

No. 620,804.

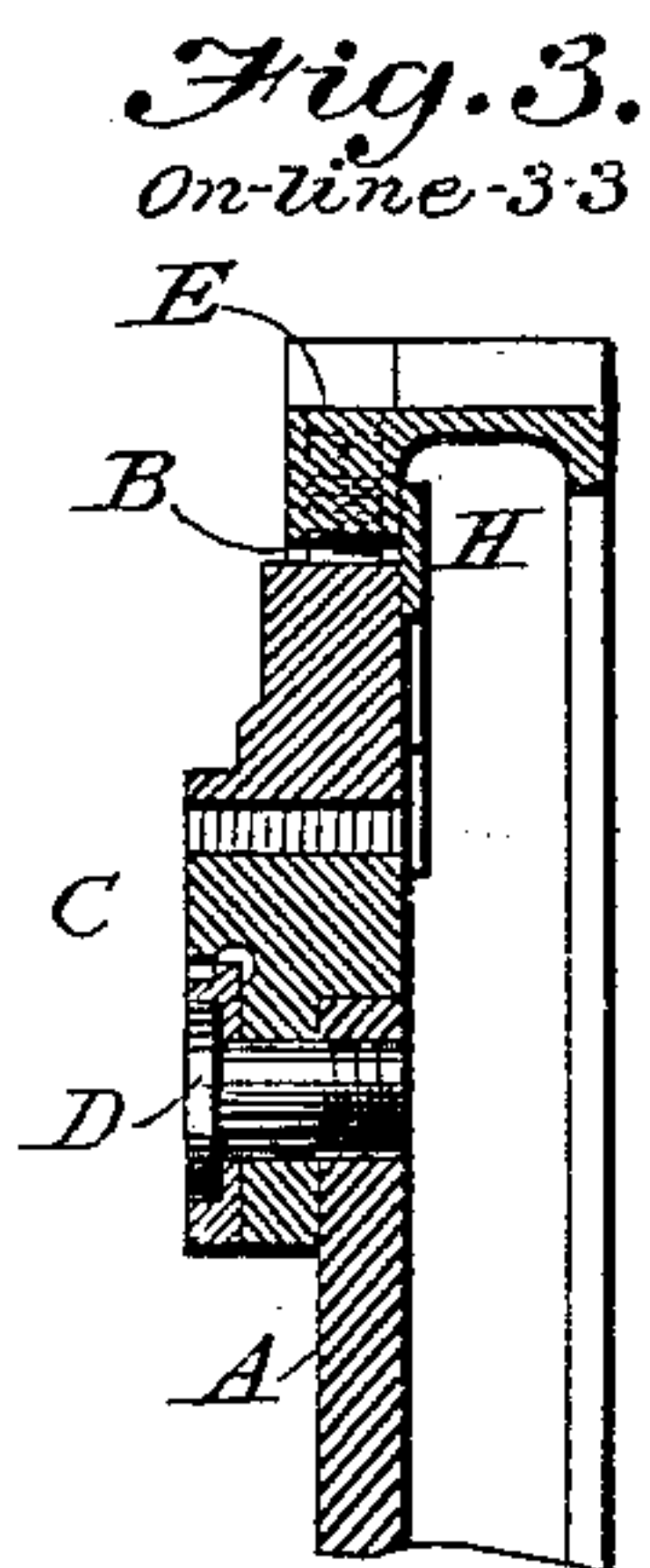
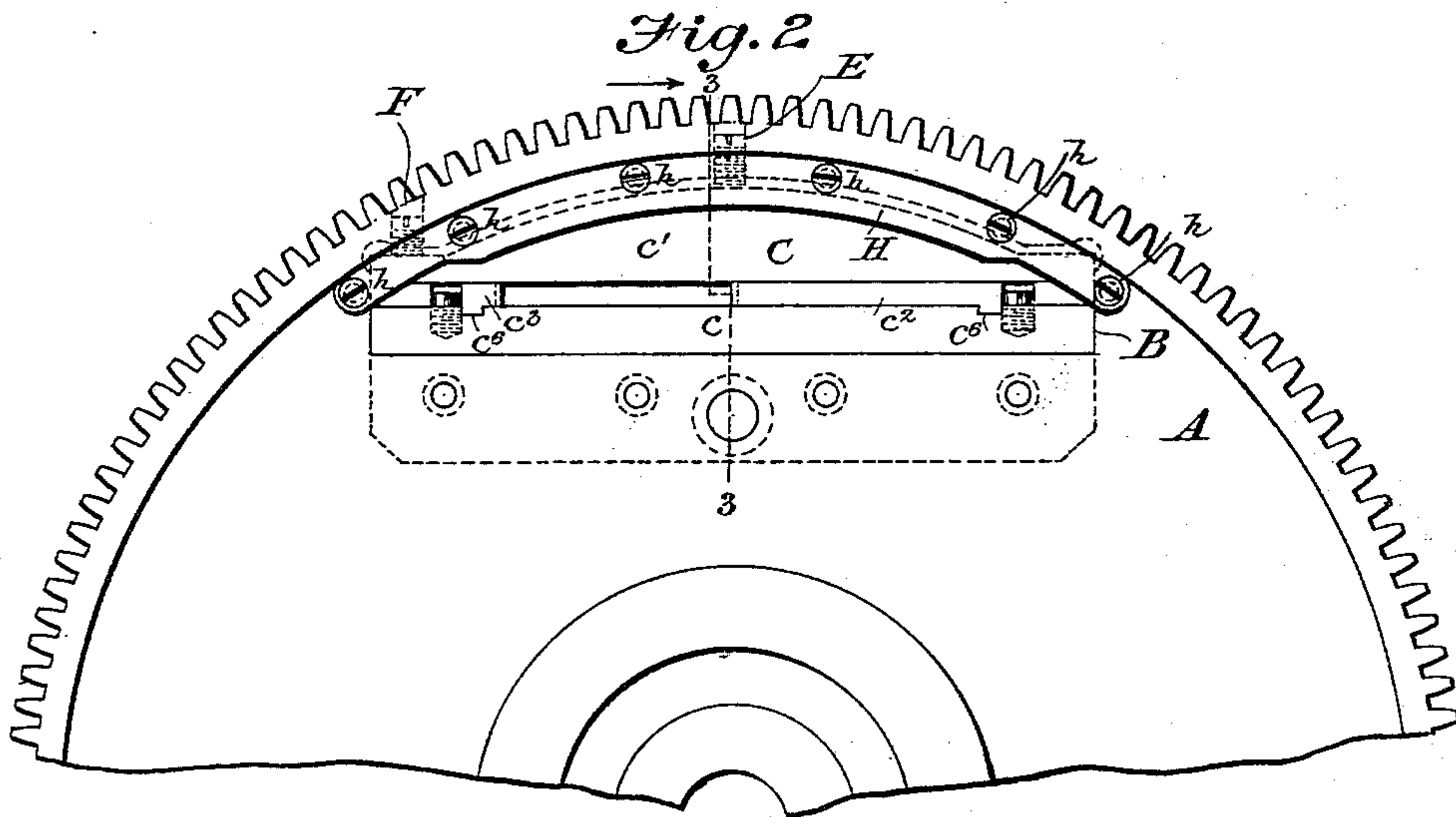
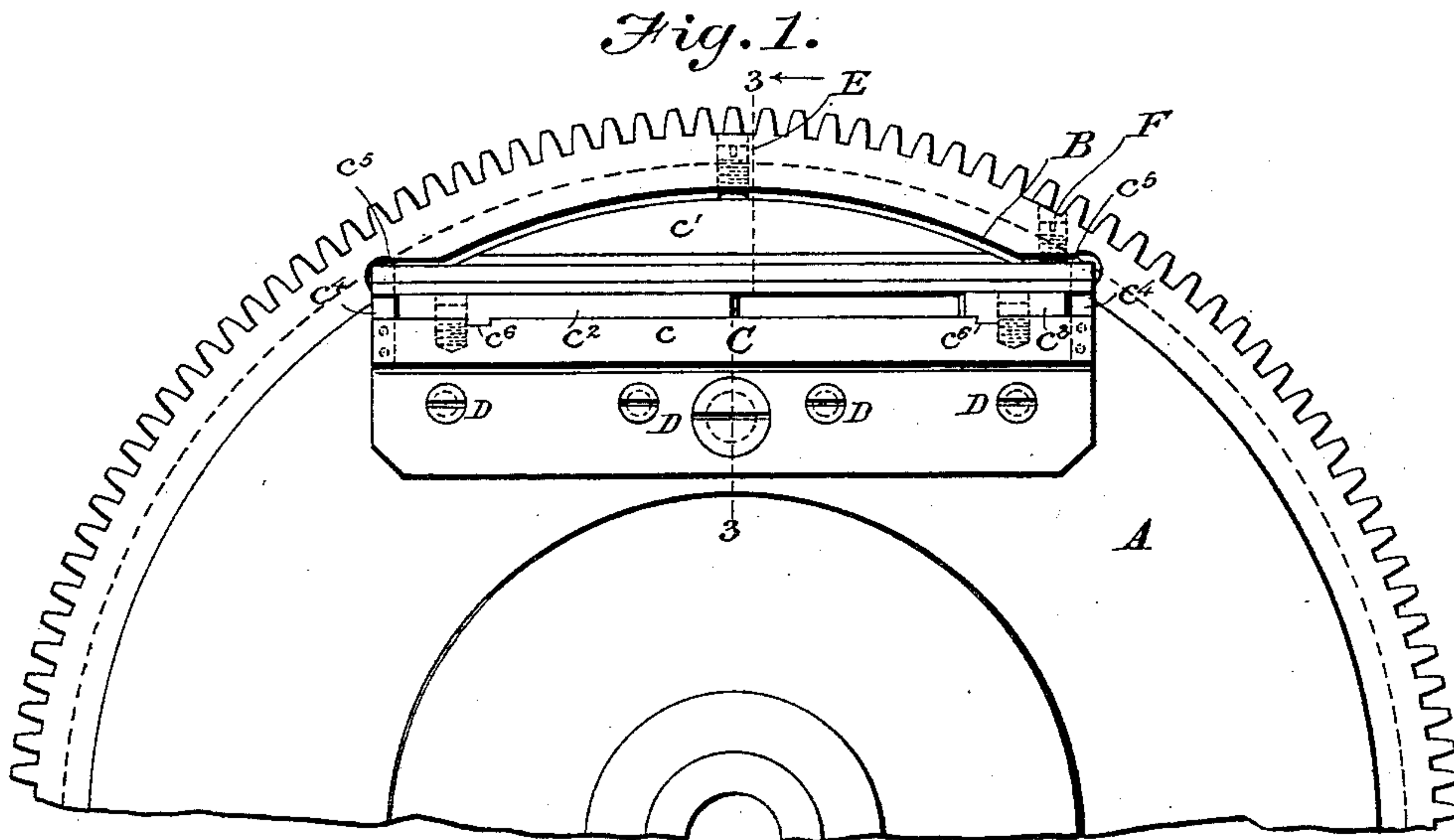
Patented Mar. 7, 1899.

J. R. ROGERS.  
LINOTYPE MACHINE.

(Application filed Dec. 31, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 4.

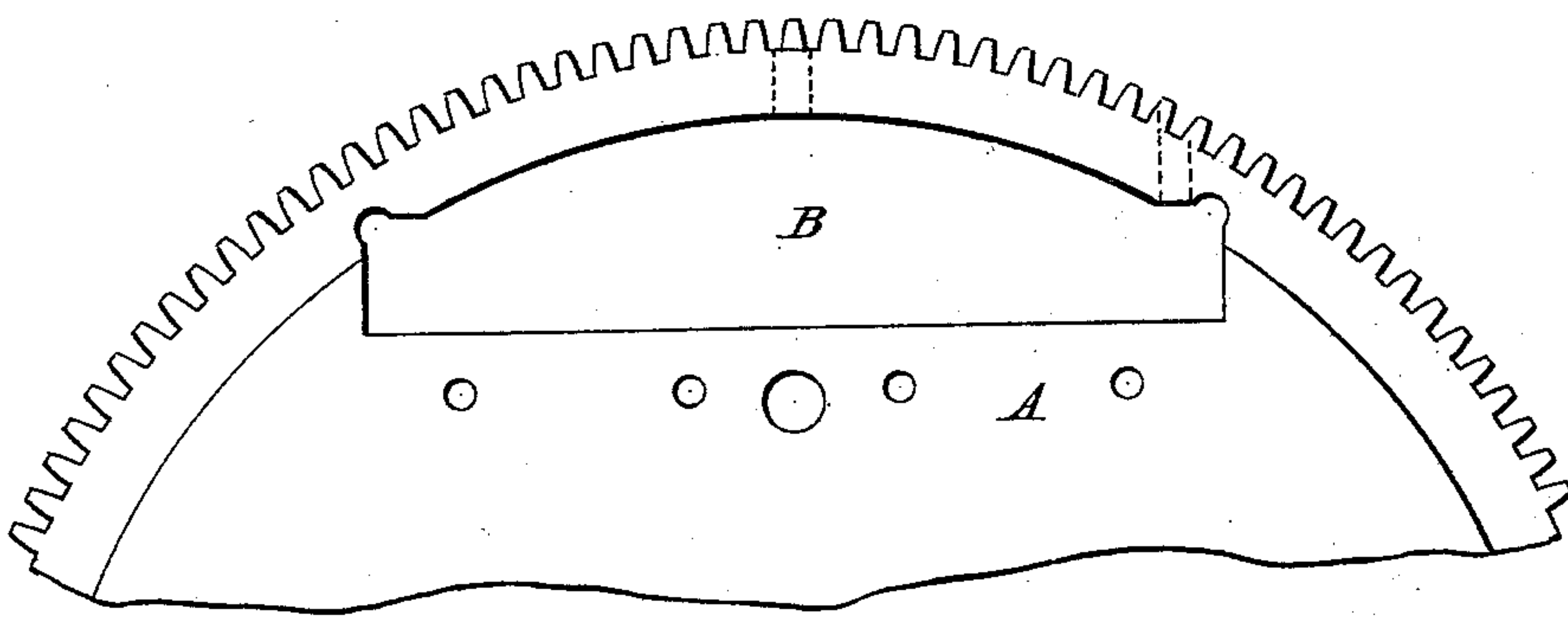


Fig. 5.

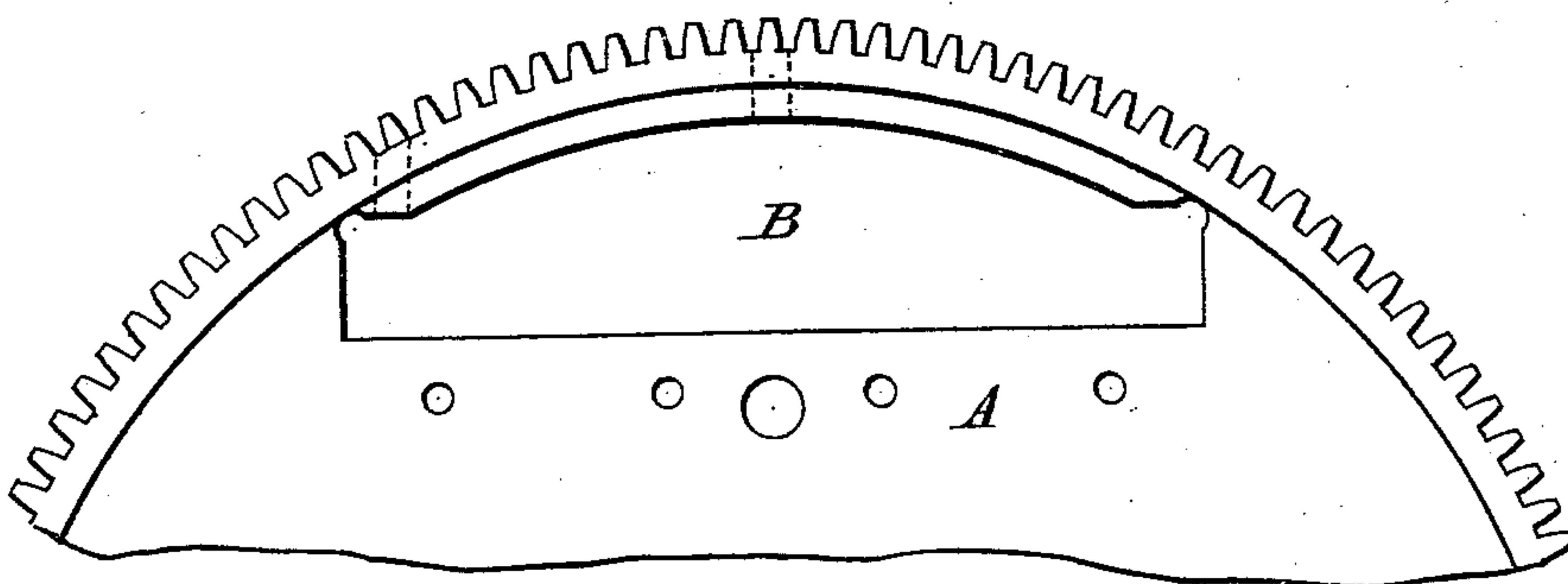


Fig. 6.

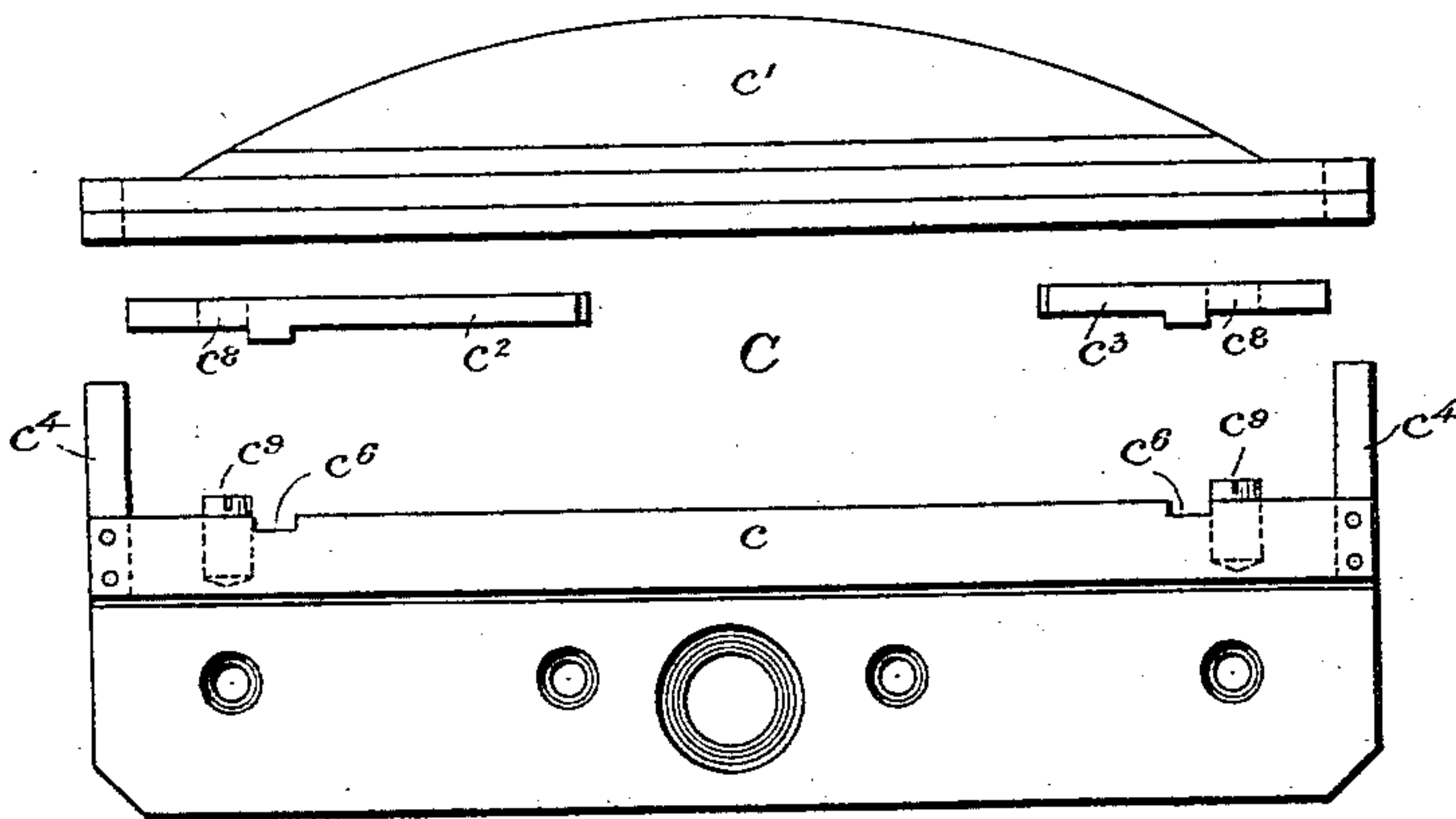


Fig. 7.

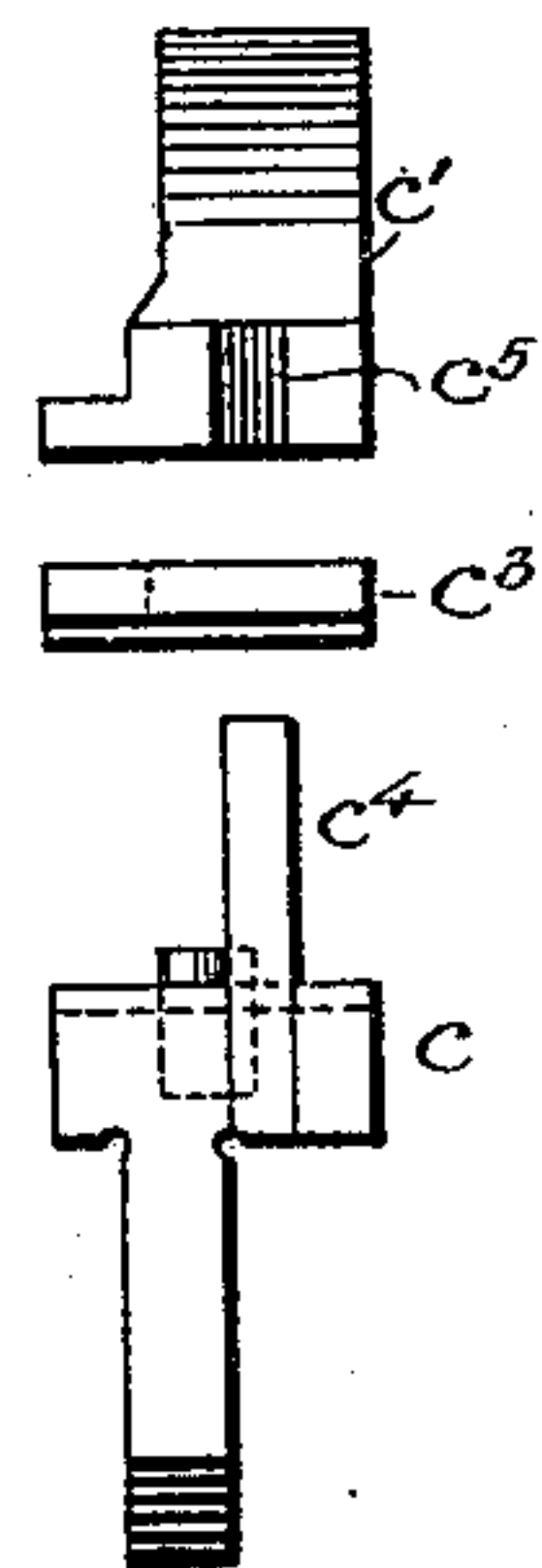
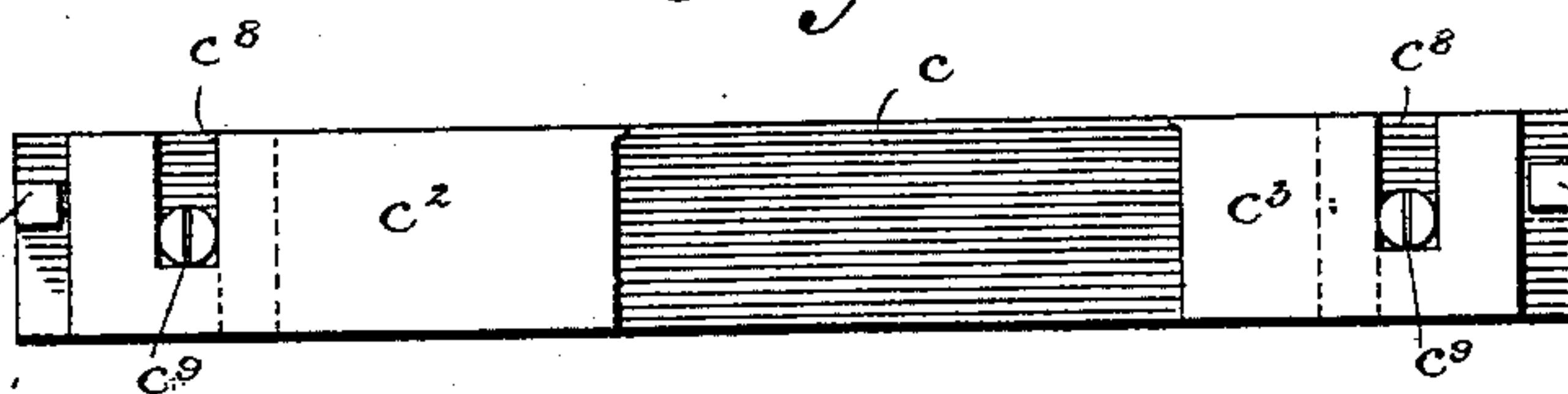


Fig. 8.

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# UNITED STATES PATENT OFFICE.

JOHN R. ROGERS, OF NEW YORK, N. Y., ASSIGNOR TO THE MERGENTHALER  
LINOTYPE COMPANY, OF NEW YORK.

## LINOTYPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 620,804, dated March 7, 1899.

Application filed December 31, 1898. Serial No. 700,794. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN R. ROGERS, of New York, (Brooklyn,) county of Kings, and State of New York, have invented a new and useful Improvement in Linotype-Machines, of which the following is a specification.

The aim of my invention is to provide for the Mergenthaler linotype-machine a mold which will permit the slug produced to be varied as to the length or thickness, or both.

To this end the invention consists of a peculiarly-constructed mold consisting of a body portion, an adjustable cap, and intermediate removable liners, combined with a disk recessed to receive the mold and provided with means for holding the cap down in position on the liners, as hereinafter explained.

Figure 1 is a front view of a mold-wheel containing my improved mold. Fig. 2 is a rear view of the same. Fig. 3 is a cross-section on the correspondingly-numbered line of the preceding figures. Fig. 4 is a front view of the wheel with the mold removed. Fig. 5 is a rear view of the same. Fig. 6 is a front elevation of the mold with its parts separated in order that their forms may be seen. Fig. 7 is an end view of the same. Fig. 8 is a top plan view of the mold-body with the liners in position thereon, the cap being removed to expose the other parts to view.

Referring to the drawings, A represents the mold-carrying wheel, constructed in essentially the same manner as that used in the commercial linotype-machine, with driving-teeth on its periphery and with one or more openings B therethrough to receive the mold. Heretofore the mold-opening B has been of rectangular form, with a thick or unyielding body of metal above or outside of the opening. In order to admit my peculiarly-constructed mold and for other reasons which will appear later, I now construct this opening with an arched or curved top, cutting away the rim of the wheel on the inside as far as the requisite strength will permit. As shown in Figs. 4 and 5, this construction leaves only a curved or circular rim of metal outside of the mold-opening, its thickness being such that it will spring or yield slightly and momentarily under excessive strains from

the interior, as hereinafter more fully explained.

C represents the mold, consisting, as shown in Figs. 6, 7, and 8, of the body portion *c*, an overlying cap portion *c'*, and two liners or spacing-pieces *c<sup>2</sup>* and *c<sup>3</sup>*, seated tightly between the cap and body and serving to determine both the thickness and the length of the slot or mold proper in which the linotype is cast. In its general construction this mold resembles those now in common use, but it differs therefrom in that the body is provided at each end with an arm or guide *c<sup>4</sup>*, extending upward through the corresponding notch *c<sup>5</sup>* in the cap. These arms serve to keep the vertical front and rear faces of the cap in alignment with those of the body, while allowing the cap to be raised and lowered in order to permit the use of liners of different thicknesses. The cap and body differ from those heretofore in use in that the usual holes at the ends for binding-screws are omitted. The cap is constructed with a thick heavy unbroken rib extending nearly the entire length thereof and serving to prevent the cap from twisting and warping under the influence of the variable temperature to which it is subjected or under the pressure of the confining-screws hereinafter referred to. The liners *c<sup>2</sup>* and *c<sup>3</sup>* are each constructed with a transverse rib on the under side to fit the corresponding groove *c<sup>6</sup>* in the upper surface of the body, so that when in place the liners are held firmly against end motion, a matter of the utmost importance, since it is necessary that the slugs produced not only in one machine but in a number of machines shall agree precisely as to their length. In order to vary the length of the slug produced, it is only necessary to remove the liner *c<sup>2</sup>* and substitute another of different length. If the slugs are to be changed in thickness, both liners are removed and another pair of appropriate thickness introduced in order to change the distance between the cap and body, or, in other words, to change the vertical width of the mold-slot. The liners are fitted closely in place, but so that when the cap is relieved from pressure they may be pushed out readily at the front. In order to facilitate the adjustment of the liners, they are preferably



slotted from the rear, as shown at  $c^8$ , and the body provided with short studs  $c^9$ , so that the liner need only be pushed home from the front astride of the stud until arrested by the latter. In making use of this mold the rear protruding sides of the cap and body are inserted into the mold-opening and the body  $c$  secured firmly to the face of the wheel by screws  $D$  or equivalent fastening. When the mold is thus inserted, the guide-arms  $c^4$  keep the cap in position and prevent it from falling out of the wheel, while at the same time the cap is permitted to move vertically to the extent necessary in order to accommodate liners of the various thicknesses commonly employed. In practice I generally make use of liners running in thickness from agate to pica.

In operation the liners are held in place by the pressure of the cap. For the purpose of applying this pressure I set in the rim of the wheel, directly over the middle of the mold, a screw  $E$ , the outer end of which is exposed to receive the screw-driver or other operating-tool, while the inner end is arranged to bear directly on the cap. Under ordinary conditions and with molds of ordinary length this screw is alone sufficient to hold the cap under its different adjustments. In some cases, however, a left-hand liner of extreme length is employed in order to produce very short slugs, and if this liner projects beyond the middle of the mold it has a tendency to reduce the pressure applied to the right-hand liner. As a precautionary matter I therefore insert through the rim a second screw  $F$  to bear on the cap directly over the right-hand liner, which under ordinary circumstances is not disturbed. In order to change the thickness of measure of the slug, it is only necessary to loosen the screw or screws, thereby releasing the liners, which may be pushed out and replaced by others of suitable size. The rim of the wheel being reduced in thickness serves as a yielding or elastic support for the binding screw and cap, so that sufficient pressure may be applied to hold the cap with certainty without danger of springing or fracturing it and without, on the other hand, springing the wheel to such an extent as would interfere with the operation of the gear-teeth. Another advantage of this elastic support lies in the fact that if a slug should for any reason adhere strongly within the mold, as sometimes occurs, the action of the ejector will cause the cap to spring or rise sufficiently to permit the driving out of the slug, the yielding action being inappreciable to the eye, but sufficient to relieve the friction. It will be perceived that as the body is secured permanently to the disk the end guides serve to hold the cap in place, so that it cannot fall out of place when released from the screws.

The construction of the cap of my mold without holes therethrough and with a heavy strengthening-rib extending through the disk to the rear face of the mold is of marked advantage. In the manufacture of the molds

it is necessary that the caps shall be hardened or tempered and subsequently ground to shape with extreme precision. During this grinding operation and during the use of the mold, which is alternately heated and cooled, sometimes for one portion of its length and sometimes for another, a molecular disturbance occurs in the metal and there is frequently a strong tendency of the cap to warp or twist out of shape. This tendency is greatly aggravated by extreme or sudden variation in the thickness of the metal and by the presence of holes or openings. The construction herein shown and claimed is found to overcome most of the difficulties heretofore encountered and was arrived at only after the construction of the cap and its fastening devices in many forms, which, satisfactory at the time of construction, were attended with serious difficulties under long-continued use.

In the operation of the machine it occasionally happens that molten metal or shavings of metal reach the upper rear surface of the mold, and if there were nothing to prevent they would be liable to fill the space or slot over the mold-cap. In order to avoid difficulty from this source, I attach to the inner rear face of the mold-wheel a thin guard-plate  $H$ , secured in place by screws  $h$  or otherwise and adapted to cover and close the joint between the mold-cap and the wheel and rest against the rear face of the mold. This plate may be made in any appropriate form and attached in any appropriate manner, provided only it closes the joint substantially as described.

Having thus described my invention, what I claim is—

1. The adjustable linotype-mold, comprising in combination the body, the imperforate cap, end guides connecting said members, the intermediate liners provided with transverse ribs and notches, and fixed studs to determine the position of the liners.

2. In a linotype-machine, the mold-disk provided with the mold-opening, in combination with the inserted mold, comprising the body, the cap and intermediate liners, and a pressure-screw seated in the rim of the wheel and bearing on the mold-cap, substantially as described.

3. In a linotype-machine, the mold-disk provided with the mold-opening and the reduced elastic rim, in combination with the inserted mold, comprising the body, the cap and intermediate liners, and the pressure-screw seated in the rim of the wheel and acting on the mold-cap substantially as described, whereby the cap is held to its place with a yielding pressure.

4. In a linotype-machine, the mold-disk provided with a mold-opening, in combination with the mold, comprising the body, the cap and the intermediate liners, and two screws seated in the wheel and bearing one on the middle and the other on the end of the mold-cap, substantially as described.



5. In a linotype-machine, the mold-disk provided with an opening, the mold seated in and extending through said opening and having a movable cap, in combination with a plate  
5 or shield covering the joint between the mold cap and wheel.

6. In a linotype-machine, the combination of the mold-wheel having an opening there-  
through, the mold with an adjustable cap,  
10 and the guard-plate H, secured to the mold-wheel and overlapping the face of the mold, substantially as described.

7. In a linotype-machine, a mold having a movable cap in combination with a yielding device to hold the cap in position, whereby  
15 the delivery of adhering slugs is facilitated.

In testimony whereof I hereunto set my hand, this 19th day of December, 1898, in the presence of two attesting witnesses.

JOHN R. ROGERS.

Witnesses:

M. C. RESEK,

JOHN V. PAULSEN.