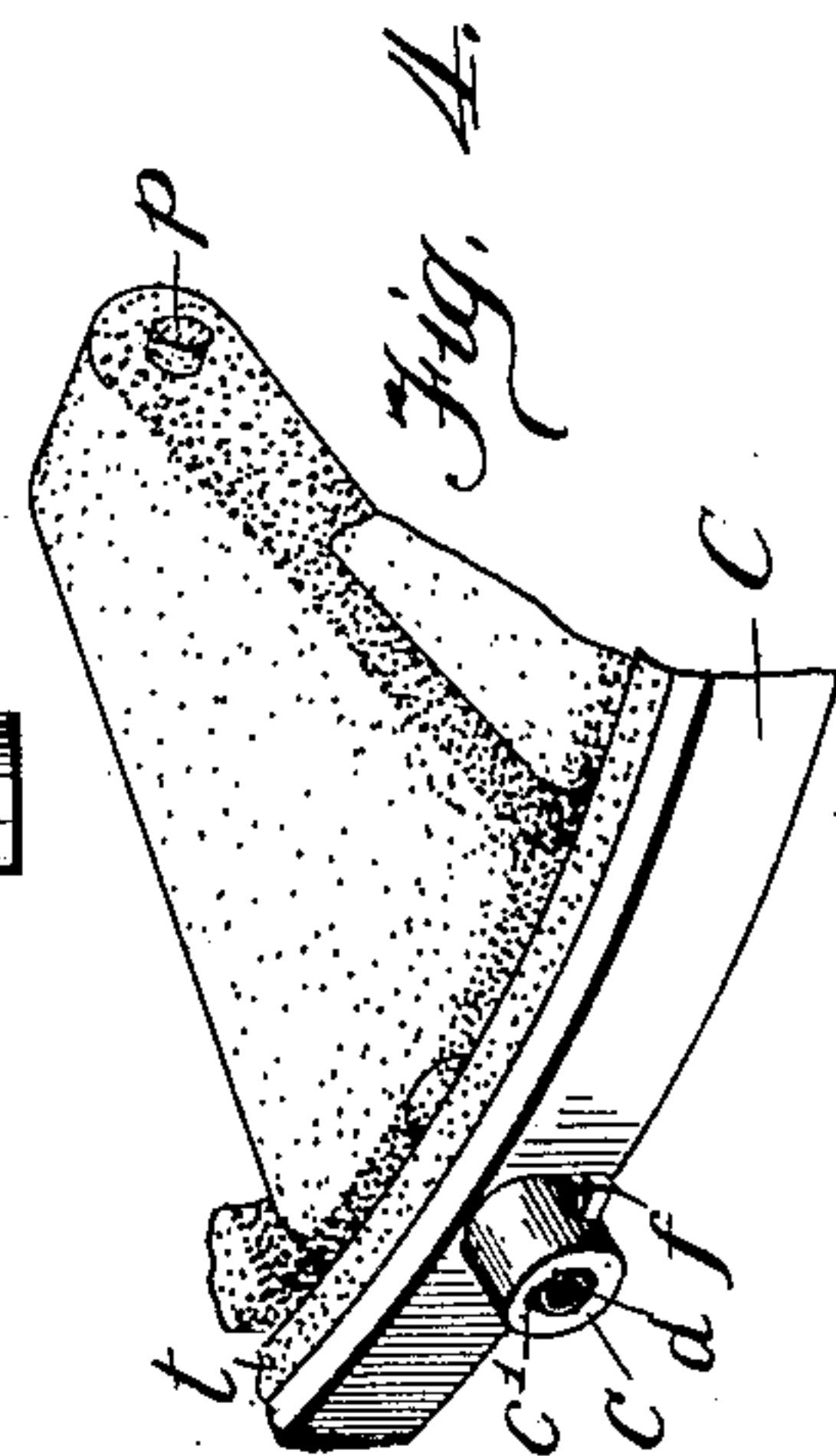
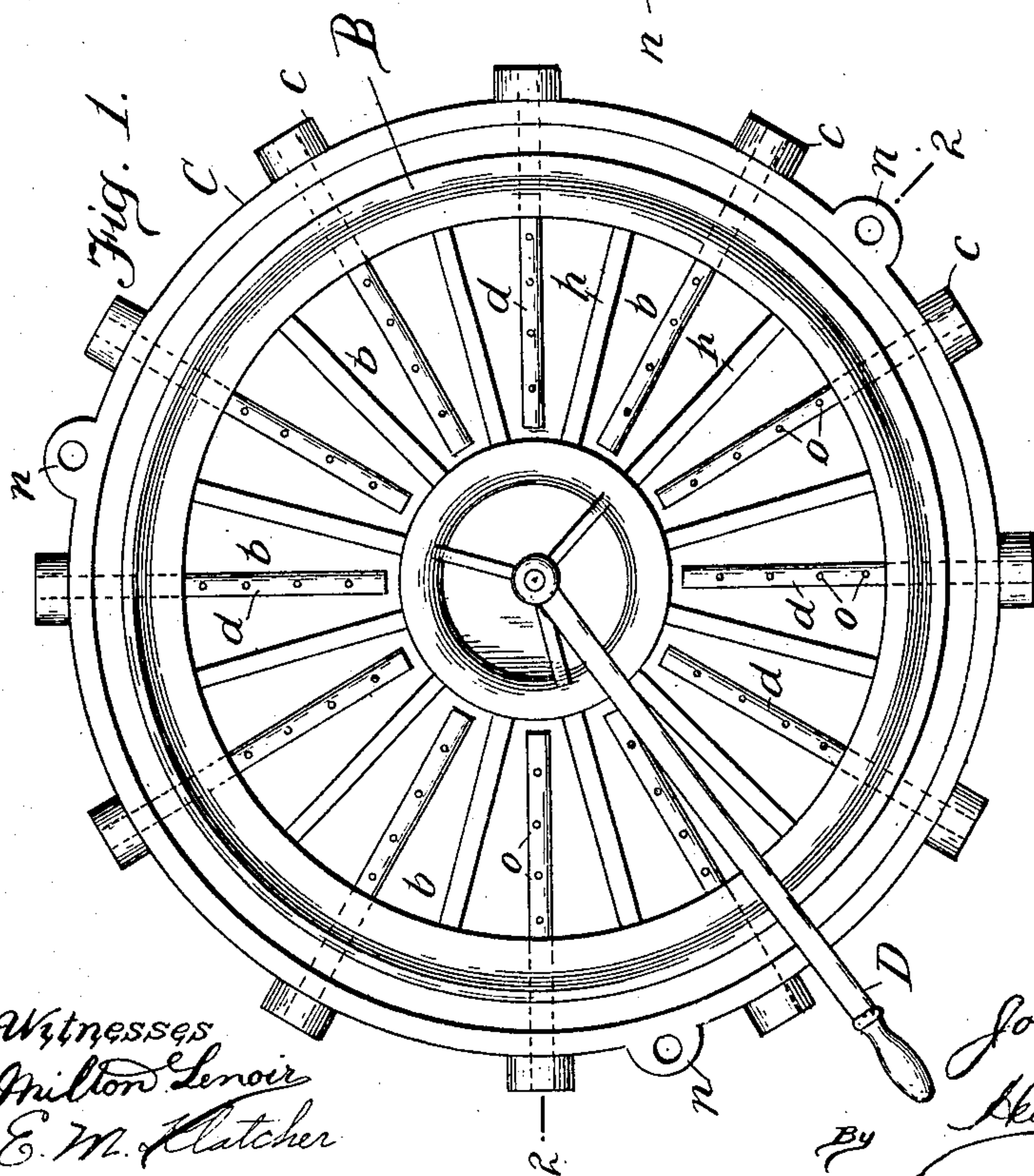
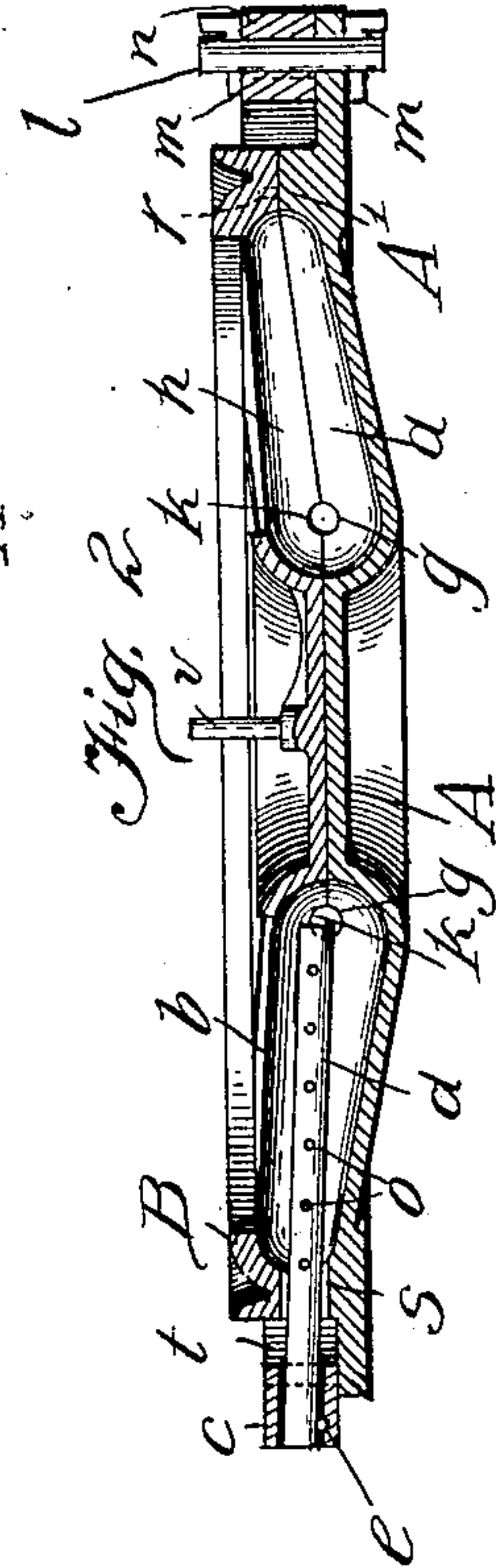


913,270.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING CORES.

No. 913,270.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed March 11, 1908. Serial No. 420,298.

To all whom it may concern:

Be it known that I, JOHN R. DAVIES, a citizen of the United States, and resident of Waukegan, in the county of Lake and State of Illinois, have invented a certain new and useful Improvement in Apparatus for Making Cores, of which the following is a specification, reference being had to the accompanying drawing, which forms a part of my specification.

My invention relates more particularly to an improvement in apparatus for making a core to be used in manufacturing car-wheels of the class in which the wheel is formed with a cast-metal center about which a steel tire is to be secured.

The invention consists in providing an apparatus whereby an efficient core can be quickly made; the object of the invention being to provide apparatus whereby an integrally formed core for the entire body of a wheel may be formed, that will have its support in the mold entirely from the outside or outer circumference of the mold, obviating the necessity for supporting the core in the mold at its inner circumference, as that would cause the hub of the wheel to have a series of radially extending openings, which would greatly weaken the hub or center of the wheel. It is essential, in casting a car-wheel, that the core be so formed and supported as to prevent any displacement or upheaval by the molten metal poured into the mold. It is to overcome such difficulty that my apparatus is especially adapted and at the same time provide an apparatus that can be easily and quickly manipulated, as will be apparent from the following detailed description.

In the drawing:—Figure 1, is a plan view of my improved apparatus properly assembled with the sweep in position; the assembled apparatus being shown before sand is placed therein. Fig. 2, is a cross sectional view taken on the line 2—2 of Fig. 1. Fig. 3, is a plan view with the upper member removed after the core has been formed, showing the arbor-retaining ring in position on the bottom member, and also showing the shape of the core formed by my improved apparatus. Fig. 4, is a perspective view of a sector or portion of the core formed by my device and the intermediate or arbor-retaining ring.

Like letters of reference indicate identical parts in the respective figures.

A, is the lower or one of the core plates or members, and B, the other or upper core plate or member. These plates are of course of the required form as to their inner or adjacent surfaces to produce the desired shape to the core. The upper plate B, is, of what may be termed, skeleton-form, as can be seen in Fig. 1, provided with the cut-out portions or openings as at *b*, which extend almost across the entire form-giving surface of the upper plate B, so as to permit of easy access to the space between the assembled plates, as shown in the sectional view, Fig. 3.

C, is an intermediate or retaining ring whereby the arbors *d*, are held. The ring C, has integrally formed thereon or is provided at determined points, with bosses *c*, which have longitudinal openings there-through, see Figs. 3 and 4. These bosses *c*, are to receive the arbors *d*, which are hollow and cylindrical in form; the bosses are intended to give sufficient support to arbors *d*, so that the latter will be firmly held and permit them to extend the required distance toward the center of the ring and core-plates as seen; thereby also giving the core the requisite support. The arbors are also adapted to provide the necessary vent in the core for the escape of gases when the wheel is being cast. These arbors *d*, must be firmly held against any tendency to turn either on their own axes or otherwise in the bosses *c*; this is prevented by preferably forming the upper side of the longitudinal opening in the bosses, in the shape of an inverted V, as can more clearly be seen in Fig. 4 at *c'*. I also provide each boss *c*, with a transverse opening *e*, see Fig. 2, the upper portion of which takes through or communicates with the longitudinal opening in the boss. After the arbors *d*, have been inserted through the longitudinal openings to the proper extent, I insert a bolt or cotter-pin *f*, through the transverse opening *e* in the boss. Because of the registration of the upper part of this transverse opening with the longitudinal opening, it will be seen that the bolt or cotter-pin *f*, will necessarily press against the lower side of the cylindrical arbors *d*, thereby wedging them up tightly against the upper or V-shaped part of the longitudinal

opening, thus holding the arbors d , against any accidental twisting or turning, which might occur if no means were provided for wedging the arbors. Of course, it will be readily understood, that the longitudinal openings may be made sufficiently large to receive small wedges adjacent the arbors if it is desired, which might be held by the transversely extending bolt or pin f .

The lower plate A, which gives form to one side of the core, is provided with the radially extending ribs a , which extend from the inner circumference to the outer flange or periphery A' of the plate as can be seen in Fig. 2. The outer flange or base of plate A, is made larger, as shown, in order to support the intermediate or retaining member C, which latter is of larger diameter than the upper member B, so as to provide a space between the inner circumference of member C and the outer circumference of member B. In order to permit of the entrance of the arbors between the plates, the flanges or peripheries of plates A and B are provided with openings to receive the arbors, as shown, at s . Each rib a , is provided at a point preferably near its inner end, with the semi-circular groove g . The upper or skeleton plate B, which gives form to the other side of the core, is also provided with radially extending ribs h , which articulate with the ribs a , on the lower plate and thus form partitions in the chamber or space between the assembled plates, dividing the chamber into sector-shaped compartments. The ribs h , are also provided near their inner ends with semi-circular grooves k , see Fig. 2, which register with the semi-circular grooves g , in the ribs of the lower plate, thus together forming a circular opening as shown in Fig. 2, through the partitions formed by ribs a , h , establishing communication between the different compartments.

The plate A and the intermediate member or retaining ring C, are held in proper relation by a pin or bolt l , which takes through openings in the flange or periphery of the plate and lobes n , on ring C, which may be provided at suitable points as shown in Figs. 1 and 3. This pin or bolt l , may be of any convenient or desired form; I have shown it as provided with slots through which are passed the pins m . As the intermediate or retaining ring C, is not as large in diameter as the base of plate A, I have provided the ring C, with the lobes n , the holes in which are adapted to register with the holes in the plate through which pin l , takes as above described. In order to have the ribs h , on upper member B, register with the ribs a , on lower member A, I provide a few of ribs a , or the flange A', with dowels, as at r , which take into small openings in ribs h on upper member B, or its periphery as shown. This will insure the articulation of the dif-

ferent ribs, as will be readily understood. The arbors d , are provided with perforations as can be seen at o , Figs. 1 and 2, to permit the gases to escape during the process of casting; the perforations o , permit the gases to pass to the inside of the hollow cylindrical arbors d , and on through to the outside circumference of the intermediate member or retaining ring C.

The manner of using my improved apparatus is as follows:—the arbors d , are inserted into place in the intermediate or retaining ring C, each arbor d , being wedged as herein-before described; the ring C, with the arbors d , mounted therein, is then placed on top of the lower plate A, bringing the opening in the lobes n , to register with the openings in the flange or periphery of plate A, to receive bolt or pin l , which will also bring the arbors d , to extend through the openings in the periphery or flange of plate A, at points intermediate of the radially extending ribs a ; the upper or skeleton plate B, with the openings in its periphery for the arbors d , is then placed on top of the lower member so as to have the dowels on flange A' take into openings in plate B, thus compelling the radially extending ribs h , to register with the ribs a on the lower plate. It will be seen that the arbors d , will extend toward the center of the core-plates intermediate of the composite partitions formed by ribs a , and h . The plates and ring having been properly assembled, the first step in making the core is to fill the circular groove composed of the semi-circular grooves g , and k , with the properly mixed sand, which will form a supporting or anchor-portion p , (see Figs. 3 and 4) whereby the different sectors of the core will be united or anchored, thus firmly supporting the same in addition to the support afforded by the arbors. The mixed sand is then also tamped about the arbors d , in the openings, in the flange or periphery of members A and B. The sand, which may be previously mixed with flour or the like to increase its cohesiveness, is then dumped on top of upper plate B, which, by reason of its skeleton form, permits the sand to enter between the plates and around the arbors d , the sand of course being properly tamped into place. The mixed sand is also made to fill the space t , between the inner circumference of ring C, and the outer circumference of plate B, being properly tamped about the portion of the arbors, and of course is supported by the wide flange on lower plate A. This will completely cover the inside circumference of the ring C, as seen at t' , so that molten metal cannot contact therewith, and the flanges or peripheries of plates A and B, will leave circumferential interstices or spaces outside of the body-portion of the core. The surplus material is then loosened by turning the sweep D, which

takes over a pivot-pin *v*, secured to or integral with the center of plate B; the sweep D, of course being shaped to conform to the outside formation of the upper plate B.

5 The chamber intermediate of the plates being completely filled, the core is then baked until properly hardened, when the top plate is removed and the retaining ring with the arbors and core is lifted from the lower
10 plate. The composite partitions, composed of the ribs on the two plates, will leave radially extending spaces or interstices between the parts of the core surrounding each arbor, and the arbors will also be completely
15 enveloped by the hardened sand, which, of course, will leave openings through the outer periphery of the cast center of the wheel; these however will be completely covered by the steel tire placed thereon afterward.

20 In Fig. 3, the shape of the core is shown, where it is noticed that the core proper will have radially and circumferentially extending interstices whereby the main portion of the core will be divided into sectors of a
25 circle materially smaller in diameter than the inside diameter of the retaining ring, leaving each sector, however, united with the portion of the core adjacent the inner circumference of the ring by the portion surrounding the arbor as shown. To mold a
30 wheel, the core, by means of the retaining ring, is then adjusted on the lower part of a flask, the core extending into the mold previously formed by the pattern; a cylindrical
35 core is also placed in the center of the flask to form the axle-opening through the hub, leaving a space around this core sufficient to form the metal of the hub and from which the radial ribs of the wheel extend, being
40 caused by the spaces between the sectors of the core; the hub however, being devoid of any lateral openings.

45 Having thus described my invention, what I claim and wish to secure by Letters Patent, is:—

1. An apparatus for making cores for use in casting car wheels, comprising an upper and a lower member provided with radially
50 extending ribs adapted to register, an intermediate member, arbors having support in said intermediate member and adapted to extend toward the center thereof at points intermediate of the radially extending ribs.

2. An apparatus for making cores for use
55 in casting car wheels, comprising an upper and a lower member formed to give the desired shape to the outer face of the core, each member being provided with radially extending ribs adapted to register, the upper
60 member having openings intermediate of its ribs, an intermediate member having openings at predetermined points in its periphery, arbors adapted to take through the openings in the periphery of said intermediate
65 member, the arbors extending toward the

center of the assembled members at points between the radially extending ribs.

3. An apparatus for making cores for use in casting car wheels, comprising an upper and a lower member provided with radially
70 extending ribs, the ribs on the one adapted to articulate with those on the other and form partitions whereby the space between the members is divided into sector-shaped compartments, an intermediate member, hol-
75 low arbors supported by said intermediate member and extending toward the center thereof between the partitions, said arbors being formed to carry off the gases to the exterior of the intermediate member. 80

4. An apparatus for making cores for use in casting car wheels, comprising an upper and a lower member provided with radially
85 extending ribs, the ribs on the one adapted to articulate with those on the other and form partitions whereby the space between the members is divided into sectoral compartments, a supporting member adapted to rest on the base of the lower member and of a
90 diameter sufficiently large to provide a space between its inner circumference and the periphery of the upper and lower members, hollow arbors supported by said supporting member and extending toward the center
95 thereof intermediate of the partitions, said arbors being adapted to carry off the gases to the exterior of the supporting member.

5. An apparatus for making cores for use in casting car wheels, comprising an upper and a lower member provided with radially
100 extending ribs, the ribs on the one adapted to articulate with those on the other and form partitions whereby the space between the members is divided into sectoral compartments, each partition being provided
105 with an opening whereby communication between the compartments is established, a supporting member, hollow arbors secured therein and extending toward the center thereof between the partitions, said arbors
110 being formed to establish communication with the exterior of the supporting member.

6. An apparatus for making cores for use in casting car-wheels, comprising an upper
115 and a lower member provided with radially extending ribs adapted to register, said ribs being formed to provide openings there-through, an intermediate member, arbors having support in said intermediate mem-
120 ber and adapted to extend toward the center thereof at points intermediate of the radially extending ribs.

7. An apparatus for making cores for use in casting car-wheels, comprising an upper
125 and a lower member provided with radially extending ribs adapted to register, an intermediate member, arbors having support in said intermediate member and adapted to extend toward the center thereof at points
130 intermediate of the radially extending ribs,

and a sweep adapted to swing about the upper face of said upper member.

8. An apparatus for making cores for use in casting car-wheels, comprising an upper
5 and a lower member provided with radially extending ribs adapted to register, the upper member being provided with a pivot-point, an intermediate member, arbors hav-

ing support in said intermediate member and adapted to extend toward the center thereof, 10 and a sweep adapted to take onto said pivot-point on the upper member.

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