

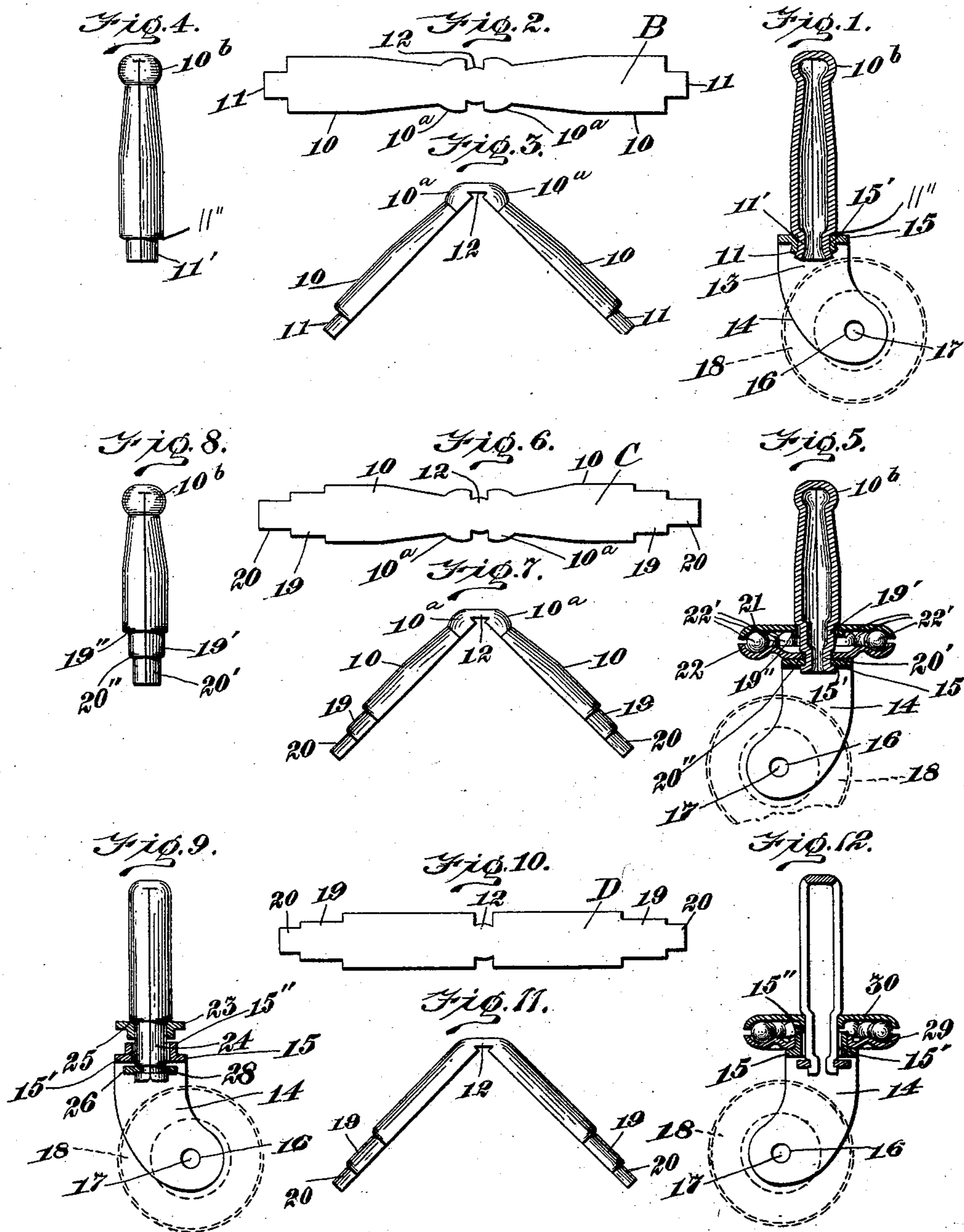
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W. LIVINGSTONE.
FURNITURE CASTER.

(Application filed Dec. 17, 1900.)

(No Model.)



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FURNITURE-CASTER.

SPECIFICATION forming part of Letters Patent No. 689,553, dated December 24, 1901.

Application filed December 17, 1900. Serial No. 40,097. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LIVINGSTONE, a citizen of the United States, residing in Flushing, in the county of Queens and State of New York, have invented certain new and useful Improvements in Furniture-Casters, of which the following is a specification.

This invention relates to furniture-casters, and more particularly to that class in which a pintle is either driven into the article to be supported, having the remainder of the caster revolving around it, or is secured to the horn or frame of the caster and turns with it in a socket. Such casters have heretofore been commonly made with the pintle of wire swaged to produce the desired form and connected to a separate horn or else cast in one piece therewith. To economize metal and secure lightness, the diameter of the pintle in these forms has been reduced to a minimum, so that it will barely sustain the ordinary strains put upon it, and therefore they very frequently break in use. Casters have also been made with the pintle and horn formed integrally of sheet metal, with one or more longitudinal seams dividing the parts of both pintle and horn. This construction is open to several objections. The blank from which such a caster is produced is necessarily of so irregular form as to necessitate the production of considerable waste metal or "scrap," involving serious loss. It obliges the manufacturer to form both parts from metal of the same thickness, which would usually be objectionable, it being desirable to make them of different thicknesses or different quality. It also leaves a seam or opening between the two arms of the horn, throwing a heavy stress upon the juncture between the pintle and horn when the caster is in use in furniture, causing a twisting strain very liable to break the material at this point.

The principal object of my invention is to obviate these difficulties and to produce a caster having a pintle which will with approximately the same transverse sectional area as in the ordinary caster be strong enough to resist fracture and at the same time may be inexpensive to produce. These objects are attained by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section of one form of my improved caster. Fig. 2 is a plan of the sheet-metal blank from which the pintle thereof is formed. Fig. 3 is a side elevation of this blank after pressing. Fig. 4 is a side elevation of the completed pintle. Figs. 5, 6, 7, and 8 are similar views of a caster provided with a ball-bearing attachment and the blank and completed pintle therefor. Figs. 9, 10, and 11 are similar to Figs. 1, 2, and 3 of a caster and pintle-blank for use without socket; and Fig. 12 is a side elevation of the same type of caster supplied with ball-bearings.

Similar characters designate like parts throughout the several figures of the drawings.

In constructing my improved caster a pintle-blank B of the form illustrated in Fig. 2 in one embodiment of my invention is stamped or otherwise cut from sheet metal of a suitable kind, quality, and thickness, which comprises sections 10 10, similarly shaped and having inner enlargements 10^a 10^a, reduced end sections 11 11, and a reduced connecting portion 12 between the enlargements 10^a. This blank is then preferably submitted to the action of suitable dies, which round the sections 10 10 and their enlargements into semicircular or curved outlines to each form half of a complete pintle and at the same time to so form the connecting portion 12 that the parts will be most effectively arranged for the next step in the construction of the pintle without unduly straining the metal at this point. This is preferably such that the halves of the blank assume an angle of about ninety degrees to each other. As the next step the parts are bent toward one another until the edges of the halves contact to form the complete pintle-body, with the cylindrically-reduced end portion 11' and the enlarged spherical head 10^b for engagement with the socket. These parts will have the tendency to remain in the position to which they are bent, but will also be positively retained by a horn 13, which may be conveniently formed from sheet metal of any desired thickness and quality, with arms 14 14 and a connecting-plate 15, through a central hole 15' in which plate the reduced portion 11' of the pintle extends.

These semitubular reduced ends are then expanded below the plate, pressing it against a shoulder 11" and firmly securing it in place. In the arms 14 are holes 16 in transverse alignment, through which extends the usual pin 17 to support a roller 18.

Figs. 5 to 8 of the drawings illustrate a caster similarly constructed, but showing it converted into one of the ball-bearing type. In this case the blank C, while it may be otherwise similar to the blank B, has two separate and successively-reduced end sections 19 20, which form in the completed pintle the inner and outer cylindrical reduced portions 19' 20', respectively, having at their inner ends the shoulders 19" 20". Turning freely about the portion 19' is situated a bearing-ring 21, retained against upward movement by the shoulder 19". About the outer portion 20' is shrunk a coaxing bearing or channel ring 22, abutting against the shoulder 20", and between the adjacent bearing-faces of the two rings is situated a series of balls 22'. The horn surrounds the portion 20' below the ring 22, being secured thereon by its expansion as described in the preceding form, and serves, together with the ring 22, to retain the parts of the pintle together.

The type of pintle adapted for use without a socket to be driven directly into the article to be supported is illustrated in Figs. 9 to 12. In this pintle the blank D, while being shown with its outer ends similarly formed to the blank C, is without the inner enlargements, having only the connecting portion 12, so that no enlarged head is formed in the completed pintle. The pintle preferably has a retaining ring 23, shrunk about a reduced portion 24, having its upper side resting against a shoulder 25, after which the loose horn is put in place, and then a ring 26 is put on a still further reduced portion below it, abutting against a shoulder 28 and secured in place by expanding the lower end of the pintle. The horn will thus be left to turn freely between rings 23 and 26 and may be provided with an annular flange 15" to increase the bearing-surface. In Fig. 12 a ball-bearing arrangement of this type of caster is shown, the horn carrying the bearing-ring 29, in which is the ball-channel, while upon the balls rests a suitable bearing-ring 30, secured about the pintle in place of the ring 23.

It will be seen that while this caster may be produced with great economy the strength of the pintle for the amount of metal employed will be much increased on account of the well-known ability of a tubular member to resist stresses, and it will be also strengthened by the continuous retaining member surrounding it. Furthermore, the various forms may be readily changed from the ordinary or cheap caster to the high-grade ball-bearing caster at a comparatively slight increase in cost.

Having thus described my invention, I claim—

1. In a caster, the combination with a roller, of a pintle formed from two semitubular sections of sheet metal joined together at one end, and a horn at the opposite end of the pintle formed separately therefrom and comprising supporting-arms for the roller, and an integral connecting-plate through an opening in which the pintle extends.

2. In a caster, the combination with a roller, of a pintle formed from two semitubular sections of sheet metal joined together at one end by an integral connecting portion and a horn at the opposite end of the pintle formed separately therefrom and comprising arms for supporting the roller, and an integral connecting-plate through an opening in which the pintle extends.

3. A blank for a tubular caster-pintle comprising a pair of sheet-metal body-sections connected at their adjacent ends by an integral reduced portion disposed between larger portions and each of which body-sections is reduced in width at its free end, said body-sections when the blank is shaped to form constituting the oppositely-disposed semitubular portions of a pintle having a shoulder at one end and at the opposite end a head formed by said integral reduced portion around which extend the said adjacent larger portions.

4. In a caster, the combination with a roller and a supporting-horn, of a pintle having a shoulder at one end and formed of a single piece of sheet metal said pintle comprising two semitubular sections joined at their connected ends by an integral reduced portion having adjacent to its extremities larger portions which surround the reduced portion and form therewith the pintle-head.

5. In a caster, the combination with a roller and a supporting-horn comprising roller-supporting arms and an integral connecting-plate through an opening in which the pintle extends, of a pintle formed by two semitubular sections of sheet metal joined by a connecting portion at one end and at the opposite end having a reduced diameter to form a shoulder.

6. In a caster, the combination, with a roller, of a tubular pintle formed of two semitubular sections of sheet metal and provided with a reduced portion at one end; a horn surrounding the reduced portion; and two rings having adjacent bearing-faces also surrounding the reduced portion.

7. In a caster, the combination with a tubular pintle formed of two semitubular sections of sheet metal and provided at one end with two successively-reduced portions, of a retaining member surrounding the outer portion; a member freely movable about the inner portion; a horn; and a roller supported by the horn.

8. In a caster, the combination with a tubular pintle having one or more longitudinal divisions, of one or more rings adapted to form raceways for a series of balls and surrounding the pintle; a horn; and a roller supported by the horn.

9. In a caster, the combination with a tubular pintle having one or more longitudinal divisions and two successively-reduced portions, of a retaining member surrounding the
5 outer and smaller portion; a bearing-ring turning freely about the inner and large portion; a horn; and a roller supported by the horn.

10. In a caster, the combination, with a
10 roller, of a tubular pintle having one or more

longitudinal divisions and two successively-reduced portions; a retaining member surrounding the outer and smaller portion, and a bearing-ring and horn turning freely about the inner and larger portion.

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