

(No Model.)

D. J. POWERS.
CASTER.

No. 313,023.

Patented Feb. 24, 1885.

Fig. 1.

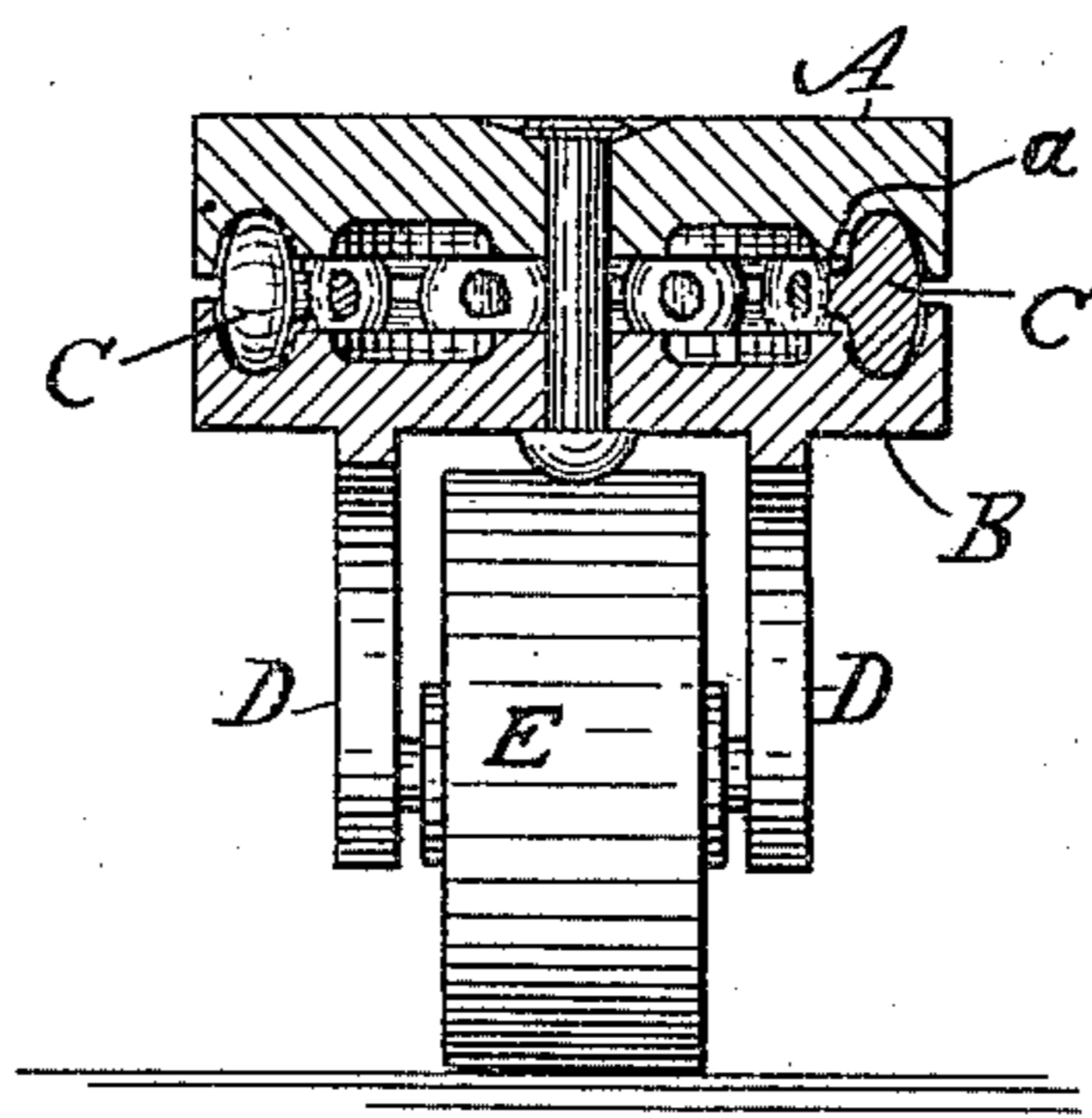
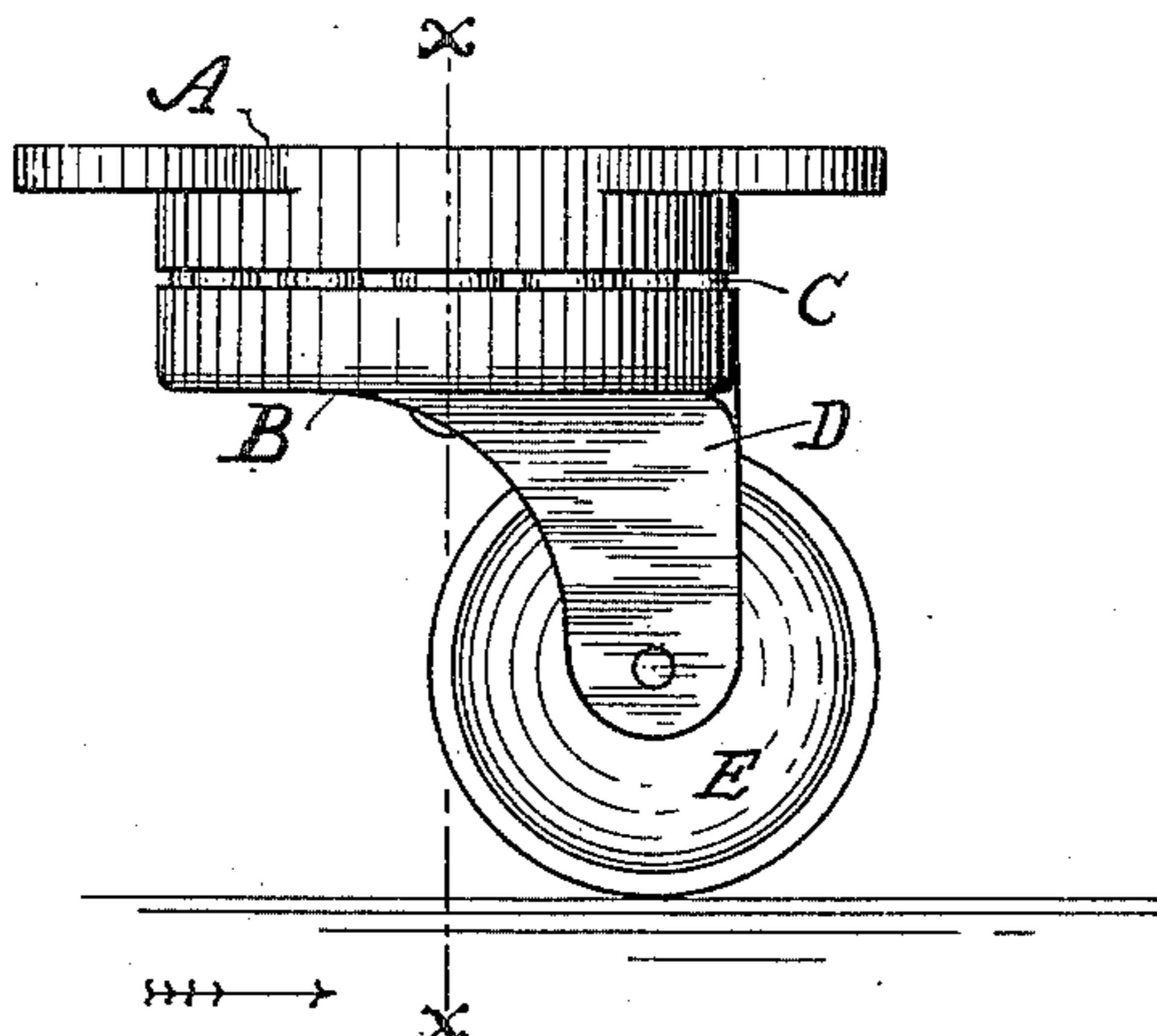


Fig. 2.

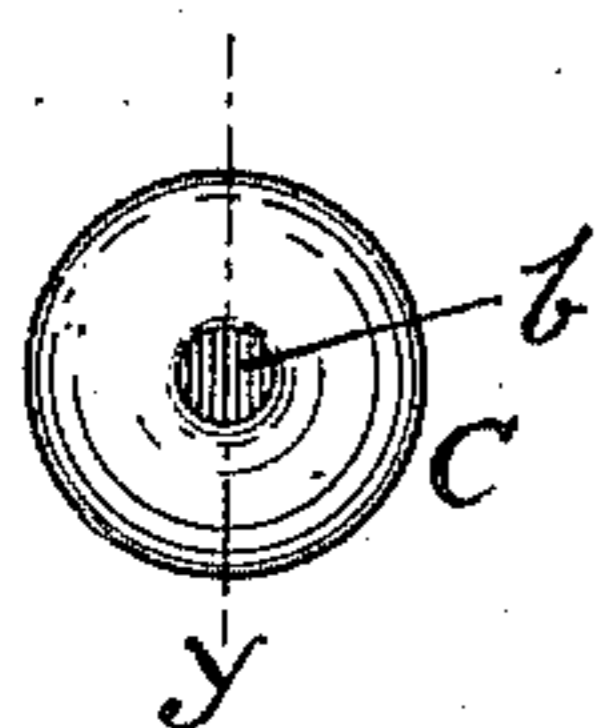


Fig. 4.

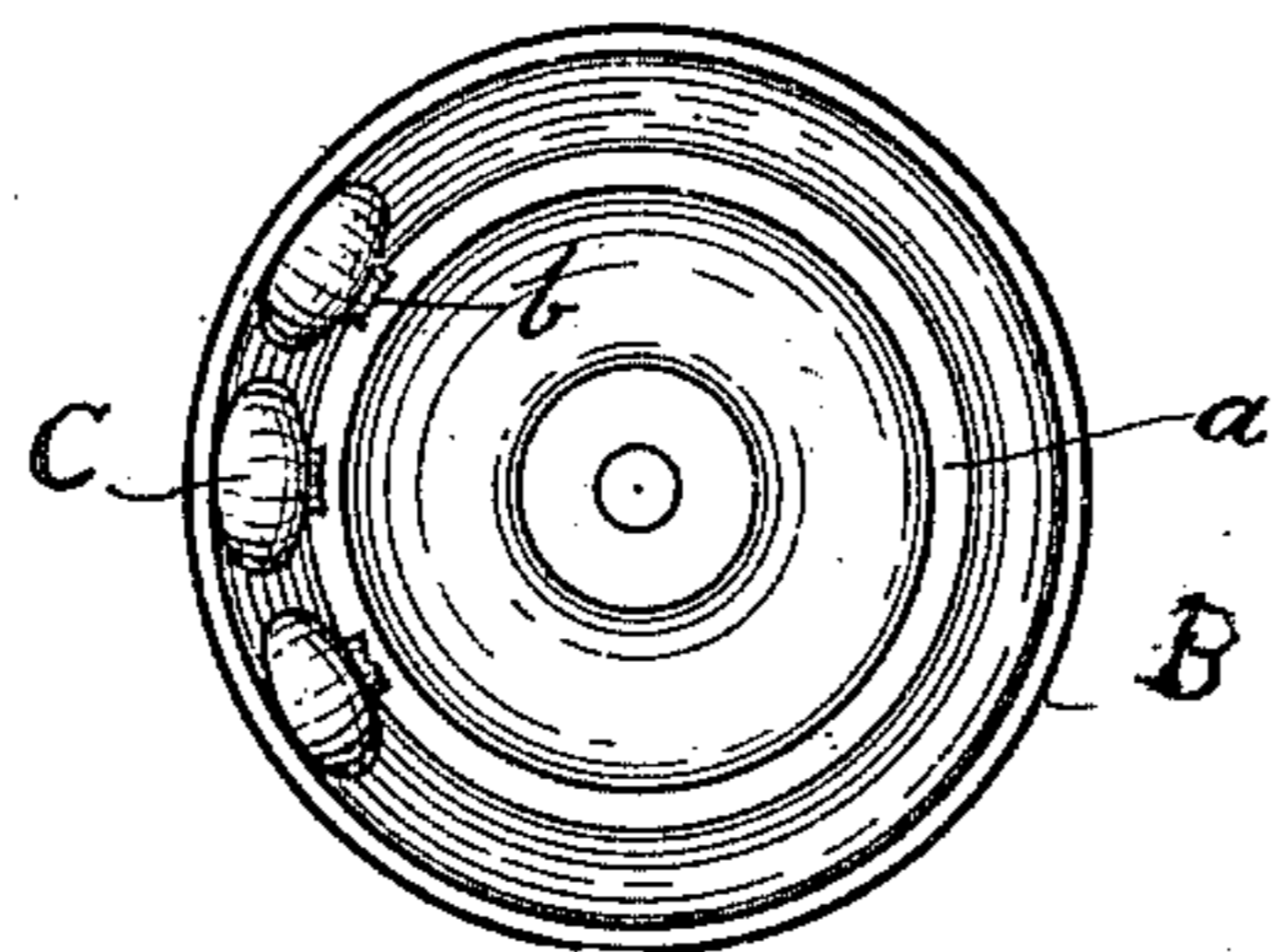


Fig. 3.

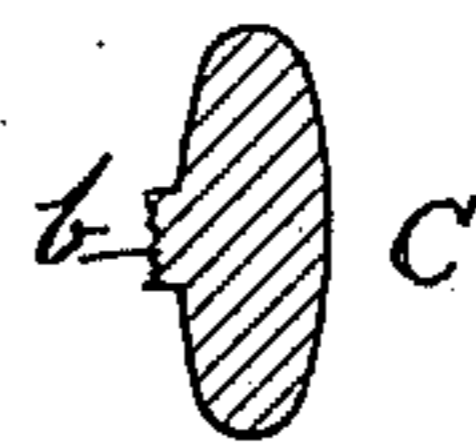


Fig. 5.

Witnesses:

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J. T. Rollins

Inventor:

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UNITED STATES PATENT OFFICE.

DAVID J. POWERS, OF CHICAGO, ILLINOIS.

CASTER.

SPECIFICATION forming part of Letters Patent No. 313,023, dated February 24, 1885.

Application filed July 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, DAVID J. POWERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Furniture-Casters, of which the following is a specification.

I am aware that casters have heretofore been provided with rollers of various kinds placed between the plates to reduce or obviate friction, and therefore I do not claim rollers so placed, broadly, but confine myself to rollers of a form and quality as hereinafter described; but that my improvement may be fully understood I will set out the difference between it and the several kinds which have preceded it. First, the merit of spherical rollers is in their perfect freedom of rotation in any and all directions, and freedom to shift the position of the axis of rotation as to the substance of the roller; but this quality depends upon perfect sphericity, which is difficult and costly to attain. Unless these rollers are truly spherical, they soon find a position where the imperfect form causes them to cease to rotate. Conical rollers constantly grind against the exterior rim or flange of the inclosing-plate. This not only causes great frictional resistance, but constantly tends to move the axis of rotation out of its radial position and cause the roller to jam and stick. Rollers which are sections of spindles, or cigar-shaped, because they present small areas of contact with the bearing-plates, are more easily disturbed as to their axial position than conical rollers. Rollers which are thin parallel-sided disks necessarily stand in their grooves tangential to the curve of said groove, and therefore with the principal frictional points at their peripheral angles, whereby their direction of progression will be constantly changed. These practical defects have been remedied by placing each roller, of whatever shape, upon an axial spindle; but this of itself adds so much labor and cost in perforating each roller and in constructing and mounting the spindle that it is rendered impracticable.

My invention obviates all the practical disadvantages alluded to above as adherent to the art prior to this time by employing cast-metal rollers substantially elliptical or V-shaped in axial section, less than a sphere,

whereby, first, any desired degree of hardness and strength may be secured; second, the roller conforms to the form of the groove in which it runs and cannot shift the position of its axis of rotation; third, its curved side conforms closely to the curve of the groove in which it runs, and therefore its direction of advance is changed by friction remote from its periphery; fourth, because it conforms to the form of the groove both vertically and horizontally, it cannot change the radial position of its axis.

My invention relates to an improvement in casters for furniture and kindred articles; and it consists in the use and adaptation of a new kind of anti-friction roller between the upper and lower portions or plates of the caster, as hereinafter more fully set forth.

In the drawings, Figure 1 represents the complete caster, viewed sidewise; Fig. 2, a vertical interior cross-section of the same upon line *xx* of Fig. 1, showing the position of the rollers in the grooves and the lower inner ledge to remove it from contact with the sprue upon the inside of the rollers. Fig. 3 shows the upper side of the lower plate with some of the rollers in the groove. Fig. 4 is a face view of the roller, and Fig. 5 is a cross-section of the same.

Like letters indicate like parts in both the drawings and specification.

The two sections of the caster, A and B, have annular corresponding grooves upon their inner faces of the form in reverse of the periphery of the roller C, these grooves being usually near the outer diameter of the plates or sections of the caster. The roller C is preferably in the form, when seen in cross-section, of a nearly flat ellipse, but may be varied more or less, as found desirable, provided it has a periphery corresponding to and adapted to run in the annular grooves in the same without liberty to change the position of its axis of rotation, which function is desirable, because I usually cast my rollers in molds with a side attachment to the pattern-gate, as shown at *b* in the drawings. In breaking these rollers from the gate more or less of a sprue or roughness will remain upon the roller; but by mounting the rollers in grooves, as shown, and having the inner ledge of the groove at *a*, as seen in Fig. 2, somewhat lower

than the outer one, the roughness upon the roller, as seen at *b*, Fig. 5, is kept clear of coming in contact with any portion of the plates, and thus leaves a perfect roller in all
 5 of its acting parts, capable of being made cheaply and sufficiently perfect in molds of metal or other material without the necessity of any other finish than what is done in the tumbling or polishing box. Such cast rollers
 10 can be chilled or made of hard iron that will not wear or crush in use, however great the pressure upon them. Therefore

What I consider to be new, and desire to secure by Letters Patent, is as follows:

15 1. A furniture-caster having annular corresponding grooves upon the inner faces of its top and bottom plates, of elliptical or V-shaped form in cross-section, in combination with anti friction rollers with peripheries correspond-
 20 ing with the grooves in the plates, all arranged and operating substantially as and for the purpose specified.

2. A furniture-caster having grooved plates for anti-friction rollers, with the inner ledges

of the grooves lower than the outside ones, 25 substantially as and for the purpose specified.

3. A furniture-caster having annular corresponding grooves in the opposing faces of the upper and lower plates, said grooves being elliptical or V-shaped in transverse section, and
 30 having their ledges on one side more widely separated than their ledges on the other side, combined with cast-metal rollers having an elliptical or V-shaped cross-section in the plane of the axis corresponding with the cross-
 35 section of said grooves, and having the axial sprues still adhering, whereby cast-metal rollers may be employed without dressing, and the form of the roller conform to the form
 40 of the groove without possibility of shifting its axis of revolution or encountering friction on the side to destroy the figure of the bearing-surface.

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Witnesses:

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