

No. 627,012.

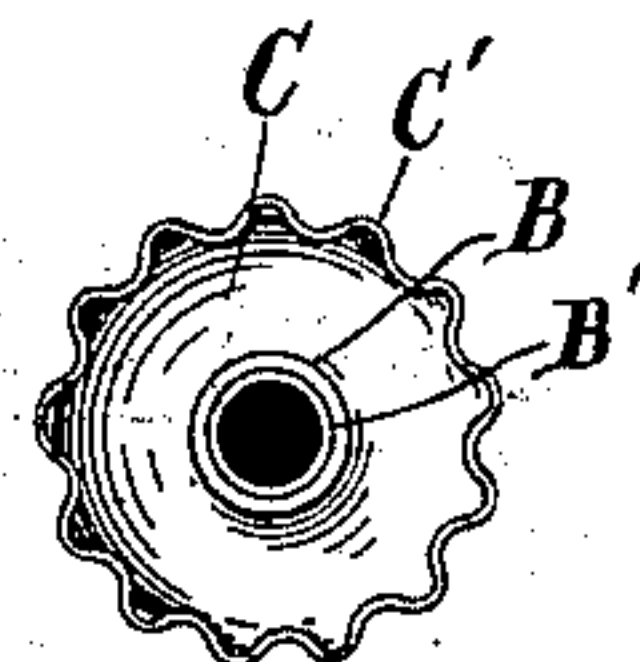
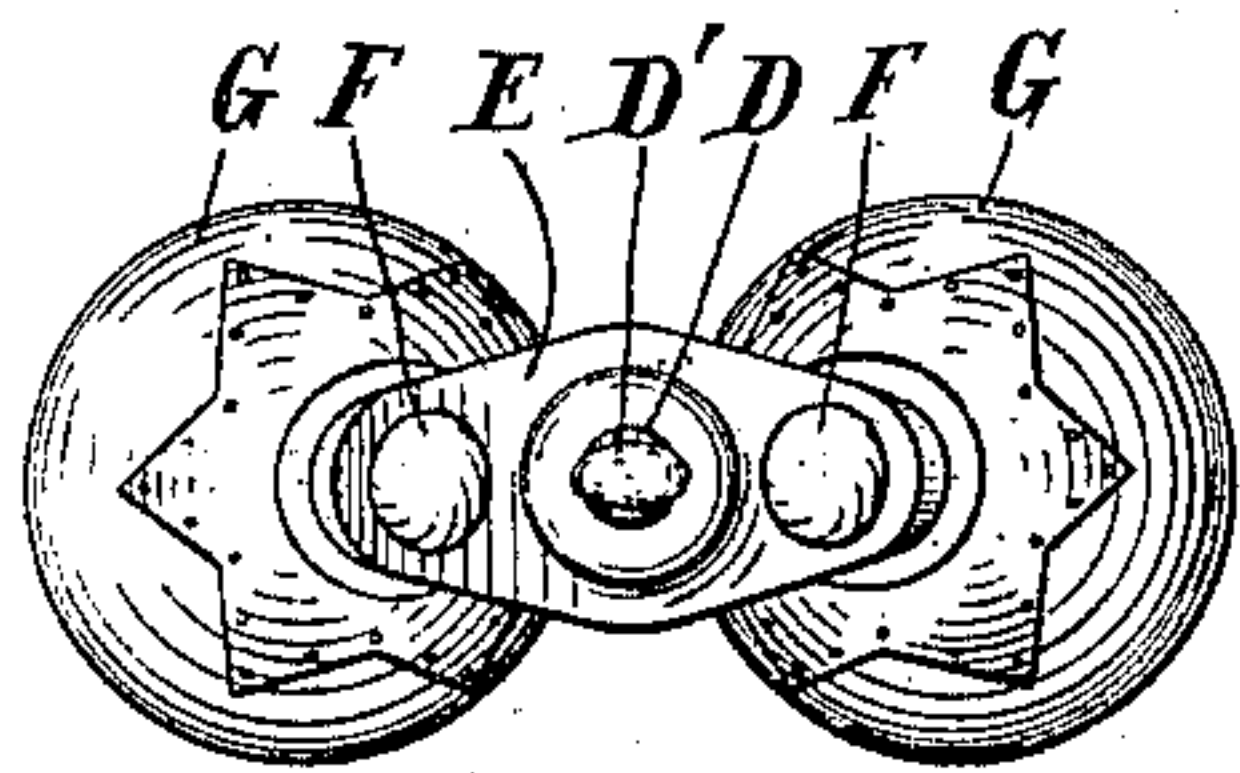
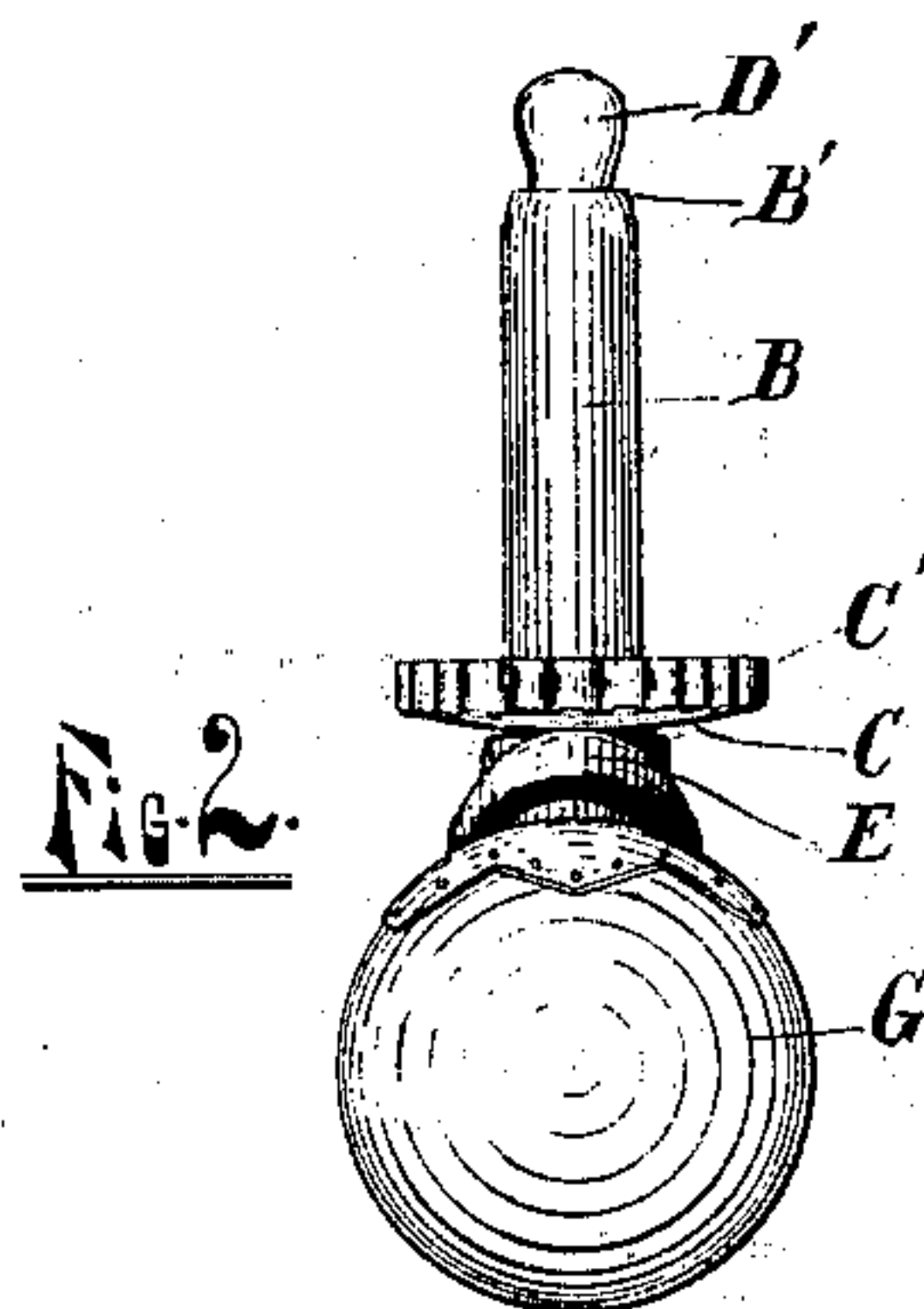
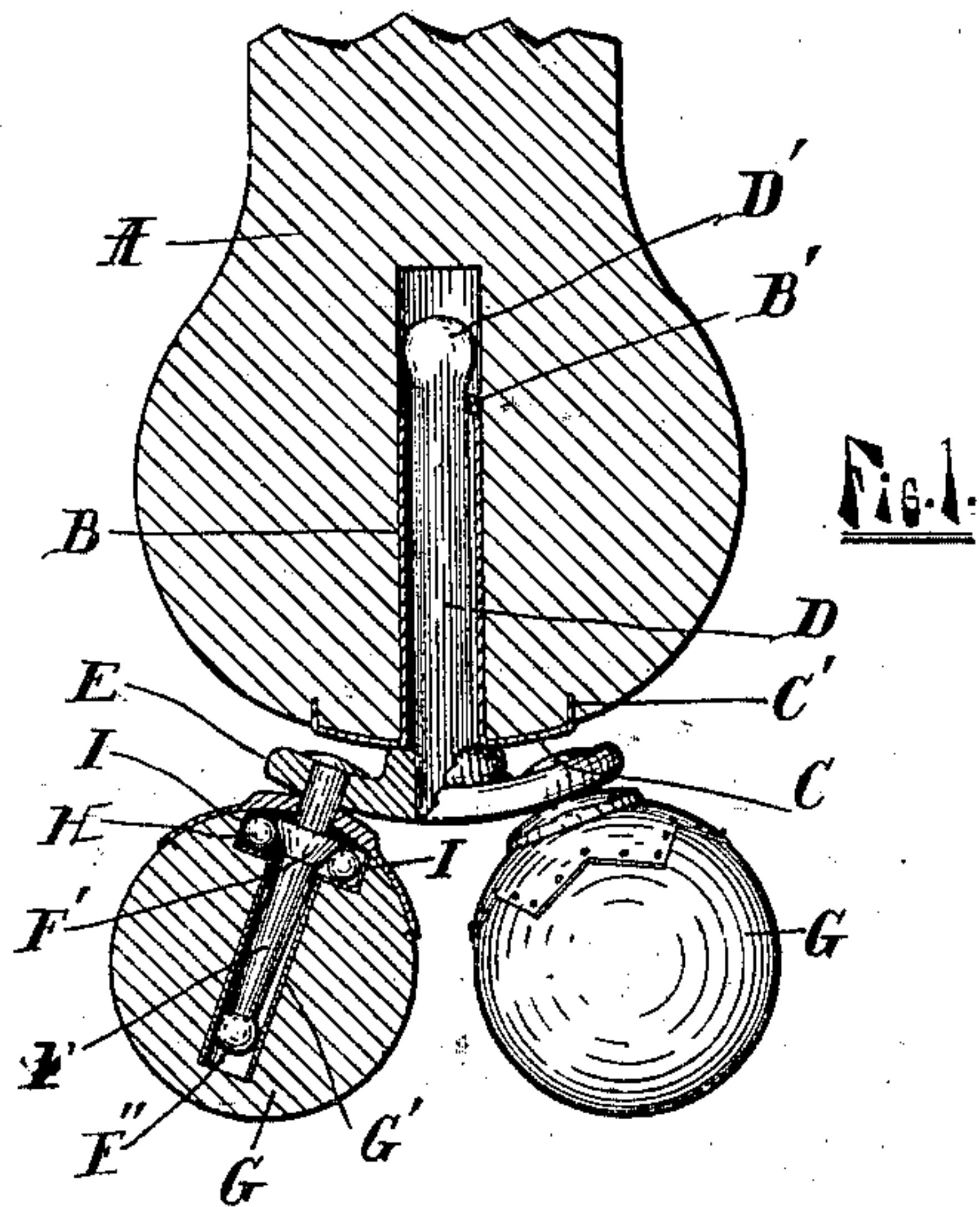
Patented June 13, 1899.

S. H. RAYMOND.

CASTER.

(Application filed Nov. 18, 1896.)

(No Model.)



WITNESSES:

Letty C. Cook
Lois Moulton

INVENTOR:

Silas H. Raymond
By *Moulton & Flanders*
Attorneys.

UNITED STATES PATENT OFFICE.

SILAS H. RAYMOND, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-
FOURTH TO GEORGE E. RAYMOND, OF SAME PLACE.

CASTER.

SPECIFICATION forming part of Letters Patent No. 627,012, dated June 13, 1899.

Application filed November 16, 1896. Serial No. 612,273. (No model.)

To all whom it may concern:

Be it known that I, SILAS H. RAYMOND, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Casters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to furniture-casters; and it consists in certain peculiarities in the construction thereof, substantially as hereinafter described, and particularly pointed out in the subjoined claims.

The objects of the invention are as follows: first, to so improve the construction of the track-plate as that it will more efficiently serve to attach the caster to the leg of the article of furniture to which it is applied; second, to so construct the end of the caster-socket and the head of the pintle as to provide a more durable and efficient, as well as a cheaper, connection of these parts with each other, and, third, to so mount the balls of the caster as to improve the action of the device. These several objects are attained by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved caster attached to a portion of the leg of an article of furniture and having parts broken away to show the construction. Fig. 2 is an elevation of the same detached from the leg and viewed at right angles to Fig. 1. Fig. 3 is a plan view of the caster detached from the socket, and Fig. 4 is a plan view of the socket and track-plate.

A represents the leg of the table to which my caster is applied. B is the tubular socket inserted in said leg. C is the track-plate at the lower end of said socket. D is the pintle, and G the balls, which are connected with said pintle and engage the floor.

Heretofore the track-plate has been formed with a peripheral upturned flange having upwardly-projecting teeth formed in its upper part for attaching it to the leg of the article of furniture to which the caster is to be applied. Practical experience has demonstrated

that such means of fastening is unreliable and inefficient, as the tendency of the track-plate to turn with the caster causes the teeth to saw a path in the wood of the furniture-leg, and thus become wholly detached therefrom in a comparatively short time. To overcome this disadvantage, the track-plate of the present structure in lieu of being formed with such teeth has its peripheral upturned flange C', which is inserted in the end of the leg A and holds the socket B in place, formed serpentine, as shown.

The means heretofore proposed for detachably retaining the pintle in the socket having any similarity to my means hereinafter described contemplate splitting the socket to form resilient tongues, which will be spread apart while the pintle-head is being forced through the end of the socket and resume their normal position and engage beneath the pintle-head when the latter has reached its proper position, or else they propose to split the head of the pintle in lieu of the open end of the socket, so that the pressure exerted upon said head in forcing it through the open upper end of the socket will cause its sections to come together, and thereby result in such change in the diameter and size of the head as to permit it to go through said open end and said sections resume their normal spread-apart condition when the pintle has been forced to place, and thus serve to retain the pintle, or else they propose the use of a split spring or ring inserted in a retaining-groove formed around the upper end of the pintle, which will contract in passing through the open end of the socket and expand to its normal size when it has passed through the same, and thus prevent accidental displacement.

In short, all previous proposals with which I am acquainted depend upon the splitting of one or another part to permit the head to pass through the socket end and be retained after it has passed through. This splitting as an essential part of the pintle-retaining means or the use of a supplemental means is objectionable in many respects, and the particular object of this part of my invention is to overcome such objections by so form-

ing the open upper end of the socket and the head of the pintle as to eliminate the necessity of splitting either of said parts or of forming the socket with retaining yielding tongues or of providing one or the other part with a supplemental means to permit the head to pass through and be retained after it has passed through. In carrying out this object the unyielding pintle-head and the open reduced upper end of the socket are relatively different in size and form and such that in forcing the head of the pintle through said reduced and open end the latter will be temporarily expanded laterally in one direction and contracted laterally to a corresponding extent in a transverse direction (thus changing its form without changing the amount of its total circumference) instead of being contracted or expanded or spread apart, as the case may be, in the one direction without correspondingly changing its form or size in the other direction, as heretofore, and will return to its normal shape when said head has been forced through it, thus providing a more efficient and durable connection of said parts and at less cost than heretofore. The reduced upper end of the socket being continuous forms a most substantial bearing for the pintle below the head thereof.

Preferably the reduced upper end of the socket is circular and the pintle-head has a portion or portions of its circumference of greater radius than the reduced upper end of the socket and no greater than the radius of the interior of the body of the same and the other portions of its circumference of correspondingly less radius than that of said reduced upper end, whereby said head will pass freely through the body of the socket and the portions of greater radius engage the reduced end of the socket at intervals only, and thus spring it outward at these points and inward at the portions opposite the portions of the head having the lesser radius. I have shown in the accompanying drawings a head having flattened sides and with its greater radii at opposite sides, which construction is preferred by me; but it is evident that the number of portions having greater or less radii than that of the reduced upper end of the socket is not material and also that the particular shapes of the head and said reduced open end may be varied, as long as the reduced open end of the socket and the unyielding pintle-head are of such relative sizes and shapes that the latter may be forced through said open end by expanding the same in one direction and correspondingly reducing its diameter in another direction.

To the lower end of the pintle D is attached a head E, having at its opposite ends downwardly-extending pins F, having their respective axes oppositely inclined. These pins have cone-bearings F' near their upper ends and balls F'' at their lower ends. Journalled on said pins are the balls G, having

axial sockets G' to receive said pins and engage the balls F'' and provided with cups H at their upper ends, within which are ball-bearings I, engaging the cones F'.

By inclining the axes of the balls G their points of contact with the floor are at one side of the axes, respectively, and thus the balls are made to rotate on the respective pins when moved in any direction except when moved exactly in the direction of the inclination of the pins F. There is a slight clearance around one end of the pintle D, so that if one ball is in advance of the other said pintle may move laterally at said end or slightly from the vertical, and thus throw the greater pressure upon the ball which is in advance. This turns the pintle in the socket D, and thereby automatically brings the balls side by side and at right angles to the line of motion, where the pressure is equal on both.

Having thus described my invention, what I claim is—

1. In a caster, a track-plate having an up-turned serpentine peripheral flange, substantially as described and for the purposes set forth.

2. In a caster, the combination of the pintle having a solid head, and the socket having a reduced and open upper end through which said head passes, said reduced and open end of the socket being of different circumferential shape from the pintle-head and forced to expand in one direction and to contract a corresponding extent in another direction while the head is being forced there-through, substantially as described and for the purposes set forth.

3. In a caster, a tubular socket having a reduced and open upper end, and a pintle having a solid head adapted to pass wholly through said socket, said head having a portion or portions of its circumference of greater radius than that of the reduced upper end of the socket and other portions of correspondingly less radius than that of the same, substantially as described.

4. In a caster, a rotative pintle, a transverse head on the lower end of said pintle, oppositely-inclined pins at opposite sides of said head, and balls journaled on said pins, substantially as described.

5. In a caster, a rotative vertical pintle, a transverse head on said pintle, oppositely-inclined pins at opposite sides of said head, cones on said pins, and balls journaled on said pins, having sockets engaging the same, cups in said balls, and ball-bearings engaging said cups and cones, substantially as described.

6. In a caster, a socket, a vertical rotative pintle movable laterally in said socket at one end and having its other end held against such lateral movement, said pintle having a transverse head at its lower end, oppositely-inclined downwardly-projecting pins at opposite sides of said head, and balls journaled

upon said pins and each engaging the floor at one side of the axis of its pin, substantially as described.

7. In a caster, the combination of the socket
5 having a reduced open end, a vertical rotative
pintle extending through said socket and hav-
ing an unyielding head, said pintle and socket
being of such relative diameters at the ends
as that the pintle will be movable laterally in
10 said socket at one end and held against such
movement at the other end, said pintle hav-
ing a transverse head at its lower end, oppo-

sitely-inclined downwardly-projecting pins at
opposite sides of said head, and balls jour-
naled upon said pins and each engaging the 15
floor at one side of the axis of its pin, sub-
stantially as described.

In testimony whereof I affix my signature
in presence of two witnesses.

SILAS H. RAYMOND.

Witnesses:

LUTHER V. MOULTON,
LEWIS E. FLANDERS.