

(No Model.)

3 Sheets—Sheet 1.

M. M. GILLAM.

# ART OF AND APPARATUS FOR COLORING THE PRINTING SURFACE OF CAST TYPE.

No. 518,063.

Patented Apr. 10, 1894.

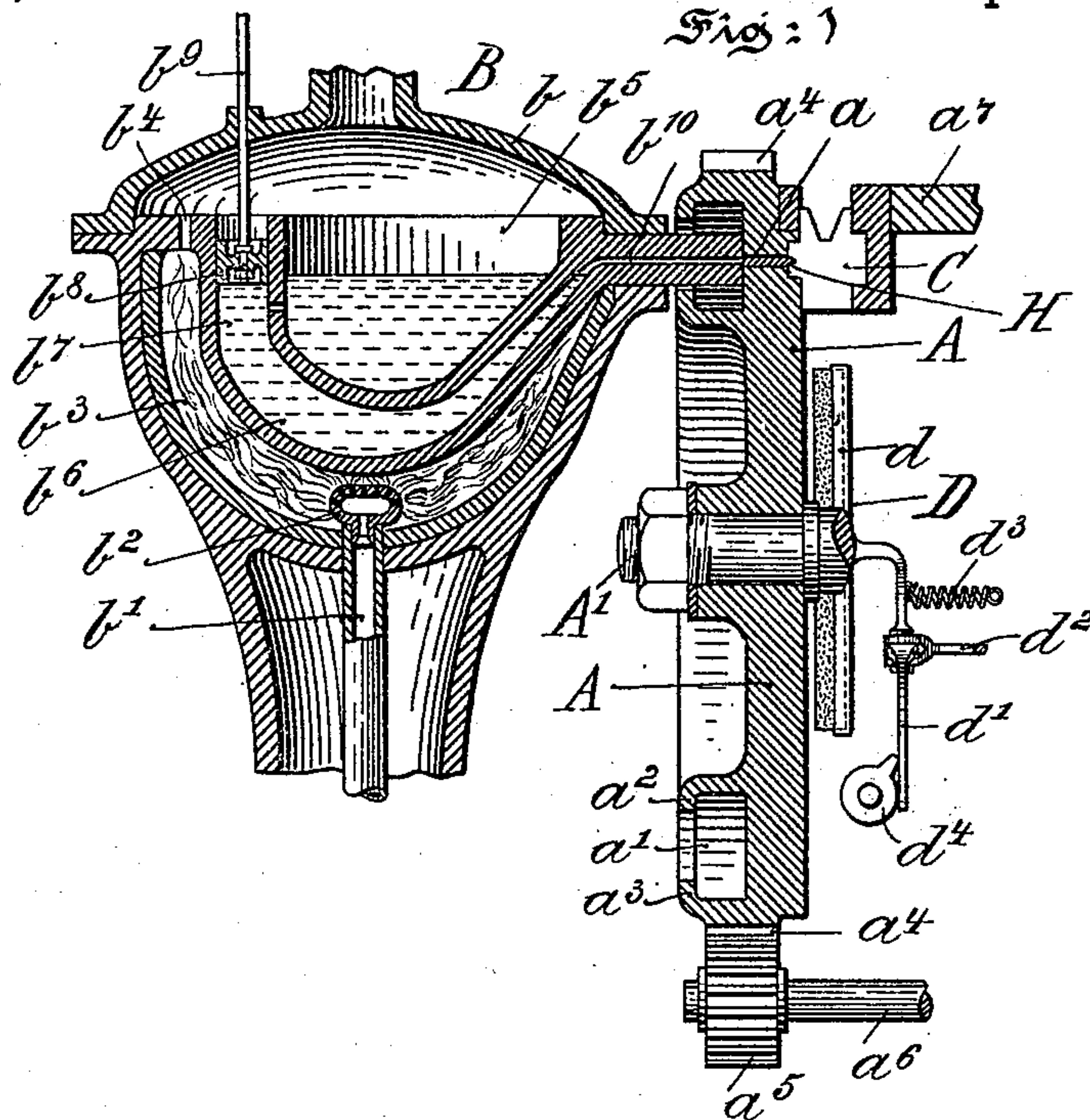
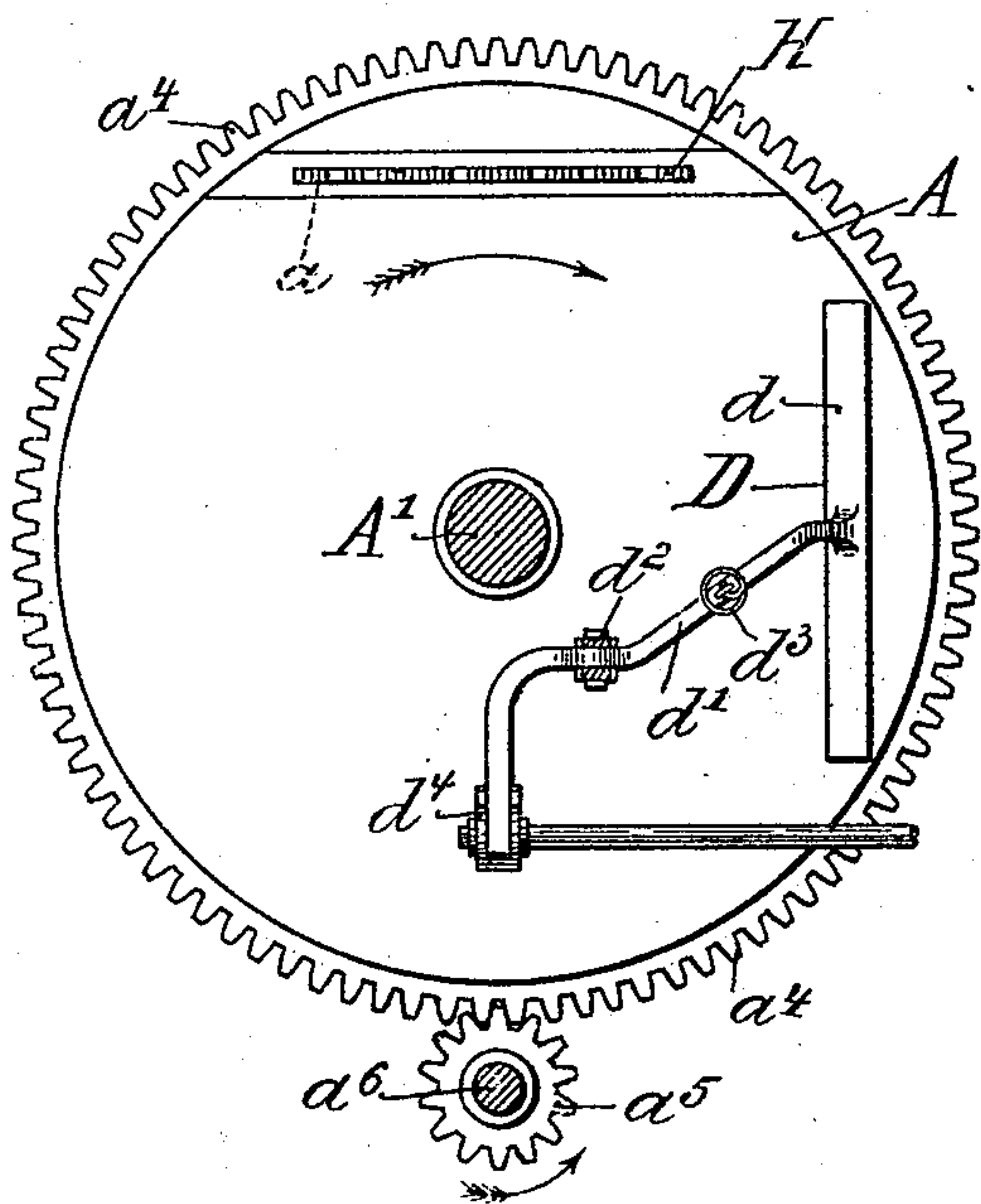
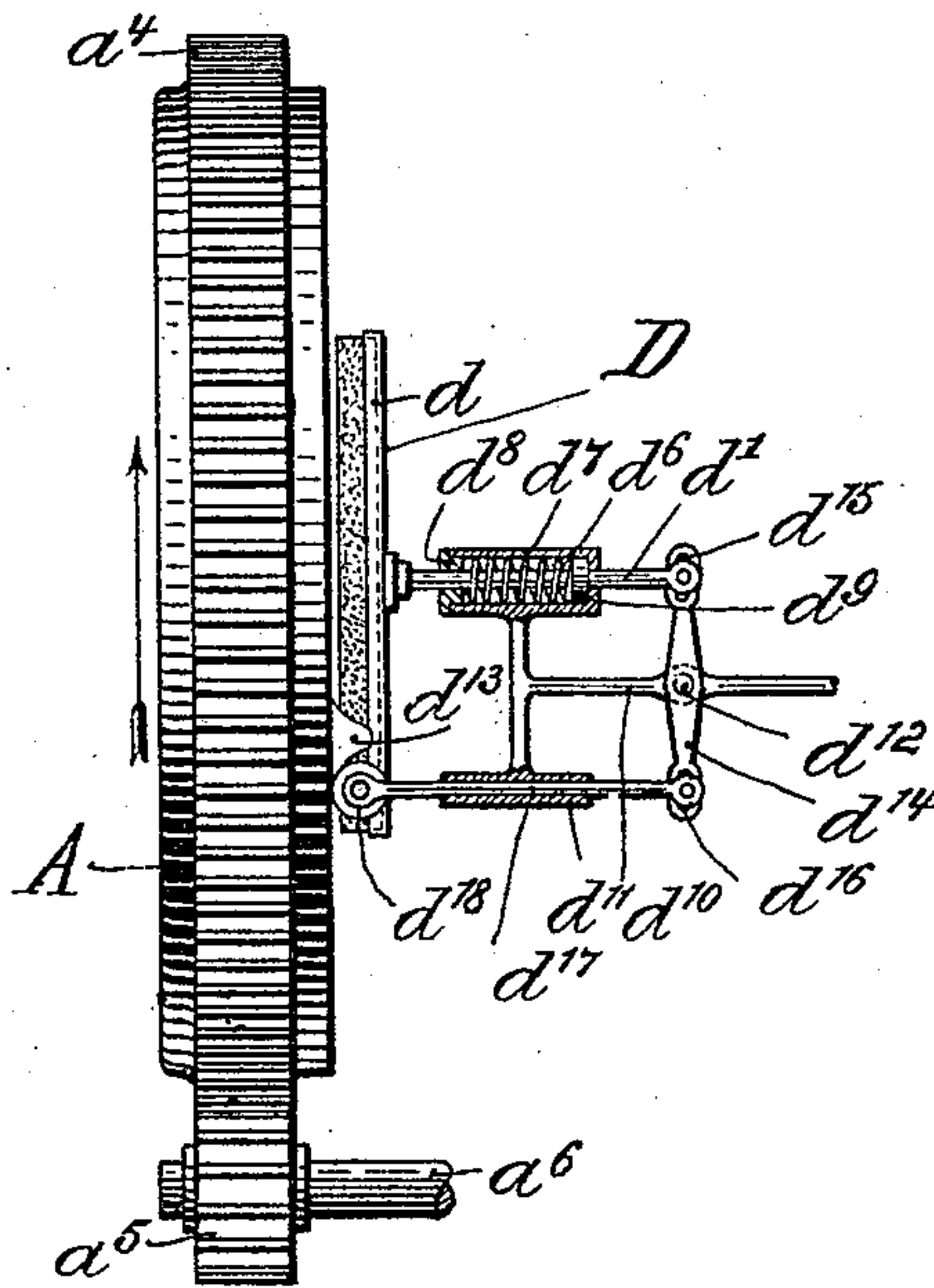


Fig: 2



Witnesses:  
Richard C. Maxwell,  
Wilhelm Fagt

Fig: 3-



Inventor,  
Manly M. Gillam,  
By J. Walter Douglass.  
Attorney.

(No Model.)

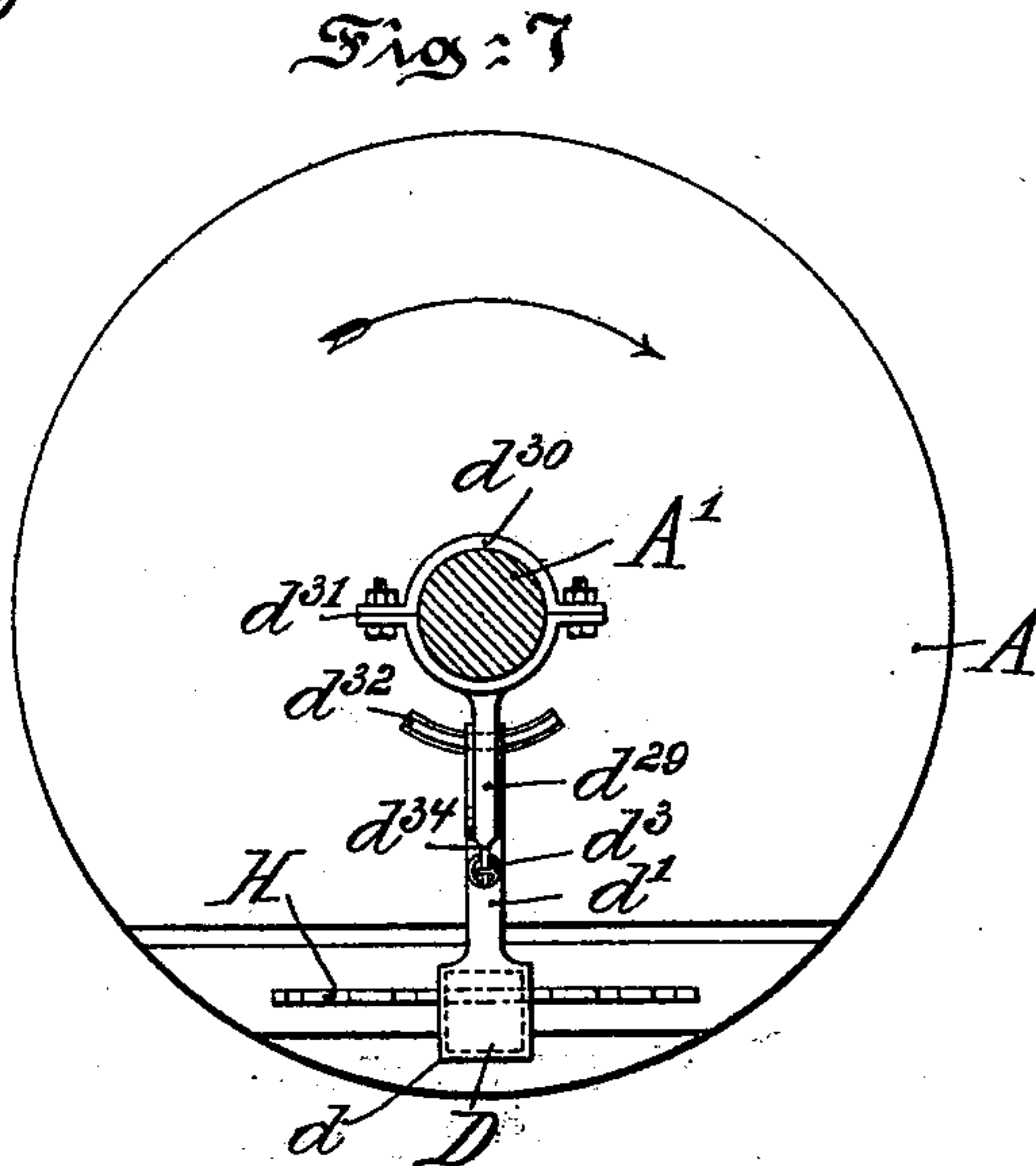
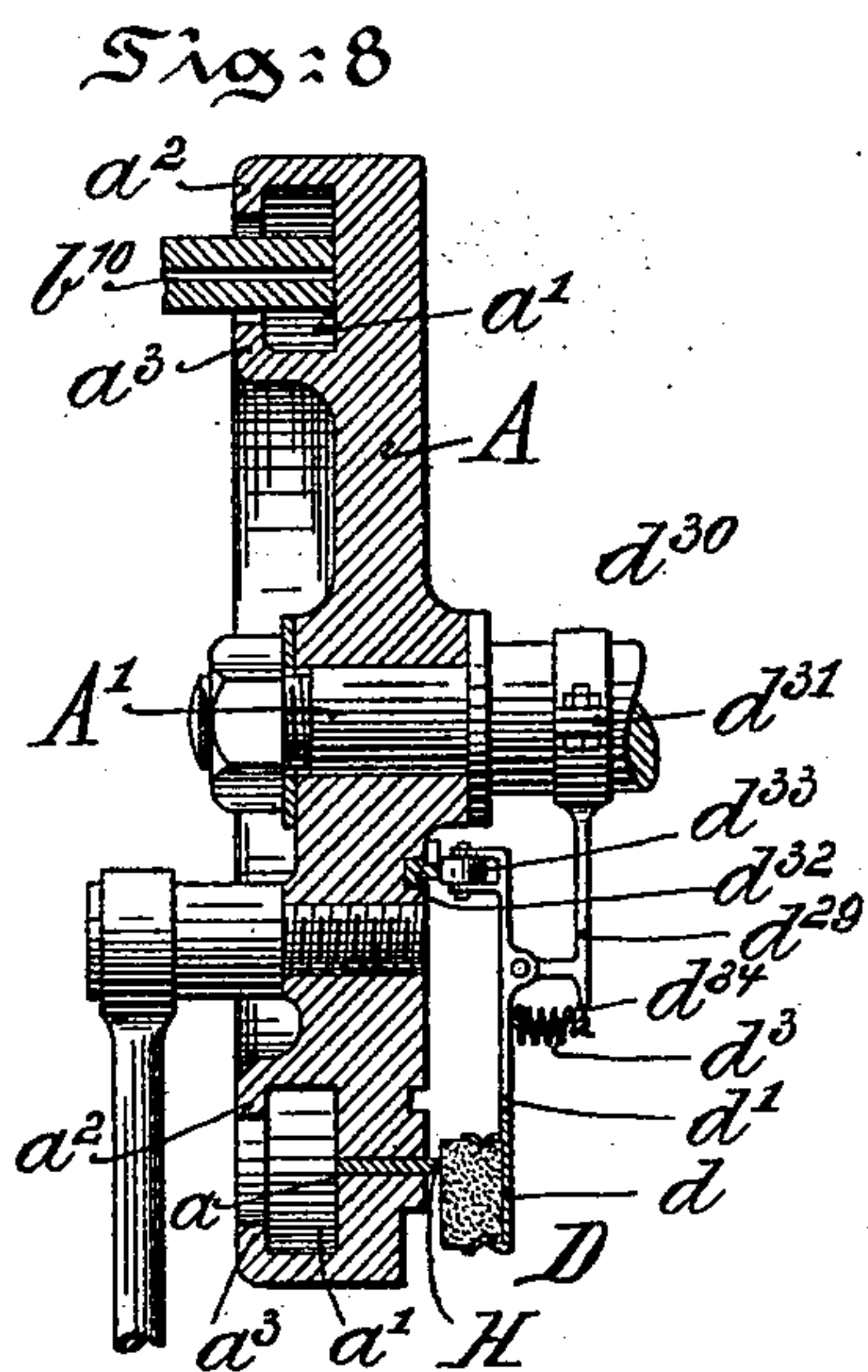
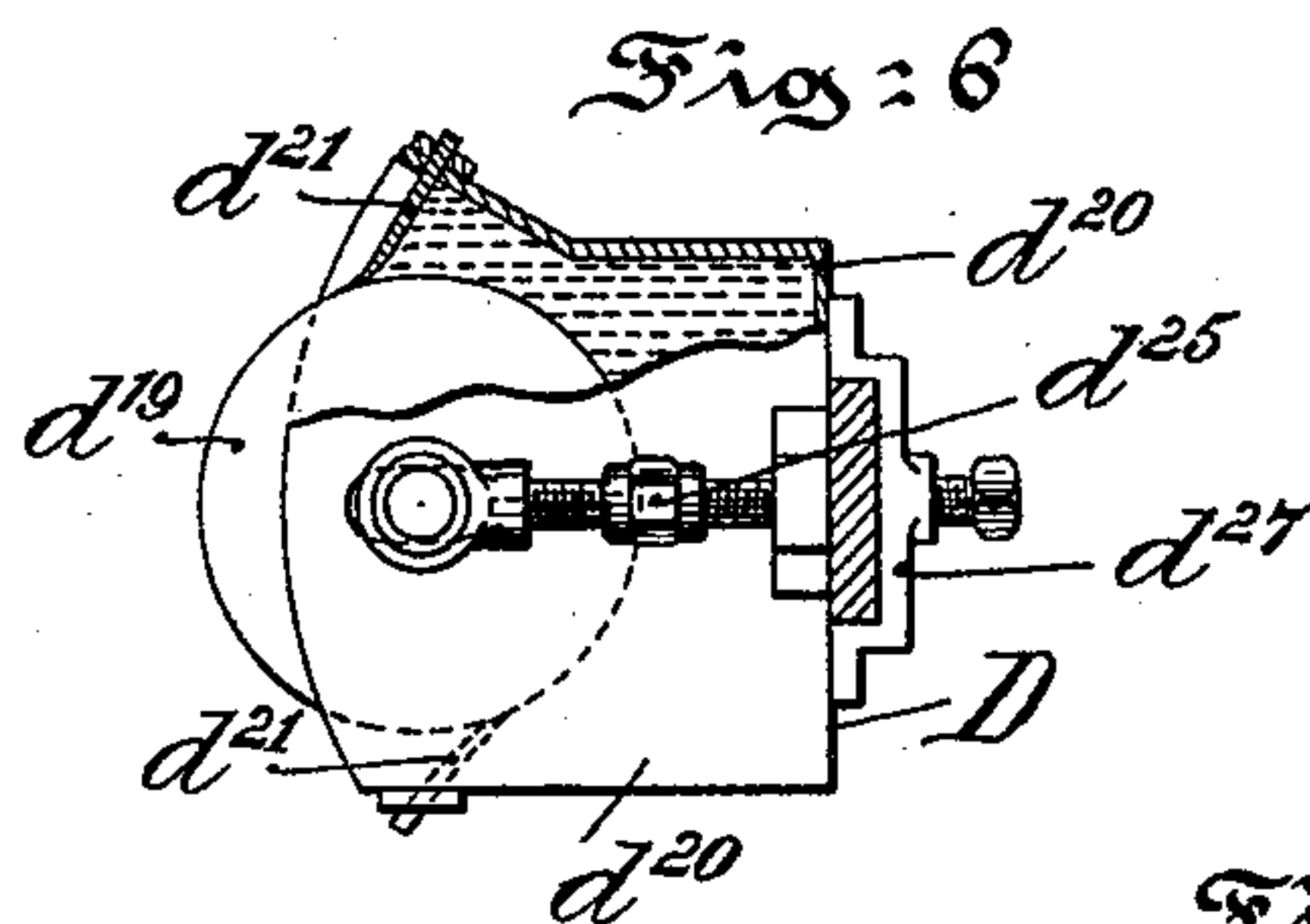
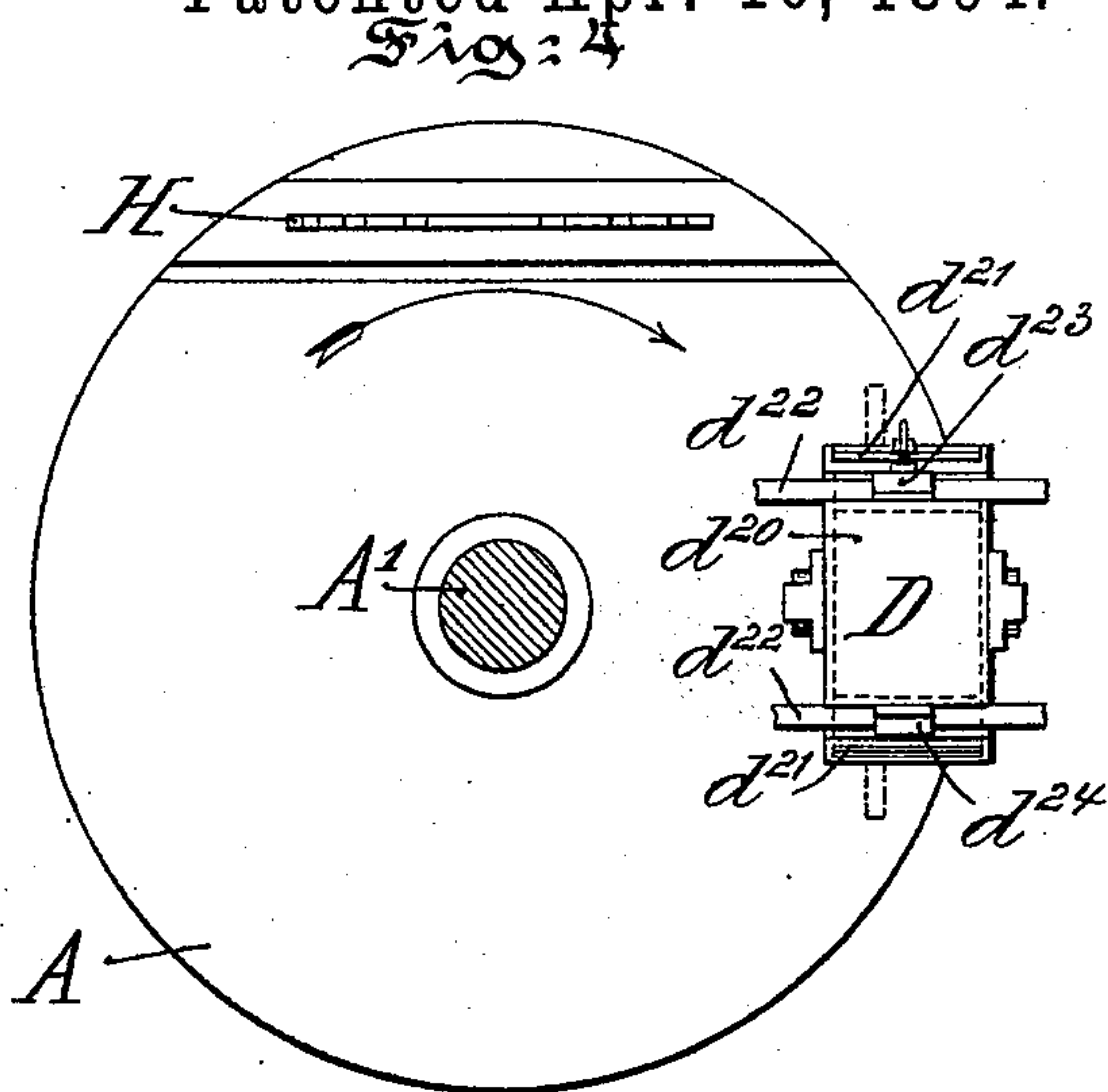
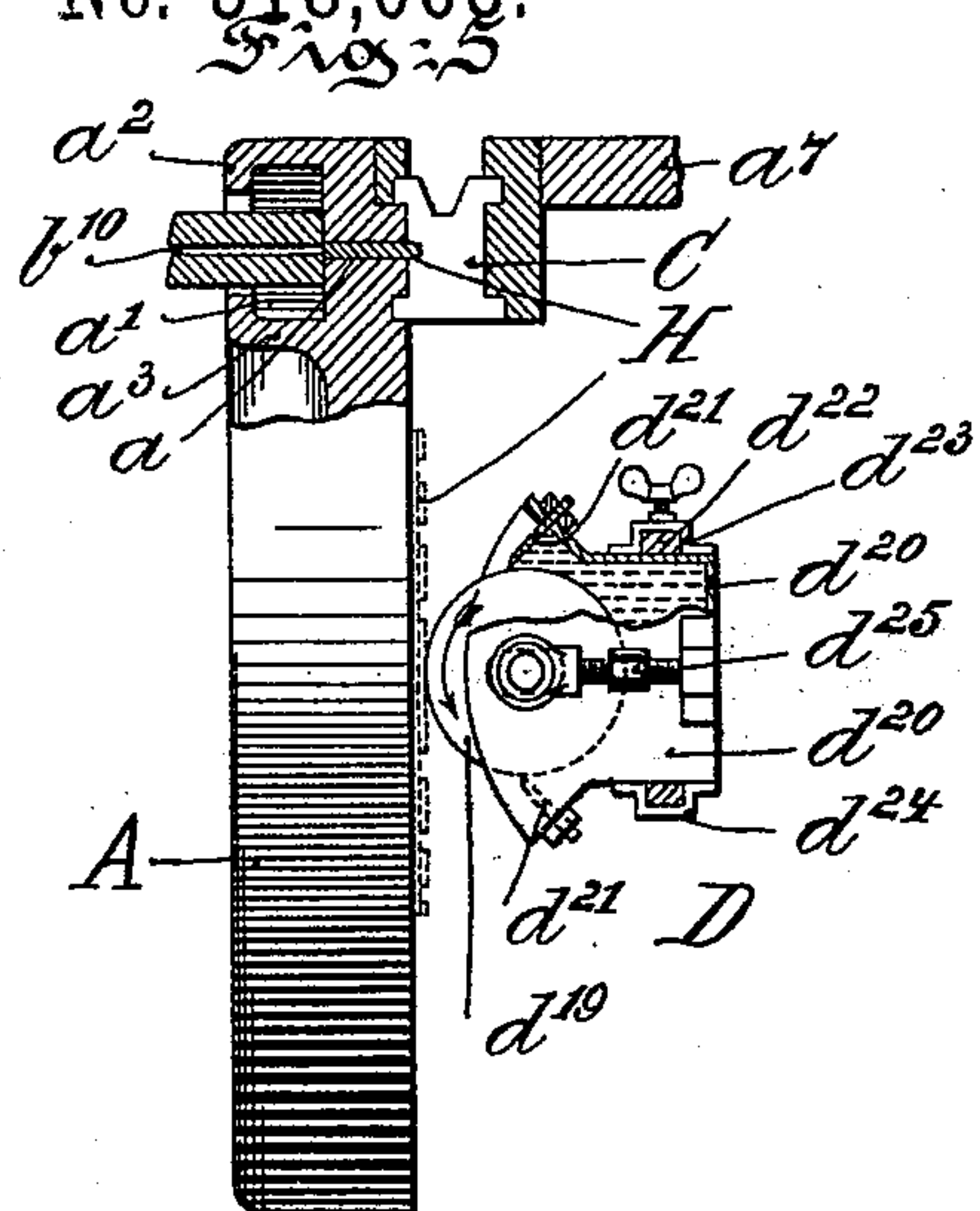
3 Sheets—Sheet 2.

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Witnesses:  
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(No Model.)

3 Sheets—Sheet 3.

M. M. GILLAM.

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Fig: 9

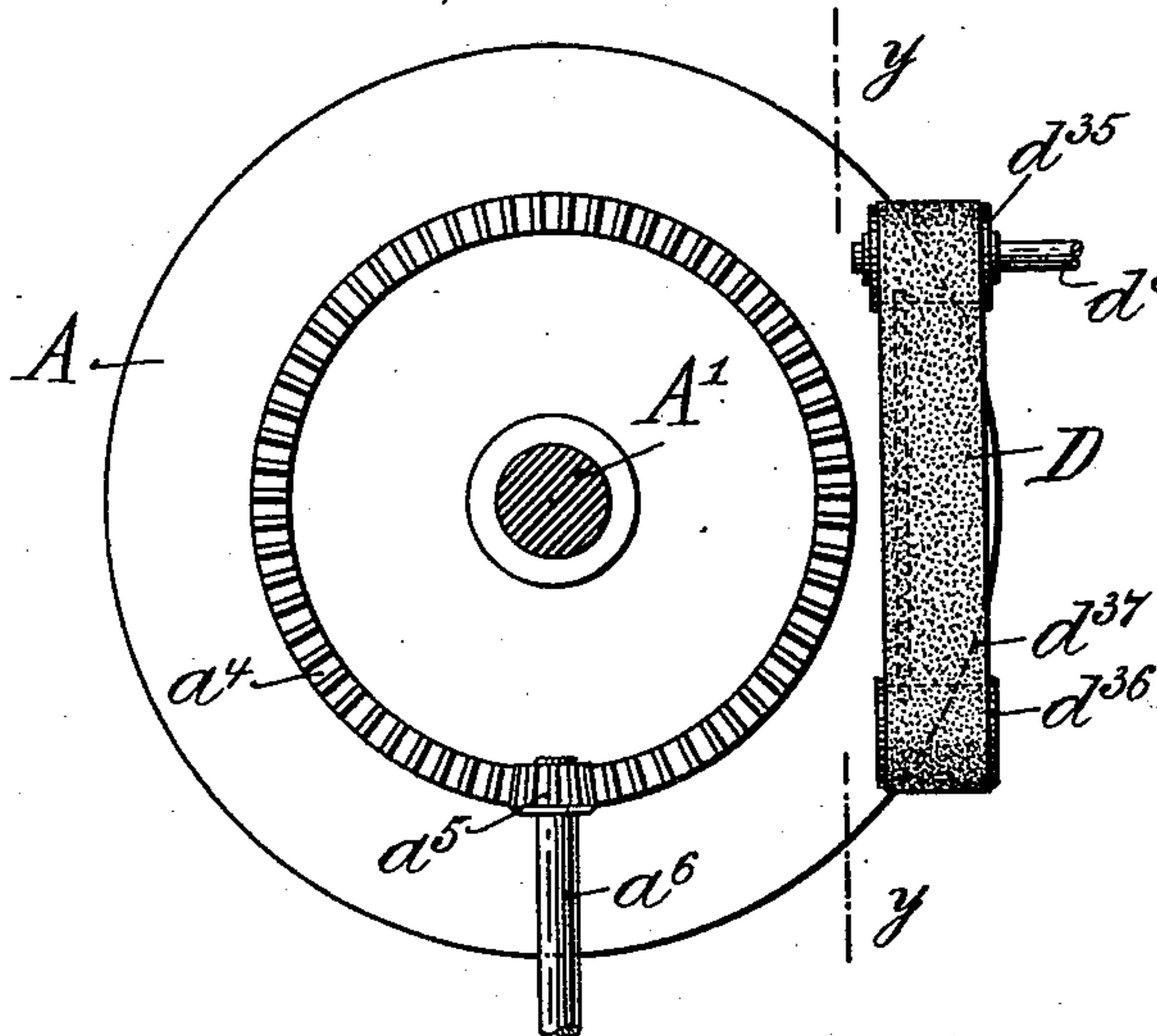


Fig: 10

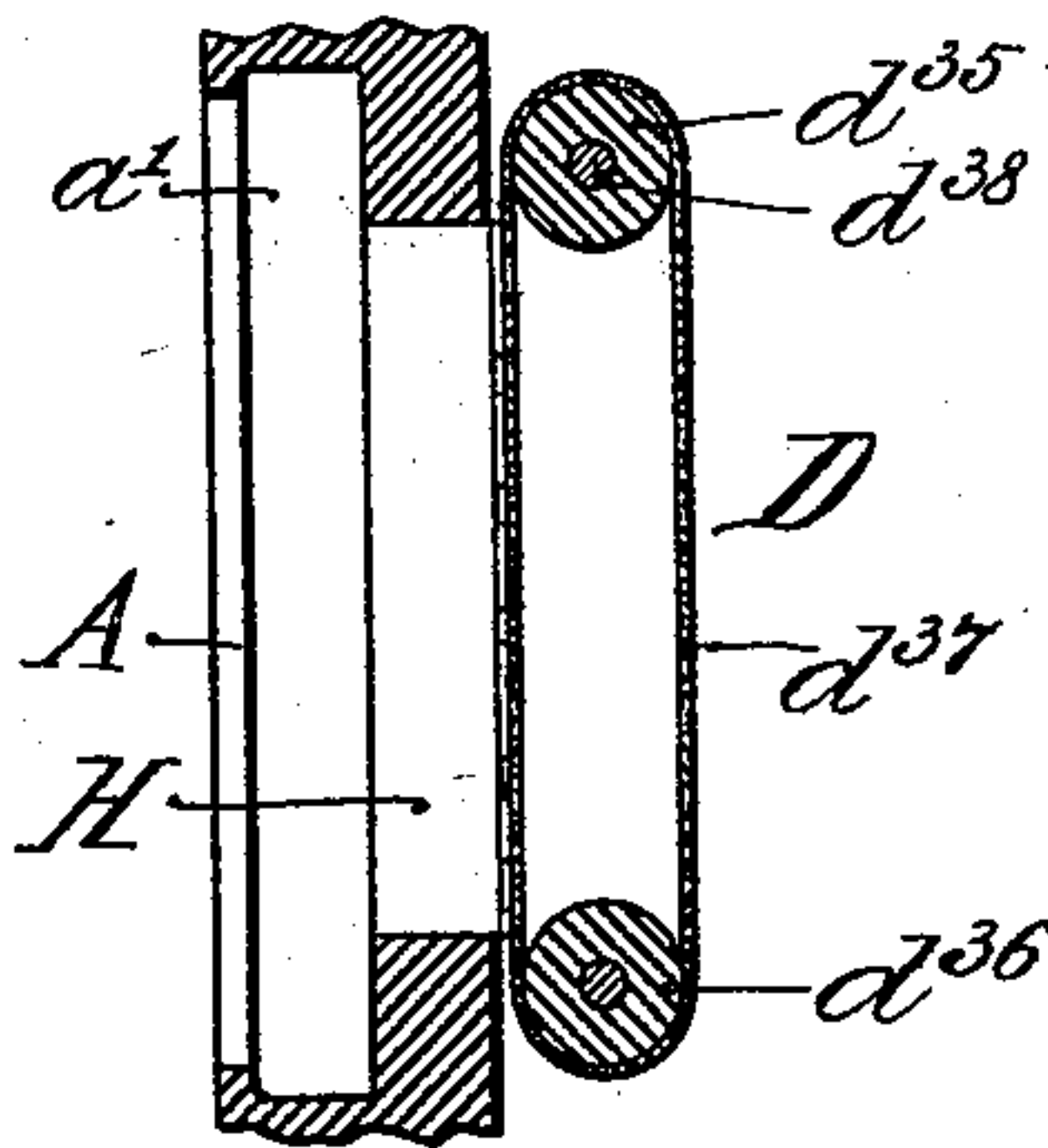


Fig: 11

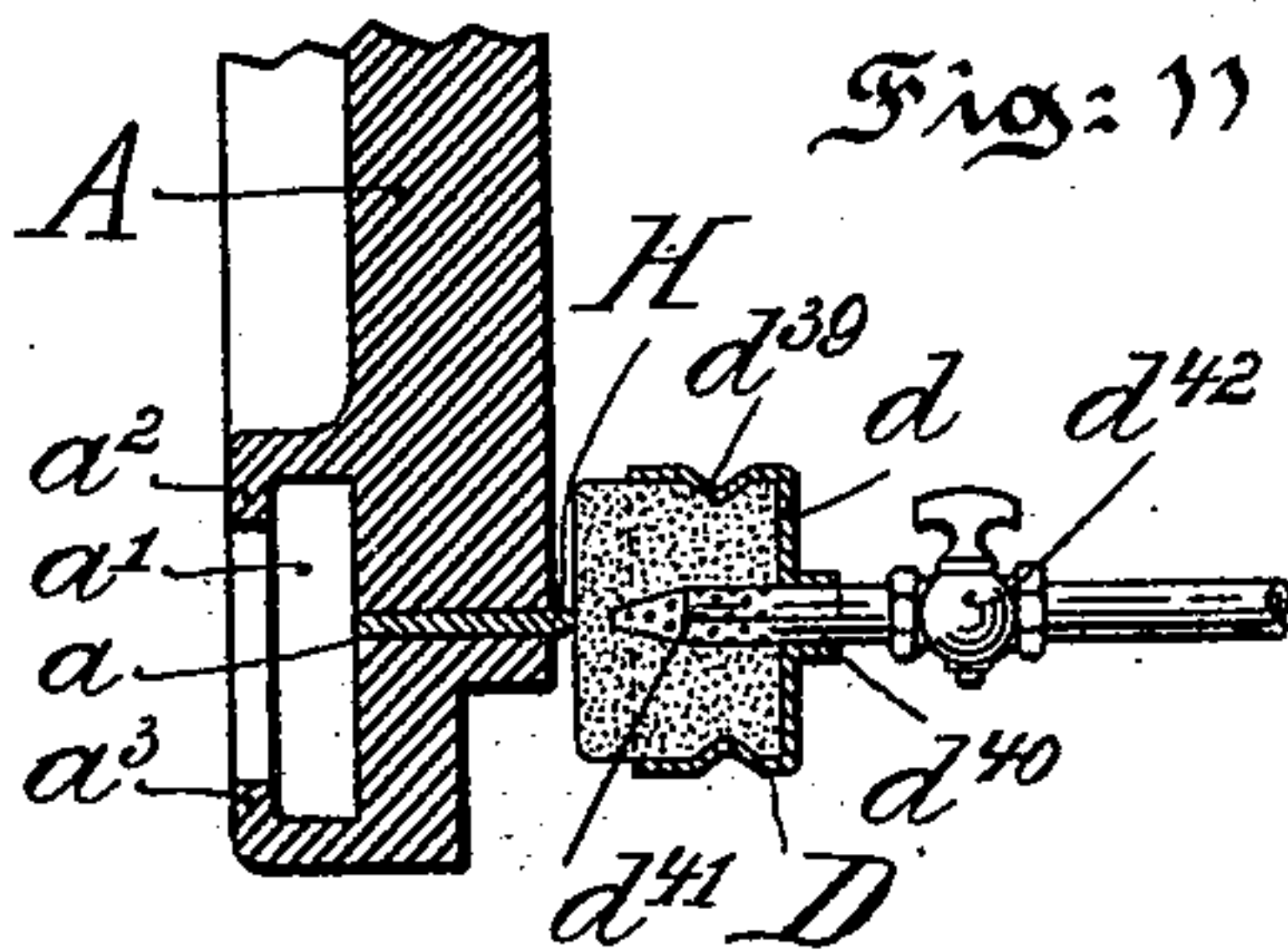


Fig: 12

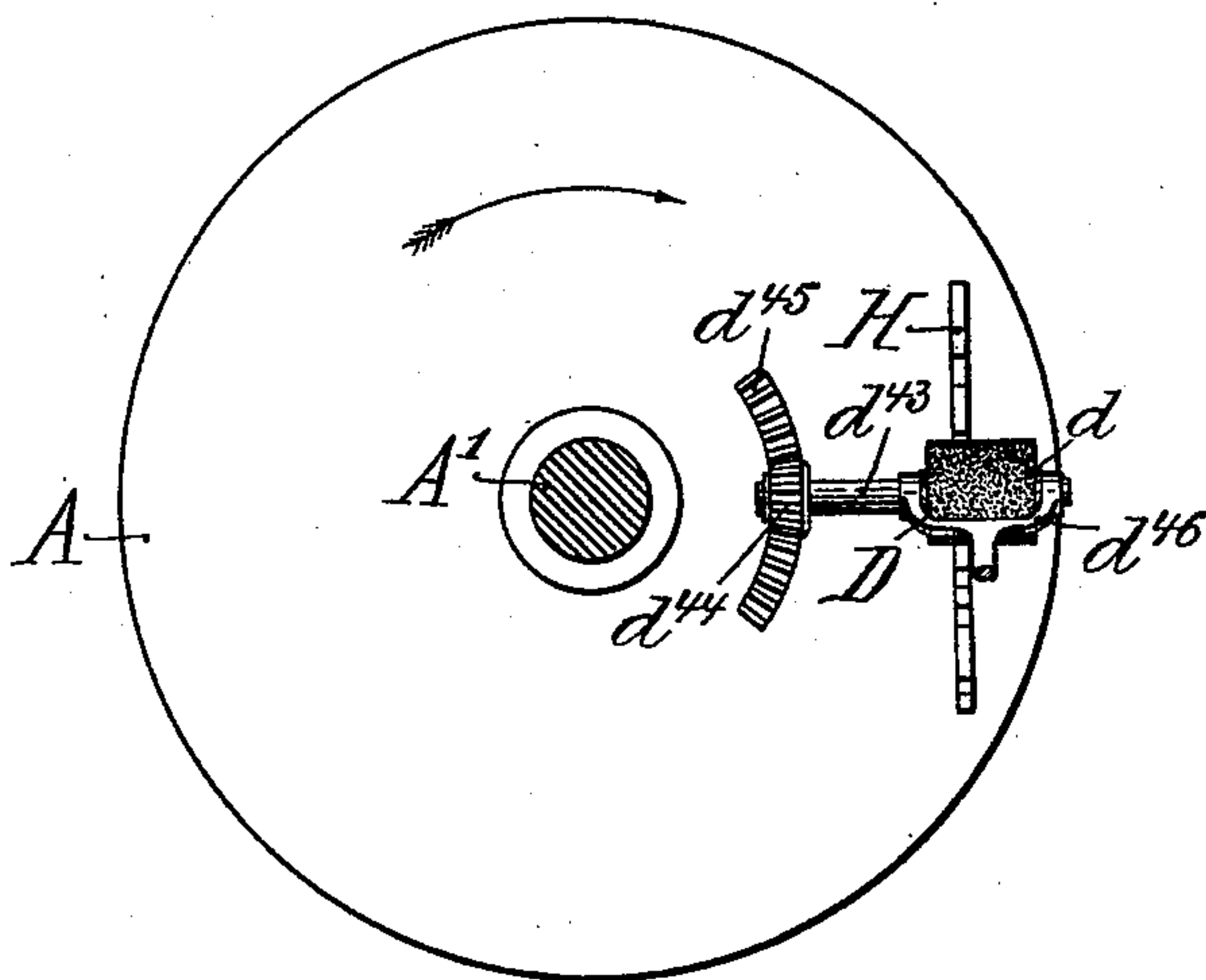
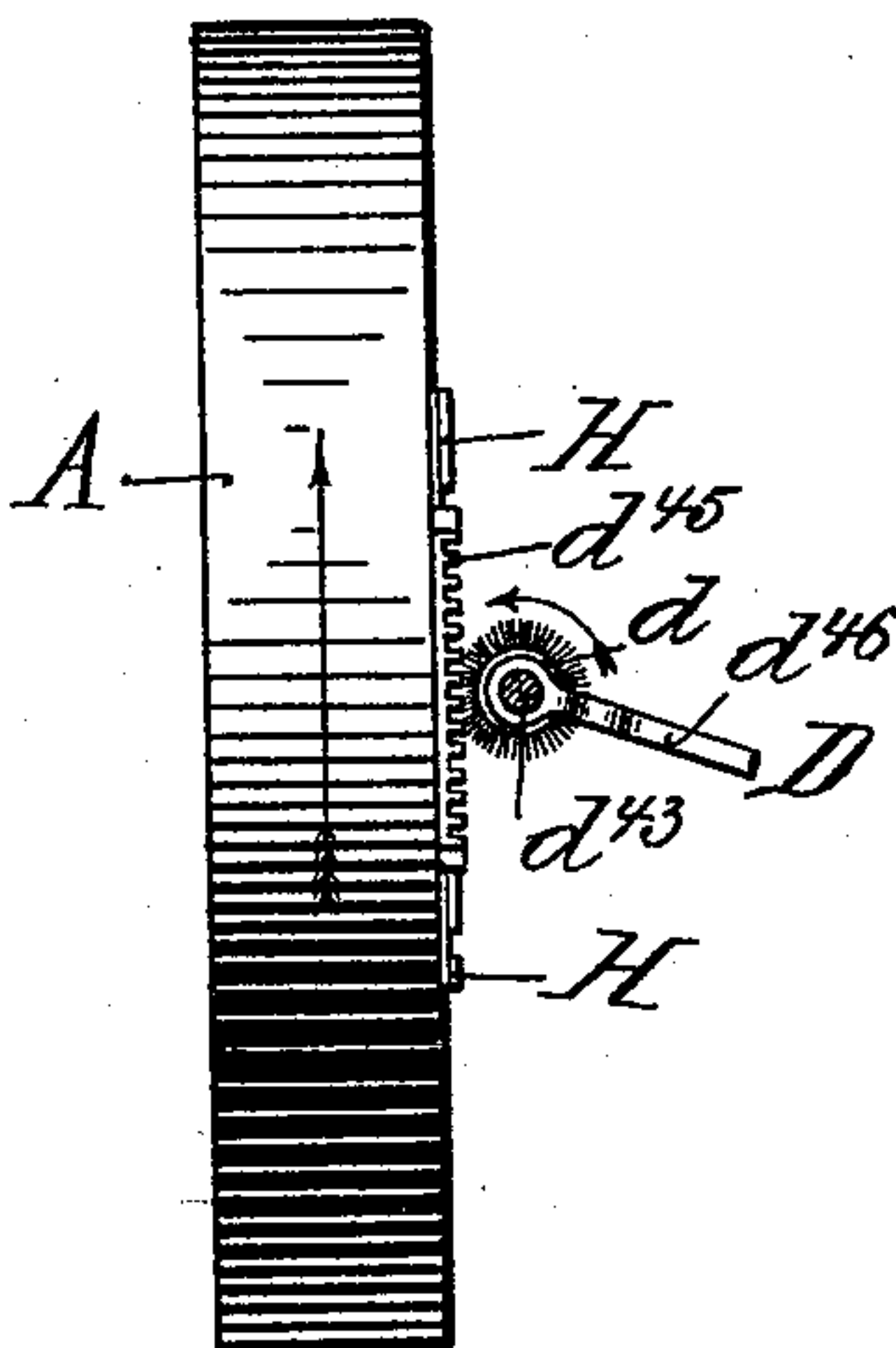


Fig: 13



Witnesses:  
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By J. Walter Douglas  
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# UNITED STATES PATENT OFFICE.

MANLY M. GILLAM, OF PHILADELPHIA, PENNSYLVANIA.

ART OF AND APPARATUS FOR COLORING THE PRINTING-SURFACE OF CAST TYPE.

SPECIFICATION forming part of Letters Patent No. 518,063, dated April 10, 1894.

Application filed June 30, 1893. Serial No. 479,215. (No model.)

*To all whom it may concern:*

Be it known that I, MANLY M. GILLAM, 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 the Art of and Apparatus for Coloring the Printing-Surface of Cast Type, of which the following is a specification.

My invention has relation in general to that class of machines designed to cast a type-bar or linotype; and it relates more particularly to the mode of and devices for coloring or staining the newly cast type before the liberation of the same from the casting machine, in order to render the type-bar or linotype conspicuous by color contrast.

Hitherto in type-bars or linotypes produced by casting machines the bright or glittering printing faces of such bars or linotypes are only with difficulty and strain upon the eyes distinguished from the equally bright and glittering background or intaglio surfaces of the type-bars.

The principal objects of my invention are first, to provide an economical and efficient method of coloring the printing surface of newly cast type, especially such as produced by linotype machines in general, and preparatory to the ejection of the type-bar or linotype from the machine, and preferably while the type-bar or linotype is afforded a range of movement to effect the cooling thereof, whereby the cast type-bar or linotype is rendered conspicuous by color contrast, and in such manner as that correction or alteration in the composition of matter while in galley or similar form, may be readily effected as well as read without strain upon the eyes and detriment to the type for subsequent use in printing therefrom; second, to provide simple durable and comparatively inexpensive devices or appliances for applying color or stain to the printing surface of the linotype or type-bar produced in a casting machine and preparatory to ejection therefrom; and third, to provide automatic means for coloring or staining the printing surface of a type-bar or linotype after casting and during cooling and preparatory to ejection of the type-bar or linotype from the machine.

My invention comprises the method of treat-

ing a type-bar or linotype to form a color contrast between the printing surface and the background thereof, which consists in coloring the printing surface in the casting machine in the range of movement thereof.

My invention further comprises the method of treating a type-bar or linotype to form a color contrast between the printing surface and background thereof, which consists in casting a type-bar or linotype in a machine under pressure, affording the type-bar or linotype a range of movement to cool and coloring the printing surface thereof in said movement and prior to being liberated from the machine.

My invention further consists of the devices or appliances for applying coloring matter to a type-bar or linotype substantially in the manner hereinafter described and claimed.

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

Figure 1, is a vertical transverse section through the melting and molding apparatus of a linotype or type-bar casting machine with my invention in one of the several forms embodying the characteristic features thereof shown in application thereto. Fig. 2, is a front or plan view of the revoluble toothed disk or wheel provided with a mold, having the formed type-bar or linotype exposed to view therefrom and showing the color applying apparatus of Fig. 1, for employment in connection therewith. Fig. 3, is a view partly in end elevation and partly in central section of a modified form of color applying apparatus of my invention. Fig. 4, is a front or plan view of the mold of a linotype or type-bar casting machine with the cast type-bar exposed to view therefrom and with another form of coloring apparatus of my invention shown in application thereto. Fig. 5, is a view partly in elevation and partly in section of the revoluble disk or wheel provided with a mold of a type-bar casting apparatus with the cast-type exposed to view and with the color applying appliance of Fig. 4, shown in application thereto. Fig. 6, is a view partly in side elevation and partly in section of a color applying apparatus in another modified form to that shown in Figs. 4



and 5, showing the color tank or reservoir with a revoluble roller or cylinder mounted therein and with adjustable doctors connected with the roller or cylinder for regulating and removing superfluous matter from off the cylinder or roller in the rotation of the same in the tank or reservoir. Fig. 7, is a front or plan view of a rotatable disk or wheel provided with a mold with the cast type-bar or linotype exposed to view and with a still further modified form of color applying apparatus of my invention shown in application thereto. Fig. 8, is a view partly in vertical central section and partly in side elevation through the disk or wheel provided with a mold of the linotype or type-bar casting machine with a color applying device of my invention, such as illustrated in Fig. 7, shown in application thereto. Fig. 9, is a front or plan view of a disk or wheel with a mold in a modified form with respect to that shown in Fig. 1, and with a still further modified form of color applying apparatus of my invention shown in application thereto. Fig. 10, is a transverse section on the line  $y-y$ , of Fig. 9. Fig. 11, is a sectional view of the revoluble disk or wheel of a type-bar casting machine provided with a mold and with a still further modified form of color applying device of my invention shown in application thereto. Fig. 12, is a front or plan view of the revoluble disk or wheel with the mold of a type-bar casting machine, and with a still further modified form of color applying device shown in application to the same; and Fig. 13, is an end elevation of a revoluble disk or wheel with a mold and with the color applying device of my invention such as shown in Fig. 12 in application thereto.

In order to enable others skilled in the art to which this invention appertains to fully understand the same, it will be here remarked that there has been illustrated only so much of a type-bar casting or linotype machine, as will serve to show the application of the invention thereto and as to details of construction and arrangement of such machines, reference may be made to the Mergenthaler type-bar casting machine or linotype apparatus, because such furnishes a familiar example of apparatus to which my invention is applicable with most satisfactory results.

Referring now to the drawings, and more particularly to Figs. 1 and 2, A is a disk or wheel mounted on a horizontal shaft A', in any preferred manner, and having the slot or mold  $a$ , of this disk or wheel extending through the body thereof. This disk or wheel provided with the mold  $a$ , has a rear chamber  $a'$ , and flanged walls  $a^2$  and  $a^3$ , and a toothed periphery forming a rack  $a^4$ , which meshes with a pinion  $a^5$ , mounted on or keyed to a horizontal shaft  $a^6$ , and adapted to impart from a suitable source of power, motion to the same for rotating the disk or wheel A. B, is a melting apparatus for containing a supply of molten metal provided with a re-

movable cover  $b$ , a heating appliance  $b'$ , provided with a regulated gas jet tube or vapor burner  $b^2$ ; a flame chamber  $b^3$ , with an outlet  $b^4$ , a divided melting pot having the chambers  $b^5$  and  $b^6$ , with an outlet  $b^{10}$ , a plunger-pump  $b^8$ , having the stem  $b^9$ , thereof projecting through the cover  $b$ , of the melting apparatus B, and operated in any preferred manner to force the molten metal through the outlet  $b^{10}$ , into the mold  $a$ , of the disk or wheel A. C, is one of a series of matrices adapted to be respectively arranged in line against the face of the mold  $a$ , of the disk or wheel A, and firmly held to position against the same by means of a clamp or holder  $a^7$ , or in any other preferred manner, to effectually close the face of the mold  $a$ , in the front thereof. These matrices are in the form preferably of flat plates each having in one of the edges or ends thereof an underlying character or figure so as to present the same opposite the mold  $a$ , of the disk or wheel A. It may be here remarked that the type-bar or linotype H, after being cast in the mold  $a$ , of the disk or wheel A, is afforded a range of preferably rotary movement for a certain distance, in order to permit the cast type-bar or linotype to cool and it is during the cooling of the same in the travel of the disk or wheel A, and prior to liberation of the bar, that my invention is made applicable to and effective for producing color contrast, so that the printing surface is readily distinguishable from the surrounding background of the type-bar or linotype without strain upon the eyes, in order to detect any errors or omissions in the composition thereof.

The color contrast to the type-bar or linotype is produced, by a device D, consisting in Figs. 1 and 2 of a flanged plate provided with a fluid color absorbent or similar material  $d$ , such as felt, sponge or the like, supported therein in any suitable manner. This cup shaped plate D, carrying felt, sponge or the like, is provided with a right angular arm  $d'$ , pivotally connected with a support  $d^2$ , and having a retracting spring  $d^3$ , connected with the same and with a back-stop, not shown. The arm  $d'$ , of the color applying device D, is adapted to engage an actuated cam  $d^4$ , for presenting in the rotation of the disk or wheel A, by means of the rack and pinion  $a^4$  and  $a^5$ , the face of the color applying device D, to the surface of the cast type-bar or linotype H, supported in and exposed beyond the surface of the disk or wheel A, in its travel in the path of the device D, and which latter is returned to normal position by the force of the spring  $d^3$ , after the exposed type-bar or linotype in the disk or wheel A, has passed beyond the range of the device, and during the cooling of the type-bar or linotype and preparatory to the liberation of the same from the carrier wheel A.

In Fig. 3, the color applying device D, comprises a flanged plate  $d$ , having suitably secured thereto felt or other preferred color ab-



sorbing and distributing material, and adapted under a slight pressure exerted against the same to apply the color or stain to the exposed type-bar or linotype of the disk or wheel A. This color applying device D, is provided with an arm  $d'$ , having a spring  $d^6$ , coiled around the same and held in a chamber or cylinder  $d^7$ , provided with front and rear heads  $d^8$  and  $d^9$ . This chamber or cylinder  $d^7$ , has formed preferably integral therewith an inverted T-arm or bracket  $d^{10}$ , provided with a tube  $d^{11}$ , and with an eye  $d^{12}$ , for a purpose to be presently more fully explained. Suitably secured to or formed integral with the disk or wheel A, is an inclined plane  $d^{13}$ .  $d^{14}$ , is a link pivoted to the inverted T-arm or bracket  $d^{10}$ , and having oblong slotted extremities  $d^{15}$  and  $d^{16}$ , adapted to respectively engage the end of the arm  $d'$ , which is pivotally connected therewith, and also the arm  $d^{17}$ , pivotally connected with the other extremity of said link  $d^{14}$ . The arm  $d^{17}$ , carries a roller  $d^{18}$ , adapted in the movement of the disk or wheel A, to travel up the inclined surface of the plane  $d^{13}$ , in such manner as that in the rotation of the disk or wheel A, the wheel  $d^{19}$ , in riding up the inclined plane  $d^{13}$ , actuates the link  $d^{14}$ , so as to cause the arm  $d'$ , by a plunger movement to actuate the color applying device D, thereby bringing the same into contact with the exposed surface of the type-bar or linotype of the disk or wheel A, imparting to the surface of the exposed type-bar or linotype a color adapted to deaden the glittering or bright printing surface of the newly cast type-bar or linotype and so as to render the same readily distinguishable from the surrounding back-ground. When in the travel of the wheel or disk A, it has reached a point beyond the range of the color applying device D, by the return of the spring  $d^6$ , under compression to its initial position, the color applying device D, will assume a position freed from the type-bar or linotype. By permitting of the further rotation of the disk or wheel A, the color applying device D will again be brought into contact with the newly cast and exposed type-bar or linotype for effecting the staining or coloring of the printing surface thereof.

With reference to Figs. 4 and 5,  $d^{10}$ , represents the mouth of the melting pot, and A, the disk or wheel provided with a mold  $a$ , and with matrices C, shown in connection therewith, and in dotted lines is shown the newly cast type-bar or linotype exposed to view therefrom. In these figures is shown a further modified form of color applying device D, of my invention, and which in this instance consists of a roller  $d^{19}$ , immersed in a tank or reservoir  $d^{20}$ , containing any suitable fluid coloring material or substance and provided with adjustable doctors  $d^{21}$ , for removing superfluous coloring matter from off the roller in the rotation thereof by suitable hand or other appliances, not shown. This reservoir or tank  $d^{20}$ , is adjustably supported at

$d^{22}$ , in proximity to the face of the disk or wheel A, by means of frames or supports  $d^{23}$  and  $d^{24}$ , and in such manner as to permit of the roller  $d^{19}$ , being brought into contact with the exposed type-bar or linotype H, in the rotation of the wheel or disk A, in the manner, for example, fully illustrated in Figs. 4 and 5. This roller  $d^{19}$ , is provided with a turnbuckle connection  $d^{25}$ , as shown in Fig. 5, whereby the roller may be adjusted to such position as to permit of contact of the same with the exposed type-bar or linotype H, supported in the carrier-wheel or disk A, during the travel of the same for cooling off the newly cast type-bar or linotype preparatory to being liberated therefrom.

The color applying device D, illustrated in Fig. 6, is the same as that illustrated in Figs. 4 and 5, with the exception of the means employed in this view, for supporting the tank or reservoir  $d^{20}$ , in position, in which the roller  $d^{19}$  is immersed in order to permit of a coloring substance or material to be distributed or supplied therefrom to the exposed type-bar or linotype of the disk or carrier wheel A, in the travel thereof.

In Figs. 7 and 8 are illustrated a further modification of my invention in application to certain parts of a type-bar casting or linotype machine, and in this instance the device comprises a flanged plate  $d$ , having a color absorbent material secured into the same, and with a vertical arm  $d'$ , fulcrumed to a right angular arm  $d^{29}$ , which is preferably formed integral with a collar  $d^{30}$ , mounted on the horizontal shaft A', of the wheel A, and suitably clamped thereto at  $d^{31}$ . Around the face of the disk or wheel A, is disposed a segmental rail  $d^{32}$ , with which engages the wheel  $d^{33}$ , journaled to the bifurcated extremity of the arm  $d'$ . To the right angular arm  $d^{29}$ , is secured a catch  $d^{34}$ .  $d^{35}$ , is a coiled spring engaging at one of its extremities with the catch  $d^{34}$ , and at the other of its extremities with the vertical arm  $d'$ . This construction and arrangement of the color applying device D, is such, as that in the rotation of the disk or wheel A, by contact of the roller  $d^{33}$ , with the rail  $d^{32}$ , the color applying device D, is brought into contact with the exposed printing surface of the cast type-bar or linotype, in such manner as to apply the color or stain thereto. Upon the release of the exposed type-bar beyond the range of said rail the compression of the spring  $d^{35}$  being automatically released, the device returns to its initial or inoperative position, as will be fully understood by reference to Figs. 7 and 8.

In Figs. 9 and 10, is illustrated a further modification of my invention in application to the disk or wheel A, and in which D represents the color applying device, consisting in this instance of two rollers  $d^{35}$  and  $d^{36}$ , carrying an endless apron or ribbon  $d^{37}$ , for applying color to the exposed type-bar or linotype H, of the disk or wheel A, and operated in any suitable manner by means of the shaft



$d^{38}$ , connected with the roller  $d^{35}$ . In this instance the disk or wheel A, is provided with a rack and pinion  $a^4$  and  $a^5$ , as illustrated in Fig. 9, whereby in the rotation of the mold wheel A, by means of said rack and pinion through the intervention of the shaft  $a^6$ , having motion imparted thereto from any suitable source or power not shown, the exposed type-bar or linotype in the travel of the same is brought into contact with the rotating ribbon or apron  $d^{37}$ , of the color applying device D, in order to stain the printing surface of the type-bar or linotype, while the same is cooling and before ejection from the disk or wheel A, for the purpose of printing therefrom.

With reference to Fig. 11, the color applying device D, comprises in its application to the exposed type-bar or linotype H, carried by the disk or wheel A, to effect the cooling thereof and liberation of the type-bar or linotype therefrom, an oblong plate  $d$ , provided with a contracted or crimped rim  $d^{39}$ , adapted to support an absorbent and distributing material or appliance therein and with a flanged opening  $d^{40}$ , in the rear wall thereof.  $d^{41}$ , is a perforated jet tube, provided with a stop-cock  $d^{42}$ , extending through the opening  $d^{40}$ , for supplying coloring matter to said color absorbent material, whereby in the rotation of the disk or wheel A, the exposed type-bar or linotype carried thereby is presented to the surface of the material mounted in the flanged plate  $d$ , of this color applying device D.

In Figs. 12 and 13 is shown a still further modification of my invention in its application to the disk or wheel A, of a linotype or type-bar casting machine. In this instance the color applying device D, comprises a brush-wheel  $d$ , mounted on a shaft  $d^{43}$ , which is journaled to a bifurcated arm  $d^{46}$ , rigidly attached to a part of the machine frame, not shown. The shaft  $d^{43}$ , carries at its inner extremity a pinion  $d^{44}$ , which meshes with a segmental rack  $d^{45}$ , secured to or formed integral with the face of the disk or wheel A. By this arrangement through the rotation of the disk or wheel A, the requisite pressure of the brush  $d$ , with respect to the cast type-bar or linotype is produced to cause the color or stain with which the bristles of the brush  $d$ , are coated or saturated to be presented to the type-bar or linotype in its travel while cooling and prior to the liberation of the same from the machine.

It will be observed from the foregoing description of the several devices hereinbefore explained and illustrated in the accom-

panying drawings, that the color contrast, designed as the object of my invention, may be carried into effect by various means employed therefor in connection with linotype or type-bar casting machines, and therefore, I do not wish to be understood as limiting myself to any of the precise constructions and arrangements of devices such as hereinbefore described.

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

1. The method of treating a type-bar or linotype to form a color contrast between the printing surface and the background thereof, which consists in inking the printing surface in the casting machine in the range of movement thereof, substantially as and for the purposes set forth.

2. The method of treating type-bars or linotypes to form a contrast between the printing surface and back ground thereof, which consists in casting a type-bar or linotype under pressure in a machine, affording the type-bar or linotype a range of movement to cool and inking the printing surface thereof in said movement and prior to being liberated from the machine, substantially as and for the purposes set forth.

3. The combination with a casting machine, of means for applying coloring matter to the printing surface of the cast type-bar or linotype prior to liberation of the same from the machine, substantially as and for the purposes set forth.

4. The combination, with a machine for casting type-bars or linotypes, of devices with actuating mechanism for automatically applying coloring matter to the printing surfaces thereof, substantially as and for the purposes set forth.

5. The combination, with a type-bar casting or linotype machine provided with a carrier adapted to expose a type-bar or linotype in the travel thereof, means for coloring or inking the exposed printing surface of said type-bar or linotype and mechanism for controlling the range of movement thereof and for releasing the color applying means from contact with said type-bar or linotype, substantially as and for the purposes set forth.

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

MANLY M. GILLAM.

Witnesses:

THOMAS M. SMITH,  
WILHELM VOGT.