

(No Model.)

E. L. RANSOME.
MOLD.

No. 528,342.

Patented Oct. 30, 1894.

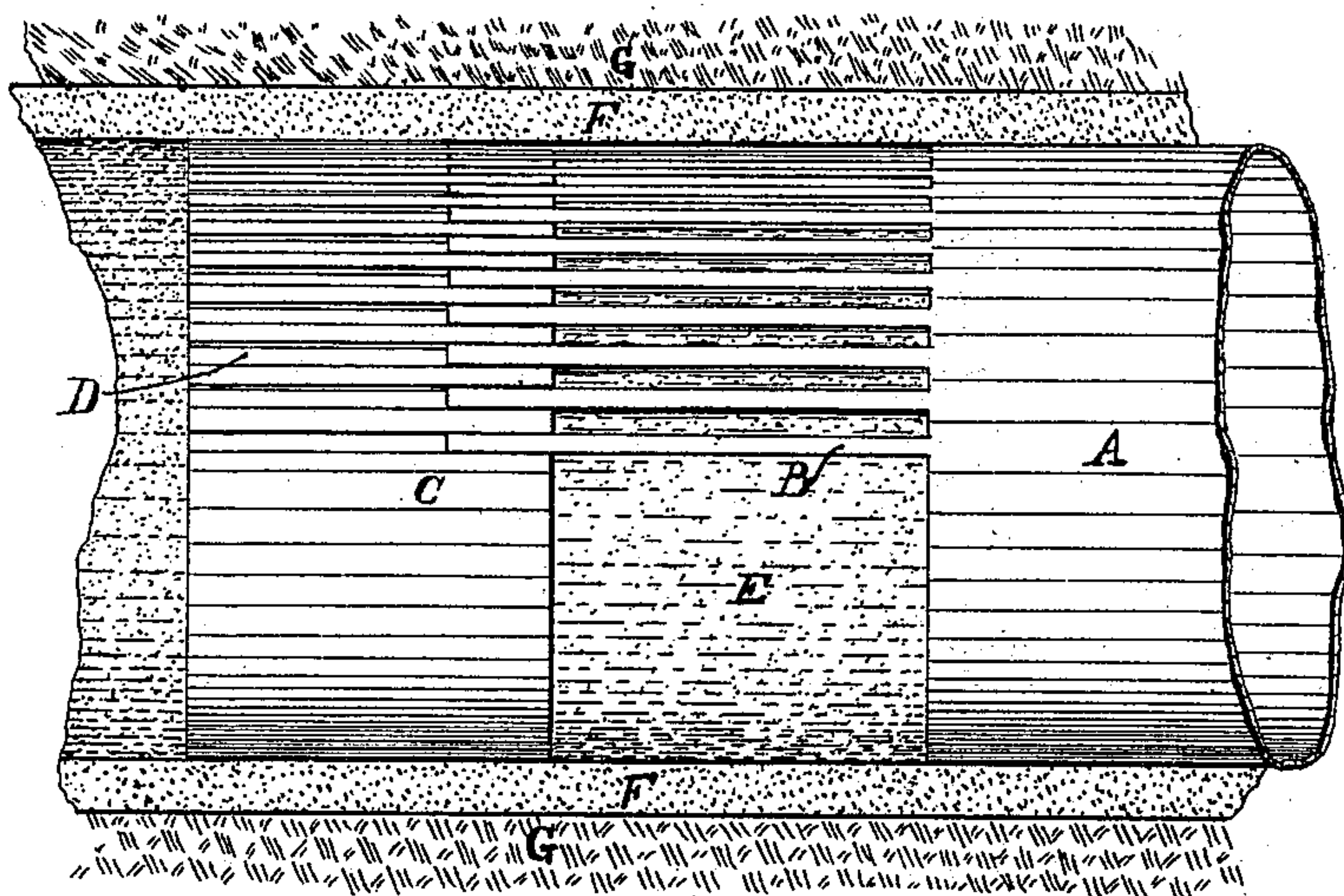


Fig. 1

Fig. 2.

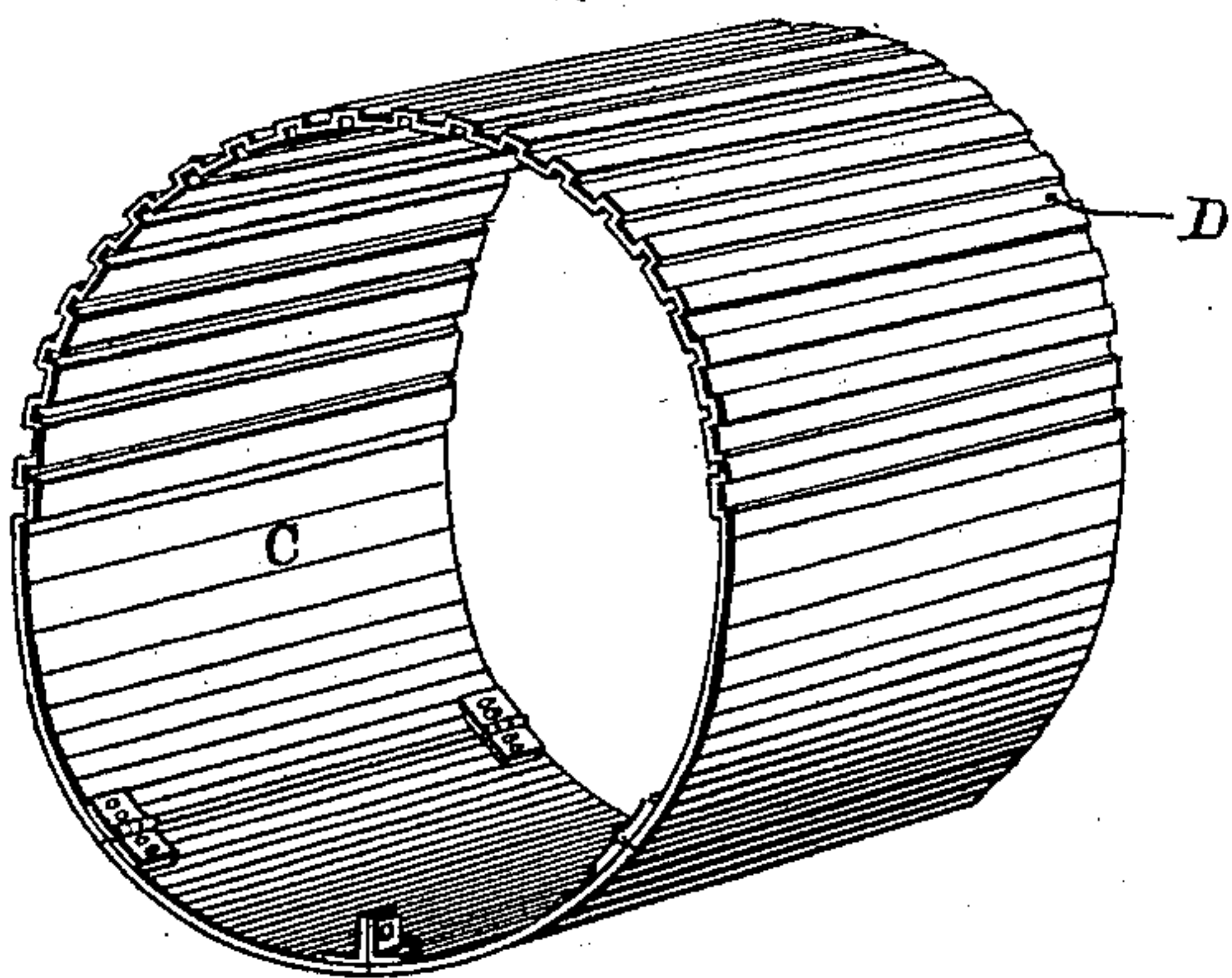
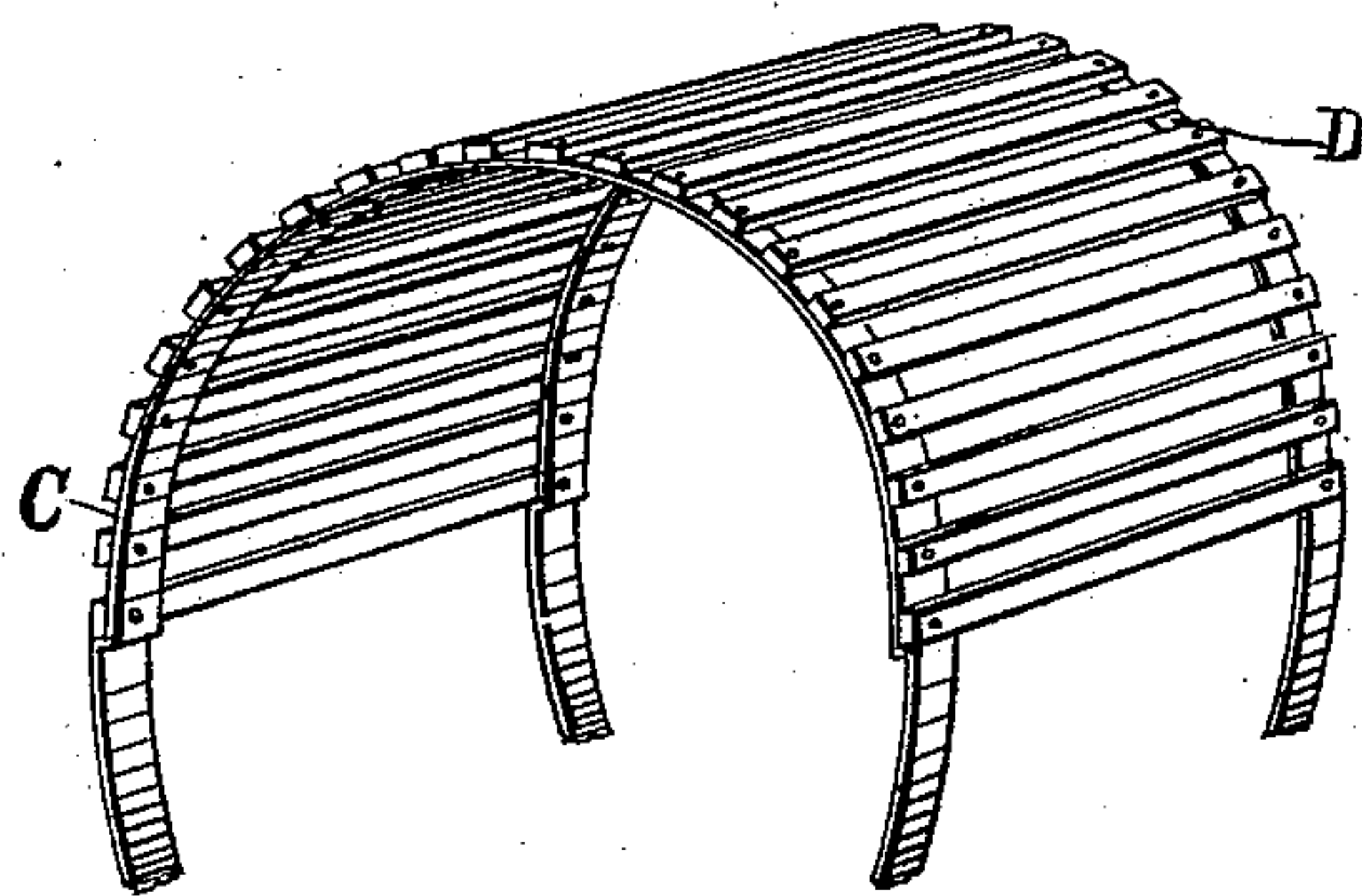


Fig. 3



Witnesses:
Wm. A. Wheeler
H. D. Thomsen.

Inventor:
Emory Leslie Ransome

UNITED STATES PATENT OFFICE.

ERNEST LESLIE RANSOME, OF OAKLAND, CALIFORNIA.

MOLD.

SPECIFICATION forming part of Letters Patent No. 528,342, dated October 30, 1894.

Application filed November 6, 1893. Serial No. 490,182. (No model.)

To all whom it may concern:

Be it known that I, ERNEST LESLIE RANSOME, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Molds; 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 appertains to make and use the same.

My improvement relates to that class of molds for which Letters Patent No. 353,500, of November 30, 1886, and No. 424,656, of April 1, 1890, were granted and for which applications for Letters Patent Serial No. 452,849, of May 17, 1893, and Serial Nos. 463,658 and 468,049, of August 25, 1893, were allowed me.

It consists of modifications of the molds and methods described in these inventions, for the purpose of constructing pipes and subways in tunnels. Hitherto there has been great difficulty in using these molds and this system in tunnels, by reason of the cramped space about and overhead the work, and the consequent interference between the men placing the "top plates" or sectional arch pieces, or braces hereinafter designated "crown supports" and those placing the concrete. In an open trench, or wherever the adjoining space is sufficient for the purpose, the workmen in placing the concrete along the upper half of the long, sloping, working face, stand above the molds and over the "crown supports," and, therefore, these pieces offer no impediment to the placement and consolidation or packing of the concrete, but in a tunnel or other confined and limited space the workman has of necessity to stand in the front, upon the bottom of the nose or forward and open part of the main core mold which shapes the inside of the pipe, and in front also of the crown supports, which extend forward from the rear end termination of the working sloping face, usually some ten feet or more, and by reason of this extension of the "crown supports" it is a very difficult matter indeed in large size pipe for the workman to reach, and place and consolidate the concrete at the rear end of the working face. Furthermore, in occupying that position—the only one available—he appropriates the place

required by the men employed in setting or placing the "crown supports."

The object of my invention is to do away with these difficulties, by dispensing with the "crown supports," in front of the rear end of the working face, and, with their placement by workmen from the front. By so doing, the workman placing the concrete has the free, full and sole use of all the front space in the open sloping end of the core mold, which is encompassed by the working face of the concrete, and can at will approach closely to the rear end thereof, and can easily place and consolidate the concrete there. This I accomplish by placing the "crown supports" within the already formed pipe, and set the rear of the core mold somewhat after the manner described in the application filed September 4, 1893, Serial No. 468,048. In making these changes, the difficulty presented itself of upholding the soft concrete of the crown of the pipe during the interval which must necessarily occur between the placement of each "crown support." An interval both of time and space must occur between the position and setting of the first "crown support" and the setting of the next, to allow of the advancement of the core mold sufficiently to make room for the second "crown support" and so on. This advancement must be a trifle more than the width of the "crown supports" used. By my present invention I overcome this difficulty of upholding the crown of the pipe by continuing the shell of the core mold rearward in the form of slats, or long teeth, or ribs, comb fashion for a length greater than the width of one of the "crown supports," maintaining with them as far as possible the same general perimeter as that of the core mold from which they spring.

The "crown supports" are made with depressions or slots in their periphery corresponding to the slats of the core mold, with which they interlock, and thus the latter are supported at their outer ends while they are free to slide in these slots as the core mold moves forward. These slats temporarily uphold the concrete during the aforementioned interval, and are, by preference, about as wide as the spaces between them, and the width of the slats and spaces should be as

small as strength, economy of construction, and ease of adjustment in working permits; say, some one, two or three inches wide.

Referring to the accompanying drawings which illustrate my invention, Figure 1 is a side view of the rear end of a core mold fitted with slats, and of a crown support in place. In this view the core mold is represented as sufficiently advanced for the placement of another "crown support," the intervening concrete being supported by the slats. Figs. 2 and 3 are perspective views of crown supports.

In the drawings, A is the core mold; B, a slat of the core mold; C, the "crown support;" D, a slot of the "crown support;" E, intervening space for a second "crown support;" F, newly formed concrete pipe; G, surrounding earth. These crown supports may be of solid construction as in Fig. 2, or they may be in the form of a skeleton shell with strips placed at intervals corresponding to the spaces between the slats of the core mold, and having intermediate spaces to receive the slats. These strips of the "crown supports" may extend all around the circumference of the "crown supports" or only part of the way, as shown in Fig. 3, in which the bands only of the "crown support" are continued all around.

The core mold A is a long cylindrical tube about which the concrete pipe or other structure is formed. While the concrete is being placed around it, this mold is continually drawn forward, along, in the line, or direction intended for the pipe, in the trench, by means of a wire rope leading from the mold to which it is attached, along the ditch to a windlass placed some convenient distance ahead, upon which it is wound by horse or other power.

In operation the core mold continually advances, and a "crown support" is placed about the slats of the core mold so soon as the latter has sufficiently advanced. This "crown support" remains stationary in place owing to its tight fit in the pipe, its weight and the weight of the concrete which it supports. As soon as the core mold, in its continuous progress has traveled far enough, and before its slats are withdrawn entirely from the first "crown support" another "crown support" is brought forward from the rear through the first one, after the manner fully described in aforementioned application, Serial No. 468,048, and set about the moving slats forward of and close to the first "crown support," and in a similar manner other "crown supports" are, from time to time, brought forward and set in place as often as required. Throughout the operation the rear ends of the slats of the core mold are continually carried and supported by the "crown support" that, for the time being, is placed next to the core mold.

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

1. The concrete molding apparatus for subways consisting of "crown supports" having recesses in their periphery in combination with the slats of a traveling mold which they uphold and sustain within the recesses, in turn as the slats move forward.

2. Slats extending from the rear of a traveling mold in combination with a series of stationary "crown supports."

ERNEST LESLIE RANSOME.

Witnesses:

H. F. THOMSEN,
MINNIE PATERSON.