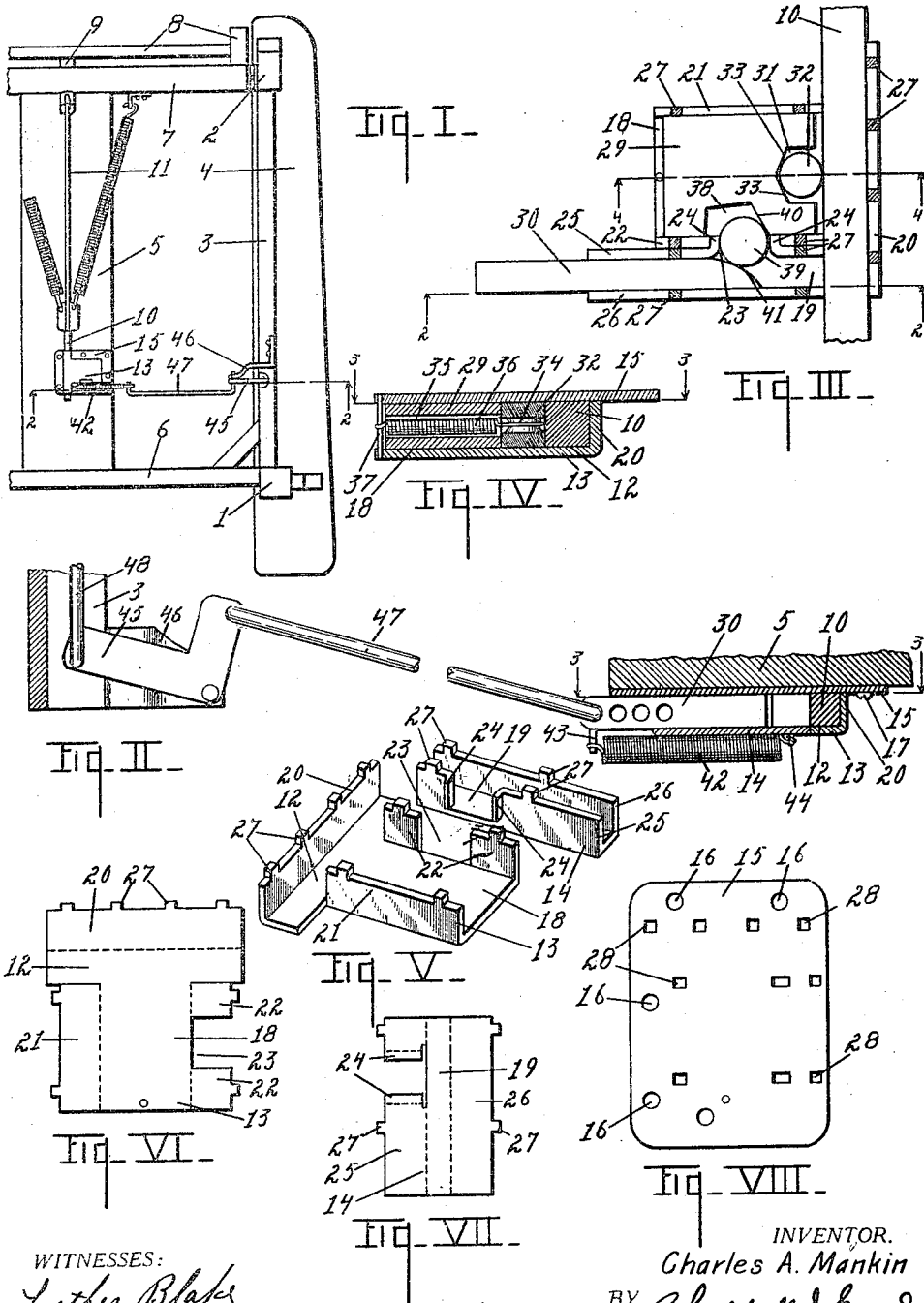


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ADJUSTING MECHANISM.
APPLICATION FILED MAR. 20, 1916.

1,211,608.

Patented Jan. 9, 1917.



WITNESSES:
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ADJUSTING MECHANISM.

1,211,608.

Specification of Letters Patent.

Patented Jan. 9, 1917.

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To all whom it may concern:

Be it known that I, CHARLES A. MANKIN, a citizen of the United States, residing at Sturgis, county of St. Joseph, State of Michigan, have invented certain new and useful Improvements in Adjusting Mechanisms, of which the following is a specification.

This invention relates to improvements in adjusting mechanisms.

My improvements are particularly designed by me for embodiment in adjusting mechanisms for adjustable chairs of the type shown, for example, in the Borgert Patent No. 1,087,526, Feb. 17, 1914, and I have illustrated the same as I have embodied them in such a chair structure. My improvements are, however, readily adapted and desirable for use in various relations.

The main objects of my invention are: First, to provide an improved adjusting mechanism. Second, to provide an improved adjusting mechanism for adjustable chairs. Third, to provide an improved adjusting mechanism which is noiseless, is capable of adjustment to any position within its scope and supports the adjustable member against movement in either direction. Fourth, to provide an improved adjusting mechanism having these advantages which is very simple and compact in structure and at the same time one which is strong and durable.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a detail inverted view of a chair embodying the features of my invention. Fig. II is an enlarged detail vertical section on a line corresponding to line 2—2 of Figs. I and III, parts being shown in full lines to better illustrate structural details. Fig. III is a detail section on a line corresponding to line 3—3 of Figs. II and IV. Fig. IV is a transverse section on a line corresponding to line 4—4 of Fig. III,

parts being shown in full lines to better illustrate the structure thereof. Fig. V is a perspective view of the casing members 13 and 14 in disassembled relation. Fig. VI is a plan of the blank for the casing member 13. Fig. VII is a plan view of the blank of the casing member 14. Fig. VIII is a plan view of the casing plate 15.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the chair illustrated comprises front and rear legs 1 and 2 connected by the side bars 3 and the arms 4. A horizontally disposed bar 5 extends between the front rail 6 and rear rail 7.

8 represents the adjustable back which is hinged to the chair frame in the well-known manner, preferably as illustrated in the Borgert patent referred to. The back is provided with a downwardly projecting arm 9. The slide bar or adjustable member 10 of the adjusting mechanism is connected to the arm 9 by the link 11.

A casing-like support having a slide way 12 for the member 10 is provided, the support being mounted on the horizontal piece 5 of the chair frame. This support comprises a pair of members 13 and 14 and the top plate 15 having holes 16 adapted to receive attaching screws 17. The members 13 and 14 are sheet metal stampings, the blanks therefor being shown in Figs. VI and VII, respectively. The member 13 is provided with a way 18 disposed transversely of the way 12 for the slide bar 10 while the member 14 is provided with a way 19 arranged at the side of the way 18. The casing or support member 13 has an upturned flange 20 at one end forming one end of the casing and one side of the way 12. It also has upturned flanges 21 and 22 forming the side members of the way 18. The flanges 22 are spaced to provide an opening 23 adapted to receive the outturned portions 24 at the edges of an opening in the flange 25 of the member 14 which has an upturned flange on each edge, its outer flange 26 constituting one side wall of the casing and one side of the way 19. The projections 24 fit between the flanges 22 as shown in Fig. III. These casing members are provided

with suitable rivet projections 27 while the plate 15 has openings 28 adapted to receive the same. When these projections are introduced into the openings and riveted therein the parts are effectively retained in their assembled relation.

The folding lines of the blanks are indicated by the dotted lines in Figs. VI and VII.

The way 18 is adapted to receive the cage member 29 for the clutch roller 32 while the way 19 is adapted to receive the actuating member 30. The cage member 29 is supported for reciprocating movement transversely of the slide bar 10. At its inner end the cage member 29 is provided with a recess-like cage 31 for the clutch roller 32. The walls at the inner end of this recess 31 are V-shaped or, in other words, constitute oppositely disposed forwardly inclined surfaces 33 which coact with the clutch roller 32. The clutch roller 32 is preferably knurled on its periphery, as shown in Fig. IV, and provided with a central peripheral groove 34. The member 29 has a longitudinal bore 35 opening into the recess 31 at its apex. The coiled spring 36 is arranged within this bore with one end engaged in the groove 34 and the other engaged with a pin 37 carried by the support or casing member. Thus arranged, the spring tends to center the clutch roller in its cage and also to retract the cage member 29. The cage member is provided with a recess 38 opposite the opening between the ways 18 and 19.

The portions 24 projecting between the flanges 22 constitute a cage for the actuating roller 39. The recess 38 has an inclined surface 40 at its inner edge with which the roller 39 coacts, so that when the roller is forced inwardly or actuated, it actuates the cage member to force the clutch roller against the adjustable member 10 and, owing to the inclined walls 33 of the cage, the force applied to the member 10 to move it in either direction causes the clutch roller to engage more securely.

The adjusting member 30 is slidably supported in the way 19 and is provided with a cam 41 at its inner end coacting with the roller to force it and support it in actuated position by means of the spring 42, one end of which is connected to the pin 43 on the actuating member and the other to a pin 44 on the casing or support. With the parts thus arranged, a comparatively light spring or a slight force on the actuating member 30 is sufficient to actuate the roller 39 and through it the cage member to engage the clutch and to retain it in engaged position. A correspondingly slight movement is sufficient to release these parts so that while the mechanism is very easily operated it is very strong and secure.

For convenience in operation when applied to a chair as I have illustrated, I mount a bell-crank lever 45 on a bracket 46 carried by the side rail 3 and connect one end to the adjusting member by the link 47 and the other to a push rod 48 which is preferably carried through the arm 4 as in the Borgert patent referred to.

My improved adjusting mechanism is noiseless in its operation and has the advantage of being very strong and secure when engaged and at the same time may be easily engaged and released and this by a very slight movement. Owing to the fact that a very light spring is sufficient to actuate the parts to engaging position but little power is required to disengage or release the mechanism.

I have illustrated and described my improvements in the form in which I have embodied them for use on adjustable chairs of the type referred to. I have not attempted to illustrate or describe various modifications and structural details which I contemplate or which might be desirable in adapting my improvements to other structures as I believe the disclosure will enable those skilled in the art to which my invention relates to embody or adapt the same as conditions or circumstances may require. Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a structure of the class described, the combination of a slide bar, a coacting clutch roller having a central peripheral groove, a casing-like support member provided with a way for said slide bar, a clutch roller cage member way disposed transversely of said slide bar way, and an actuating member way disposed at the side of said cage member slide way, there being an opening between said cage member and actuating member ways constituting an actuating roller cage, an actuating roller disposed in said cage, a clutch roller cage member provided at its inner end with a clutch roller recess having a V-shaped rear wall and with a longitudinal bore opening into said recess at the apex thereof, said cage member being provided with a recess opposite said actuating roller cage having a forwardly inclined front edge coacting with said actuating roller, a spring disposed in the said bore of said cage member with one end engaged with said groove of said clutch roller and the other connected to said support so that it acts to center the roller and retract said cage member, an actuating member disposed in said actuating member slide way and having a cam coacting with said actuating roller, a spring urging said actuating member to actuating position, and means for retracting said actuating member.

2. In a structure of the class described, the combination of a slide bar, a coacting clutch roller having a central peripheral groove, a casing-like support member provided with a way for said slide bar, a clutch roller cage member way disposed transversely of said slide bar way, and an actuating member way disposed at the side of said cage member slide way, there being an opening between said cage member and actuating member ways constituting an actuating roller cage, an actuating roller disposed in said cage, a clutch roller cage member provided at its inner end with a clutch roller recess having a V-shaped rear wall and with a longitudinal bore opening into said recess at the apex thereof, said cage member being provided with a recess opposite said actuating roller cage having a forwardly inclined front edge coacting with said actuating roller, a spring disposed in the said bore of said cage member with one end engaged with said groove of said clutch roller and the other connected to said support so that it acts to center the roller and retract the said cage member, and an actuating member disposed in said actuating member slide way and having a cam coacting with said actuating roller.

3. In a structure of the class described, the combination of a slide bar, a coacting clutch roller having a knurled periphery and a central peripheral groove, a casing-like support member provided with a way for said slide bar, a clutch roller cage member way disposed transversely of said slide bar way, an actuating roller disposed in said cage, a clutch roller cage member provided at its inner end with a clutch roller recess having a V-shaped rear wall and with a longitudinal bore opening into said recess at the apex thereof, a spring disposed in the said bore of said cage member with one end engaged with said groove of said clutch roller and the other connected to said support so that it acts to center the roller and retract said cage member, and means for actuating said cage member.

4. In a structure of the class described, the combination of a slide bar, a coacting clutch roller, a casing-like support member provided with a way for said slide bar, a clutch roller cage member way disposed transversely of said slide bar way, and an actuating member way disposed at one side of said cage member slide way, there being an opening between said cage member and actuating member ways constituting an actuating roller cage, a clutch roller cage member provided at its inner end with a clutch roller cage having oppositely disposed clutching surfaces with which said clutch roller coacts, a spring connected to said roller and to said support so that it acts to center the roller and retract said cage member.

ber, an actuating roller, said cage member being provided with a surface inclined to the plane of its movement with which said roller coacts, a reciprocating actuating member having a cam coacting with said actuating roller, and a spring urging said actuating member to actuated position.

5. In a structure of the class described, the combination of a slide bar, a coacting clutch roller having a central peripheral groove, a casing-like support member provided with a way for said slide bar and a clutch roller cage member way disposed transversely of said slide bar way, a clutch roller cage member provided at its inner end with a clutch roller cage having oppositely disposed clutching surfaces with which said clutch roller coacts, a spring engaged with said groove of said clutch roller and connected to said support, so that it acts to center the roller and retract said cage member, and means for actuating said cage member.

6. In a structure of the class described, the combination of a slide bar, a coacting clutch roller having a central peripheral groove, a casing-like support member provided with a way for said slide bar and a clutch roller cage member way disposed transversely of said slide bar way, a clutch roller cage member provided at its inner end with a clutch roller cage having oppositely disposed clutching surfaces with which said clutch roller coacts, and a spring engaged with said groove of said clutch roller and connected to said support so that it acts to center the roller and retract said cage member.

7. In a structure of the class described, the combination of a slide bar, a coacting clutch roller, a casing-like support member provided with a way for said slide bar and a clutch roller cage member way disposed transversely of said slide bar way, a clutch roller cage member provided at its inner end with a clutch roller cage having oppositely disposed clutching surfaces with which said clutch roller coacts, a spring connected to said roller and said support so that it acts to center the roller and retract said cage member, and means for actuating said cage member.

8. In a structure of the class described, the combination of a support, an adjustable member, a coacting clutch roller having a central peripheral groove, a clutch roller cage member provided at its inner end with a clutch roller recess having a V-shaped rear wall and with a longitudinal bore opening into said recess at the apex thereof, a spring disposed in the said bore of said cage member with one end engaged with said groove of said clutch roller and the other connected to said support so that it acts to center the roller and retract said cage member, and means for actuating said cage member.

9. In a structure of the class described, the combination of a support, an adjustable member, a coacting clutch roller, a clutch roller cage member provided with a clutch roller cage having oppositely disposed inclined surfaces with which said clutch roller coacts, a spring connected to said clutch roller and to said support so that it acts to center the roller and retract said cage member, an actuating roller, said cage member being provided with a surface inclined to the plane of its movement with which said actuating roller coacts, a reciprocating actuating member having a cam coacting with said actuating roller, and a spring urging said actuating member to actuated position.

10. In a structure of the class described, the combination of a support, an adjustable member, a coacting clutch roller, a clutch roller cage member provided with a clutch roller cage having oppositely disposed inclined surfaces with which said clutch roller coacts, a spring connected to said clutch roller and to said support so that it acts to center the roller and retract said cage member, and means for actuating said cage member.

11. In a structure of the class described, the combination of an adjustable member, a coacting clutch roller, a roller cage member provided with a clutch roller cage having oppositely disposed inclined surfaces with which said clutch roller coacts, a spring acting to center said roller and retract said roller cage member, an actuating roller, said cage member being provided with a surface inclined to the plane of its movement with which said actuating roller coacts, a reciprocating actuating member having a cam coacting with said actuating roller, and a spring urging said actuating member to actuated position.

12. In a structure of the class described, the combination of an adjustable member, a coacting clutch roller, a roller cage member provided with a clutch roller cage having oppositely disposed inclined surfaces with which said clutch roller coacts, a spring

acting to center said roller and retract said roller cage member, and means for actuating said clutch roller.

13. In a structure of the class described, the combination of an adjustable member, a coacting clutch roller, a roller cage member supported for movement transversely of said adjustable member and provided with oppositely disposed forwardly inclined surfaces with which said roller coacts, an actuating roller, said cage member being provided with a forwardly inclined surface with which said actuating roller coacts, and an actuating member coacting with said actuating roller.

14. In a structure of the class described, the combination of an adjustable member, a coacting clutch roller, a roller cage member supported for movement transversely of said adjustable member, an actuating roller, said cage member being provided with a forwardly inclined surface with which said actuating roller coacts, and an actuating member coacting with said actuating roller.

15. In a structure of the class described, the combination of an adjustable member, a coacting clutch roller, a clutch roller cage member supporting said roller to coact with said adjustable member, a spring for retracting said cage member, an actuating roller, said cage member being provided with a surface inclined to the plane of its movement with which said actuating roller coacts, and actuating means for said actuating roller.

16. In a structure of the class described, the combination of an adjustable member, a coacting clutch roller, a cage member provided for said clutch roller having oppositely disposed inclined surfaces with which said clutch roller coacts, and means for actuating said cage member.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

CHARLES A. MANKIN. [L. s.]

Witnesses:

THEO. T. JACOBS,
E. B. GRAY.