July 12, 1949. C. E. E. LUNDQUIST 2,476,258

SUPPORT FOR VERTICALLY ADJUSTABLE SEATS

Filed April 29, 1944 2 Sheets-Sheet 1

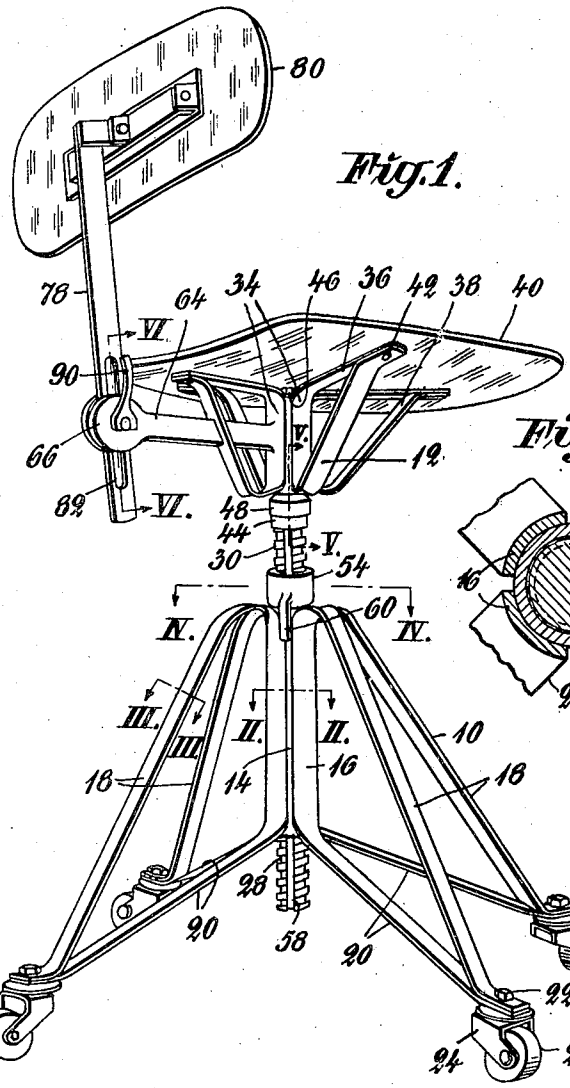


Fig. 1.

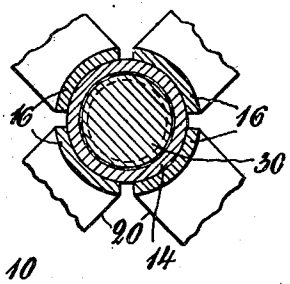


Fig. 2.



Fig. 3.

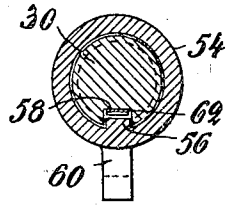


Fig. 4.

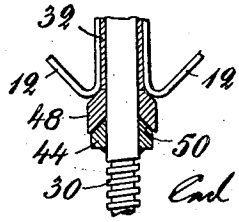


Fig. 5.

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SUPPORT FOR VERTICALLY ADJUSTABLE SEATS

Filed April 29, 1944 2 Sheets-Sheet 2

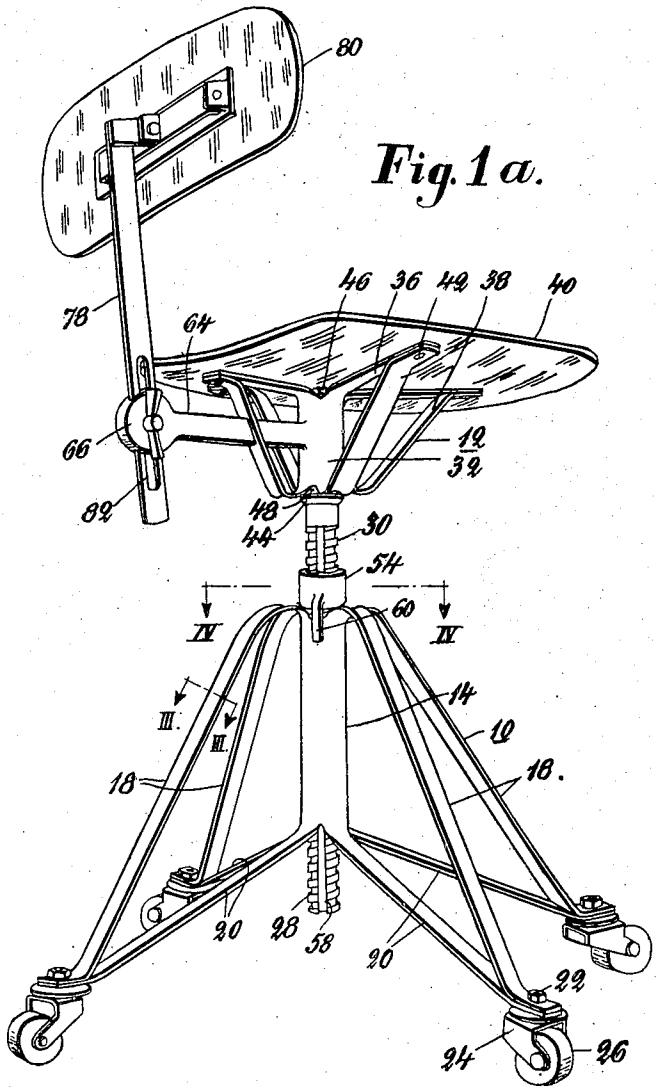


Fig. 1a.

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UNITED STATES PATENT OFFICE

2,476,258

SUPPORT FOR VERTICALLY ADJUSTABLE SEATS

Carl Ernst Edvard Lundquist, Stockholm, Sweden

Application April 29, 1944, Serial No. 533,370
In Sweden October 3, 1942

Section 1, Public Law 690, August 8, 1946
Patent expires October 3, 1962

4 Claims. (Cl. 155—94)

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My invention relates to chairs, more particularly for office use. Still more particularly my invention relates to chairs having a frame to support a rotatable seat adapted to be raised and lowered, said frame being provided with a tubular hub portion for a spindle having the seat connected thereto. One object of the invention is to provide a chair of said type, which is cheap and permits of being manufactured with a small consumption of material only, and which at the same time possesses great strength and stability.

Further objects and advantages of the invention will be apparent from the following description considered in connection with the accompanying drawings, which form a part of this specification, and of which:

Figs. 1 and 1*a* are perspective views of office chairs constructed in accordance with the invention;

Figs. 2 and 5 are sectional views on an enlarged scale on the lines II—II and V—V, respectively, of Fig. 1;

Figs. 3 and 4 are sectional views on the lines III—III and IV—IV of Figs. 1 and 1*a* respectively.

Corresponding parts are designated throughout by the same reference numerals in the various drawings.

In the embodiments illustrated, the chair is provided with two frames 10, 12 constructed in accordance with the invention. The lower frame is composed of a tubular piece 14 and a number, in the present case four, of upper and lower strap braces 18, 20, which are of a curved cross section (Fig. 3).

While these strap braces are in Fig. 1*a* constituted by the slotted end portions of the tubular piece 14, the upper and lower strap braces of Fig. 1 are connected in pairs with a central portion 16, which is rigidly connected to the tubular piece 14 in any suitable manner, for instance by welding. The central portions 16 extend along generatrixes of the tube 14 and follow with their curved profile over the outer surface thereof, as will appear from Fig. 2. The central portions 16 of the strap braces need not bear on each other, but may be arranged in a spaced relationship.

The strap braces are bent outwardly at both ends of the tubular piece 14, the upper part 18

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being longer and forming a smaller angle with the axis of the tube 14 than does the lower portion 20.

The bent portions 18, 20 meet one another in pairs at the free ends thereof, where they are connected with each other. Furthermore, they are connected with pivoted holders 24 for rollers or wheels 26, for instance by means of bolts 22.

The tubular piece 14 may be provided with internal threads engaged by the threads 28 of a vertical spindle 30, and may support the frame 12 at the upper end of the tube. The frame 12 is constructed in a similar manner as the frame 10, and consequently consists of a tubular piece 32 which, however, is freely rotatable on the spindle 30. The strap-like, outwardly bent brace portions 36, 38—four of which may be provided in the present case too—in the embodiment according to Fig. 1*a* consist of the slotted end portions of the tubular piece 32, and, as shown in the embodiment according to Fig. 1, are connected in pairs to a central portion 34, which is rigidly connected with the tube 32 (Fig. 5), for instance by welding. The central portions 34 extend in parallel to generatrixes of the tube. The lower brace portions 38 are then bent outwardly at acute angles, while the upper brace portions 36 may extend in a horizontal or approximately horizontal direction. The free ends of the individual braces are connected with each other and with a chair seat 40, for instance by means of rivets 42.

The upper frame 12 is held in an axial direction between a nut 46 screwed on spindle 30 and a ring 44, which is secured on the spindle 30, for instance by welding. A ring 48 may be interposed between the ring 44 and the frame 12, said ring 48 being preferably fixed to the frame, as for example by welding, so as to turn with the frame. The bearing surfaces 50 (Fig. 5) between the rings 44 and 48 extend conically. By the fact that they are also situated at a greater radial distance from the axis of the spindle 30 than are the contact surfaces between the threads of the spindle and the lower frame 10, the friction between the surfaces 50 will be greater than in said threads.

In the embodiments illustrated, a sleeve 54 is movable in the axial direction over the spindle threads 28 above the frame 10. This sleeve may

be provided with a shoulder 56 (Fig. 4) on the inside thereof, said shoulder running in a guide slot 58 in the spindle threads 28. A stud 60 extends downwardly from the sleeve 54. In the position shown in Figs. 1 and 1a, such stud is located between two strap braces of the frame 10. By this means positive locking will be obtained between the spindle 30 and the frame 10 so that when the chair seat 40 is rotated, the upper frame 12 will turn relative to the upper portion of the spindle 30, which has no threads. When the sleeve 54 is moved upwardly so that the stud 60 is relieved of the frame 10, said stud being, if desired, held in place in the slot 58 by means of an arresting spring 62, the spindle may turn relative to the lower frame 10, for the purpose of adjusting the height of the chair seat 40. By the friction surfaces 59 the turning movement now takes place between the frame 10 and the spindle, although the upper frame 12 is running freely thereon. After the sleeve has been returned to the position shown in Figs. 1 and 1a, the spindle 30 is again locked relative to the frame 10.

Extending through a slot in one of the lower strap brace portions 38 of the frame 12 is an arm 64, which is preferably rigidly connected with the central portion 34 of the same strap brace, for instance by welding.

In the embodiments illustrated, a novel form of joint is shown between the back supporting arms 64 and 78. This joint forms the claimed subject matter of my copending divisional application, Serial No. 2512, filed January 15, 1948.

While more or less specific embodiments of the invention have been shown, it is to be understood that the same are for purpose of illustration only, and that the invention is not to be limited thereby, but its scope is to be determined by the scope of the appended claims.

What I claim is:

1. In an adjustable chair, a tubular member for engaging a rotatable spindle, a plurality of arms having their central portions integral with said member, the end portions of each arm extending in a radial plane from the upper and lower ends, respectively, of said member, and means for joining the free ends of the end portions of each arm together.

2. In an adjustable chair, a tubular member for engaging a rotatable spindle, said tubular member being split longitudinally at its end portions to form a plurality of arms integral therewith and extending in radial planes from the upper and lower ends, respectively, of said member, and means for joining together the free ends of the arms in the same radial plane.

3. In an adjustable chair, a tubular member for engaging a rotatable spindle, a plurality of arms having their central portions integral with said member, the end portions of each arm extending in a radial plane from the upper and lower ends, respectively, of said member, a seat member, and means for joining the free ends of the end portions of each arm together and to said seat member.

4. In an adjustable chair, a tubular member having a central portion for encircling a rotatable spindle and end portions longitudinally slit to provide a plurality of pairs of arms bent radially outwardly from said central portion at each end thereof, said pairs of arms being arranged in a plurality of radial planes respectively, and means for joining the free end portions of the arms of each of the pairs together.

CARL ERNST EDVARD LUNDQUIST.

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Certificate of Correction

Patent No. 2,476,258 July 12, 1949

CARL ERNST EDVARD LUNDQUIST

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 4, line 45, list of references cited, after "1,101,402 Carroll ..... June 23, 1914" insert *1,110,142 Piner ..... Sept. 8, 1914*; after line 48, insert *2,342,921 Cramer et al. ..... Feb. 29, 1944*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of February, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.