No. 726,447. PATENTED APR. 28, 1903.

H. McDONNELL.

CASTER.

APPLICATION FILED MAY 17, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

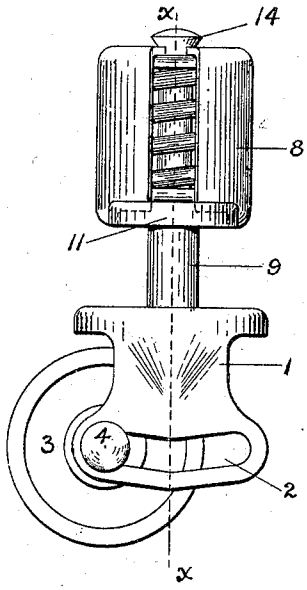


Fig. I.

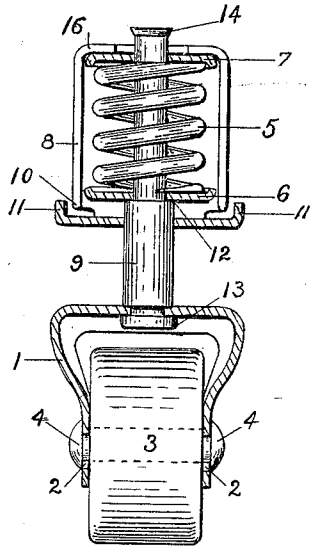


Fig. II

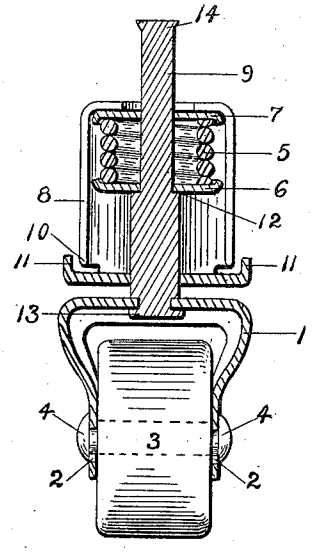


Fig. III.

WITNESSES.

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NO MODEL. 2 SHEETS—SHEET 2.

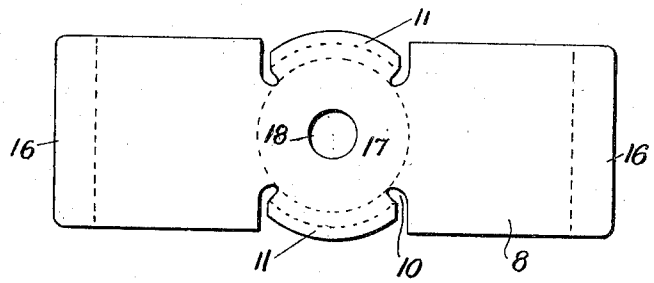


Fig. V.

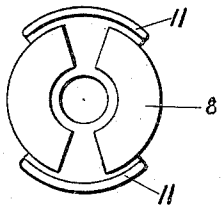


Fig. VI.

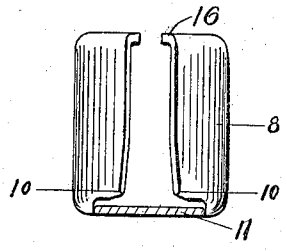


Fig. VII.

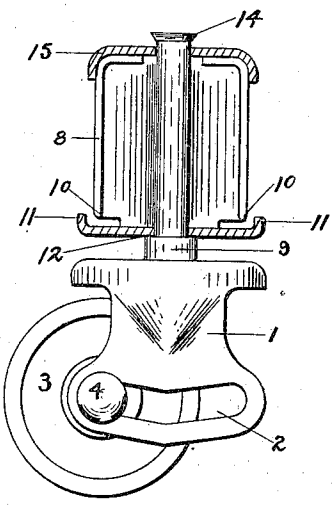


Fig. IV.

WITNESSES.

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UNITED STATES PATENT OFFICE.

HUGH McDONNELL, OF DETROIT, MICHIGAN.

CASTER.

SPECIFICATION forming part of Letters Patent No. 726,447, dated April 28, 1903.

Application filed May 17, 1902. Serial No. 107,704. (No model.)

To all whom it may concern:

Be it known that I, HUGH MCDONNELL, a citizen of the United States of America, and a resident of Detroit, county of Wayne, State of Michigan, have invented certain new and useful Improvements in Casters, of which the following is a specification.

My present invention relates to an improvement in casters, the object being to provide a simple, cheap, and efficient construction of a device of this character; and the invention consists, essentially, in the construction, combination, and arrangement of parts, substantially as will be hereinafter described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of my improved caster delineated in its actual operative position. Fig. 2 is a vertical sectional side elevation of the same. Fig. 3 is a similar vertical sectional view showing the condition of the parts when the greatest amount of weight rests upon the caster and the spring device therein has been compressed. Fig. 4 is a vertical sectional side elevation of a modification in the construction of my improved caster. Fig. 5 is a plan view of the blank or sheet out of which the upper shell portion of the caster is formed before it is stamped or pressed into final shape. Fig. 6 is a top plan view of said shell portion after the blank has been bent into shape. Fig. 7 is a detail side elevation of the same.

Similar numerals of reference designate corresponding parts throughout the different figures of the drawings.

1 designates a metallic shell stamped or otherwise formed of metal or other suitable material and serving as the foot of the caster. This foot 1 is fashioned with the oppositely-located slots 2 2, having a general horizontal direction, but each made up of two inclined portions running to the center from the ends or made in the form of an inverted arc or curve, so that the ends of the slots are higher than the middle points, which prevents the roller from stopping at the center. The wheel or roller 3 has a central perforation or passage, as shown, through which passes loosely a journal, rivet, or axle 4, the latter likewise passing through the slots 2 2, and there being heads on the opposite ends of the axle or rivet for the purpose of keeping it in position in the slots 2 and preventing the roller from ever falling out of its proper position. The wheel or roller 3 turns on the axle, so that the axle will turn without turning the wheel. The vertical stem 9 is a suitably-shaped upright rod, the lower end 13 of which passes through a central orifice in the upper portion of the foot 1 and is riveted at that point to the foot, so as to be firmly and strongly connected to the latter. The stem 9 is also riveted at its upper end at 14 to prevent the dislodgment from the stem of the vertically-movable disk 7 thereon. Near the center of the vertical length of the stem 9 is a shoulder 12, on which disk 6 is adapted to rest.

The disks 6 and 7 are preferably made of stamped metal, with the peripheral edges cut or bent, so as to keep in place a coiled or spiral spring 5, which is coiled about the stem 9 and tensioned between the two disks 6 and 7, said spring 5 being of sufficient strength to uphold the weight of the article of furniture to which the caster may be attached or any other article supported on the caster. It will be noted that the disk 7 holds the spring in place at the upper end and the disk 6 holds it in place at the lower end and that the said spring may occupy the extended position indicated in Fig. 2 or the compressed position shown in Fig. 3.

8 denotes a shell of substantially cylindrical form, the upper end being inturned or bent inwardly to provide the flanges 16, that overlap and rest upon the upper disk 7, as clearly shown in Fig. 2. This shell 8 is formed by bending into shape a metallic blank of the character indicated in Fig. 5. When bent into shape, the shell consists of vertical transversely curved sides, whose edges do not meet, but are separated by intervening spaces, as indicated in Fig. 7, said sides having the top flanges 16 and being integral with a flat circular and disk-like lower portion 17, which is formed on opposite edges with the upturned curved flanges 11, that are adapted to support the tube into which the caster is placed when in its operative position. The sides of the shell 8 are of the proper diameter to enable it to fit inside of this tube in which the caster may be carried. At the lower end of the sides of shell 8 the metal is cut or slit at each side at 10 for a sufficient distance to give it the tension required to hold the caster in

place. At the center of the bottom 17 of shell 8 is a circular opening 18 of proper size to enable shell 8 to move easily up and down on stem 9. When the weight of the article with which the caster is used is supported on the flanged bottom 17 alongside of the flanges 11, it will press down on shell 8, also on disk 7, and compress the spiral spring 5, which is supported by disk 6, resting on the middle shoulder of stem 9, thereby giving resiliency in the support.

The slot 2, in which the rivet or axle 4 moves and rotates, is an important feature of my present improvements, because it does not permit the roller to rest at the center, for as the slot is lower at the center and higher at each end the slightest weight applied to the caster will force the roller to move to one end or the other of the slot and be in position to turn at right angles if the bed or other article of furniture is moved at right angles. Another feature is that the caster is never required to make more than a quarter-turn, for when casters are turning or pivoting they are grinding and wearing the carpet. When a movement of the supported article of furniture is made in an opposite direction, the roller will remain stationary and the axle revolve in the slot and in the wheel 3 to the opposite position. The spiral spring 5 has the function of taking the weight of the article and imparting elasticity, and when on a bed would add additional resiliency, and the shell device 8, with lower part cleft at 10, affords the required tension or spring to hold the caster in place. The particular advantage of the spring in connection with this caster is that it holds the weight, and therefore takes off all sudden strain which may be put on a caster. When moving an article having this caster, if an obstacle be met the caster is not required to lift with a dead strain, but the spring permits the roller to rise over the obstacle. This caster when placed on ordinary chairs will give the resiliency of spring-bottomed chairs, and placed on a child's crib would obviate the necessity of rockers. When these casters are made large and placed on a piano, they will make it roll easily. The shell or cap device 8, covering the spring and slit 10, forming a spring or tension to hold caster in place, together with the disks 6 and 7, are important features in the make-up of my improved caster mechanism.

Many changes may be made in the exact construction and arrangement of the various parts without departing from my invention, and I reserve the liberty of so varying and adapting the precise combination as may suit the exigencies of different cases—as, for instance, the spring arrangement may be used with or without the slotted foot, or the slotted foot may be used in a caster construction with the omission of the spring device, and when slot is used it may be formed with two inclines to the center or it may be partly circular, as an inverted arc.

In the modified form of the invention shown in Fig. 4 the spring is omitted, and also the disks 6 and 7; but the wheel 3, the slotted foot 1, the stem 9, and the shell 8, with its flanged bottom 11, are all substantially the same as in the primary form of the invention. A circular or round cap 15 covers the upper end of shell 8 and is carried by the stem 9 and serves the purpose of holding shell 8 and stem 9 in proper relative position. The shoulder on the stem 9 is lower on the stem than it is in Fig. 3, and the flanged bottom 11 of the shell 8 rests on this shoulder.

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

1. In a caster, the combination with a foot and roller mounted therein, of a stem, a lower disk supported on a shoulder on the stem, an upper disk vertically movable on the stem, a spiral spring situated between the two disks and adapted to be compressed and extended, and a shell inclosing the spring and disks and vertically movable on the stem.

2. In a caster, the combination with a foot and roller mounted therein, of a stem secured to the foot, a lower disk supported on a shoulder on the stem, a vertically-movable upper disk, a spiral spring tensioned between the disks, and an inclosing shell which is vertically movable on the stem and is formed with top flanges embracing the upper disk, and also with the horizontal lower portion having upturned curved flanges adapted to support the tube into which the caster is placed when in operative position.

3. In a caster, the combination with a foot and roller mounted therein, of a stem secured to the foot, a lower disk supported on a shoulder of the stem, an upper disk vertically movable on the stem, both of said disks having inturned edges, a spiral spring tensioned between the two disks, and a slotted vertically-movable inclosing shell having its upper end bent inwardly to provide flanges that overlap the upper disk, and having a horizontal lower portion formed with curved flanges adapted to support the tube into which the caster is placed when in operative position.

4. In a caster, the combination with a stem, of a foot provided with oppositely-located curving or angular slots, both of said slots being lowest at the middle point and highest at the ends, together with a roller and its axle supported in said slots, the form of the slots preventing the roller from stopping in the center of the slots but causing it to be brought to the ends of same by the weight of the article of furniture when at rest and thus providing that the roller be always in position to pivot when moved at right angles.

Signed at Detroit this 13th day of May, 1902.

HUGH McDONNELL.

Witnesses:
FRANCES RAYMOND,
WILLIAM ARTHUR HENDERSON.