

No. 616,411.

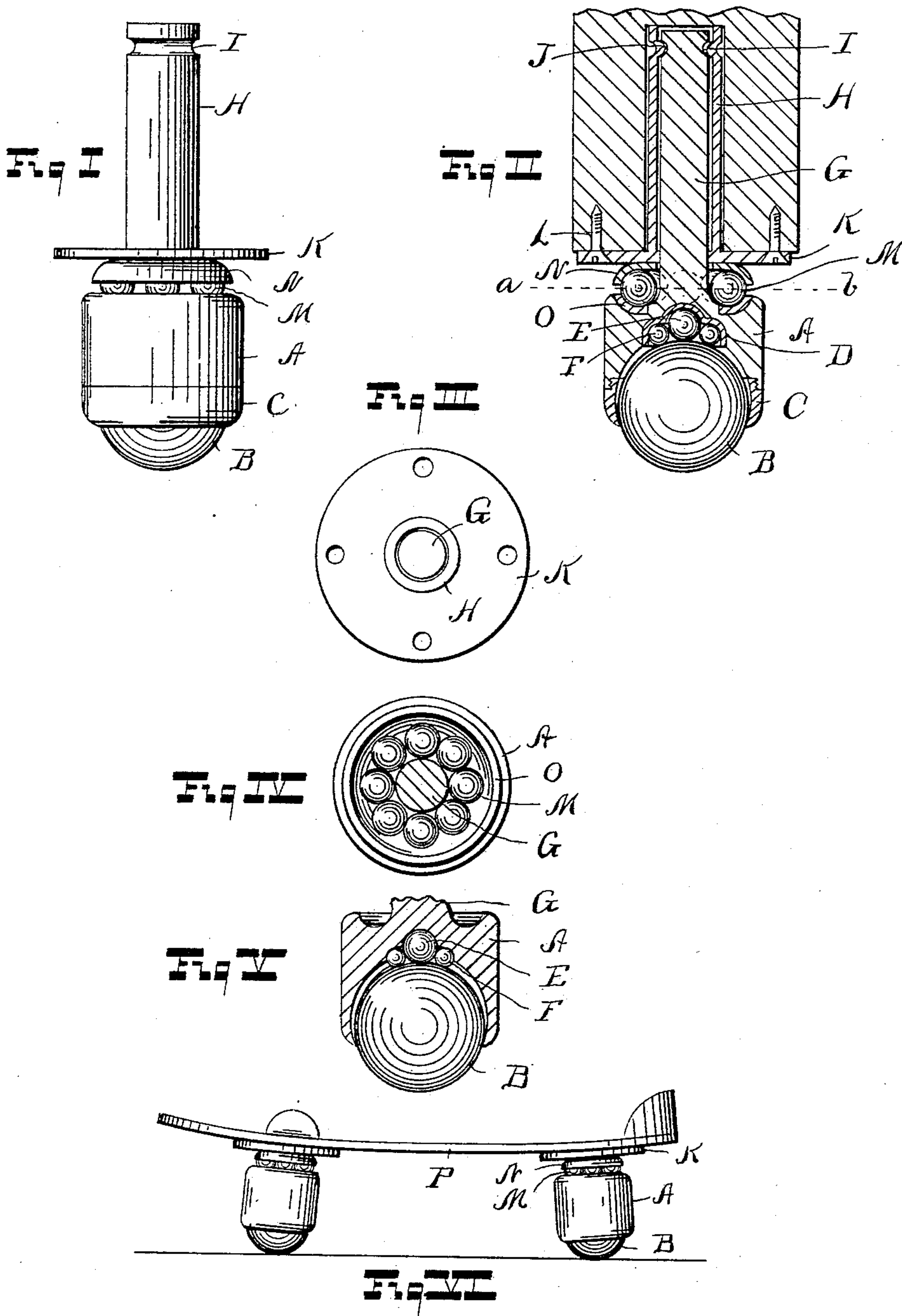
Patented Dec. 20, 1898.

E. L. DIMMITT.

BALL CASTER.

(Application filed Jan. 14, 1898.)

(No Model.)



WITNESSES:

*W. D. House*  
*A. P. Scott*

Edward L. Dimmitt,

INVENTOR,

BY

*Warren D. House,*

HIS ATTORNEY.



# UNITED STATES PATENT OFFICE.

EDWARD L. DIMMITT, OF KANSAS CITY, MISSOURI.

## BALL-CASTER.

SPECIFICATION forming part of Letters Patent No. 616,411, dated December 20, 1898.

Application filed January 14, 1898. Serial No. 666,592. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD L. DIMMITT, a citizen of the United States, residing in Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Universal Ball-Bearing Casters, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in ball-bearing casters.

The object of my invention is to provide a caster that may be used on the legs of chairs, tables, and other furniture.

My invention is also applicable to trunks, chests, skates, and, in fact, most any article requiring a rolling support.

My invention provides a caster that is cheap in construction, easily applied to the place of use, and in which the main supporting roller or ball is capable of universal rotatory movement with a minimum of friction.

My invention provides, further, certain new and useful features of construction herein-after fully described and claimed.

In the accompanying drawings, which illustrate my invention, Figure I represents a side elevational view. Fig. II represents a vertical sectional view of a caster secured to the lower end of a chair-leg. Fig. III represents a plan view. Fig. IV represents a horizontal sectional view taken on the dotted line *a b* of Fig. II. Fig. V represents a vertical sectional view of the lower part of a caster in which the ball-holder is composed of a single piece and in which the cup D is dispensed with. Fig. VI represents a modification of my invention as applied to a skate.

Similar letters of reference indicate similar parts.

A indicates what I term the "ball-holder," the lower end of which is provided with a semispherical-shaped opening, in which is placed the roller-ball B, which bears the weight of the article to which the caster is secured. The ball B is held in place by means of a ring C, the upper end of which is externally screw-threaded, the screw-threaded portion being fitted to an internally-screw-threaded annular recess in the lower end of the part A. The ring C projects below the center of the ball B and has its lower end contracted, so as

to prevent the ball B from falling out. The body of the holder A is provided above the ball B with a recess in which is fitted a hardened-steel cup D, the upper or closed end of which has its center portion raised, so as to provide for the reception therein of a ball E, which is preferably of larger diameter than several balls F, which are held in the cup D and are disposed around the ball E. The balls E and F are of a size such that the ball B will bear on all of them. The holder A is provided with a central upwardly-extending shank G, fitted rotatably in a vertical sleeve H, which is provided near its upper end with an annular depression I, which enters an annular peripheral recess J in the upper end of the shank G. The depression in the sleeve co-operating with the said annular recess prevents the disengagement of the sleeve from the shank, while permitting relative rotation between the parts. At the lower end of the sleeve is provided integral therewith a horizontal disk K, having suitable vertical openings therethrough for the insertion of screws, designated by L, designed to secure the caster to the table or chair leg. Between the disk K and the upper end of the body of the holder A and around the shank G are located several balls M. Between the balls M and the lower side of the disk K is an inverted cup N, provided with a vertical central opening through which extends the shank G. This cup is made of hardened steel, preferably. It provides a bearing for the upper sides of the balls M and is preferably secured rigidly to the disk K. In the upper end of the body of the holder A is provided an annular recess, in which is placed a cup O, similar to the cup N, but having its open end up. This cup O provides a hardened bearing for the under side of the balls M.

In the modification shown in Fig. V the cups D, N, and O are dispensed with. Such a construction may be used when the caster is used comparatively little—as, for instance, on pianos or trunks that are not moved about to any extent. Where, however, the caster is used on articles that are moved about much, it is better to employ the hardened cups to prevent wear. In the modification just referred to the ring C and the body of the holder A are made of a single piece, the



lower end of the body being swaged inwardly after the balls E, F, and B have been placed within the holder.

In Fig. VI is shown a skate provided with two of the casters constructed in accordance with the principles of my invention. The casters when so used are constructed in the same manner as already described; but the shank G and sleeve H are made much shorter than when the casters are to be used on chair or table legs.

In the drawings I have shown the skate-platform P provided with two casters, one under the ball of the foot and one under the heel. More than two may be applied, if desired. The caster may be used in a perpendicular position or it may be inclined in any direction without interfering with its operativeness.

In applying my invention the chair-leg is first provided with a vertical hole in its lower end, in which is inserted the sleeve H, after which the disk K is secured to the under side of the leg by means of screws L, which are screwed into the wood through the openings provided for them in the disk. The cups D and O are then placed in their appropriate places in the holder A, after which the balls E and F are placed in the cup D, the larger ball E occupying the central position. The ball B is then inserted in the recess in the bottom of the holder, after which the ring C is screwed onto the lower end of the holder, thus holding the ball B in position. The balls M are then placed in the cup O, after which the cup N is slipped over the shank G to a position where it rests upon the balls M. The shank G is then inserted into the sleeve-opening and is forced to a position such that the annular depression I of the sleeve will spring into the annular recess J of the shank and prevent the accidental removal of the shank G from the sleeve, while permitting the rotation of the shank freely within the sleeve. The balls M perform a double function. They permit the easy rotation of the shank and holder in the sleeve independently of the rotation of the ball B when the caster is in the vertical position, and when the caster is inclined sidewise they furnish a double bearing for the shank and holder and prevent cramping of the shank G in the sleeve due to the side strain upon the shank. In the event of the ball B being made tight in its seat due to the accumulation of dirt in the recess in

which it is placed or due to the breaking of any of the balls E or F the balls M provide a non-friction bearing for the upper end of the holder A upon the lower side of the disk K and permit the rotation with small friction of the holder relative to the disk.

My invention may be variously modified to suit the different articles to which it may be applied without departing from the spirit of my invention.

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

1. In a caster, the combination with the holder provided with an upwardly-extending shank and a recess in its lower end, of an inverted cup in the said recess, one or more balls located in the said cup, a roller-ball located in the said recess and bearing upon the said ball or balls in the cup, means for preventing the falling out of the roller-ball from the recess, a cup upon the upper end of the holder provided with an opening through which the shank extends, a series of balls located in the said cup, an inverted cup upon the said series of balls, and a sleeve provided with means for securing to the article on which the caster is to be used and adapted to receive therein the shank, substantially as described.

2. In a caster, the combination with the holder provided with an upwardly-extending shank and a recess in the lower end, of a seat in the said recess, a series of balls located in the said seat, a roller-ball located in the said recess, a ring, the upper end of which is secured to the lower end of the holder the ring being smaller in its smallest internal diameter than the diameter of the roller-ball, a sleeve provided with a disk at its lower end having an opening adapted to receive the shank, means for detachably securing the shank to the sleeve while permitting its rotation therein, and a series of balls upon the holder and grouped around the shank adapted to support the disk when the shank is inserted into the sleeve, substantially as described.

Signed by me, at Kansas City, Missouri, this 6th day of January, 1898, in presence of two witnesses.

EDWARD L. DIMMITT.

Witnesses:

WARREN D. HOUSE,  
D. W. C. HOUSE.