

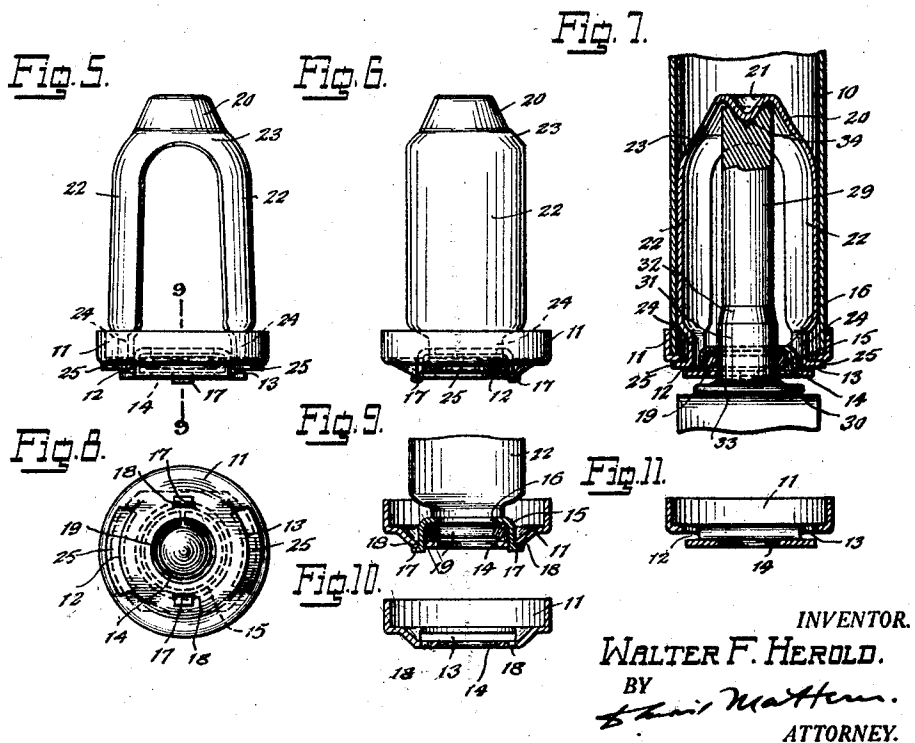
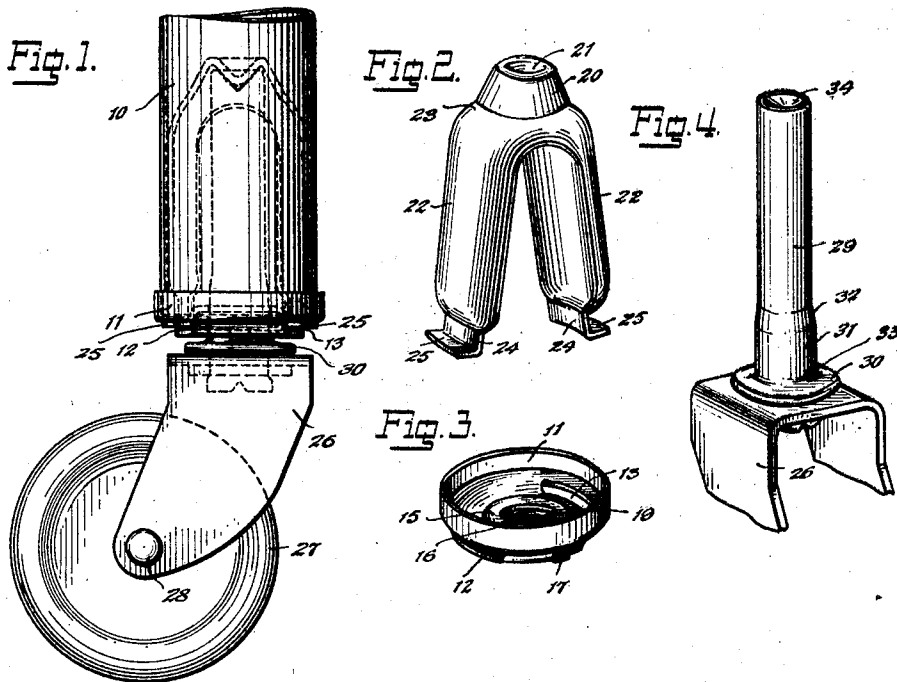
March 15, 1927.

W. F. HEROLD

1,620,657

CASTER

Filed Dec. 18, 1925



INVENTOR.
WALTER F. HEROLD.
BY
John W. Mattern.
ATTORNEY.

UNITED STATES PATENT OFFICE.

WALTER F. HEROLD, OF UPPER MONTCLAIR, NEW JERSEY, ASSIGNOR TO THE BASICK COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

CASTER.

Application filed December 18, 1925. Serial No. 76,228.

The present invention relates to improvements in casters, and has for an object to provide a caster particularly adapted for use with articles of furniture having tubular legs, as hospital beds, and the like, in which a retaining frame and leg mount structure is adapted to be firmly engaged within the leg, and into which the caster pintle is removably inserted and supported in a manner to have free pivotal movement about its vertical axis.

Heretofore the construction of casters of this character has been such that the entire strain was placed upon the leg mount washer, with the result that relatively heavy stock was required for the leg mount and the same was apt to distort under heavy loads. It is proposed in the present invention to provide a caster in which the load strain is supported by the tubular leg, with practically no strain upon the leg mount washer, and to this end the present embodiment consists in providing a spring frame in the form of a hanger having a top center bearing for the upper end of the caster pintle, and having its ends extended directly beneath the end of the leg, so that the load strain is transferred from the top of the spring frame directly to the bottom of the tubular leg, the leg mount washer being merely supported by the spring frame, but not taking the strain. It is further proposed to provide in combination with this structure spring pintle retaining means carried by the leg mount washer.

A further object is to provide improved centering means for the caster pintle, so that no matter at what angle it is inserted it will be automatically centered at its upper end, and any possibility of jamming or distortion is thereby prevented. A still further object is to provide improved lubricant retaining means between the pintle and its center bearing by means of which the lubricant will not drain out by gravity, so that it will be retained for an indefinitely long period.

Other objects are to provide a caster of simple and inexpensive construction, which may be pressed from sheet metal, and which will be reliable in use.

With the above and other objects in view, an embodiment of the invention is shown in the accompanying drawings, and this embodiment will be hereinafter more fully de-

scribed with reference thereto, and the invention will be finally pointed out in the claims.

In the drawings:

Fig. 1 is a side elevation showing a tubular metal leg provided with a caster according to the present embodiment of the invention;

Fig. 2 is a perspective view of the spring frame employed;

Fig. 3 is a perspective view of the leg mount, as detached from the spring frame;

Fig. 4 is a perspective view of the caster pintle, and showing a portion of the horn;

Fig. 5 is a side elevation of the assembled socket member consisting of the spring frame and leg mount;

Fig. 6 is a side elevation at right angles to that shown in Fig. 5;

Fig. 7 is a vertical sectional view showing the assembled caster and socket attached to the furniture leg;

Fig. 8 is a bottom plan view of the caster socket;

Fig. 9 is a detail sectional view, taken along the line 9—9 of Fig. 5;

Fig. 10 is a similar sectional view of the leg mount washer, disassembled; and

Fig. 11 is a similar sectional view of the leg mount washer, but at right angles to that shown in Fig. 10.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, the caster, according to the present embodiment of the invention, is adapted to be attached to a tubular metal leg or post 10, as shown in Figs. 1 and 7, and comprises a peripherally flanged leg mount washer 11 provided in annularly spaced relation to its flange with diametrically opposed circumferential slits 12 and 13, the portion of the leg mount between said slits being depressed to form said slits into laterally extending slots for receiving the spring frame ends, as will hereinafter more fully appear. The leg mount is provided with a central pintle receiving opening 14, and at its upper surface there is provided a cup member 15 having a central opening 16 in line with the opening 14, and secured by projecting ears 17 inserted through slots 18 in the leg mount and bent over upon its under surface. Within this

cup member there is loosely engaged and retained a split spring ring 19 having an inner diameter smaller than that of the openings 14 and 16 and an outer diameter smaller than the inner diameter of the cup member, this spring ring adapted to yieldably retain the caster pintle, as will presently more fully appear.

The spring frame member comprises a truncated cone shaped top portion 20 having a depressed cone-shaped center bearing 21, and side legs 22 connected to the top portion by an annular shouldered portion 23, these legs being of circumferential cross section, and provided at their lower ends with inwardly offset contracted leg mount engaging portions 24 having laterally extending circumferential end flanges 25 bent outwardly therefrom. The spring frame is assembled with the leg mount by compressing the side legs to a point where the outer edges of the end flanges 25 will pass downwardly past the upper walls of the slots 12 and 13, whereupon they are expanded outwardly through the slots beneath the lateral under surface of the leg mount, the engagement of the contracted leg portions 24 with said upper walls of the slot limiting the expansion of the spring member to such extent that in the detached position (Fig. 5) the side legs are inclined outwardly toward the lower ends, and the end flanges 25 are substantially beneath the peripheral flange of the leg mount. In the inserted position within the furniture leg (Fig. 7) the side legs are contracted, so that they engage the inner surface of the leg substantially over their entire outer surface and exert an outward pressure to firmly retain the caster mounting frame and leg mount, the lower end of the furniture leg being engaged within the peripheral flange of the leg mount. In this attached relation the end flanges 25 extend directly beneath the lower end of the furniture leg.

The detachable caster consists of the usual horn 26, having a caster wheel 27 rotatably carried therein upon an axle 28, and having a pintle 29 secured in its upper transverse portion, the lower end of the pintle having a flange or shoulder 30 engaging the upper surface of the horn. The pintle is provided at its lower portion with an enlarged diameter cylindrical portion 31, tapering, as at 32, to the upper smaller diameter portion, and between said portion 31 and the shoulder 30 there is preferably formed a rounded fillet surface 33. At the upper end the pintle is provided with a cone-shaped recess 34 adapted to rotatably engage the center bearing 21 of the spring frame. The diameter of the pintle is such that the upper portion will pass freely through the spring ring 19, while the lower portion 31 will expand said ring and be thus frictionally held thereby against

dropping out of the leg, the ring being snugly held about the pintle and being freely rotatable within the cup member 15.

Upon inserting the pintle in vertically aligned relation the recessed end 34 will engage directly upon the center bearing 21, while if it is inserted at an angle the tapered end portion 20 will automatically guide the same to its central position upon said center bearing, the relation of the portion 20 to the center bearing being such that it is not possible to jam the pintle end between them. In the engaged relation of the pintle the upper recessed end has thrust bearing upon the center bearing 21, the construction forming a lathe center bearing in which suitable lubricant can be retained for an indefinitely long period.

In the operative position of the caster, as shown in Fig. 7, the load strain carried by the pintle is transferred from the top of the spring frame directly to the bottom of the tubular furniture leg through the lateral spring leg ends 25, the spring frame functioning in the nature of a hanger between the pintle and leg, so that no appreciable strain is imposed upon the leg mount washer. The leg mount washer serves to maintain the vertical alignment of the pintle, but is practically free of any vertical thrust strains, and it may therefore be formed of relatively thin metal, or in fact of fibre or other suitable material. The spring ring 19 firmly retains the caster pintle in place, allowing it to be readily removed however, when desired. It furthermore permits easy swiveling action, the same being gripped snugly about the pintle and freely rotatable within the cup member 15 substantially out of frictional contact therewith.

The manner of supporting the pintle retaining spring means independently of the spring frame permits of the latter being formed of one piece, without weakening the same by the attachment or formation therein of pintle retaining means, and without the necessity of providing separate strengthening means for supporting the frame against collapse or distortion. In particular, the construction makes possible the provision of a one piece spring frame member having an unbroken circumferential top portion—the portions 20 and 23 in the present embodiment—constituting a rigid support for the spring legs, to the end that the frame may be subjected to great lateral pressure and vertical thrust without danger of collapse.

The circumferential cross section of the leg mount engaging portion 24 and the circumferential bends between these portions and the main leg portions 22 and flanges 25 render the lower ends of the spring frame substantially rigid against any tendency to bend under the heavy load adapted to be imposed thereon.

The invention is illustrated in connection with a caster wheel, but it is obvious that instead of such wheel the pintle may be provided with a slide or other floor engaging element, so that the term "support" employed in the claims will be understood to cover a floor engaging element generically.

I have illustrated and described a preferred and satisfactory embodiment of the invention, but it will be understood that changes may be made therein, within the spirit and scope thereof, as defined in the appended claims.

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

1. In a support, a spring frame adapted to be inserted in an opening in a furniture leg or the like, including a thrust bearing portion and side leg portions adapted to frictionally engage the interior of the furniture leg, a base member having a central pintle receiving opening and portions engaged by said side leg portions, said side leg portions being provided with inwardly offset end portions each having a lateral flange extending outwardly to retain said base member and adapted to engage directly beneath the lower end of said furniture leg, whereby thrust on said bearing portion is adapted to be transferred directly to said furniture leg.

2. In a support, a spring frame adapted to be inserted in an opening in a furniture leg or the like, including a thrust bearing portion and side leg portions, a base member having a central pintle receiving opening and slots at each side thereof engaged by said side leg portions and adapted to limit the expansion of said side leg portions and permit equal inward contraction of said leg portions, said side leg portions being provided with end portions extending outwardly to retain said base member and adapted to engage directly beneath the lower end of said furniture leg, whereby thrust on said bearing portion is adapted to be transferred directly to said furniture leg.

3. In a support, a spring frame adapted to be inserted in an opening in a furniture leg or the like, including a thrust bearing portion and side leg portions, a base member having a central pintle receiving opening and diametrically opposed slits, the portion of the base member between said slits being depressed to a greater extent than the metal thickness of said leg portions to form said slits into laterally extending slots, said slots being engaged by said side leg portions and

adapted to limit the expansion of said portions and permit inward contraction, said side leg portions being provided with end portions extending outwardly through said slots to retain said base member and adapted to engage directly beneath the lower end of said furniture leg, whereby thrust on said bearing portion is adapted to be transferred directly to said furniture leg.

4. In a caster, a frame adapted to be inserted in an opening in a furniture leg or the like, including a top portion in the form of a truncated cone, unbroken and continuously formed circumferentially to form a rigid top diverging downwardly and outwardly from the upper extremity of said frame, a center thrust bearing portion formed in the upper surface of said truncated top and surrounded laterally by the circumferential portion thereof, side leg portions integrally formed with said top portion adapted to frictionally engage the interior of said furniture leg, a base member connected to said side leg portions having a central pintle receiving opening, and a pintle engaged through said base opening adapted to be rotatably engaged at its upper end with said thrust bearing portion, and adapted through engagement with the inner surface of said truncated cone top portion to be guided into centralized engaging relation with said thrust bearing portion.

5. In a support, a one piece spring frame adapted to be inserted in a furniture leg or the like, including a top portion having a peripheral wall and an unbroken circumferential shoulder intermediate the upper and lower limits of said top portion adapted to render the same rigid, and spaced resilient side leg portions extending downwardly from said top portion adapted to frictionally engage the interior of the furniture leg.

6. In a support, a spring frame adapted to be inserted in a furniture leg or the like, including side leg portions adapted to frictionally engage the interior of the leg, and inwardly offset end portions extending the full width of said side leg portions and each having an outwardly bent lateral flange adapted to engage beneath the end of the leg, the bend between said end portions and said flanges being along a bent line whereby said end portions are rendered rigid with respect to said side portions.

Signed at Bridgeport, in the county of Fairfield, and State of Connecticut, this 25th day of November, 1925.

WALTER F. HEROLD.