July 2, 1968 W. H. SULLIVAN 3,390,421

CHAIR BASE

Filed Jan. 4, 1966

Fig. 1.

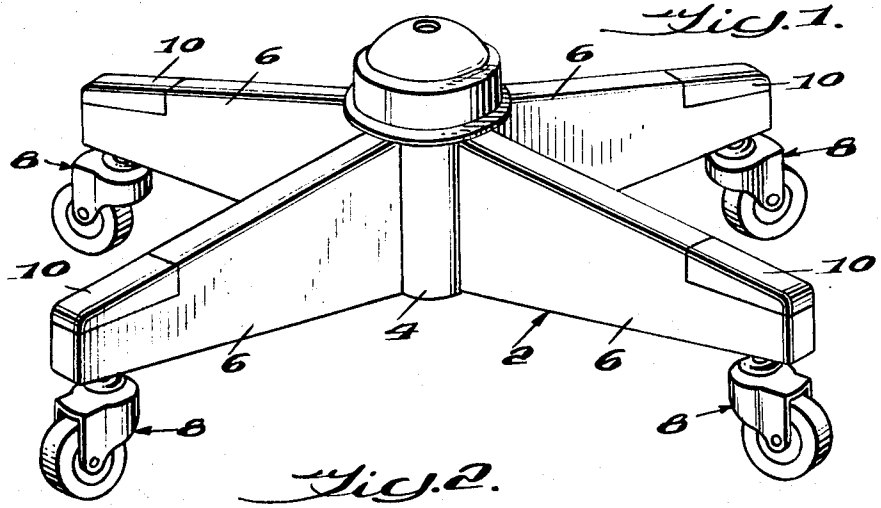


Fig. 2.

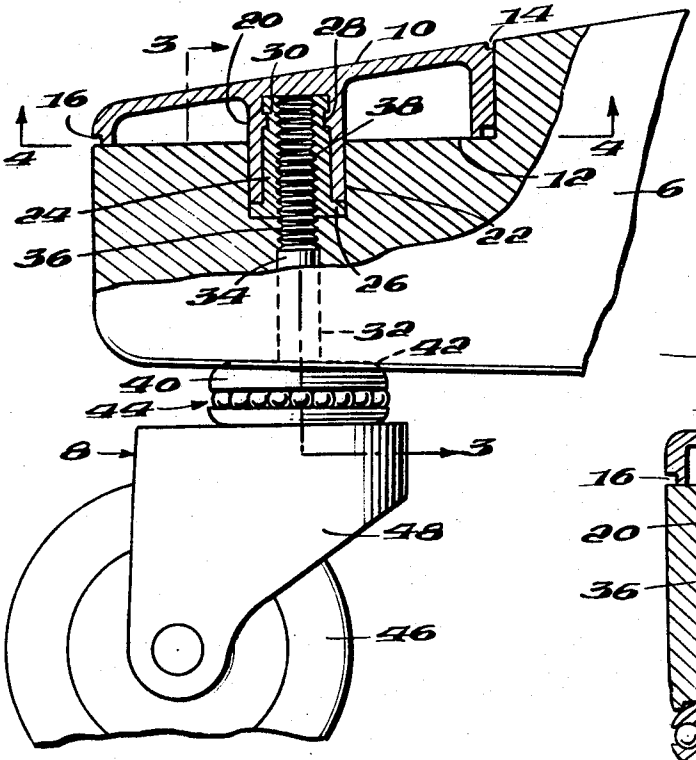


Fig. 3.

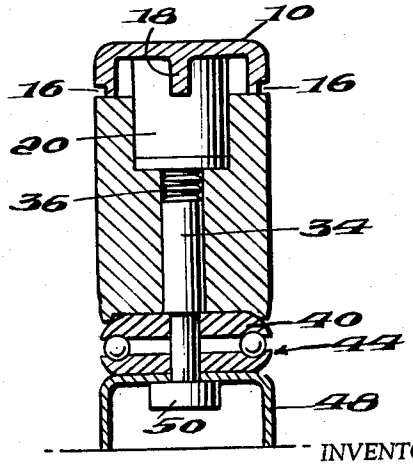
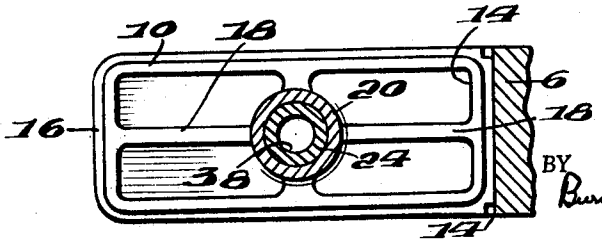


Fig. 4.



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CHAIR BASE

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ABSTRACT OF THE DISCLOSURE

A caster assembly for a chair base of the type having outwardly extending legs. The caster assembly includes a scuff plate positioned on top of the leg and a caster assembly positioned under the bottom of the leg. The scuff plate has a screw socket for receiving a threaded screw which is secured at its base to the chair caster and extends through the leg where it is threadedly engaged in the socket. The threaded connection permits opposed bearing surfaces on the scuff plate and on the caster assembly to be clamped rigidly against the chair leg.

This invention relates to chairs and more particularly to swivel chair bases.

Chairs of the typical office type have four legs extending outward from the center of the base. The seat is mounted on an upright post that is received in a socket in the center of the base, and the chair seat swivels relative to the base. Casters support the outer ends of the legs for rolling the chair over the floor.

Usually, the chair casters have stems and sockets are drilled in the wood legs of the base for receiving the caster stems. The caster stems are held in the sockets by friction. After the chair has been in use for a period of time, the lateral force exerted by the roller on the stem causes the stem to enlarge the socket, so that the caster drops out. Another method of mounting a caster stem in a chair is to drive the stem of the caster directly into the wood. In this type of mounting the stem is serrated to prevent turning relative to the leg and is glued in the socket. Even this type of rigid mounting ultimately allows the caster to work free and to drop out of the socket.

Another difficulty encountered with chair casters is that the stems of the casters may be bent during shipping. When this occurs, the socket becomes enlarged and the caster drops out. Usually, the only remedy when the socket becomes enlarged is to replace the entire wood chair base, which is expensive. Attempts to fix a wood base having an enlarged caster stem socket have been found to be generally unsatisfactory.

Accordingly, it is an object of this invention to provide an improved wood chair base of the type having casters on the legs.

It is another object of this invention to provide a caster mounting for a wood chair base that securely maintains the caster stem in the base.

It is a further object of this invention to provide an improved wood chair base having a scuff plate and a caster securely mounted on each leg.

These objects are accomplished in accordance with a preferred embodiment of the invention by a chair base in which the casters under each leg are supported by a stem which extends through a hole in the leg. A scuff plate is applied to the top of each leg and each scuff plate has a socket that is aligned with the hole in the leg. The end of the caster stem is secured in the scuff plate socket and the stem does not turn relative to the chair leg.

This preferred embodiment is illustrated in the accompanying drawings in which

FIG. 1 is a perspective view of a chair base having the caster mounting of this invention;

FIG. 2 is a side elevational view of one of the legs, partially in cross section;

FIG. 3 is a cross sectional view of the leg along the line 3—3 in FIG. 2; and

FIG. 4 is a cross sectional view of the leg along the line 4—4 in FIG. 2.

As shown in FIG. 1, a chair base **2** has a center portion **4** which supports an upright seat post (not shown). The base also includes outwardly extending legs **6**. Each of the legs is provided with a caster assembly **8**. At the top of each leg **6** there is a scuff plate **10**. The scuff plates **10** are at the outer ends of the legs to protect the base from becoming marred and to protect the shoes of the chair's occupant. Preferably, the scuff plates **10** are formed of a plastic material.

As shown in FIG. 2, the leg **6** has a recess **12** to accommodate the scuff plate, so that the upper surface of the plate is substantially in alignment with the top surface of the leg **6**. The edges of the scuff plate adjacent the leg **6** have recessed shoulders **14** and **16**. The scuff plate **10** has a rounded end portion and rounded longitudinal edges and is reinforced by a rib **18** which extends longitudinally through the scuff plate. A boss **20** is formed integrally in the scuff plate and projects into a socket **22** that is formed in the leg **6**. A tubular insert **24** is secured in the boss **20** and has a flange **26** which abuts against the bottom of the socket **22**. The insert **24** is secured in the boss **22** by a rib **28** which engages a corresponding groove **30** in the insert **24**. Preferably, the scuff plate **10** is molded around the insert **24**, so that the insert is rigidly secured in the scuff plate. The frictional engagement between the insert and the boss and between the flange **26** and the socket **22** resists turning of the insert relative to the leg **6**.

A bore **32** of a substantially smaller diameter than the socket **22** extends through the leg **6** in alignment with the socket **22**. A stem **34** on the caster assembly **8** extends through the bore **32**. The diameter of the bore **32** is only slightly larger than that of the stem **34** so that the bore **32** fits closely around the stem to resist bending of the stem. External threads **36** on the stem **34** engage internal threads **38** in the insert **24**. At the base of the stem **34** there is a circular plate **40** which fits in the recess **42** in the leg **6**. As shown in FIG. 2, the bottom of the recess **42** extends substantially at right angles to the axis of the stem **34**. Preferably, the plate **40** has radial grooves in its upper surface which bite into the wood at the bottom of the recess **42** to resist turning of the plate relative to the leg **6**.

The plate **40** forms the upper race of a ball bearing assembly **44**. A wheel **46** is mounted on a bracket **48** and the bracket **48** is journaled on the stem **34** for turning movement relative to the leg **6**. The stem **34** extends through the ball bearing assembly **44** and through the bracket **48**. A head **50** is formed on the end of the stem **34**, preferably by cold working after the parts are assembled on the stem. Of course, any other suitable arrangement for mounting the bracket **48** on the stem **34** which permits the bracket **48** to turn relative to the stem could be substituted for the assembly shown in FIGS. 2 and 3.

The caster assembly of this invention is mounted in a chair leg **6** in which the recess **12**, the socket **22**, the bore **32** and the recess **42** have been formed. The caster assembly **8** is preferably assembled as a unitary structure with the bracket **48**, and the ball bearing assembly **44** secured on the stem **34** by the head **50**. The stem **34** is inserted through the bore **32** until the plate **40** is positioned against the bottom of the recess **42**, as shown in FIGS. 2 and 3. The scuff plate **10** is then assembled on the leg **6** by inserting the boss **20** into the socket **22** until the internal threads **38** in the insert **24** engage the threads **36** on the end of the stem **34**. The plate **40** is then rotated relative to the scuff plate **10** until the stem **34** has been

threaded into the insert 24 to such an extent that the scuff plate is rigidly secured in the recess 12 and the plate 40 is pressed tightly against the bottom of the recess 42. In this manner, the stem 34 is tightly secured in the leg 6.

The outer surface of the boss 20 has a substantially larger diameter than the stem 34. Therefore, the boss offers resistance to transverse forces tending to enlarge the socket 22 and the bore 32. Accordingly, the caster assembly 8 remains tightly affixed to the base 6 and provides a long service life for the chair base.

If the caster assembly should become worn, or for some other reason needs to be replaced, the caster assembly can be removed from a chair leg 6, by unscrewing the stem 34 from the insert 24. Then, a new caster assembly may be installed in the leg 6.

While this invention has been illustrated and described in one embodiment, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

I claim:

1. A caster assembly for a chair base having an outwardly extending leg comprising a scuff plate, a caster said scuff plate and said caster each having opposed bearing surfaces, and means for securing together said plate and said caster said securing means including means for adjusting the distance between said opposed surfaces, whereby the scuff plate and the caster may be clamped against opposite sides of said chair leg.

2. The caster assembly according to claim 1 wherein said securing means includes a stem extending between said caster and said scuff plate, said securing means including screw thread means for adjusting the distance between said caster and said scuff plate.

3. The caster assembly for a chair base having an outwardly extending leg comprising: a scuff plate on one side of said leg, a caster on the opposite side of said leg, and means for securing together said plate and said caster, said scuff plate having a boss projecting toward said caster and said securing mean including a stem on said caster, said stem threadedly engaging said boss.

4. The caster assembly according to claim 1 wherein said caster has a bearing plate in position to engage said leg and said securing means includes a stem fastened to said bearing plate.

5. The caster assembly for a chair base having an outwardly extending leg comprising a scuff plate on one side of said leg, a caster on the opposite side of said leg, and means for securing together said plate and said caster, said caster having a bearing plate in position to engage said leg, said securing means including a stem fastened to said bearing plate, said stem being threaded at the end opposite said bearing plate and said scuff plate being threadedly secured to said stem opposite end.

6. The caster assembly for a chair base having an outwardly extending leg comprising: a scuff plate on one side of said leg, a caster on the opposite side of said leg, and means for securing together said plate and said caster, said scuff plate having a boss, said boss having a threaded socket therein, and said securing means including a stem on said caster, said stem having threads on the end opposite said caster, said stem threads engaging the threads in said socket.

7. The caster assembly according to claim 6 wherein said boss has an insert therein, said insert including said socket and being metallic, and said boss being plastic.

8. The caster assembly according to claim 6 wherein said boss includes an insert, said insert including said socket and having a flange extending across the end of said boss, and flange having a substantially larger diameter than said stem.

9. The caster assembly according to claim 3 wherein said scuff plate has ribs supporting said boss.

10. A caster mounting assembly comprising a chair leg having upper and lower sides, said leg sides being in opposed relation, a scuff plate at said upper side, a caster at lower side, said leg having a bore extending between said upper and lower sides, said caster having a bearing surface engaging said lower side, said scuff plate having a bearing surface engaging said upper side, a stem extending through said bore, means securing one end of said stem to said caster and the opposite end to said scuff plate, said securing means including screw threads for adjusting the distance between said scuff plate and said caster.

11. The caster mounting assembly according to claim 10 wherein said leg has a recess at said upper side, said recess and said scuff plate cooperating to resist turning of said scuff plate relative to said leg.

12. A caster mounting assembly according to claim 10 wherein said scuff plate has a boss aligned with said leg bore, said screw threads are on said stem opposite end and on said boss, whereby said stem and boss are adjustably secured together.

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