

No. 638,774.

Patented Dec. 12, 1899.

G. E. THACKRAY.
MOLD FOR CASTING ROLLS.

(Application filed May 26, 1898.)

(No Model.)

Fig. 1.

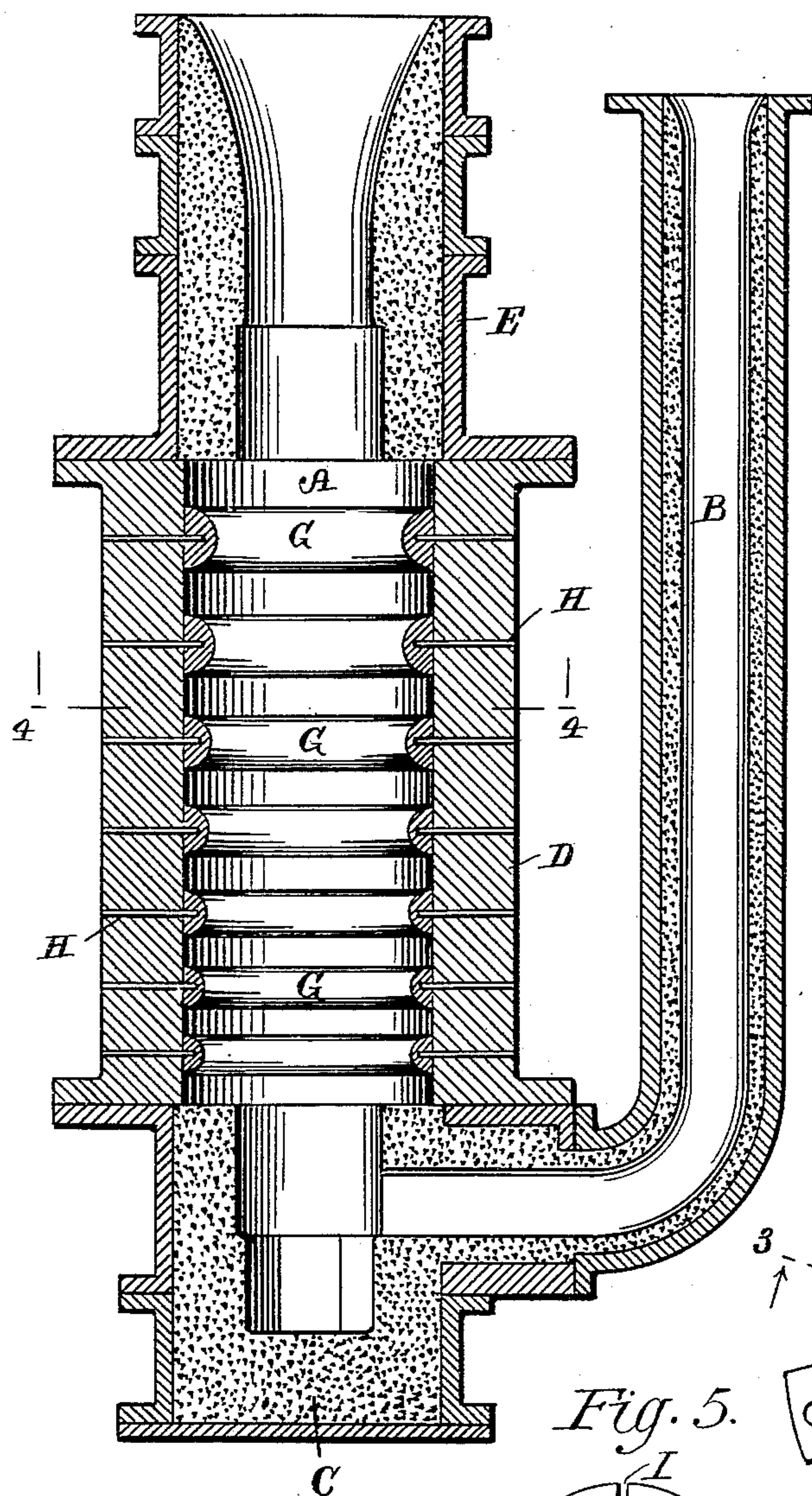


Fig. 2.

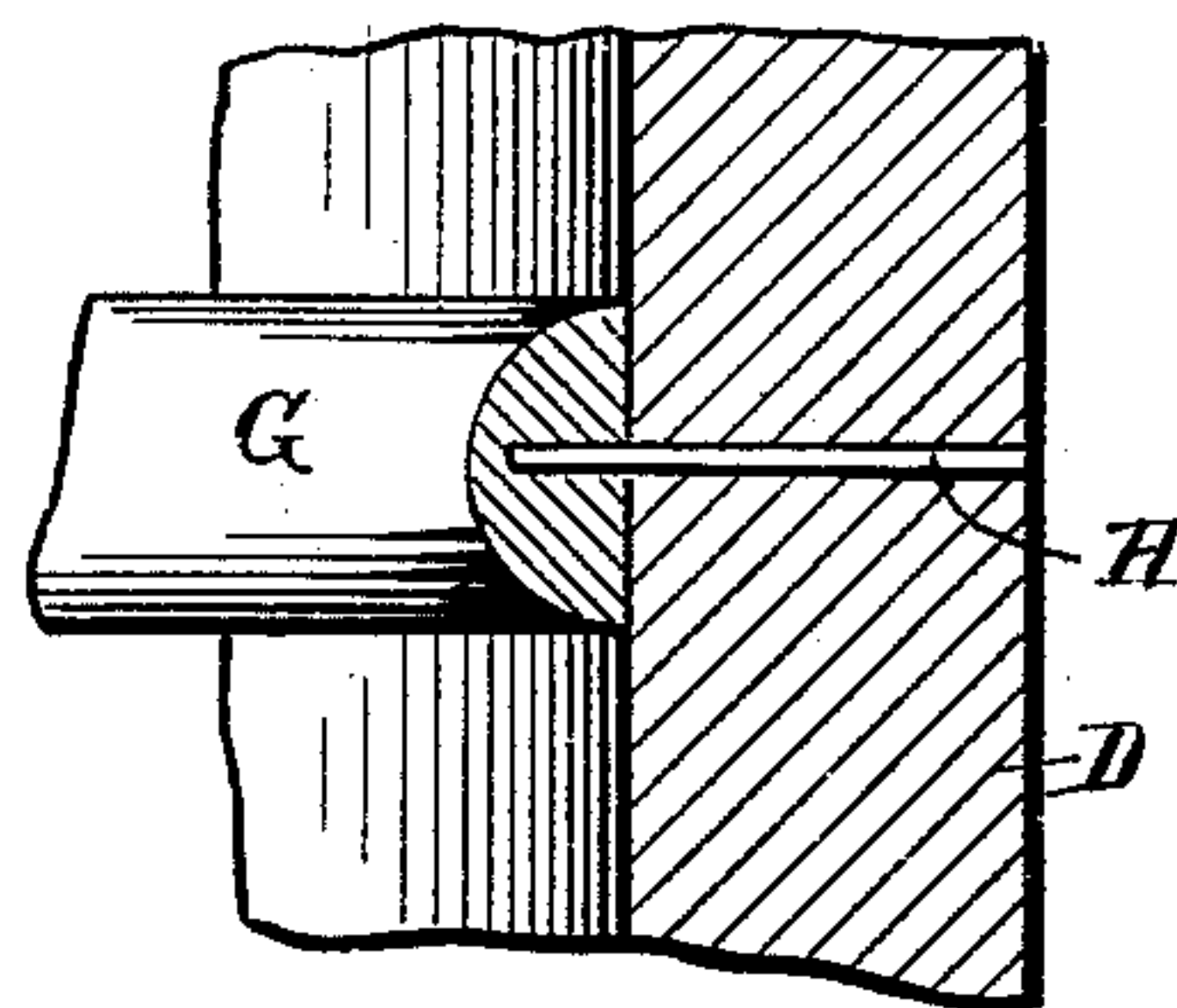


Fig. 3.

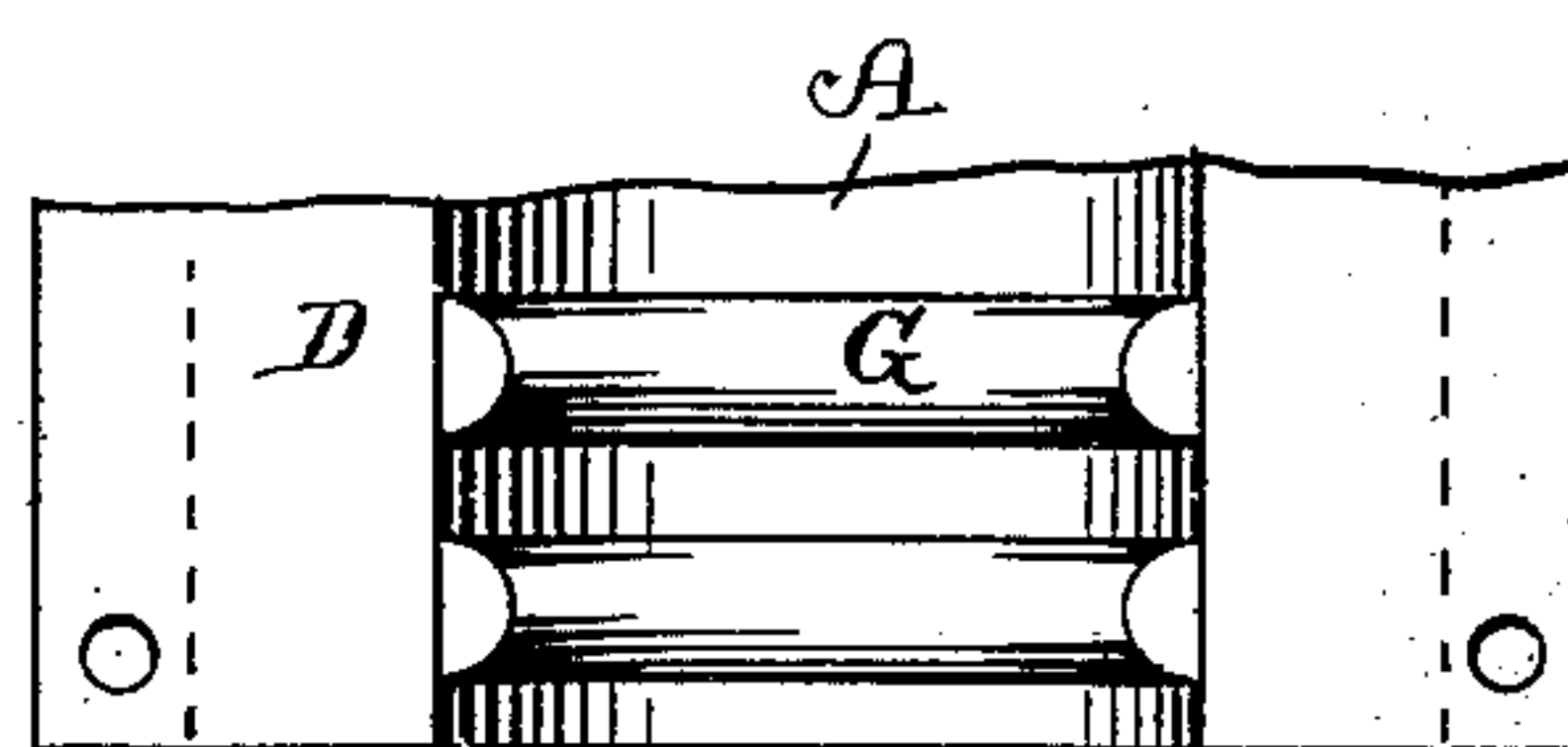


Fig. 4.

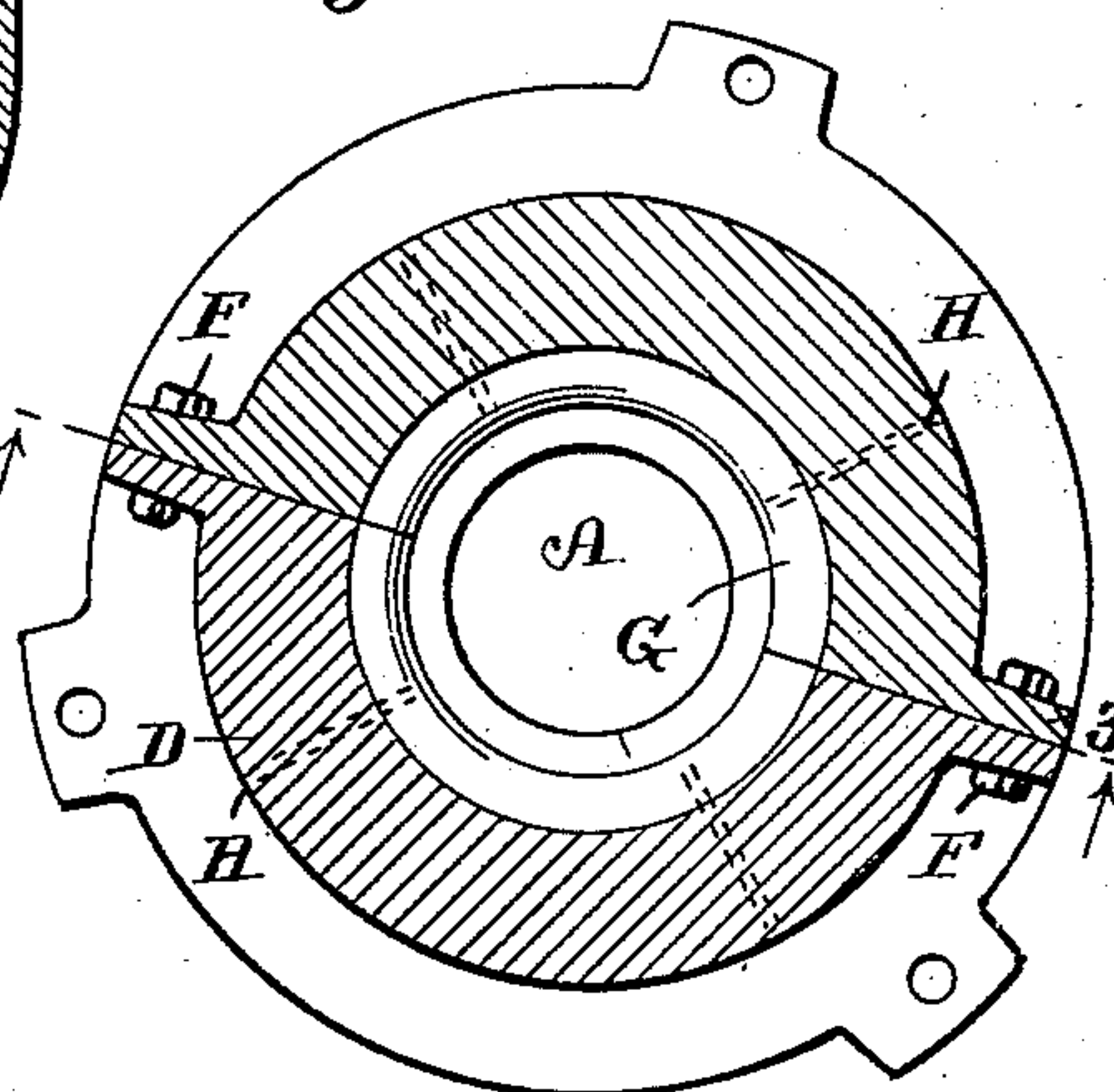
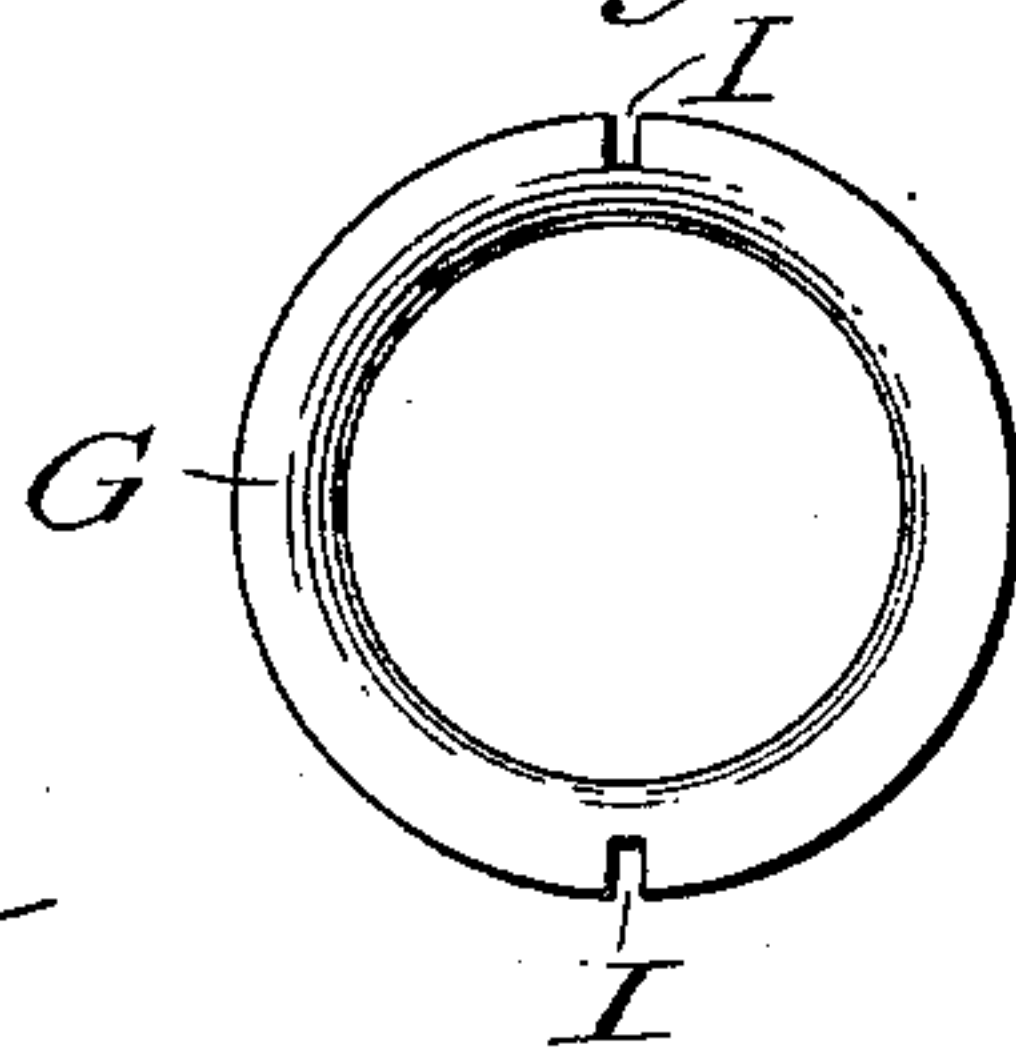


Fig. 5.



Witnesses.

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MOLD FOR CASTING ROLLS.

SPECIFICATION forming part of Letters Patent No. 638,774, dated December 12, 1899.

Application filed May 26, 1898. Serial No. 681,799. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. THACKRAY, a citizen of the United States, residing at Westmont, in the county of Cambria and State of Pennsylvania, have invented new and useful Improvements in Molds for Casting Rolls; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in molds, and particularly to that class used in casting chilled rolls for rolling-mills or like objects upon which it is desirable to produce collars, grooves, and concave or similar corrugated surfaces.

It is the object of my invention to produce a mold for the above purposes which shall be so constructed as to permit the contraction of the metal when cast therein during its cooling process without causing undue strains or shrinkage-cracks; and with this object in view my invention resides and consists in the novel construction and combination of parts shown in the accompanying drawings, forming a part of this specification, in which similar characters of reference denote like or corresponding parts throughout the several figures.

Referring now to the various drawings, Figure 1 is a central vertical longitudinal section through a mold embodying my improvements. Fig. 2 is an enlarged detail sectional view of part of the construction shown in Fig. 1. Fig. 3 is a detail side elevation of the half-mold as seen on line 3 3 of Fig. 4. Fig. 4 is a sectional plan view of the mold as seen on line 4 4 of Fig. 1. Fig. 5 is a plan view of a ring made in one piece and provided with notches to aid in breaking it from the casting.

Rolls for rolling-mills usually contain a series of specially-shaped collars or annular ribs and grooves, by means of which steel bars, rails, or similar objects are formed. These collars and grooves are preferably formed to some extent in the rough casting, as it avoids the removal of a large quantity of material during the process of finishing the roll by turning in a lathe and produces a roll when finished the operating-surface of which is of a more uniform strength and temper or chill.

Heretofore it has been difficult to produce large castings of the above class, particularly when they contained a great number of collars or grooves, as specified, for the reason that the longitudinal contraction of the casting is so great as to break or cause shrinkage-cracks in the roll.

Referring to the characters of reference marked upon the drawings, A indicates the mold as a whole; B, the gate through which molten metal is introduced; C, the drag; D, the chill or body, and E the sink-head. The gate, drag, and sink-head, as will be seen, are lined in the usual manner with sand or other suitable refractory material. The mold or chill proper is made of metal and is preferably formed in two vertical sections, which, as shown in Figs. 3 and 4, are joined by bolts F.

In my novel construction I preferably form the annular grooves in the face of the rolls by inserting within the mold at proper intervals annular rings G, which are preferably formed in two or more sections. In certain cases a ring formed in one piece best serves the intended purpose, as such a one will better retain its circular form and therefore cause a uniform chill in the metal adjoining it. A ring formed in one piece, however, will have to be broken from the roll after cooling, and to facilitate this notches may be formed in its exterior, as shown at I in Fig. 5, into which notches wedges may be driven for the purpose stated. The rings G can be of any desirable shape and thickness, and by proper spacing a roll may be cast of any form that may be desired. These rings are retained in position by small pins H, which are inserted through holes formed in said rings and in the main chill at proper intervals, as shown. The pins may be of any suitable size or shape, made of wire or other material, and are designed to retain the rings in place until the metal has been poured and begins to harden. With the hardening and cooling process contraction takes place and draws upon the rings in such a manner as to break their pins and free them from the main chill or mold, thus permitting the casting to cool without injury, after which the roll can be removed and the rings replaced with new pins for another operation.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. The combination with a mold, of a series of internal rings formed in sections, and small
5 pins for detachably retaining said rings in place, said pins being easily breakable by the movement of the casting without injury to said casting.

2. The combination with a mold, of a series
10 of internal rings detachably secured therein,

and pins for retaining said rings in place, said pins being easily breakable by the movement of the casting without injury to the same.

In testimony whereof I affix my signature 15
in presence of two witnesses.

GEORGE E. THACKRAY.

Witnesses:

C. M. NEWMAN,

I. F. GROGAN.