve b^{12} the water is permitted to leave the cylinder h spring-controlled rods l , engaging extensions i^5 of the pusher-arms i and i' and passing through eyes h^8 , formed integral with the flange h^2 of the cylinder h , shift the piston h^5 backward into the normal inoperative position shown in Fig. 3. The springs l' , actuating the rods l , bear with one end against the eyes h^8 of the cylinder h and with their other end against a nut l^2 , secured thereto, and are thus contracted during the forward movement of the piston h^5 and arms i and i' . After the band C is removed from the spring B the arms i and i' automatically return to their normal inoperative position, the beams d , head c , and piston b are lowered, and the spring B thus released is now permitted to be removed from the machine, for which purpose the beam f is preferably withdrawn from the frame A.

Having thus described the nature and object of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the character described, a frame, two sets of beams arranged in said frame and adapted to receive and support the spring, a hydraulic cylinder having a piston adapted to actuate certain of said beams to permit of the clamping of the spring to

said frame, a second hydraulic cylinder having a piston, and means carried by the same, when actuated to engage and remove the band from the spring.

2. In a machine of the character described, a frame, hydraulic cylinders arranged at right angles with respect to each other, carried by said frame, pistons arranged in and actuated by said cylinders having extensions, heads pivotally supported by said extensions, beams adapted to receive and clamp a spring introduced between the same to said frame when actuated by one of said heads carried by the piston and its extension occupying a vertical position, and said second head carried by the piston and extension occupying a horizontal position adapted to remove the band from the spring when clamped in said beams.

3. In a machine of the character described, a frame, hydraulic cylinders arranged at right angles with respect to each other, carried by said frame, pistons arranged in and actuated by said cylinders having extensions, heads pivotally supported by said extensions, beams supported respectively by one of said heads and frame adapted to receive and clamp a spring introduced between the same to said frame when actuated by one of said heads carried by the piston and its extension occupying a vertical position, and said second heads carried by the piston and extension and occupying a horizontal position adapted to remove the band from the spring, when clamped in said beams.

4. In a machine of the character described, a frame, beams arranged transversely and the upper ones carried by said frame, said beams adapted to engage a spring introduced between the same, a hydraulic cylinder arranged in a vertical plane below said beams having a piston, a pivotal head carried by said piston and adapted when actuated by the same to raise certain of said beams and clamp the spring between the same and to said frame, a cylinder arranged in a horizontal plane having a piston, arms carried by the piston of said horizontal cylinder each having a head adapted to directly engage and remove the band from the spring when actuated by the arms and piston of said horizontal cylinder.

5. In a machine of the character described, a frame, two sets of beams arranged transversely in said frame, whereof the upper set is carried by the same, said beams adapted to engage a spring introduced between the same, means carried by one of said beams and adapted to limit the movement of the spring into said frame between said beams, a hydraulic cylinder arranged in a vertical plane below said beams having a piston, a pivotal head carried by said piston and adapted when actuated by the same, to raise certain of said beams and clamp the spring between

the same and to said frame, a cylinder arranged in a horizontal plane having a piston, arms carried by the piston of said horizontal cylinder, each having a head adapted to directly engage and remove the band from the spring when actuated by the arms and piston of said horizontal cylinder.

6. In a machine of the character described, a frame, a hydraulic cylinder having a piston arranged in said frame, two sets of beams arranged in said frame, one set movably supported by said cylinder-piston and the other set carried by said frame, the lower set of beams, when actuated by said cylinder-piston, adapted to force a spring introduced between the same against the upper set of beams to clamp the spring to said frame by engaging one or more of the upper plates of the spring, a second hydraulic cylinder having a piston, arms connected therewith, and said arms arranged, when actuated by said piston to engage and remove the band from said spring.

7. In a machine of the character described, a frame, a hydraulic cylinder carried by said frame and having a piston, a head carried by said piston, beams carried by said frame, beams carried by said head and movably arranged in said frame for supporting and forcing a spring placed thereon against said first-mentioned beams and by the same and said head to clamp the spring to said frame, a second cylinder carried by said frame having a piston, arms rigidly secured thereto, heads pivotally secured to said arms, said heads arranged when the arms are actuated by the piston of said second cylinder to force the band from the spring by engaging the same at two points.

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

WILLIAM EVANS.

Witnesses:

WILHELM VOGT,
THOMAS M. SMITH.