

(No Model.)

3 Sheets—Sheet 1.

E. J. MULLER.
UNIVERSAL HANGER.

No. 548,808.

Patented Oct. 29, 1895.

Fig. 4.

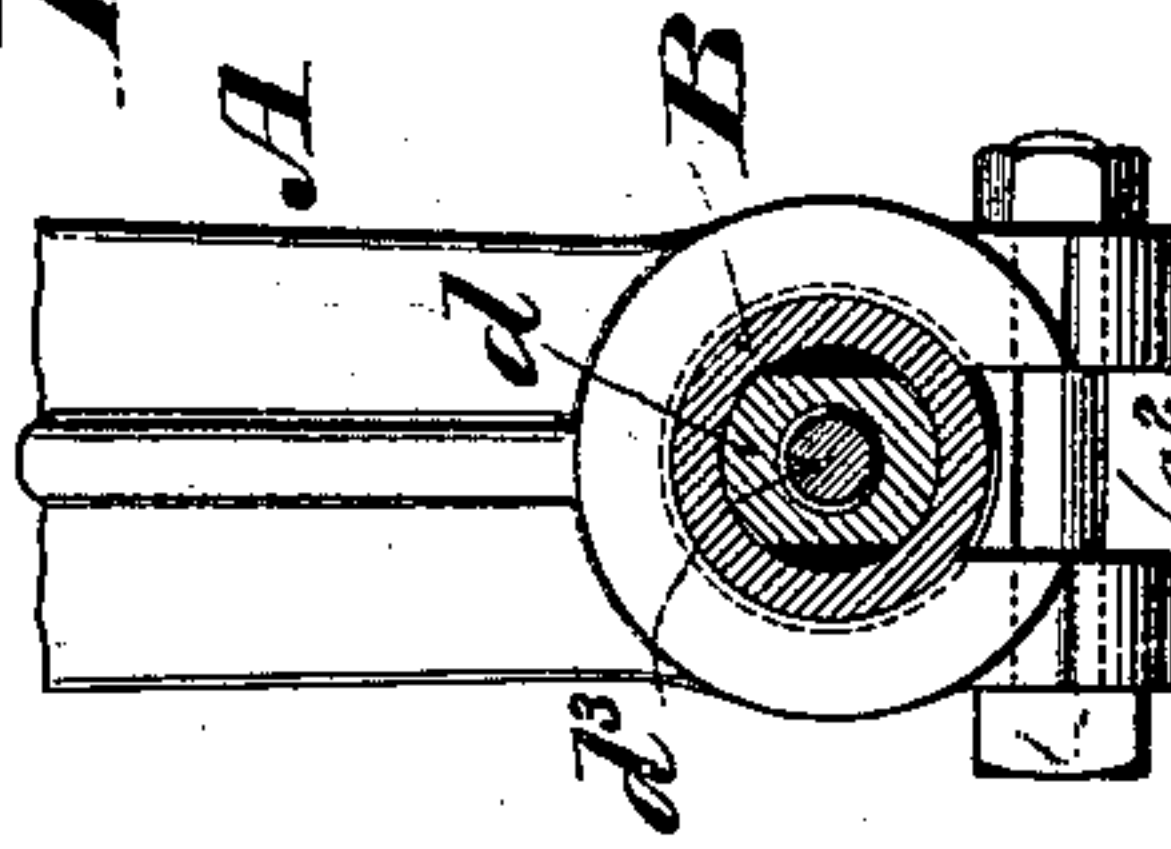


Fig. 3.

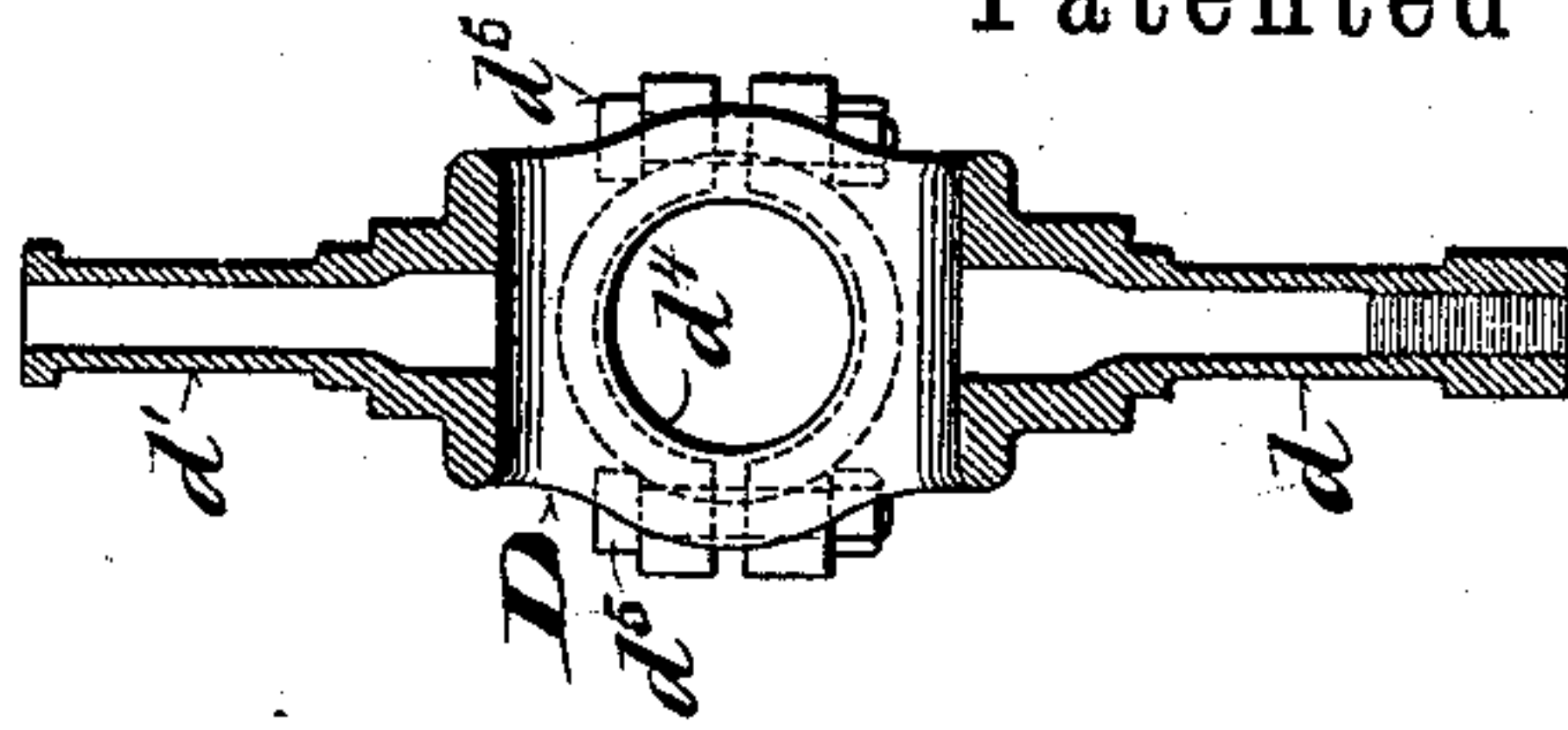


Fig. 5.

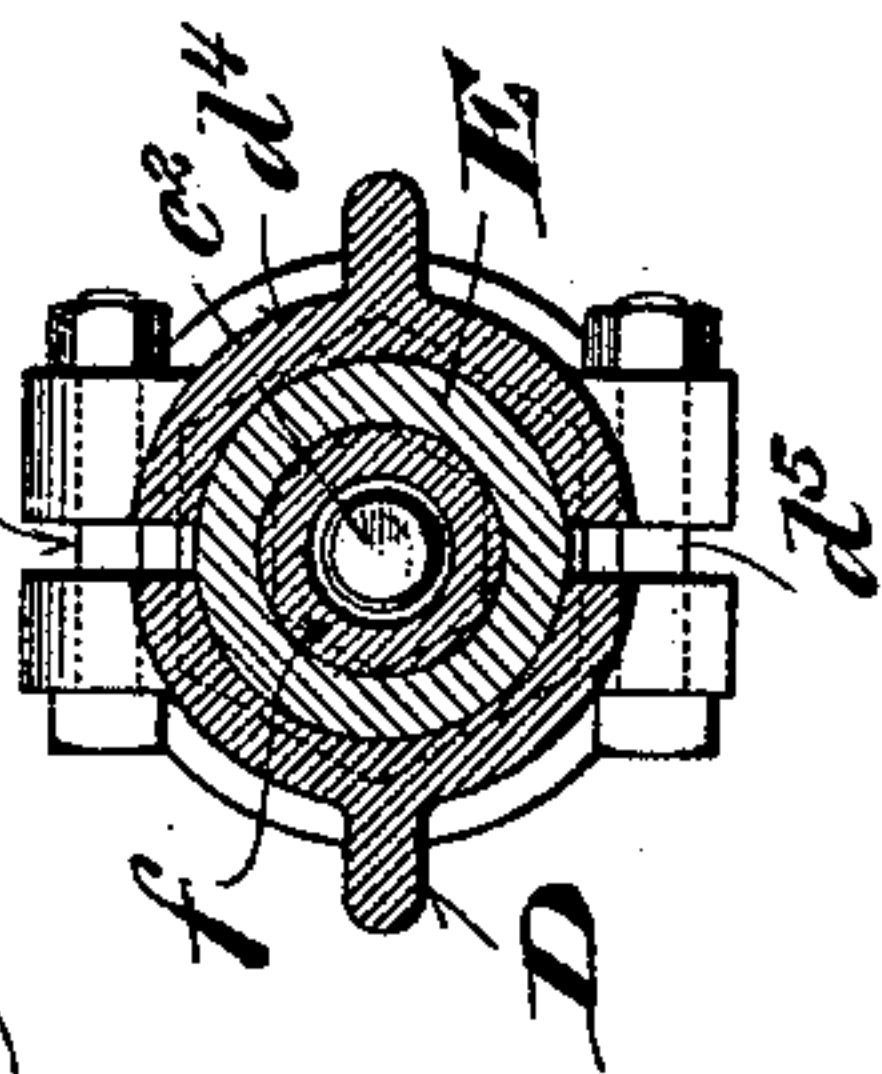


Fig. 6.

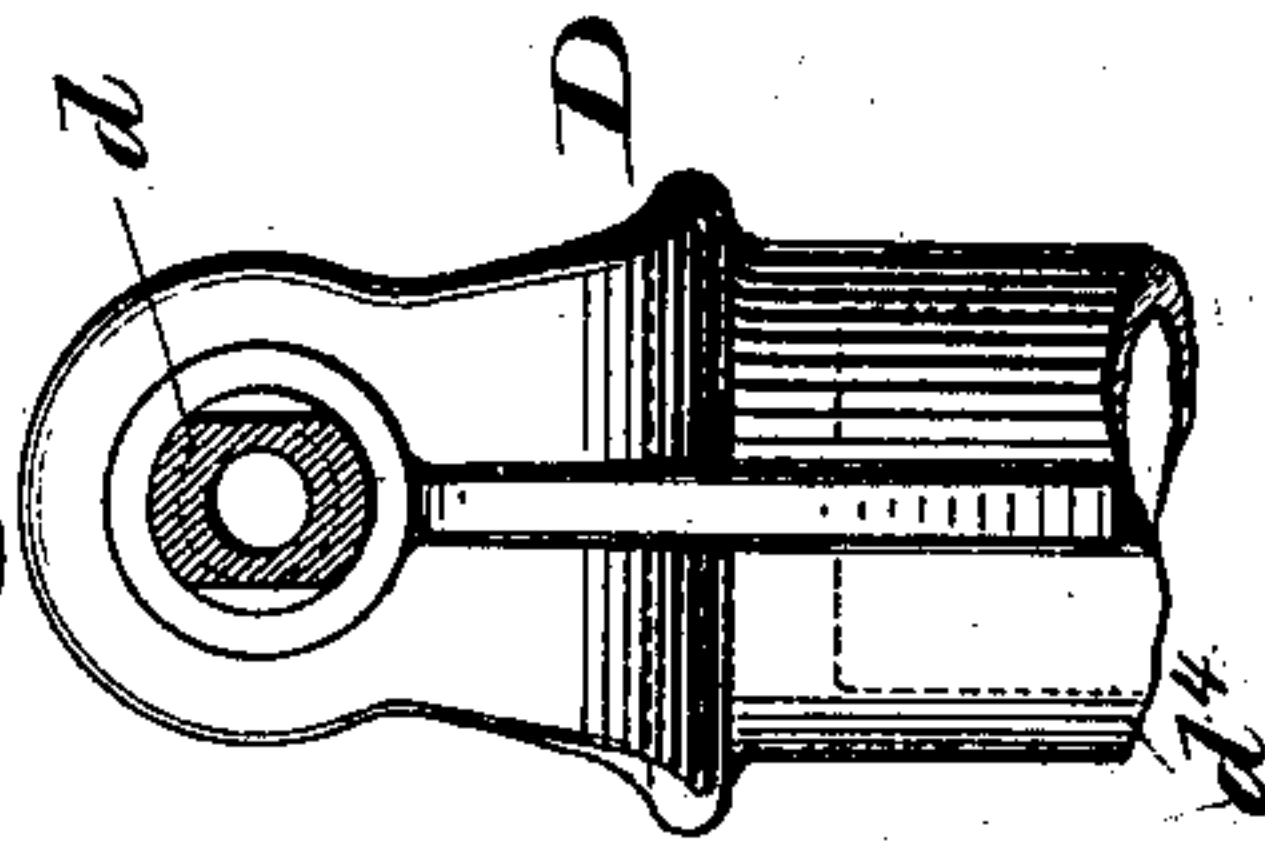


Fig. 2.

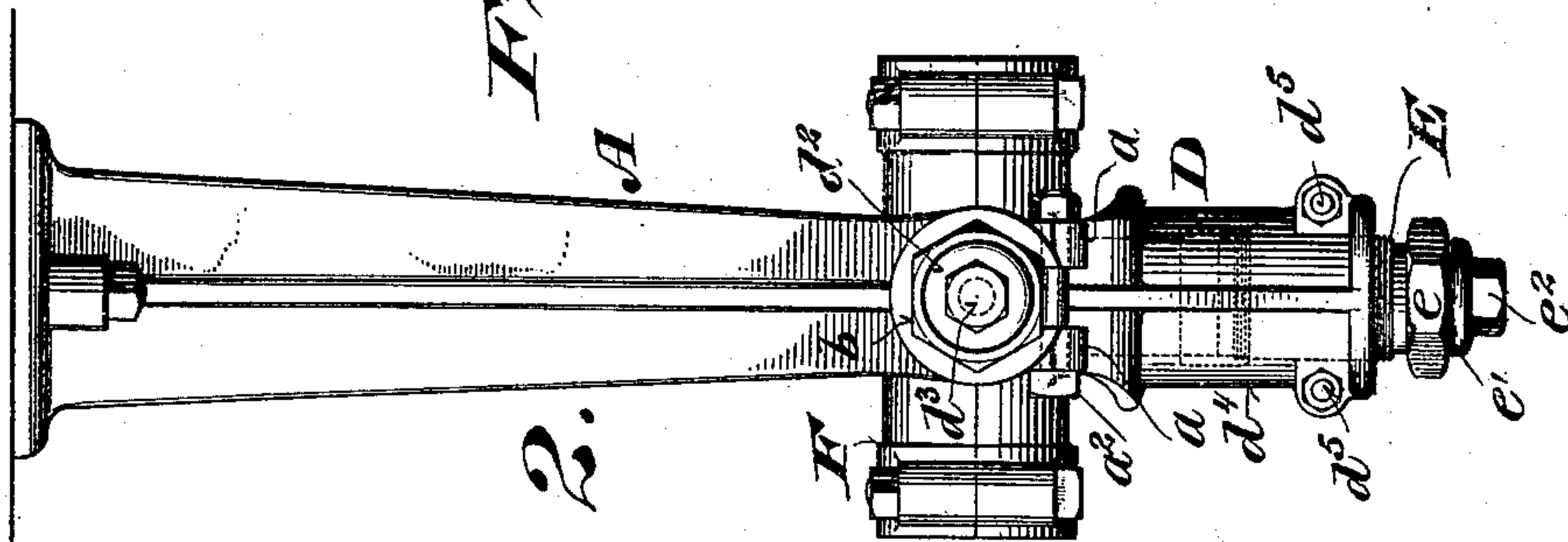
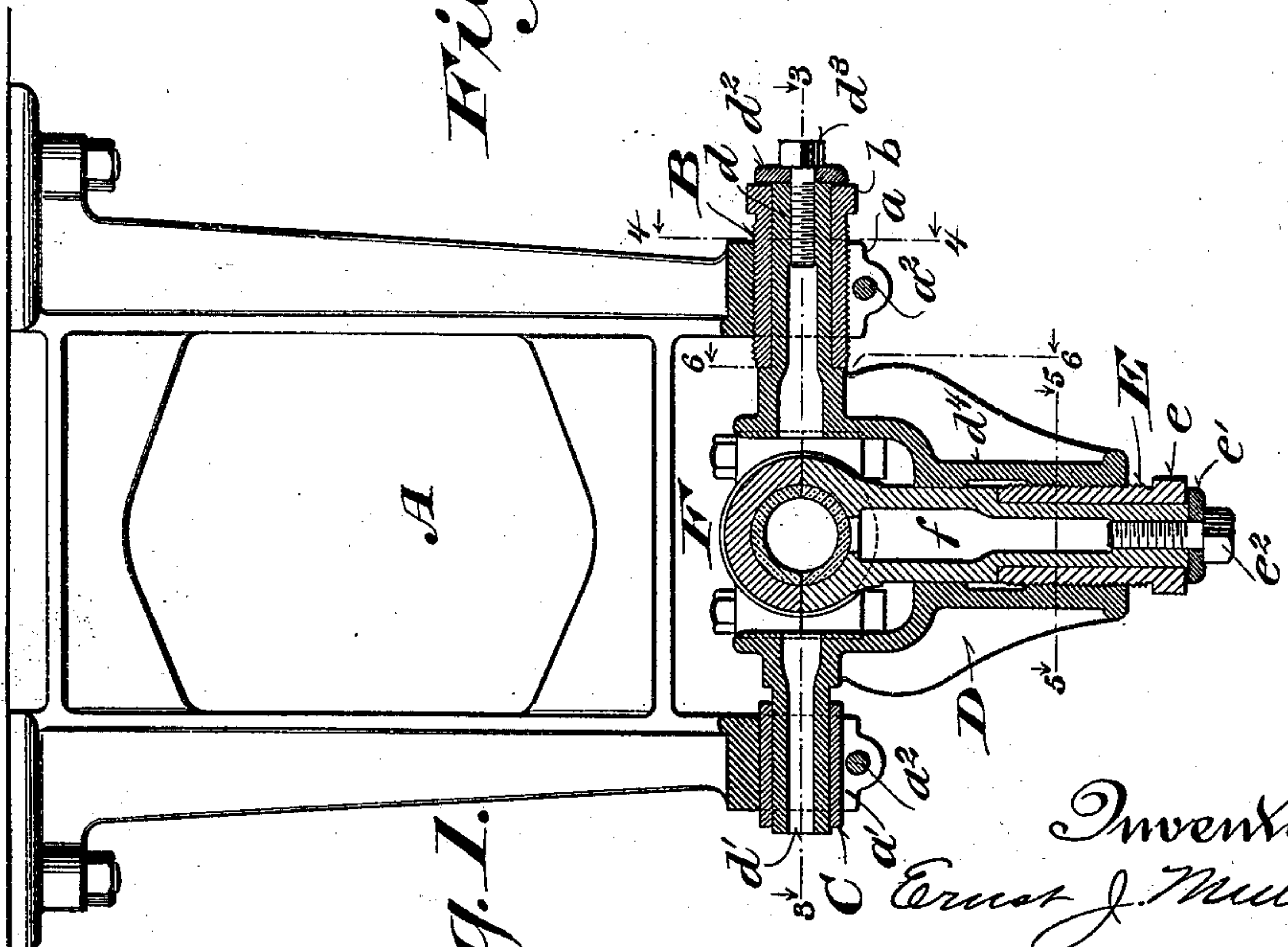


Fig. 1.



Witnesses:
Geo. W. Young,
Chas. L. Coe.

Inventor:
Ernest J. Muller,

By Ninkler, Handus, Smith, Rottum & Kles,
Attorneys.

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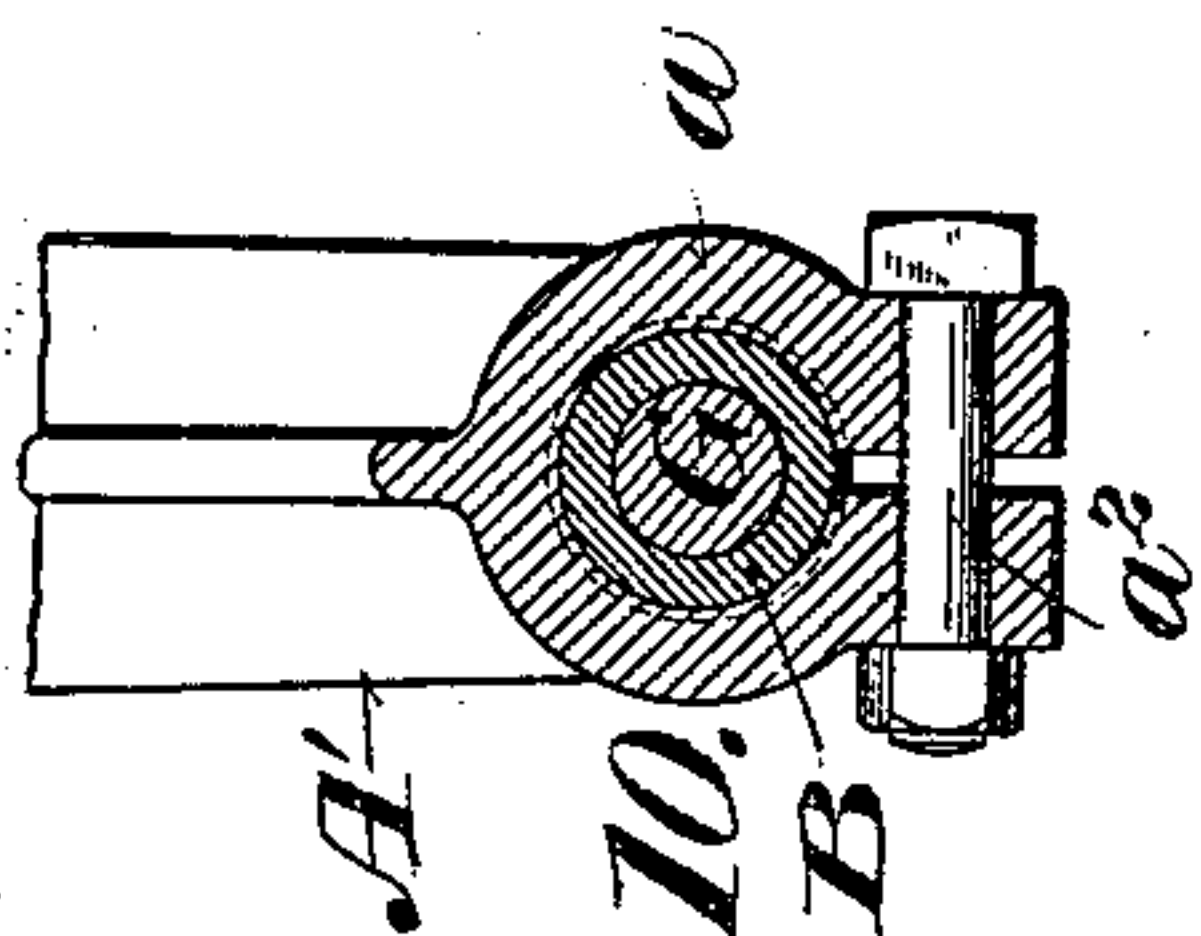


Fig. 10.

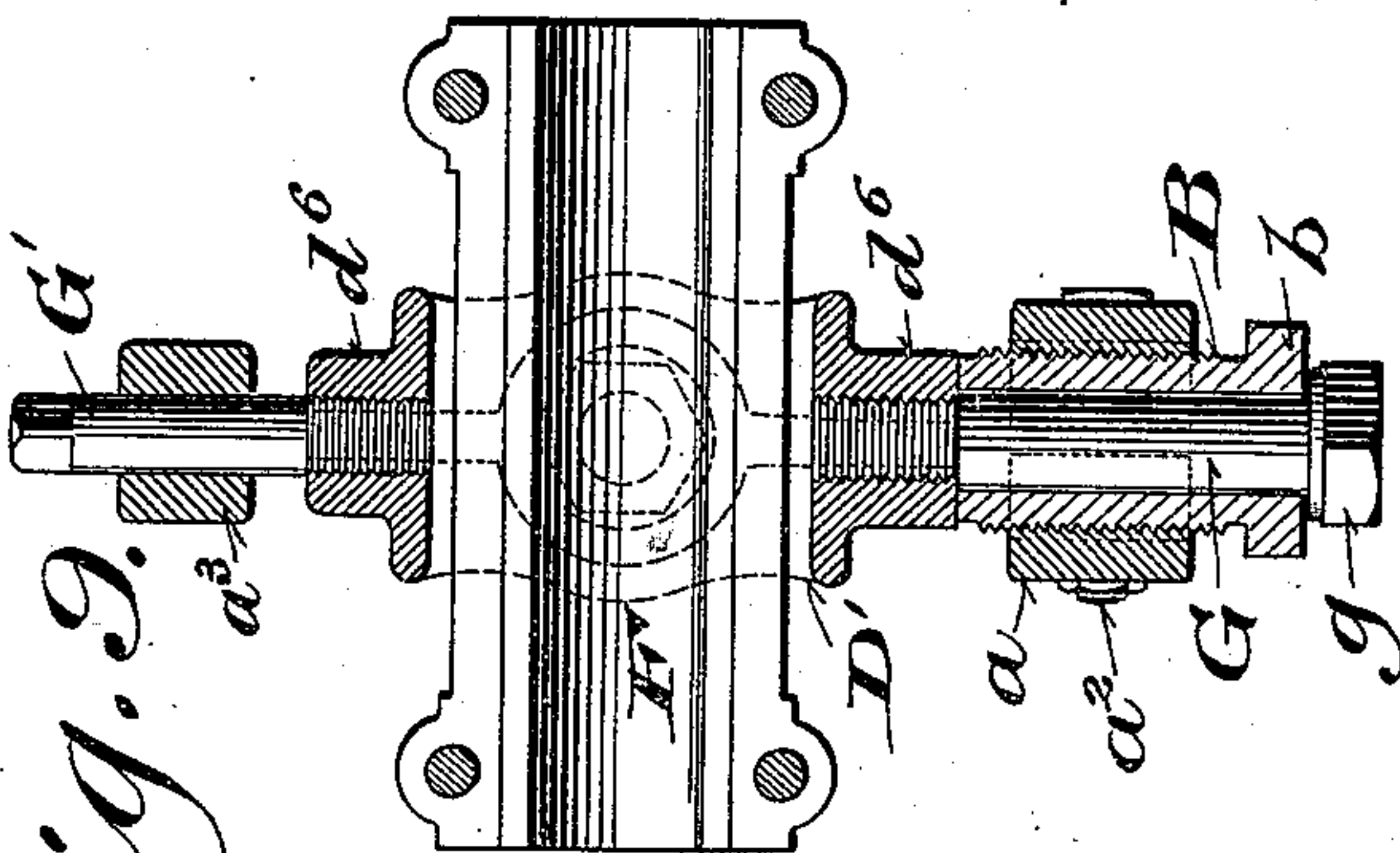


Fig. 9.

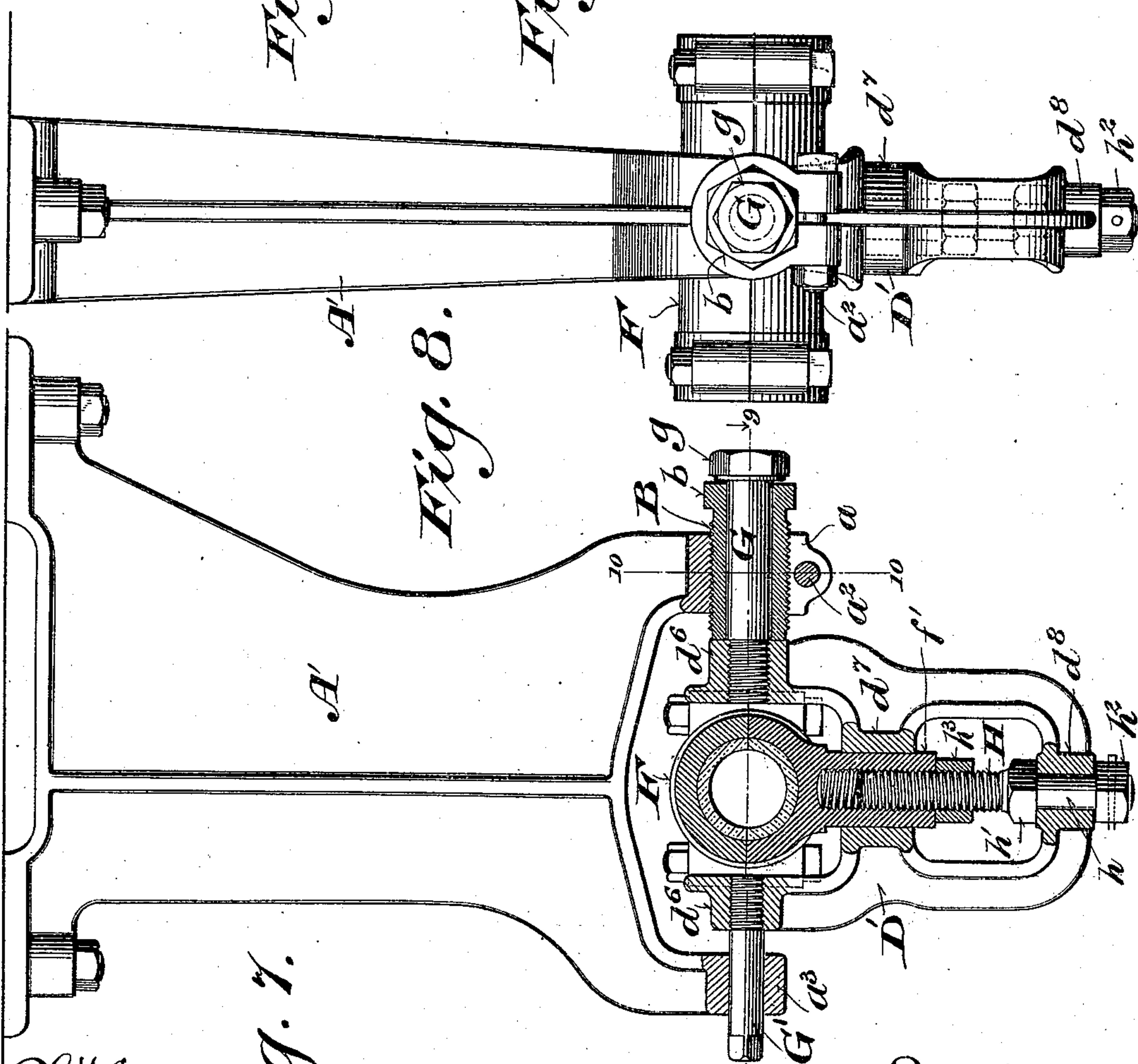


Fig. 8.

Fig. 7.

Witnesses:
Geo. W. Young.
Chas. L. Goss.

Inventor:
Ernest J. Muller.

By Wm. H. Smith Attorneys.

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Fig. 13.

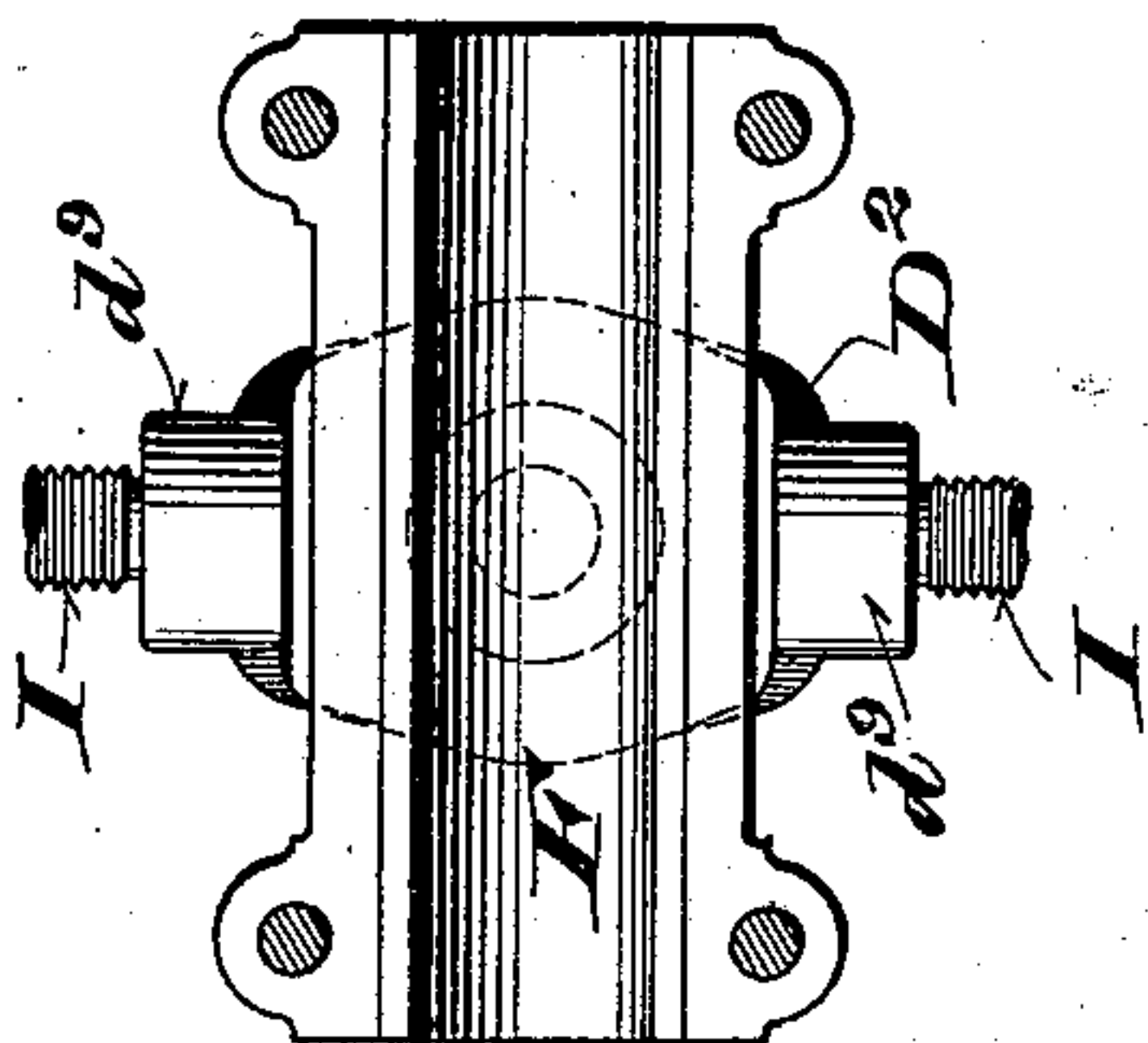


Fig. 14.

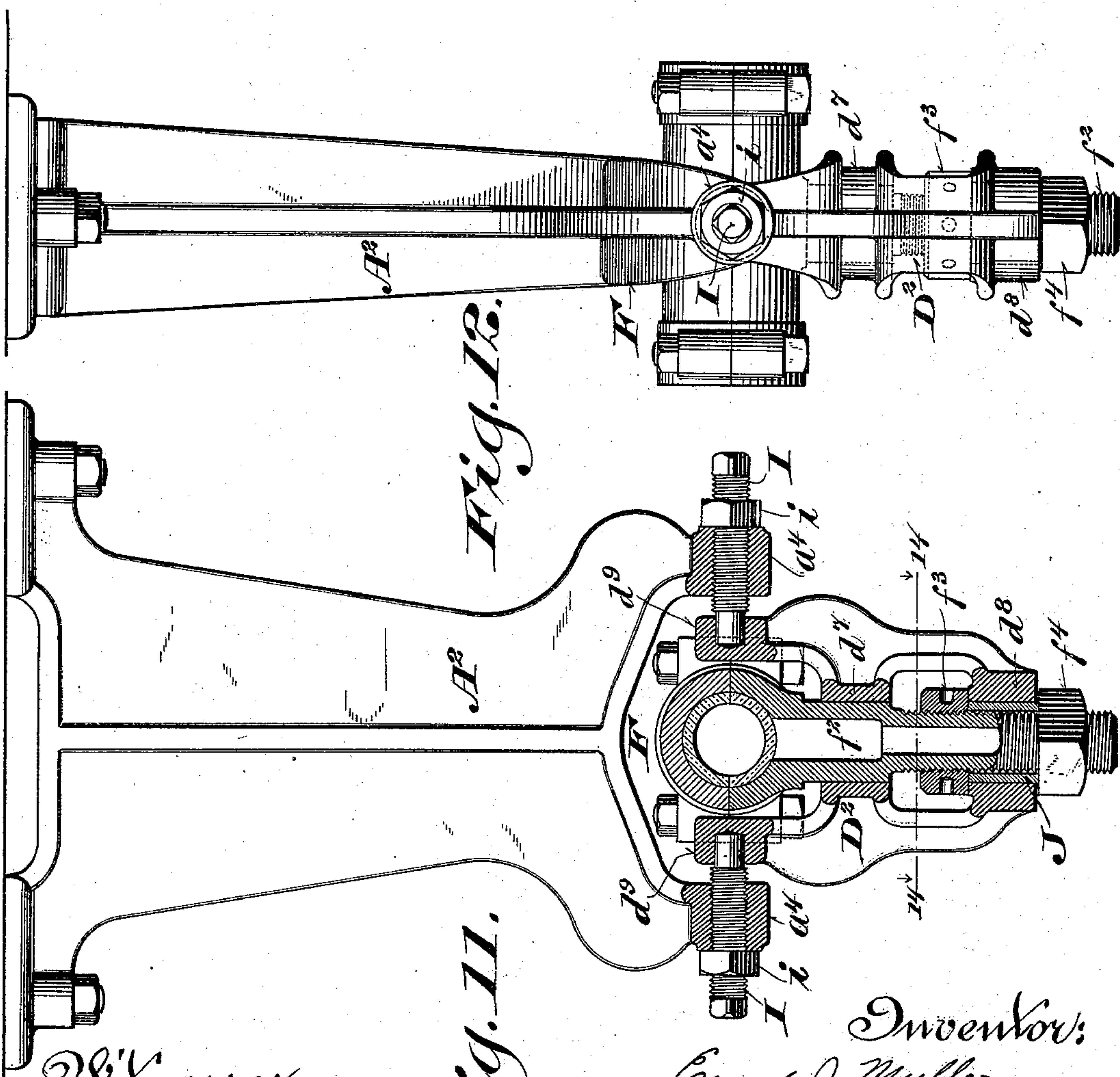
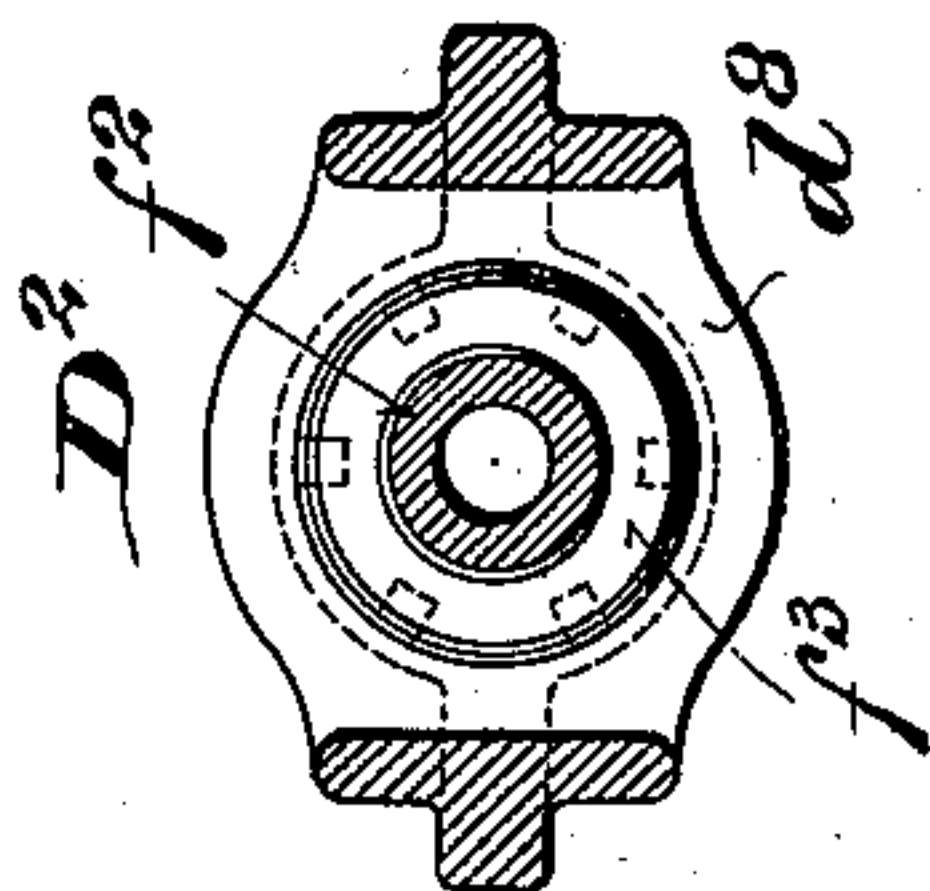


Fig. 12.

Fig. 11.

Witnesses:
Geo. W. Young.
Chas. L. Coe.

Inventor:
Ernest J. Muller,
By Wm. H. H. Smith, Boston & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

ERNST J. MULLER, OF BUTTE, MONTANA.

UNIVERSAL HANGER.

SPECIFICATION forming part of Letters Patent No. 548,808, dated October 29, 1895.

Application filed July 23, 1894. Serial No. 518,331. (No model.)

To all whom it may concern:

Be it known that I, ERNST J. MULLER, of Butte, in the county of Silver Bow and State of Montana, have invented certain new and useful Improvements in Universal Hangers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main objects of my invention are to facilitate the alignment of a number of boxes with each other without disturbing the brackets, hangers, or stands which support them, to prevent the boxes from binding on the shaft which they support by permitting them to turn in any direction transversely to their axes, and thereby adapt themselves automatically to any ordinary springing or deflection of the shaft from a straight line, and to provide for a slight adjustment of the shaft in any direction transversely to its axis.

It consists, essentially, of certain novel features in the construction and arrangement of the box supporting and adjusting connections, as hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figures 1 to 6, inclusive, show one form of my universally-adjustable bearing adapted to hangers, Fig. 1 being a side elevation and partial vertical section transverse to the axis of the box; Fig. 2, a front elevation of the same; Fig. 3, a horizontal section of the yoke on the line 3 3, Fig. 1; Fig. 4, a vertical section parallel with the axis of the box on the line 4 4, Fig. 1; Fig. 5, a horizontal section on the line 5 5, Fig. 1; and Fig. 6, a vertical section on line 6 6, Fig. 1. Figs. 7 to 10, inclusive, show a modification of the bearing, also adapted to hangers, Fig. 7 being a vertical section crosswise of the box and a partial side elevation; Fig. 8, a front elevation; Fig. 9, a horizontal section on the line 9 9, Fig. 7; and Fig. 10, a vertical section on the line 10 10, Fig. 7. Figs. 11 to 14, inclusive, show still another modification of the invention,

Fig. 11 being a partial side elevation and vertical section crosswise of the box; Fig. 12, a front elevation; Fig. 13, a plan view of the lower half of the box and the yoke supporting it; and Fig. 14, a horizontal section on the line 14 14, Fig. 11.

Referring to Figs. 1 to 6, inclusive, A designates a bracket or hanger adapted to be bolted in the usual manner to a ceiling or overhead support and formed in line with each other with split hubs a a' , which are provided with clamping-bolts a^2 a^2 . In one hub a is threaded a hollow screw or sleeve B, having a squared end b , and in the other hub a' is fitted a plain sleeve C. D is a yoke formed on opposite sides with hollow stems d d' , fitted, respectively, into the hollow screw B and sleeve C. The stem d is provided at its outer end with a washer d^2 , secured thereto by a bolt d^3 , whereby said stem is secured in the hollow screw B and prevented from moving endwise therein, said screw abutting at its inner end against a shoulder on said stem and at its outer end against said washer. Sufficient play is allowed to permit the stem to turn freely in said screw. Said yoke is formed perpendicular to the stems d d' , with a sleeve d^4 , in the lower end of which is threaded a hollow screw E, squared at its lower end e .

F designates the box, the lower half of which is formed or provided with a vertical stem f , reduced at its lower end and fitted in the hollow screw E, in which it is secured by a washer e' and bolt e^2 . The unreduced portion of said stem f is fitted to bear and turn in the upper end of the sleeve d^4 .

For convenience in manufacturing and assembling the parts of the hanger the stems d d' are flattened on the sides, as shown in Figs. 3, 4, and 6, so as to admit of their being passed sidewise upwardly between the ears of hubs a a' into the bores thereof. The screw B and sleeve C are then passed over the ends of said stems and inserted in said hubs and when properly adjusted are secured in place by the clamping-bolts a^2 . The sleeve d^4 of yoke D is split at its lower end and formed on opposite sides with ears, which are connected by clamping-bolts d^5 d^5 , as shown in Figs. 2 and 5, whereby the screw E may be secured in place when adjusted, as desired.

The stems d and d' being free to turn in

their bearings in the bracket or hanger A, and the stem f , at right angles thereto, being free to turn in the sleeve d^4 of yoke D, it is obvious that the box F has universal-joint connections with its support and is free to turn in all directions about its center and to adapt itself to any springing or deflection of the shaft which it supports from a straight line.

By loosening the nut or screw a^2 in hub a and turning the hollow screw B thus released, by means of its squared end b the box F may be readily adjusted horizontally transversely to its axis, and in like manner by loosening the nuts on bolts d^5 in sleeve d^4 and turning the hollow screw E, thus released, said box may be adjusted vertically. The alignment of a number of boxes with each other is thus readily effected without disturbing the brackets, hangers, or other supports which carry them.

The hollow screw or sleeve B, threaded in the bore of hub a , and the stem d of yoke D constitute an adjustable pivot connection between the hanger A and said yoke, and the hollow screw or sleeve E, threaded in the bore of sleeve d^4 , and the stem f of box F constitute a similar adjustable pivot connection between said yoke and box.

Referring to Figs. 7 to 10, inclusive, showing a modification of the device, A' designates a bracket or hanger adapted to be secured to a ceiling or other overhead support in the usual manner by bolts and formed with hubs a a^3 in line with each other. The hub a is split and formed on opposite sides with ears, which are connected by a clamping-bolt a^2 , as shown in Figs. 8 and 10.

B is a hollow screw threaded in the hub a and formed with a squared end b , by means of which it may be turned therein.

D' is a yoke formed on opposite sides with internally-threaded hubs d^6 d^6 , in which are secured pivot-pins G G' in line with each other. The pivot-pin G is formed with a head g , between which and the adjacent hub d^6 the hollow screw B is held thereon, sufficient play being allowed to permit said pin to turn freely in said screw. The pin G' is fitted in the hub a^3 , and squared at its outer end to receive a wrench for turning it into and out of the hub d^6 . Said yoke is also formed in a line perpendicular to the pins G G' with hubs d^7 and d^8 . The box F is formed or provided on the lower half with a hollow internally-screw-threaded stem f' , which is fitted to turn in the hub d^7 .

H is an adjusting-screw threaded in the hollow stem f' and formed with a plain extension or shank h , which is fitted to turn in the hub d^8 , and held therein by a head or shoulder h' and a nut h^2 . It is provided with a check-nut h^3 , which is forced against the lower end of the stem f' to secure the parts in place when they are properly adjusted.

To assemble the parts of this form of my improved hanger, the yoke D', with the box F, is placed between the hubs a a^3 of the hanger, with the hubs d^6 d^6 in line therewith. The

pivot-screws G G' are then passed from the outside through the hollow screw B and the hub a^3 , respectively, and screwed into said hubs d^6 . The horizontal adjustment of the box is effected in the same manner as explained in connection with the form shown in Figs. 1 to 6. The vertical adjustment of the box is accomplished by loosening the check-nut h^3 and turning the screw H by means of its nut h^2 , which is pinned thereon for this purpose.

Referring to Figs. 11 to 14, inclusive, showing another modification of my improved bearing, the hanger or bracket A² is formed or provided with internally-threaded hubs a^4 in line with each other, and in these hubs are threaded pivot-pins I I, which are provided with check-nuts i i for securing them in place when they are adjusted as desired. The yoke D² is formed on opposite sides with hubs d^9 , having sockets to receive and afford bearings for the ends of the pivot-pins I I. It is also formed with hubs d^7 and d^8 in a line perpendicular to said pivot-pins, like or similar to those shown in Fig. 7. The box F is formed or provided on the under half with a stem f^2 , the upper part of which is fitted to turn in the hub d^7 and the lower part of which is reduced and externally screw-threaded.

J is a sleeve fitted to turn in the hub d^8 and made a little longer than said hub. The reduced portion of the stem f^2 is made to pass loosely through said sleeve and is secured therein by nuts f^3 and f^4 , the nut f^3 being placed on said stem in an opening in said yoke and formed with holes in its edges to receive a spanner wrench or pin for turning it.

The box is adjusted horizontally by loosening the check-nuts i i and turning the pivot-pins I I in or out, as required, of the threaded hubs a^4 a^4 . The vertical adjustment of the box is effected by turning the nuts f^3 and f^4 up or down on the threaded stem f^2 , as required. When adjusted as desired, it is secured in place by turning the check-nuts i i against the hubs a^4 and the nuts f^3 and f^4 against the ends of the sleeve J.

I claim—

1. The combination with a suitable support of a box formed or provided with a stem rigid therewith and perpendicular to its axis, and a yoke having a sleeve in which said stem is adapted to turn freely, and pivot connections with said support perpendicular to the axis of said stem, substantially as and for the purposes set forth.

2. The combination with a suitable support having hubs in line with each other, of a box formed or provided with a stem rigid therewith and perpendicular to its axis, a yoke having a sleeve in which said stem is adapted to turn freely, and pivot pins connecting said yoke with said hubs perpendicular to the axis of said stem and adjustable endwise in said hubs, substantially as and for the purposes set forth.

3. In a universal bearing comprising two

parts, an adjustable pivot connection between said parts, consisting of a hollow screw externally threaded in a bore in one part, and a stem rigid with the other part fitted and adapted to turn in said screw, but held from endwise movement therein, substantially as and for the purposes set forth.

4. The combination with a box support having hubs in line with each other, of a box having a pivot-stem transverse to its axis, a yoke having a sleeve to receive said stem and transversely thereto pivot stems or pins, and a hollow adjusting screw in which one of said stems or pins is held, threaded in one of the hubs of said support, substantially as and for the purposes set forth.

5. The combination with a box support having split hubs in line with each other, provided with clamping screws, a hollow adjusting screw threaded in one hub and a sleeve fitted in the other, of a yoke having flattened stems adapted to be inserted sideways through the openings in said hubs and to turn in said screw and sleeve, and a box pivoted to said yoke in a line transverse to said stems, substantially as and for the purposes set forth.

6. The combination with a support and box the latter having a pivot stem transverse to its axis, of a yoke having pivot connections on opposite sides of the box with said support, and a sleeve transverse to said pivot connections, and a hollow screw in which the stem of the box is held, threaded in said sleeve, substantially as and for the purposes set forth.

7. The combination with a suitable support

of a yoke provided with pivot stems or pins having bearings in said support, a box provided with a pivot stem having a bearing in said yoke transversely to its stems, and hollow adjusting screws secured one on the pivot stem of the box and threaded in the yoke, and the other secured on one of the pivot stems of the yoke and threaded in said support, substantially as and for the purposes set forth.

8. The combination with a suitable support having separated hubs or parts bored in line with each other, a yoke having two stems rigid therewith, in line with each other and adapted to turn freely in the bores of said hubs, and a box pivoted to said yoke in a line perpendicular to said stems, substantially as and for the purposes set forth.

9. In an adjustable bearing comprising two parts, one of which has a cylindrical bore with a longitudinal opening through one side of less width than the diameter of the bore, a pivot connection between said parts consisting of a sleeve fitted in said bore, and a stem rigid with the other part fitted to turn in said sleeve and adapted to be inserted sideways into said bore through the lateral opening therein, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ERNST J. MULLER.

Witnesses:

B. C. W. EVANS,
JAS. DINGEVOW.