

(No Model.)

E. L. TARBOX.

MOLD FOR CASTING TYPE WHEELS.

No. 354,586.

Patented Dec. 21, 1886.

Fig. 1.

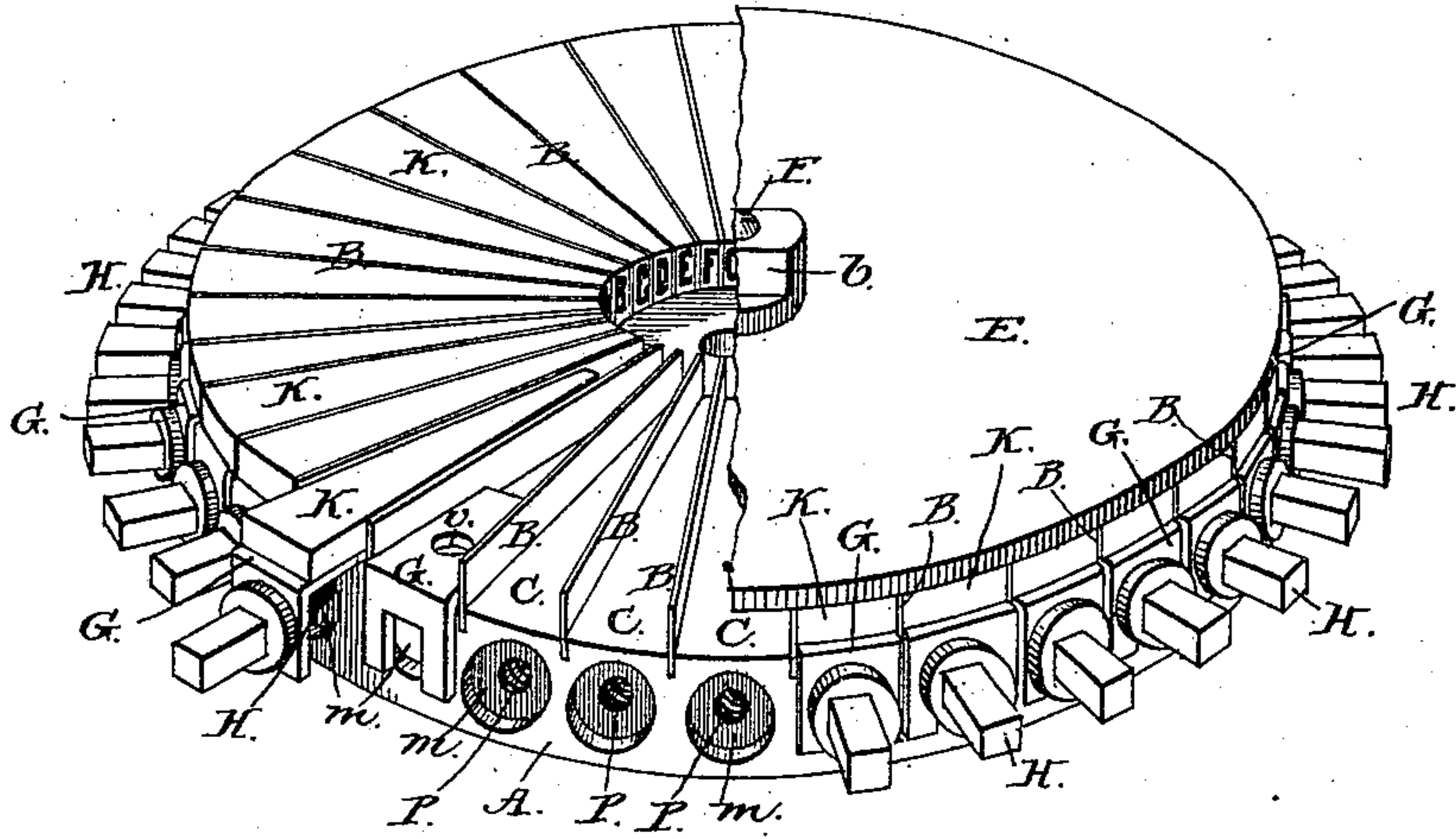


Fig. 2.

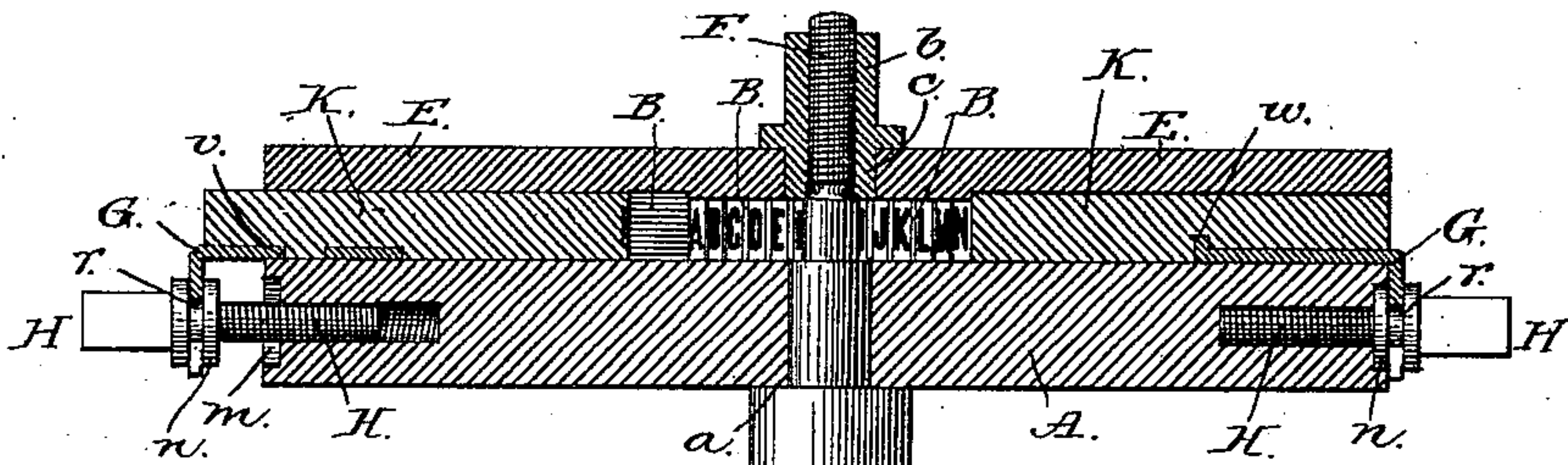


Fig. 4.

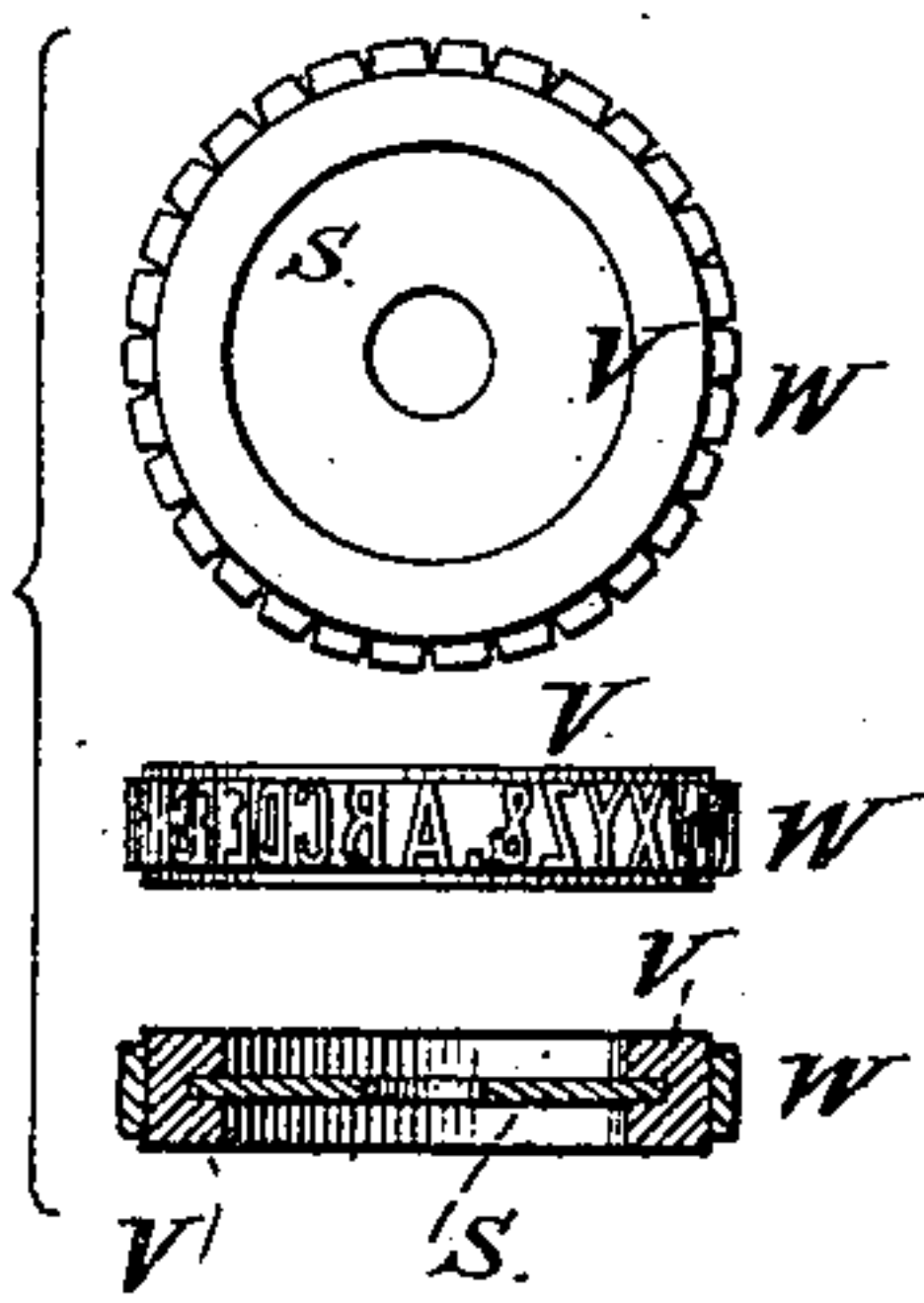
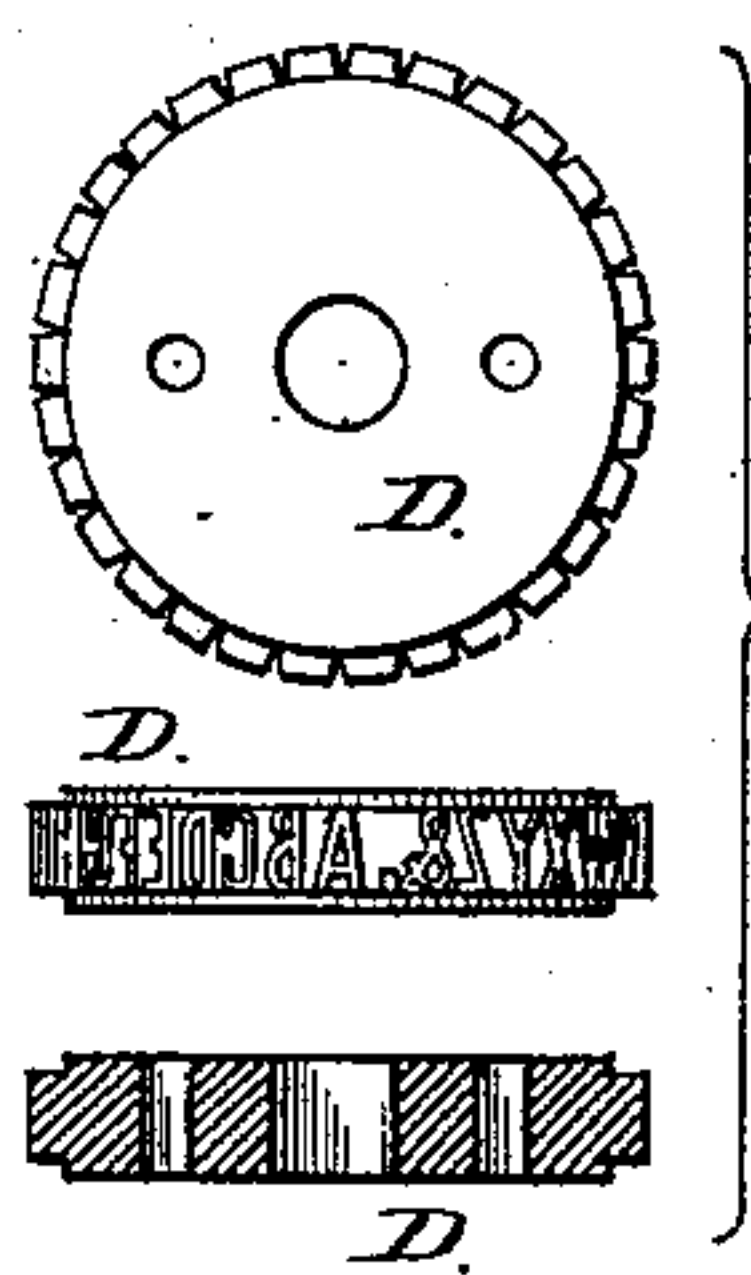


Fig. 3.



Attest:

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# UNITED STATES PATENT OFFICE.

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## MOLD FOR CASTING TYPE-WHEELS.

SPECIFICATION forming part of Letters Patent No. 354,586, dated December 21, 1886.

Application filed March 9, 1886. Serial No. 194,607. (No model.)

*To all whom it may concern:*

Be it known that I, EUGENE L. TARBOX, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Molds for Casting Type-Wheels and other Curved Surfaces; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is an elevation in perspective of my improved segmental mold, with one-half of its covering-plate broken away to disclose the radial segmental divisions beneath it. A portion of these divisions are shown as empty, one of them, with a retracting-plate, fitted in position on its outer edge and the remainder as fitted each with a segmental block of type-metal whose outer end rests upon a retracting-plate which is engaged by a set-screw to facilitate its withdrawal and adjustment. Fig. 2 is a diametric section in line *xx* of Fig. 1, showing one of the type-blocks partly withdrawn; Fig. 3, a plan, side elevation, and diametric section of a pattern type-wheel for duplication; and Fig. 4, a similar plan, side elevation, and diametric section of a duplicate type-wheel produced in the matrix obtained from the original type-wheel shown in Fig. 3.

Similar letters indicate like parts in all the figures.

My invention relates to molds for casting type-wheels or other curved objects bearing letters, figures, or other characters in relief or intaglio upon the outer periphery thereof.

It has for its object to facilitate the manufacture of such objects and the ready duplication thereof; and it consists, mainly, in the novel combination of a series of radial sections or type blocks or bars to encircle a central recess or matrix, within which the casting is made, as hereinafter fully set forth.

In the accompanying drawings, A represents a solid circular plate constituting the body or bed-plate of my improved mold.

B B represent a series of very thin partition-plates inserted and permanently fixed in radial grooves cut in the upper face of the plate, to extend inwardly from its outer rim to the point of their intersection with a circle

whose diameter equals that of the type-wheel to be cast in the mold. These partition-plates form a series of segmental compartments or spaces, C C, corresponding in number with the number of distinct figures, letters, or other characters upon the periphery of the type-wheel, and their inner ends define a central recess in which the pattern or model type-wheel, D, to be duplicated (see Fig. 3) may be inserted, and which, when the compartments are filled, becomes the matrix of the mold. When the pattern-wheel D is inserted in the central recess, defined by the inner ends of the division-plates B B, the ends of said plates are brought into contact with the periphery of the pattern between the characters or devices thereon, and the periphery of the wheel forms the inner wall of each compartment C. The height of each partition or division plate B conforms exactly to the thickness of the pattern-wheel D, and consequently to that of the type-wheel to be produced in the mold.

E is a covering-plate of a diameter equal to that of the plate A, and adapted to rest upon the division-plates B B, so as to inclose thereby the entire series of radial compartments C C, and also the central recess. When fitted upon the division-plates B B, the covering-plate is made fast by means of a bolt, F, adapted to pass up through a central aperture in the bed-plate A and in the covering-plate E, the bolt being formed with an encircling shoulder or offset, *a*, to bear against the under side of the bed-plate, and threaded at its outer end to receive a nut, *b*, which being brought to bear upon the covering-plate E, secures it upon the bolt and clamps it upon the bed-plate and its partitions B B, as shown in Fig. 2. The nut *b* may, as shown in said Fig. 2, be formed with an offset, *c*, to serve as a sleeve or collar upon which the covering-plate E shall closely fit. The lower outer end of the bolt F is extended and so fashioned or covered as to form a suitable handle, F', for the mold.

G G G represent retracting-plates consisting each of a thin strip of metal bent at a right angle to fit upon the outer edge of the base-plate A at the outer end of each compartment C. (See Figs. 1 and 2.) A series of circular recesses, *m m*, are formed in the periphery of the base-plate, centrally, each in a line with



the middle of one of the compartments C to receive a collar, *n*, encircling the outer end of a bolt, H, adapted to screw into a threaded radial seat, P, formed in the center of each recess. The outer ends of the bolts H H are made rectangular, to be turned by a key. A deep groove or annular recess, *r*, is cut in the periphery of the collar *n* on each bolt H, and the outer bent end of each retracting-plate G is notched or forked, so that when the plate is in position at the outer end of a compartment, C, its forked end shall enter the groove *r* in the collar *n*, and drop far enough to embrace the shank of the bolt H, so as to be moved in or out from the periphery of the plate as the screw is turned in or out.

Each segmental compartment C is filled, when the mold is complete, by a block, K, of type metal or other suitable alloy, which is made to bear upon its inner end, in relief or intaglio, as the case may be, a counterpart of one or more of the characters on the pattern-wheel D. Each block is attached to the retracting-plate G, at the outer end of its compartment, by means of an aperture or recess, *v*, in the plate, into which an offset in the block projects, as shown at the left hand in Fig. 2, or by means of an offset or lug, *w*, on the plate, made to project up into the bottom of the block, as shown at the right in said Fig. 2.

To obtain readily and accurately the segmental type-blocks K K for the mold, the pattern-wheel D is placed in the central recess defined by the inner ends of the radial division-plates B B, so that its periphery bearing the type shall form, in manner as hereinafter described, the inner wall of the compartments C C, produced by said division-plates. The covering-plate E is then fitted over the compartments C C and made fast by the central bolt, F, and its nut *b*. The device now consists of a series of radial segmental cells, C C, inclosed between the bed-plate A and the covering-plate E, and separated by the thin partition-walls B B, whose smaller inner ends are closed by the periphery of the pattern-wheel D, and whose outer ends are fitted with the sliding retracting-plates G G, operated by the bolts H H. A charge of type metal or other suitable alloy or composition is now poured into each of the several cells C C, and hardening therein produces a segmental type-block fitting accurately within the compartment, but admitting of being withdrawn radially therefrom. By a slight outward longitudinal movement of the retracting-plate G in each compartment, produced by turning its adjusting-bolt H, the block K therein may be readily withdrawn far enough to permit the pattern-wheel D to be readily withdrawn from the central recess. After removing the pattern-wheel the blocks K K are returned to their original positions to form a mold, their inward movement being arrested at the proper moment by the contact of the bent ends of the plates G G with the outer edge of the bed-plate A. The central recess is thus converted into a matrix, of which

the inner ends of the radial blocks K K, each bearing a type the counterpart of one of the types or characters on the pattern-wheel, constitute its inner periphery.

In the use of the mold to form a telegraph type-wheel a centrally-perforated circular disk, S, Fig. 4, or a spider adapted to form the body of the wheel, is placed upon the central bolt, F, in the place of the pattern-wheel D, this disk S or spider being, however, of smaller diameter than said wheel. The thickness of its periphery V equals the depth of the mold; but for the sake of lightness it may be recessed on both faces between its periphery and its hub, as shown in Fig. 4. The concentric space between its periphery V and the inner periphery of the mold is then closely filled with plastic celluloid, rubber, or other suitable material, W, and the covering-plate E being secured thereon, the mold may be heated to harden and vulcanize the annular block, W, of celluloid or rubber, which now serves as the face of the wheel in the customary manner.

By drawing out slightly each type-block K, by means of its screw-bolt H, the molded wheel is released therefrom, and upon removing the covering-plate it may be readily withdrawn from the mold. By moving the type-blocks in again the mold is ready for another charge. In this manner any desired number of wheels may be produced from the mold, each an exact duplicate of the pattern-wheel D.

The mold may be used not only for forming wheels of celluloid, rubber, &c., but also of cast metal, or for electrotypes, in which latter case the cells C C are filled with wax to form the type-blocks instead of with an alloy.

It is evident that the converging blocks K may be adapted to form a mold wherein to reproduce transversely-curved as well as circular surfaces, bearing sunken or relief designs or characters, and as the simple changes in the form or arrangement thereof required to adapt them to this end will readily suggest themselves to any skilled mechanic, they need not herein be described.

If a simultaneous or quick movement of all the radial blocks is desired, it may be readily accomplished in manner well known in the art by means of a raised spiral or scroll formed in relief on the base-plate A to engage oblique slots in the blocks K K as a substitute for the separate adjusting-bolts H H.

Although the type-blocks K K are preferably made of a segmental form to key together about the central recess, as illustrated, I contemplate as an equivalent device the use of rectangular type-bars moving between or upon radial guides to converge toward a common center, so that their inner ends shall be brought into contact upon an arc or a circle to form in connection with each other a continuous curved wall encircling a central recess or mold.

I claim as my invention—

1. The combination of the circular bed-plate A, a series of radial partition-plates, B B, a



series of blocks, K K, fitting and moving longitudinally between said plates, a retracting-plate, G, engaging each block and bent over the outer edge of the bed-plate, and an adjusting-screw, H, working into the periphery of the bed-plate and engaging the retracting-plate, whereby a definite longitudinal movement of the block may be produced by turning the screw, substantially in the manner and for the purpose herein set forth.

2. The combination of the bed-plate A, a series of radial partition-plates, B B, a pattern, D, fitted centrally upon the bed-plate between

the inner ends of the partition-plates, and a covering-plate, E, secured over and upon the partition-plates to inclose the radial compartments formed thereby, substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EUGENE L. TARBOX.

Witnesses:

J. F. ACKER, Jr.,  
S. M. MADDEN.