

No. 666,009.

Patented Jan. 15, 1901.

M. C. HALL.
BALL CASTER.

(Application filed Sept. 12, 1900.)

(No Model.)

Fig. 1.

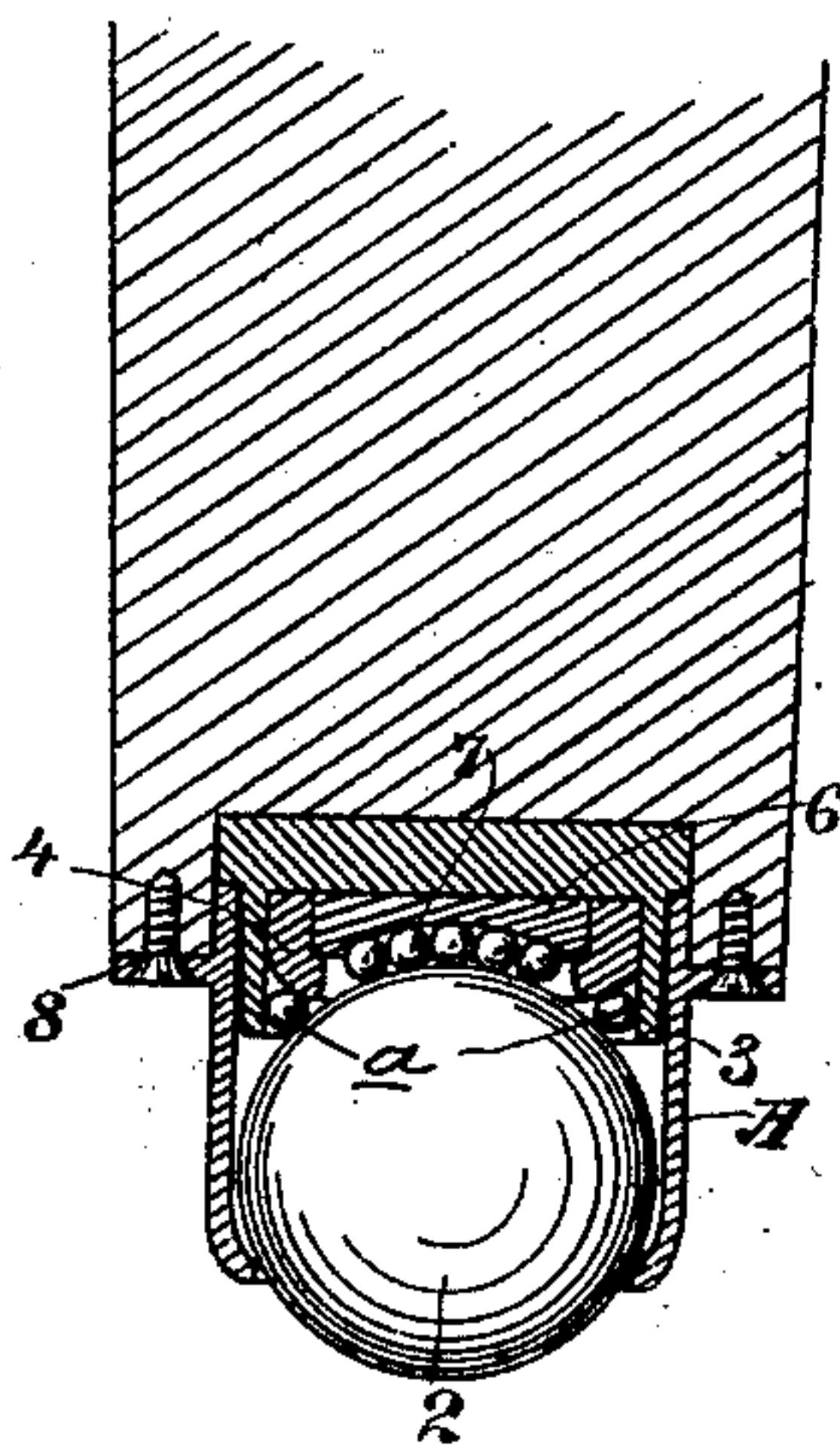


Fig. 2.

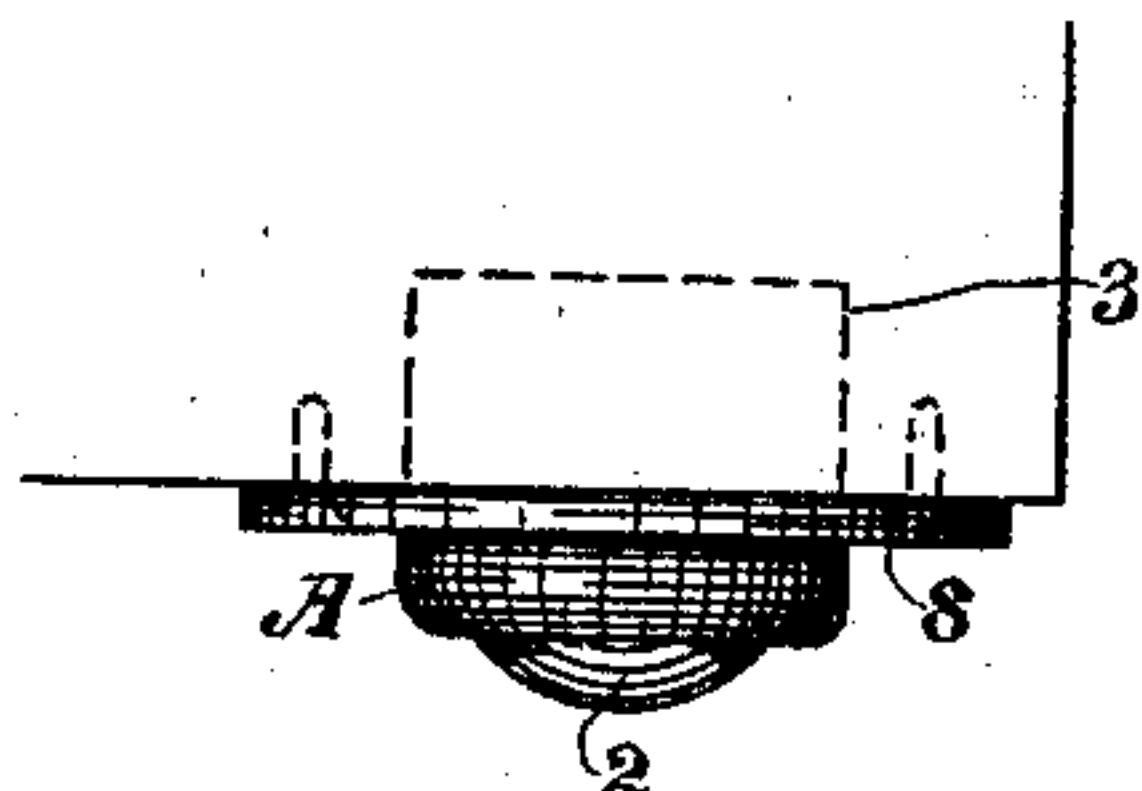
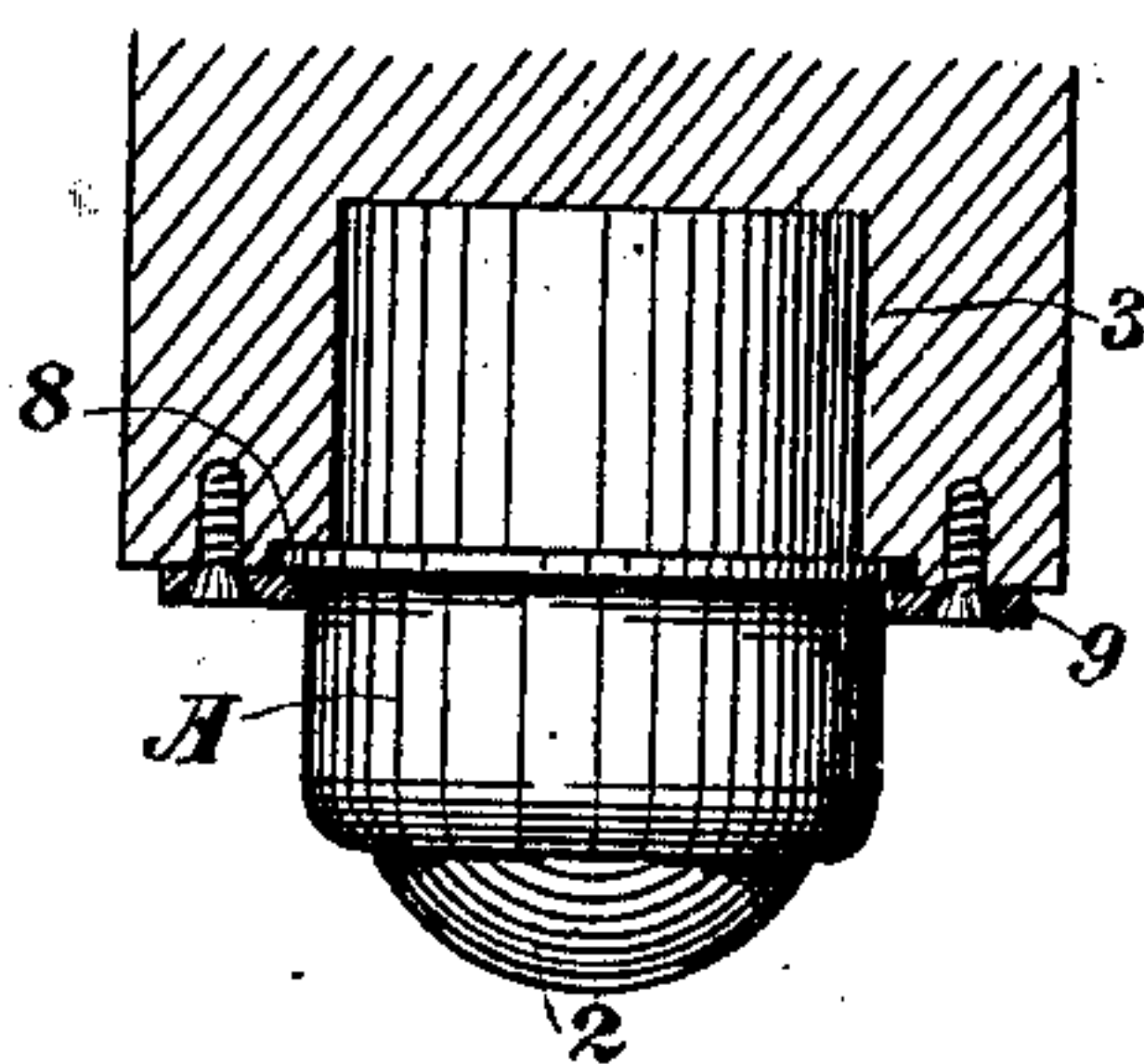


Fig. 3.



Witnesses,
J. H. Morse
H. F. Alscheck

Inventor,
Milton C. Hall
By *Dewey Strong & Co.*
attys

UNITED STATES PATENT OFFICE.

MILTON C. HALL, OF BAKERSFIELD, CALIFORNIA.

BALL-CASTER.

SPECIFICATION forming part of Letters Patent No. 666,009, dated January 15, 1901.

Application filed September 12, 1900. Serial No. 29,740. (No model.)

To all whom it may concern:

Be it known that I, MILTON C. HALL, a citizen of the United States, residing at Bakersfield, county of Kern, State of California, have
5 invented an Improvement in Ball-Casters; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in that class of furniture and like casters in
10 which a large ball is adapted to form contact with the floor or other surface and is itself contained within an exterior casing, within which are smaller balls which form a bearing for the larger one.

15 My invention consists of an exterior cylindrical casing adapted to contain the larger ball in its outer end and having means for fixing it to the article which is to be carried by the casters and an interior portion of small
20 diameter and a ball-bearing ring, between which and said inner cylinder a peripheral row of balls is arranged to bear upon the sides of the larger ball. Within this bearing-ring and at the bottom of the inner casing is a con-
25 caved steel bearing-plate, upon which another set of balls is adapted to roll in such relative relation to the peripheral set that they form a separate bearing for the base or inner convexity of the large ball.

30 My invention also comprises details of construction, which will be more fully described by reference to the accompanying drawings, in which—

35 Figure 1 is a vertical section through the caster. Fig. 2 shows the application to a trunk. Fig. 3 shows the caster held in position by an extra flange.

The casing A is made of sufficient interior diameter to receive the large ball 2 and allow
40 it to turn freely therein. The outer end of this casing A is contracted, so that the contracted portion extending beyond the plane of the center of the sphere is sufficiently smaller than the diameter thereof to prevent the lat-
45 ter from falling out. The inner end of the casing is in the form of a cup 3, which may be formed integral with the casing; but I prefer to make it as a separate structure in order to allow the ball 2 to be properly seated and
50 afterward to fit the outer casing A over it when the other parts are in place.

Within the cup 3 is a ring 4, the outer pe-

riphery of which is preferably made convex or of such equivalent surface that a row of small balls *a*, resting upon this surface and
55 against the inner surface of the cup, will have two points of bearing-contact, one upon the outer periphery of the ring and the other against the inner sides of the cup, so that these balls will roll freely. Upon these balls
60 the larger sphere 2 rests, the bearing being around the circumference of the ball in a plane at some distance from its inner pole.

By the expression "pole" I mean an axial line through the ball which is coincident with
65 the axial line of the exterior cylindrical casing.

At the bottom of the cup and interior to the ring 4 is a bearing-plate 6, upon which are placed one or more balls 7, upon which that
70 portion of the ball surrounding the inner pole has a bearing. This plate 6 is preferably made cup-shaped, so that the small balls 7 upon the cup will fit themselves to the periphery of the larger sphere, which thus has
75 a bearing, first, upon these balls on the plate, and, secondly, upon the ring of balls previously described. These numerous points of bearing in different planes give great
80 steadiness to the sphere and a perfect freedom of movement when it rests upon a surface over which it is to be moved.

The plate 6 is fitted either into a counter-sink or groove made around the inner part of the ring 4, or it may, if desired, be fitted
85 to the interior diameter of the ring, the object being in either case to hold it in proper position, but to allow it to be removed and replaced at will. The ring is also made to
90 removably fit within the cup, and all parts can thus be removed, inspected, and replaced at will. The cup fits into the interior of the inner end of the casing A and may, if desired, be slightly tapered, so that after
95 the balls and their bearings have been put in position and the larger sphere placed upon them the outer casing can be pressed or driven down upon the outside of the cup and the whole structure thus secured together. The
100 inner end of the cup is then inserted into the article to which the caster is to be applied, and the whole device is secured thereto by means of a flange 8 or equivalent lugs or fastenings.

If the casters are to be used for trunks, the outer casing A will be so made that but a small portion of the sphere will project beyond its contracted periphery, and the flange or fastening-lugs will be brought so near to the outer end of the casing that but a small portion of the latter will project, and the device will be less liable to damage from rough handling to which trunks are exposed.

10 If desired, a supplemental flange 9 may be fitted loosely around the casing, and this flange serves to secure the casing in place; but the casing is loose enough to be freely turnable within the flange and the socket
15 into which it fits.

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

1. The combination in a ball-caster, of the
20 exterior casing having the outer end contracted, a cup fitting the interior end of the casing, a bearing-ring inclosed within the bottom of the cup and having an outer peripheral surface between which and the in-
25 ner periphery of the cup, bearing-balls are disposed, a bearing-plate at the bottom of the cup and interior to the ring, a second set of balls located thereon interior to the ring, and a sphere inclosed within the casing and
30 supporting the two sets of balls.

2. The combination in a ball-caster, of an exterior casing having a contracted outer end, a cup fitting the inner end of said casing axi-

ally in line therewith, a removable ring fitting within the cup and having a convexed outer 35 periphery, a series of balls located between said convexed periphery of the ring and the inner surface of the cup, a concaved bearing-plate located within the ring and a second set of balls thereon and interior to the first- 40 named balls, and a sphere within the contracted end of the casing and supporting the two sets of balls.

3. The combination in a ball-bearing cas- 45 ter of an exterior casing having a contracted outer end, within which the large ball is retained, means for attaching said casing to the article to be supported by the caster, a cup removably fitting the inner end of the casing and axially in line therewith, a removable 50 ring having a convex outer periphery between which and the inner surface of the cup a series of bearing-balls is disposed, a concaved removable bearing-plate fitting within the ring, and a plurality of balls carried upon 55 said plate whereby two points of bearing in different planes are provided, and a large ball or sphere protruding from the casing and supporting the two sets of bearing-balls.

In witness whereof I have hereunto set my 60 hand.

MILTON C. HALL.

Witnesses:

S. H. NOURSE,

CHAS. E. TOWNSEND.