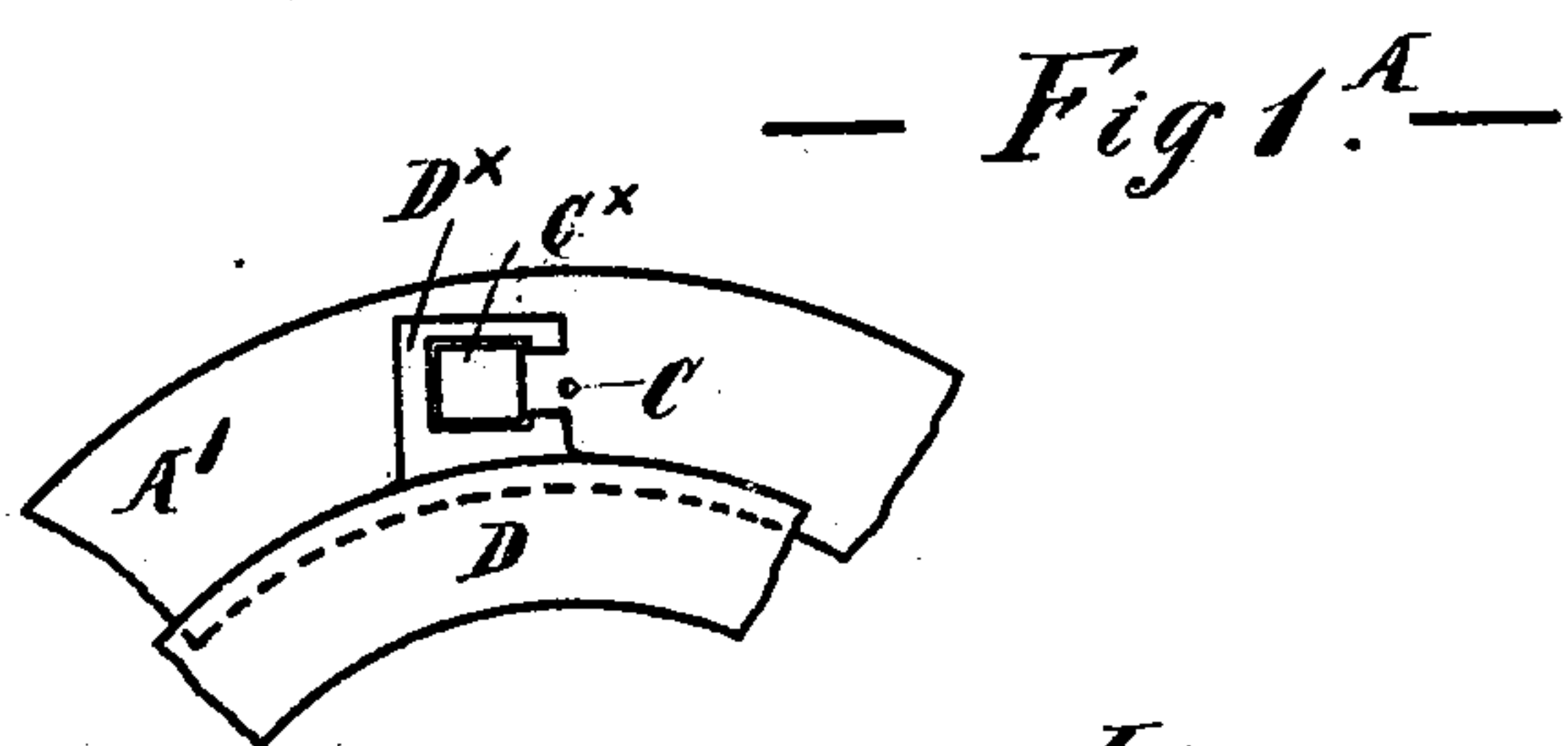
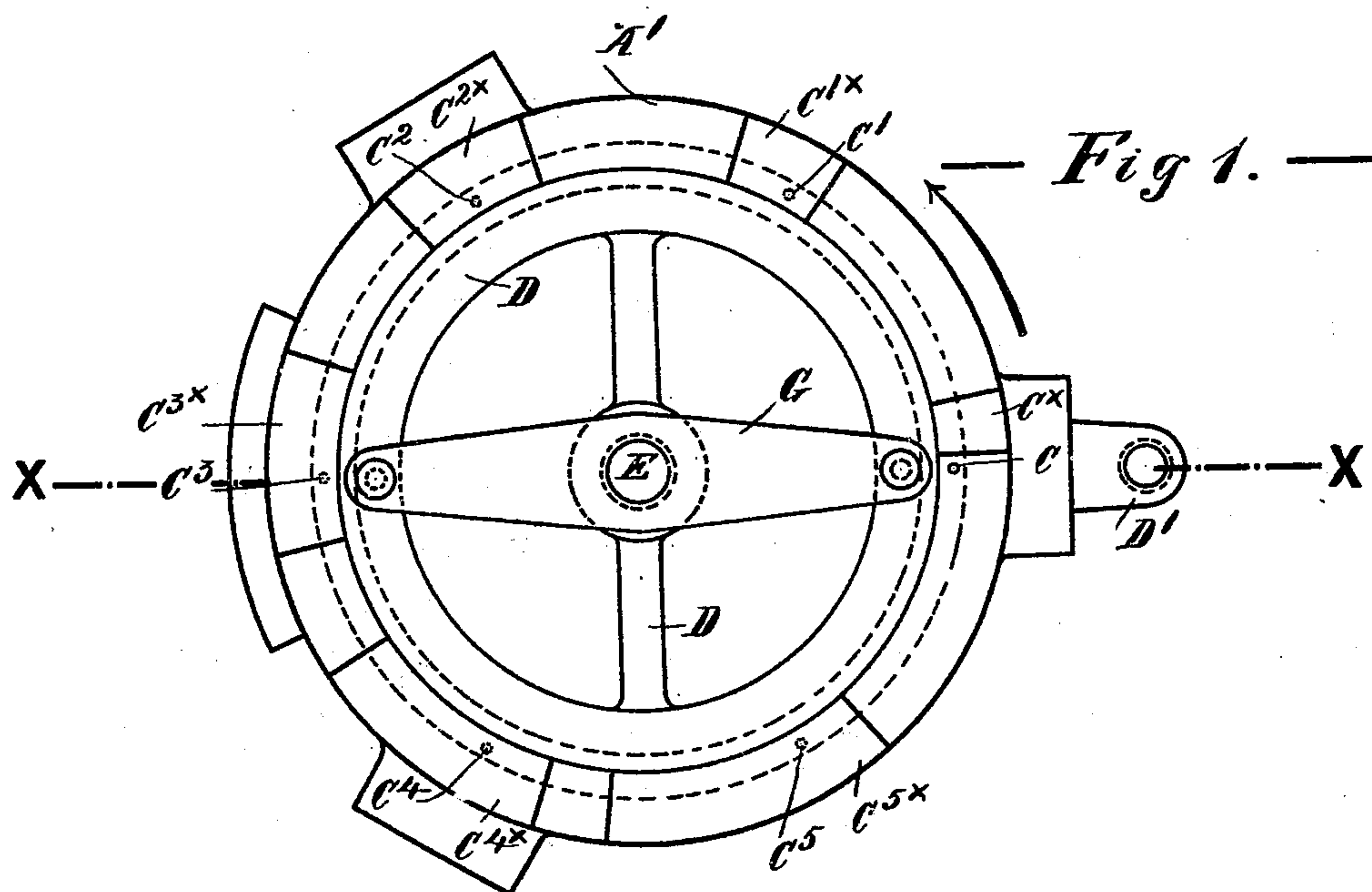
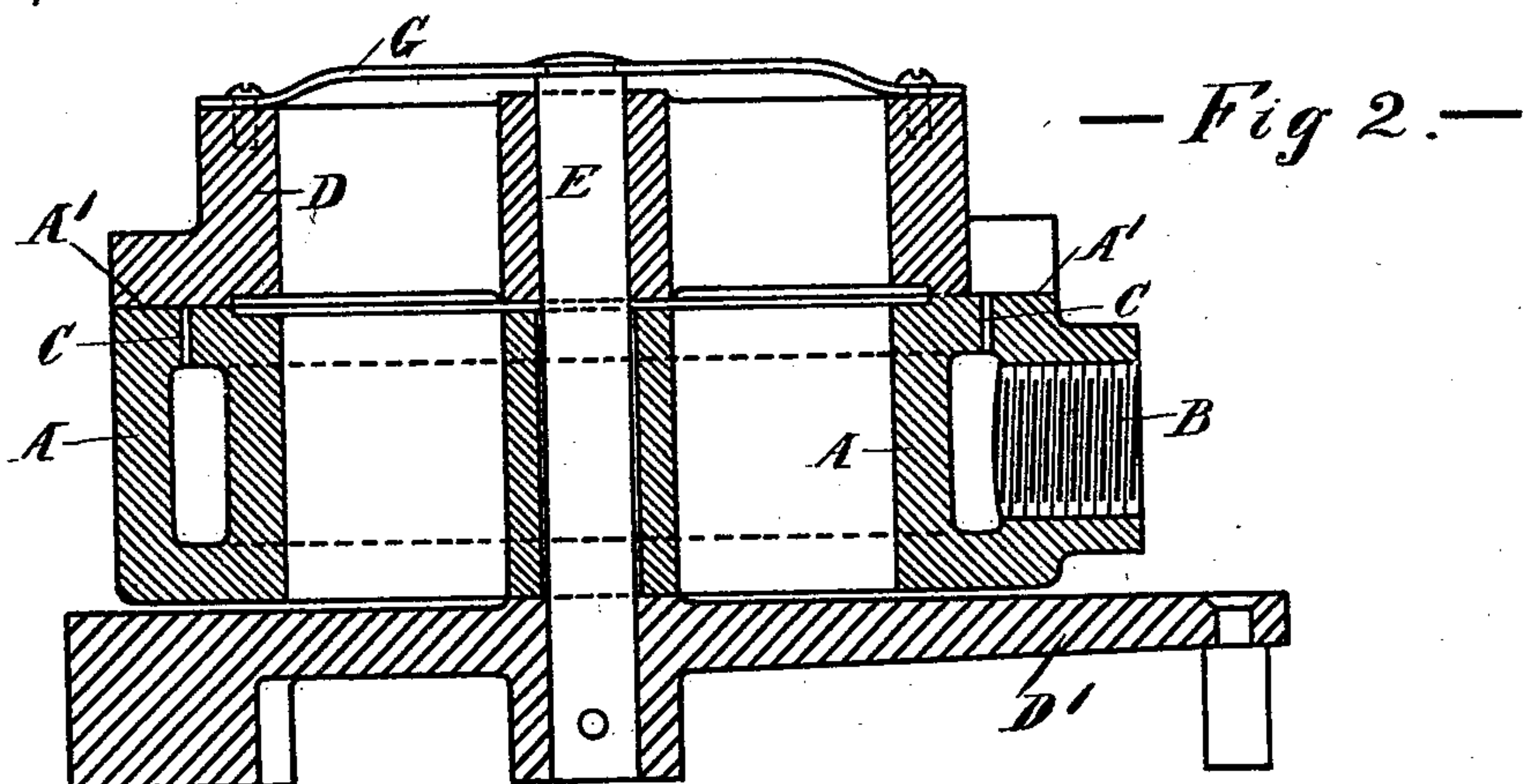


(No Model.)

H. A. HOUSE & H. A. HOUSE, Jr.
BURNER FOR THE COMBUSTION OF GAS OR VAPOR FOR HEATING
PURPOSES.

No. 521,165.

Patented June 12, 1894.



Witnesses:
William Henry Beck
Stephen Edward Cuyler

Inventors:
Henry A. House
Henry A. House Junior

UNITED STATES PATENT OFFICE.

HENRY A. HOUSE AND HENRY A. HOUSE, JR., OF BRIDGEPORT, CONNECTICUT, ASSIGNORS OF ONE-HALF TO ROBERT RINTOUL SYMON, OF LONDON, ENGLAND.

BURNER FOR THE COMBUSTION OF GAS OR VAPOR FOR HEATING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 521,165, dated June 12, 1894.

Application filed July 13, 1893. Serial No. 480,420. (No model.)

To all whom it may concern:

Be it known that we, HENRY ALONZO HOUSE and HENRY ALONZO HOUSE, Jr., mechanical engineers, both citizens of the United States of America, and both temporarily residing at Teddington, county of Surrey, England, but usually of Bridgeport, county of Fairfield, and State of Connecticut, United States of America, have invented a certain new and useful Improvement in Burners for the Combustion of Gas or Vapors for Heating Purposes, of which the following is a specification.

This invention is an improved burner for gas or vapor to be used under steam boilers or for other purposes where it is desired to maintain a uniform or readily controllable degree of heat.

The improvements reside in the special features of construction which are described herein and specifically pointed out in the subjoined claims.

In the drawings Figure 1 is a plan of one of the improved burners made in accordance with our invention. Fig. 2 is a sectional elevation of the same taken on line $x-x$ of Fig. 1. Fig. 1^A is a plan view of a portion of the burner illustrating the preferred construction.

A hollow ring of cast iron or other suitable material A is provided with an inlet B for the gas or vapor, and has a turned or planed surface A' on its upper side pierced with orifices C C' C² C³ C⁴ C⁵ of suitable size spaced at equal distances apart. Each of these orifices is provided with a faced block of metal C^x C'^x C^{2x} C^{3x} C^{4x} C^{5x} forming a small slide valve capable, when slid over its corresponding hole, of preventing the escape of gas or vapor from such hole. The leading or cutting-off edge of each successive slide valve is placed farther from its corresponding gas emission hole than in the preceding slide valve. These slide valves are operated by a kind of frame or star-wheel D secured on an axis E turning in the center of the ring A by the action of a lever or any suitable appliance attached to a stud D'. It will be understood that each successive valve requires to be moved farther in order to uncover its hole than the preceding one as seen clearly

in Fig. 1. So that, assuming the frame D with its slides C^x, &c., to be in the position in which all the holes are covered by their respective slide valves, on moving the said frame D and valves C, &c., in the direction of the arrow in Fig. 1, so as to cause the slide valve C^x to uncover the first hole C, as shown in Fig. 1, the jet of gas or vapor that will issue from such hole may be lighted. On moving the said frame D and valves farther in the same direction the second hole C' will be uncovered by its slide valve C'^x and the jet of gas or vapor issuing from it will be lighted from the first jet. On moving the said frame D and valves still farther in the same direction, the third hole C² will be uncovered by its slide valve C^{2x} and the jet of gas or vapor issuing from it will be lighted from the second jet and so on. In like manner on turning the frame and valves in the opposite direction, each of the holes will be covered in succession by its appropriate slide, and the jets of gas or vapor will be successively extinguished in the reverse order to that in which they were lighted. When the burner is applied to a steam boiler or to a generator of hydrocarbon vapor for example, the frame and valves may be turned so as to bring into operation more jets, or to cut them off, according as the level of the liquid in the boiler or generator rises or varies, by means of any suitable automatic apparatus.

In some cases it is preferable to arrange the apparatus so that one hole, or one set of holes, shall always remain uncovered as shown in Fig. 1, so that there may be always a jet burning ready to light the next jet, or set of jets, as soon as it or their holes are uncovered by the corresponding slide valve.

The covering blocks or slide valves may be made in one with the actuating frame D as shown in Fig. 1, but it will be found preferable to make each block or slide valve C^x, &c., loose in an opening D^x in the actuating frame D as shown in Fig. 1^A so that it rests on its face or seat by gravity or spring pressure independently of the frame, because the great heat to which the parts are subjected is liable to twist or warp the frame or other actuating part, and thereby to displace some of the

blocks or valves and to prevent them from acting properly. This disposition, however, offers a further advantage in that when the burner is in use a carbonaceous deposit is liable to form round the orifices, and when the valves are made separate so as to act independently of one another any of the valves that meet with such a deposit can rise over it without affecting the others where there is no such deposit. When all the valves are connected rigidly to the frame however, a deposit which would raise one would have a tendency to raise all of them from their seats.

The combination of the annular gas chamber and concentric frame and valves as described secures a better distribution of the gas jets under a surface to be heated. Moreover, as each valve opens its particular orifice it does so more or less gradually; and as the gas or vapor begins to issue from the hole as soon as the latter begins to open, the gas or vapor issues therefrom somewhat obliquely, and directed toward the jet already lighted, so that the lighting of the jet freshly brought into action is rendered certain, and when the jet is lighted and the orifice fully open the jet assumes its natural vertical position.

What we claim is—

1. The combination in a gas or vapor burner with an annular gas chamber provided with orifices at equal distances apart for the es-

cape of gas, a rotary frame mounted concentrically with the gas chamber, and a series of slide valves of different lengths carried by said frame over the orifices in the gas chamber, as set forth.

2. The combination in a gas or vapor burner with a hollow gas chamber provided with orifices for the escape of gas, of a frame or slide movable with respect thereto and blocks or slides independent of but engaged by the frame and adapted to be carried over the orifices, by the movement of said frame, as set forth.

3. In a gas or vapor burner the combination with a gas chamber provided with regularly spaced orifices for the escape of gas, a slide valve for and working over each such orifice, the said valve being independently held against its seat, and arranged so that the leading or cutting-off edge of each successive slide is farther from its corresponding orifice than in the preceding slide, as set forth.

In witness hereof we have hereunto set our hands in presence of two witnesses.

HENRY A. HOUSE.

HENRY A. HOUSE, JUNIOR.

Witnesses:

WILLIAM HENRY BECK,

STEPHEN EDWARD GUNYON,

Both of 115 Cannon Street, London.