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(12) **United States Design Patent**
Deevers et al.

(10) **Patent No.:** **US D947,559 S**
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(54) **CHAIR WITH UPHOLSTERED BACK**

FOREIGN PATENT DOCUMENTS

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CN 2256246 Y 6/1997
CN 10149202 10/2007

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(Continued)

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“Steelcase Series 1 Work Chair Office Chair—Graphite Frame
Nickel Cushions” Jun. 19, 2019, amazon.com, site visited Dec. 7,
2021 <<https://www.amazon.com/Steelcase-435A00-Office-Chair-Nickel/dp/B078HDP8NY>> (Year: 2019).*

(*) Notice: This patent is subject to a terminal dis-
claimer.

(Continued)

(**) Term: **15 Years**

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(57) **CLAIM**

Related U.S. Application Data

We claim the ornamental design for a chair with upholstered
back, as shown and described.

(63) Continuation of application No. 29/693,239, filed on
May 31, 2019, now Pat. No. Des. 907,383.

(51) **LOC (13) Cl.** **06-01**

DESCRIPTION

(52) **U.S. Cl.**
USPC **D6/366**

(58) **Field of Classification Search**
USPC D6/356, 364, 365, 366, 367, 379, 716,
D6/716.4, 716.7, 360, 380; D21/521, 695
CPC A47C 1/03294; A47C 1/034; A47C 1/032;
A47C 1/031; A47C 1/023; A47C 3/029;
A47C 3/027; A47C 3/04; A47C 3/02;
A47C 3/12; A47C 4/03; A47C 4/04;
A47C 5/12;

FIG. 1 is a top front perspective view of a chair with
upholstered back;
FIG. 2 is a top plan view thereof;
FIG. 3 is a bottom plan view thereof;
FIG. 4 is a rear elevation view thereof;
FIG. 5 is a front elevation view thereof;
FIG. 6 is a right side elevation view thereof; and,
FIG. 7 is a left side elevation view thereof.

(Continued)

The uniform broken lines on the front face of the seatback
depict a stitching pattern that forms part of the claimed
design, while the other broken lines shown as non-uniform
(dash-dot-dash) broken lines in the drawings are for the
purpose of illustrating portions of the article that form no
part of the claimed design. Additionally, the uniform broken
lines shown on back of the chair in FIG. 4 form no part of
the daimed design.

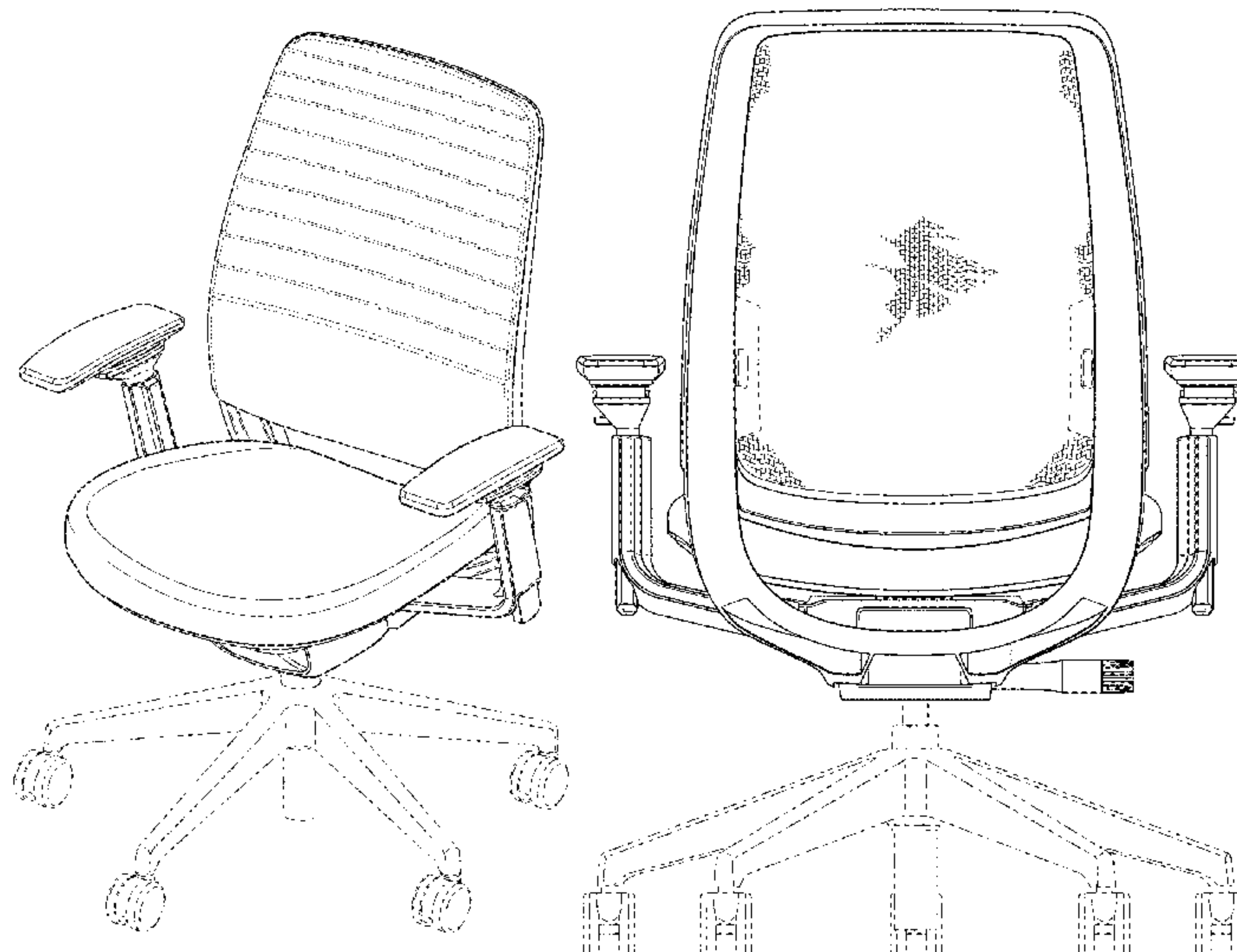
(56) **References Cited**

U.S. PATENT DOCUMENTS

590,045 A 9/1897 Mauchain
2,678,685 A 5/1954 Volsk

(Continued)

1 Claim, 7 Drawing Sheets



(58) **Field of Classification Search**

CPC .. A47C 7/029; A47C 7/02; A47C 7/18; A47C 7/28; A47C 7/32; A47C 7/38; A47C 7/40; A47C 7/44; A47C 7/46; A47C 7/54; A47C 7/425; A47C 7/445; A47C 31/023; A47C 31/04; B60R 2/0284; B60R 2/062; B60R 22/001; B60R 22/24; B60R 22/28; B60R 22/58; B60R 22/64; B60R 22/68; B60R 22/80; B60R 22/99; B60R 22/245; B60R 22/643; B60R 22/646; B60R 22/665; B60R 22/686; B60R 22/688; B60R 22/803; B60R 22/986; B60R 22/914; B60R 22/995; F16B 2/08; F16B 45/00; Y10S 297/01; A47D 13/10

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,726,713 A 12/1955 Turner
 3,559,978 A 2/1971 Molt
 3,652,809 A 3/1972 Dickopp et al.
 3,653,233 A 4/1972 Titone
 3,709,559 A 1/1973 Rowland
 3,720,568 A 3/1973 Rowland
 3,724,402 A 4/1973 Thyberg et al.
 3,767,261 A 10/1973 Rowland
 3,774,967 A 11/1973 Rowland
 3,843,477 A 10/1974 Rowland
 3,948,558 A 4/1976 Obermeier et al.
 D276,575 S 12/1984 Helmholdt
 D276,576 S 12/1984 Helmholdt
 4,502,728 A 3/1985 Sheldon et al.
 D279,244 S 6/1985 Bergquist
 4,574,100 A 3/1986 Mercer
 4,634,178 A 1/1987 Carney
 4,668,557 A 5/1987 Lakes
 4,680,215 A 7/1987 Mercer
 4,718,724 A 1/1988 Quinton et al.
 D295,925 S 5/1988 Uredat-Neuhoff
 4,889,384 A 12/1989 Sulzer
 5,154,485 A 10/1992 Fleishman
 5,269,631 A 12/1993 Mercer et al.
 D345,867 S 4/1994 Narita
 D351,291 S 10/1994 Volkle
 5,447,357 A 9/1995 Dauphin
 5,711,575 A 1/1998 Hand et al.
 5,747,140 A 5/1998 Heerklotz
 5,791,933 A 8/1998 Saka et al.
 5,863,095 A 1/1999 Rivard et al.
 5,871,258 A 2/1999 Battey et al.
 D408,161 S 4/1999 Caruso
 5,934,758 A 8/1999 Ritch et al.
 5,951,109 A 9/1999 Roslund, Jr. et al.
 5,975,634 A 11/1999 Knoblock et al.
 6,035,901 A 3/2000 Stumpf et al.
 6,062,649 A 5/2000 Nagel et al.
 6,079,785 A 6/2000 Peterson et al.
 D437,501 S 2/2001 Rehmert et al.
 6,189,972 B1 2/2001 Chu et al.
 D446,954 S 8/2001 Sottsass
 6,286,900 B1 9/2001 Roark
 D449,172 S 10/2001 VanDeRiet et al.
 6,299,248 B1 10/2001 Gennaro et al.
 D449,938 S 11/2001 Vanderiet et al.
 D451,293 S 12/2001 Su
 6,343,839 B1 2/2002 Simons, Jr.
 6,354,662 B1 3/2002 Su
 6,361,110 B2 3/2002 Roslund, Jr. et al.
 D455,571 S 4/2002 VanDeRiet et al.
 D456,160 S 4/2002 VanDeRiet et al.
 D456,164 S 4/2002 VanDeRiet et al.
 D456,627 S 5/2002 Pearce et al.
 D457,739 S 5/2002 Pearce et al.
 D460,870 S 7/2002 VanDeRiet et al.

6,412,593 B1 7/2002 Jones
 6,419,318 B1 7/2002 Albright
 D463,174 S 9/2002 Chu
 6,471,294 B1 10/2002 Dammermann et al.
 D471,042 S 3/2003 Schmitz et al.
 6,550,866 B1 4/2003 Su
 6,568,760 B2 5/2003 Davis et al.
 6,572,190 B2 6/2003 Koepke et al.
 6,575,530 B1 6/2003 Fischer et al.
 6,598,937 B2 7/2003 Caruso et al.
 6,626,497 B2 9/2003 Nagamitsu et al.
 6,644,752 B2 11/2003 Takata
 6,688,698 B1 2/2004 Chou et al.
 D487,197 S 3/2004 Edwards et al.
 6,709,060 B1 3/2004 Su
 6,726,285 B2 4/2004 Caruso et al.
 D489,191 S 5/2004 Ma
 6,729,691 B2 5/2004 Koepke et al.
 6,733,080 B2 5/2004 Stumph et al.
 D494,792 S 8/2004 Schmitz et al.
 6,805,405 B2 10/2004 Koo
 D499,564 S 12/2004 Meda
 D500,211 S 12/2004 Koch et al.
 6,837,546 B2 1/2005 VanDeRiet et al.
 6,874,852 B2 4/2005 Footitt
 6,890,030 B2 5/2005 Wilkerson et al.
 6,957,861 B1 10/2005 Chou et al.
 6,966,604 B2 11/2005 Stumpf et al.
 D513,134 S 12/2005 Asano et al.
 6,974,189 B2 12/2005 Machael et al.
 D513,457 S 1/2006 Asano et al.
 6,981,743 B2 1/2006 Edwards et al.
 7,004,543 B2 2/2006 Caruso et al.
 D517,820 S * 3/2006 Citterio D6/366
 D521,755 S 5/2006 Kinoshita et al.
 7,059,682 B2 6/2006 Caruso et al.
 7,097,247 B2 8/2006 Battey
 7,213,886 B2 5/2007 Schmitz et al.
 7,234,773 B2 6/2007 Raftery et al.
 7,247,265 B2 7/2007 Alderson et al.
 7,249,802 B2 7/2007 Schmitz et al.
 7,252,870 B2 8/2007 Anderson et al.
 7,275,793 B2 10/2007 Fujita et al.
 7,281,764 B2 10/2007 Thole
 7,293,833 B2 11/2007 Takeuchi et al.
 7,303,232 B1 12/2007 Chen
 D558,995 S 1/2008 Igarashi
 D564,264 S 3/2008 Smith et al.
 7,344,194 B2 3/2008 Maier et al.
 7,347,495 B2 3/2008 Beyer et al.
 D571,568 S 6/2008 Overthun et al.
 7,406,733 B2 8/2008 Coffield et al.
 7,419,215 B2 9/2008 Wilkerson et al.
 7,441,758 B2 10/2008 Coffield et al.
 7,455,365 B2 11/2008 Caruso et al.
 7,472,962 B2 1/2009 Caruso et al.
 7,484,802 B2 2/2009 Beyer et al.
 D591,969 S 5/2009 Overthun et al.
 D597,330 S * 8/2009 Neil D6/366
 D597,331 S 8/2009 Neil
 7,568,768 B1 8/2009 Tsai
 D600,052 S 9/2009 Smith et al.
 D600,462 S * 9/2009 Ooki D6/366
 D600,931 S 9/2009 Pearson
 7,594,700 B2 9/2009 Stumpf et al.
 7,604,298 B2 10/2009 Peterson et al.
 D604,527 S 11/2009 Ooki et al.
 D607,653 S 1/2010 Wilkinson
 7,647,714 B2 1/2010 Coffield et al.
 D609,482 S 2/2010 Englisch et al.
 7,712,834 B2 5/2010 Knoblock et al.
 7,731,295 B2 6/2010 Lin
 7,740,321 B2 6/2010 Brill et al.
 D622,985 S 9/2010 Kubryk
 7,794,017 B2 9/2010 Kan et al.
 7,794,022 B2 9/2010 Caruso et al.
 7,841,665 B2 11/2010 Geister et al.
 7,857,388 B2 12/2010 Bedford et al.
 7,866,750 B2 1/2011 Bock

(56)

References Cited

U.S. PATENT DOCUMENTS

7,887,131 B2 2/2011 Chadwick et al.
 7,931,257 B2 4/2011 VanDeRiet et al.
 D637,423 S 5/2011 Behar et al.
 D637,838 S 5/2011 Piretti
 D639,091 S 6/2011 Behar et al.
 D643,641 S 8/2011 Figueroa
 D643,642 S 8/2011 Figuerora
 7,997,652 B2 8/2011 Roslund et al.
 D644,862 S 9/2011 Gaschy
 D647,738 S 11/2011 Chen
 D648,554 S 11/2011 Smith
 D650,206 S 12/2011 Behar et al.
 D652,647 S 1/2012 Schaack
 D652,657 S 1/2012 Behar et al.
 D653,061 S 1/2012 Behar et al.
 D654,291 S 2/2012 Pearson et al.
 D655,522 S 3/2012 Czumaj-Bront et al.
 8,128,175 B2 3/2012 Groelsma et al.
 D657,166 S 4/2012 Behar et al.
 8,157,329 B2 4/2012 Masoud et al.
 D660,056 S 5/2012 Diffrient
 D660,612 S 5/2012 Smith
 D660,622 S 5/2012 Su
 8,172,332 B2 5/2012 Masunaga et al.
 8,186,761 B2 5/2012 Brill et al.
 8,191,970 B2 6/2012 Igarashi et al.
 8,210,611 B2 7/2012 Aldrich et al.
 D665,592 S 8/2012 Citterio
 8,246,117 B2 8/2012 Melhuish et al.
 D666,841 S 9/2012 Czumaj-Bront et al.
 8,297,708 B2 10/2012 Mizobata et al.
 D671,330 S 11/2012 Izawa
 D673,385 S 1/2013 Lu
 D673,394 S 1/2013 Hurford
 D680,345 S 4/2013 Xingchang
 D683,150 S 5/2013 Smith et al.
 8,436,508 B2 5/2013 Kornbluh et al.
 8,449,037 B2 5/2013 Behar et al.
 D683,552 S 6/2013 Wu
 D686,833 S 7/2013 Chan
 D688,055 S 8/2013 Baldanzi
 8,534,648 B2 9/2013 Coffield et al.
 D695,537 S 12/2013 Geelen
 8,602,494 B2 12/2013 Cvek
 8,652,602 B1 2/2014 Dolla
 D701,068 S 3/2014 Usumoto et al.
 D703,458 S 4/2014 Nakamura et al.
 D703,459 S 4/2014 Nakamura et al.
 D704,487 S 5/2014 Smith
 D704,488 S 5/2014 Massaud
 D704,945 S 5/2014 Massaud
 D705,561 S 5/2014 Massaud
 D706,547 S 6/2014 Smith
 8,752,896 B2 6/2014 Takeuchi et al.
 D708,466 S 7/2014 Massaud
 D710,640 S 8/2014 Usumoto et al.
 D711,127 S * 8/2014 Wilkinson D6/366
 D717,555 S 11/2014 Massaud
 8,926,016 B2 1/2015 Behar et al.
 D724,367 S 3/2015 Sander
 8,967,724 B2 3/2015 Battey et al.
 D726,431 S 4/2015 Ye
 D728,292 S 5/2015 Ooki
 9,095,217 B2 8/2015 Oda
 D741,099 S 10/2015 Igarashi et al.
 9,155,393 B2 10/2015 Hurford et al.
 D742,674 S 11/2015 Wilkinson et al.
 9,192,237 B2 11/2015 Bachar
 9,211,014 B2 12/2015 Schmitz et al.
 9,301,615 B2 4/2016 Behar et al.
 9,332,851 B2 5/2016 Machael et al.
 D763,587 S 8/2016 Neil
 D763,612 S 8/2016 Goetz
 D767,318 S 9/2016 Kubryk
 9,486,079 B2 11/2016 Romero

D773,872 S 12/2016 Kim
 9,578,969 B1 2/2017 Su
 D782,240 S 3/2017 Wada
 9,603,451 B2 3/2017 Masunaga et al.
 D785,353 S 5/2017 Zhou
 9,661,930 B2 5/2017 Norman
 D789,129 S 6/2017 Fromme-Ruthmann
 D792,120 S 7/2017 Webb
 D792,717 S 7/2017 Webb
 D795,602 S 8/2017 NNeil
 D799,843 S 10/2017 Chen
 D801,741 S 11/2017 Zhu
 D802,953 S 11/2017 Meda
 D816,362 S 5/2018 Su
 D825,971 S 8/2018 Scagnellato
 D846,294 S 4/2019 Peterson
 D852,525 S 7/2019 Peterson
 D869,872 S 12/2019 Deevers
 D873,576 S 1/2020 Engelhardt
 D883,690 S * 5/2020 Dassen D6/366
 D889,868 S * 7/2020 Guelfo D6/366
 D906,748 S * 1/2021 Wang D6/716
 D907,383 S * 1/2021 Deevers D6/366
 D907,935 S * 1/2021 Deevers D6/366
 D915,783 S * 4/2021 Tong D6/366
 D935,824 S * 11/2021 Deevers D6/716.1
 D936,404 S * 11/2021 Wang D6/716
 2002/0021040 A1 2/2002 Caruso et al.
 2004/0140701 A1 7/2004 Schmitz et al.
 2005/0025948 A1 2/2005 Johnson et al.
 2005/0099055 A1 5/2005 Koepke et al.
 2005/0146193 A1 7/2005 Shieh
 2006/0022506 A1 2/2006 Chan
 2006/0267258 A1 11/2006 Coffield et al.
 2006/0286359 A1 12/2006 Coffield et al.
 2007/0031667 A1 2/2007 Hook et al.
 2008/0011021 A1 1/2008 Starbuck et al.
 2008/0248710 A1 10/2008 Wittner
 2008/0258531 A1 10/2008 Lu
 2009/0020931 A1 1/2009 Coffield et al.
 2009/0021065 A1 1/2009 Brauning
 2009/0085388 A1 4/2009 Parker et al.
 2009/0239049 A1 9/2009 Hook et al.
 2010/0078975 A1 4/2010 Kang
 2011/0046715 A1 2/2011 Ugbolue et al.
 2011/0062758 A1 3/2011 Wiese
 2011/0181086 A1 7/2011 Pfeifer et al.
 2011/0282452 A1 11/2011 Koerner et al.
 2012/0007400 A1 1/2012 Behar et al.
 2012/0129416 A1 5/2012 Anand et al.
 2012/0161483 A1 6/2012 Hayashi
 2014/0084652 A1 3/2014 Norman et al.
 2014/0265493 A1 9/2014 Machael et al.
 2015/0108809 A1 4/2015 Romero
 2015/0123441 A1 5/2015 Duke
 2015/0190269 A1 7/2015 Lenoble et al.
 2015/0296989 A1 10/2015 Machael et al.
 2015/0298587 A1 10/2015 Machael et al.
 2015/0320220 A1 11/2015 Eberlein et al.
 2016/0135603 A1 5/2016 Chan et al.

FOREIGN PATENT DOCUMENTS

CN 202932442 U 5/2013
 CN 203524214 U 4/2014
 DE 102016010929 4/2017
 GB 1224810 3/1971
 JP 3974636 6/2007
 JP 2008/000364 1/2008
 JP 2008/237332 10/2008
 JP 2009106421 A 5/2009
 JP 4462227 2/2010
 JP 2011136039 A 7/2011
 JP 5386728 B2 1/2014
 JP 2014/054578 3/2014
 JP 2016152997 A 8/2016
 KR 10-1575774 12/2015
 KR 10-1679795 11/2016
 WO WO 1988/00523 1/1988

(56)

References Cited

FOREIGN PATENT DOCUMENTS

WO	WO 1991/01210	2/1991
WO	WO 2000/53830	9/2000
WO	WO 2003099071 A1	12/2003
WO	WO 2004/032686	4/2004
WO	WO 2004/088015	10/2004
WO	WO 2004/104315	12/2004
WO	WO 2007/133458	11/2007
WO	WO 2009/002479	12/2008
WO	WO 2010/049511	5/2010
WO	WO 2012/171911	12/2012
WO	WO 2015/108143	7/2015

OTHER PUBLICATIONS

Dolla et al., "Structural and Drug Diffusion Models of Conventional and Auxetic Drug-Eluting Stents" Research Paper dated Aug. 3, 2006, pp. 1-32.

Dolla et al., Structural and Drug Diffusion Models of Conventional and Auxetic Drug-Eluting Stents, *Journal of Medical Devices*, vol. 1, Mar. 2007, downloaded from the Internet on Jan. 8, 2018, pp. 47-55.

Proceedings of NanoBio 2006, *Frontiers in Biomedical Devices Conference*, NanoBios2006-18035, Jun. 8-9, 2006, Irvine, California, U.S.A., pp. 1-2.

Alderson, A Triumph of Lateral Thought, *Chemistry & Industry*, dated May 17, 1999, pp. 384-391.

Roguin et al., BeStent—The Serpentine Balloon Expandable Stent: Review of Mechanical Properties and Clinical Experience, *Artif Organs*, vol. 22 (3), 1998, presented in part on Jun. 29-Jul. 1, 1997, in Providence, Rhode Island, U.S.A., pp. 243-249.

Dolla, Drug Diffusion and Structural Design Criteria for Conventional and Auxetic Drug-Eluting Stents, *Dissertation in Engineering and Chemistry*, 2006, pp. 1-149.

Hwang, et al. 2003, downloaded from the Internet on Oct. 26, 2014, "Impact of Transport and Drug Properties on the Local Pharmacology of Drug-Eluting Stents," *International Journal of Cardiovascular Interventions*, 5, pp. 7-12.

Walline, K.S., 2004, "Drug Delivery Coatings for Cardiovascular Stents: Silicone Elastomer and Thrombin Responsive Hydrogel Coatings," M.S. Thesis, University of Washington.

Windecker et al., 2003, "Sirolimus Eluting Stent: A New Era in Interventional Cardiology," *Current Pharmaceutical Design*, 9, pp. 1077-1094.

Lu et al., 2004, "Biaxial Incremental Homeostatic Elastic Moduli of Coronary Artery: Two-Layer Model," *American Journal of Physiology—Heart*, vol. 287, pp. H1663-1669.

Boulanger et al., 1998, "Poisson's ratio of Orthorhombic Materials," *Journal of Elasticity*, vol. 50, pp. 87-89.

Clark et al., 1994, "Negative Poisson's Ratios in Angle-Ply Laminates: Theory and Experiment," *Composites*, vol. 25, No. 9, pp. 863-868.

Evans et al., 2004, "The Design, Matching and Manufacture of Auxetic Carbon Fiber Laminates," *Journal of Composite Materials*, vol. 38, No. 2, pp. 95-106.

Hine et al., 1997, Negative Poisson's Ratios in Angle-Ply Laminates, *Journal of Materials Science Letters*, vol. 16, No. 7, pp. 541-544.

Lakes, R.S., 1987(a), Foam Structures with a Negative Poisson's Ratio, *Science*, vol. 235, pp. 1038-1040, dated Feb. 27, 1987.

Lakes, R.S. et al., 1993, Indentability of Conventional and Negative Poisson's Ratio Foams, *Journal of Composite Materials*, vol. 27, pp. 1193-1202.

Warren, T.L., 1990, "Negative Poisson's Ratio in a Transversely Isotropic Foam Structure," *Journal of Applied Physics*, vol. 67, No. 12, pp. 7591-7594, dated Jun. 15, 1990.

Baughman et al., "Negative Poisson's Ratios as a Common Feature of Cubic Metals," *Letters to Nature*, vol. 392, MacMillan Publishers Ltd., 1998; dated Mar. 26, 1998, pp. 362-365.

Choi et al., "Fracture Toughness of Renetrant Foam Materials with a Negative Poisson's Ratio: Experiment and Analysis," *Int. J. Fracture*, vol. 80, 1996, pp. 73-83.

Amir Yeganeh-Haeri et al., "Elasticity of #-Christobalite: A Silicon Dioxide with a Negative Poisson's Ratio," *Science*, vol. 257, No. 5070, pp. 650-652, dated Jul. 31, 1992.

Smardzewski et al., "Auxetic Spring Elements for Elastically Supporting a Sitting or Lying," Article, WULS-SGGW, *Forest and Wood Technology* 73, 2011, 9 pages.

Smardzewski, "Auxetic Springs for Seating," *Journal*, May 6, 2013, 8 pages, Poznan, Poland.

Smardzewski et al., "Design of Small Auxetic Springs for Furniture," 2 pgs.

* cited by examiner

FIG. 1

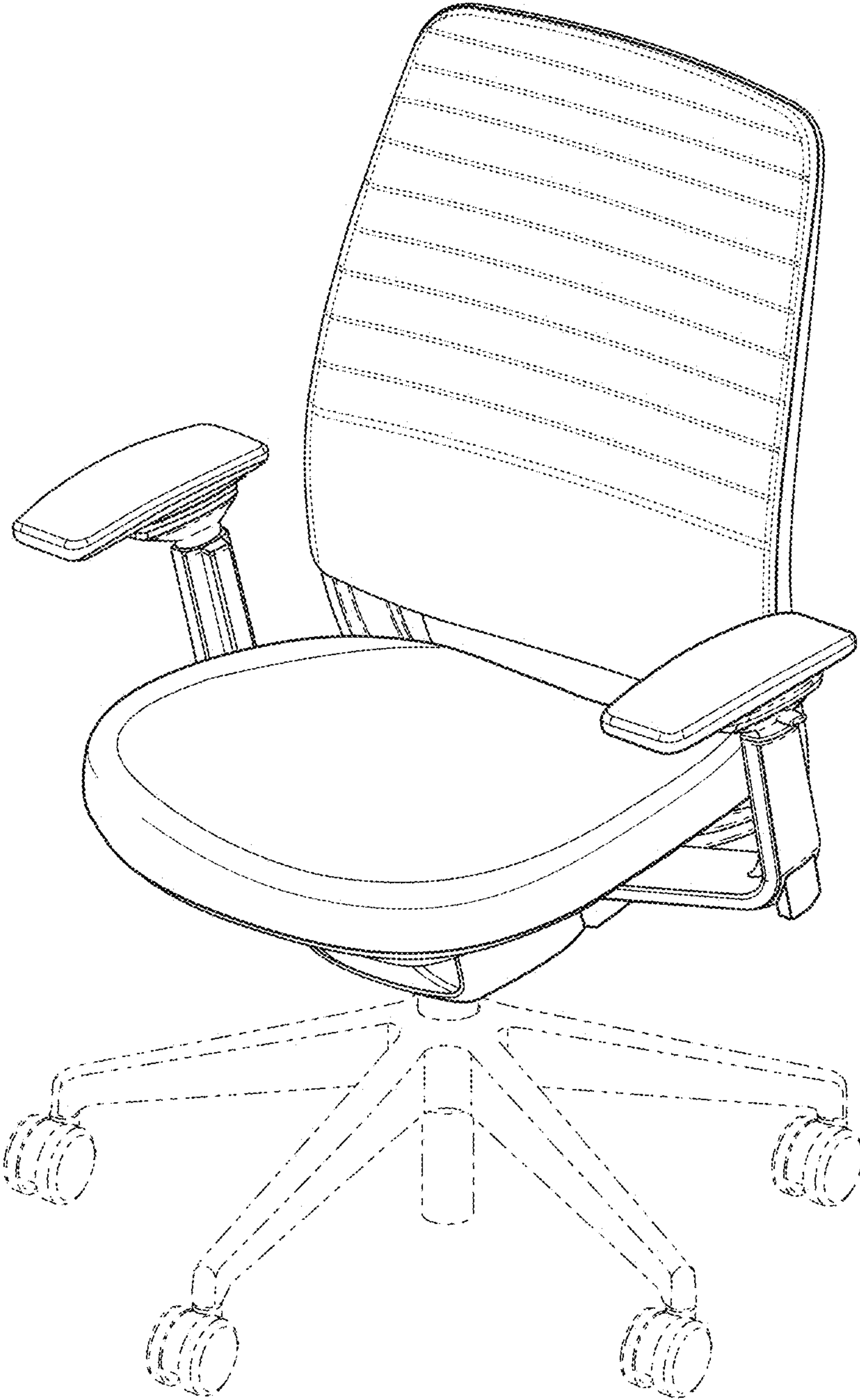


FIG. 2

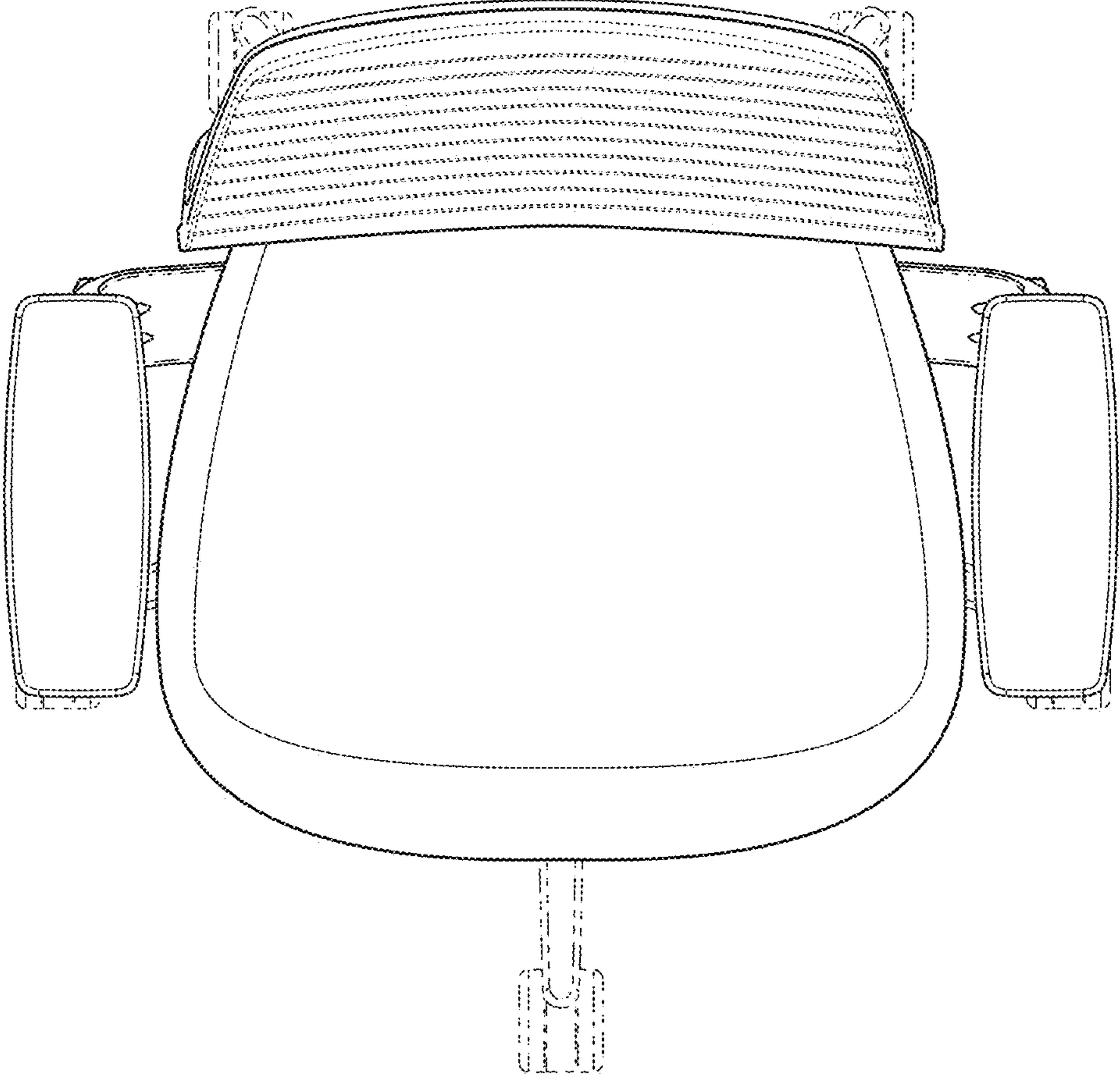


FIG. 3

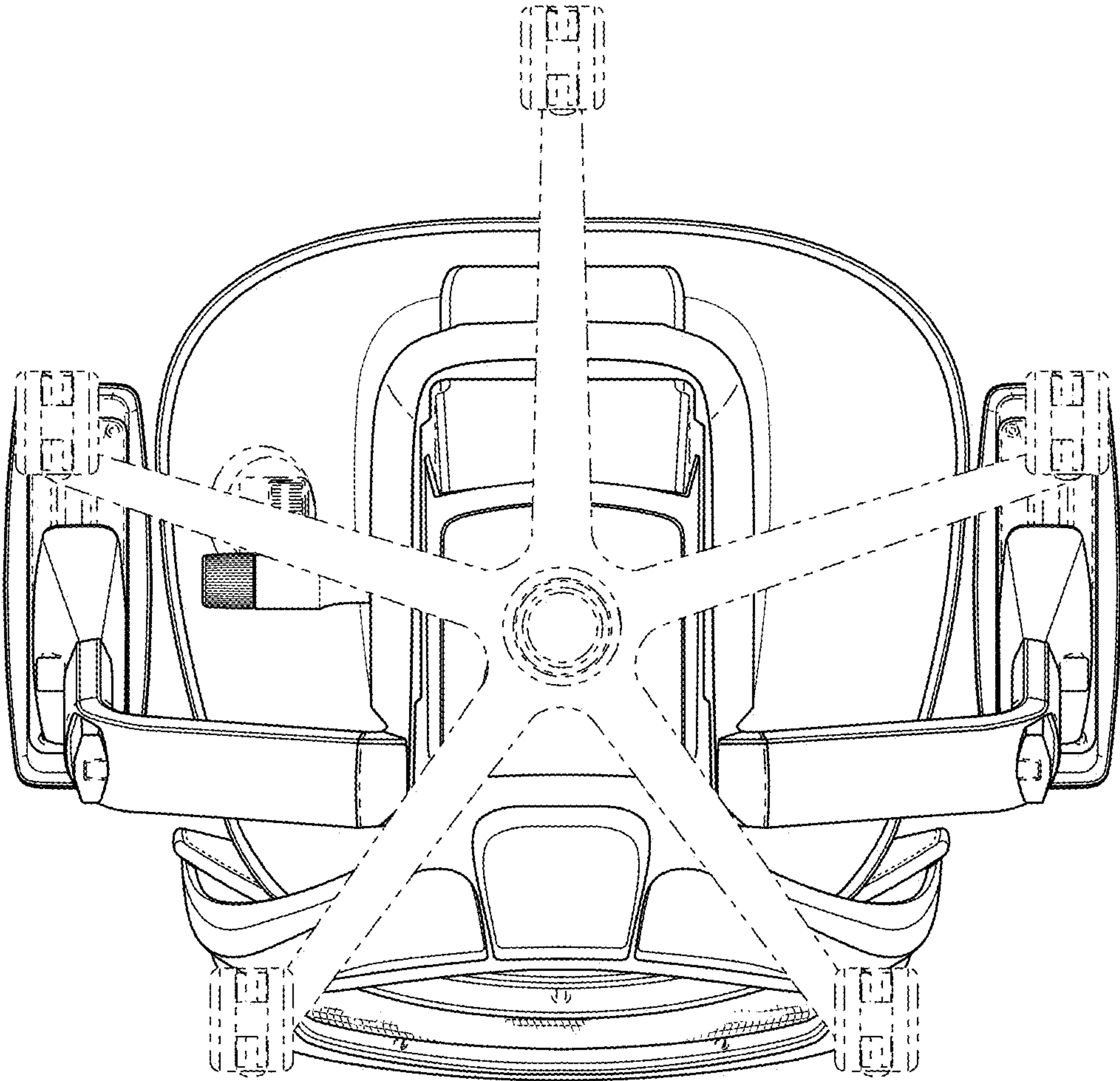


FIG. 4

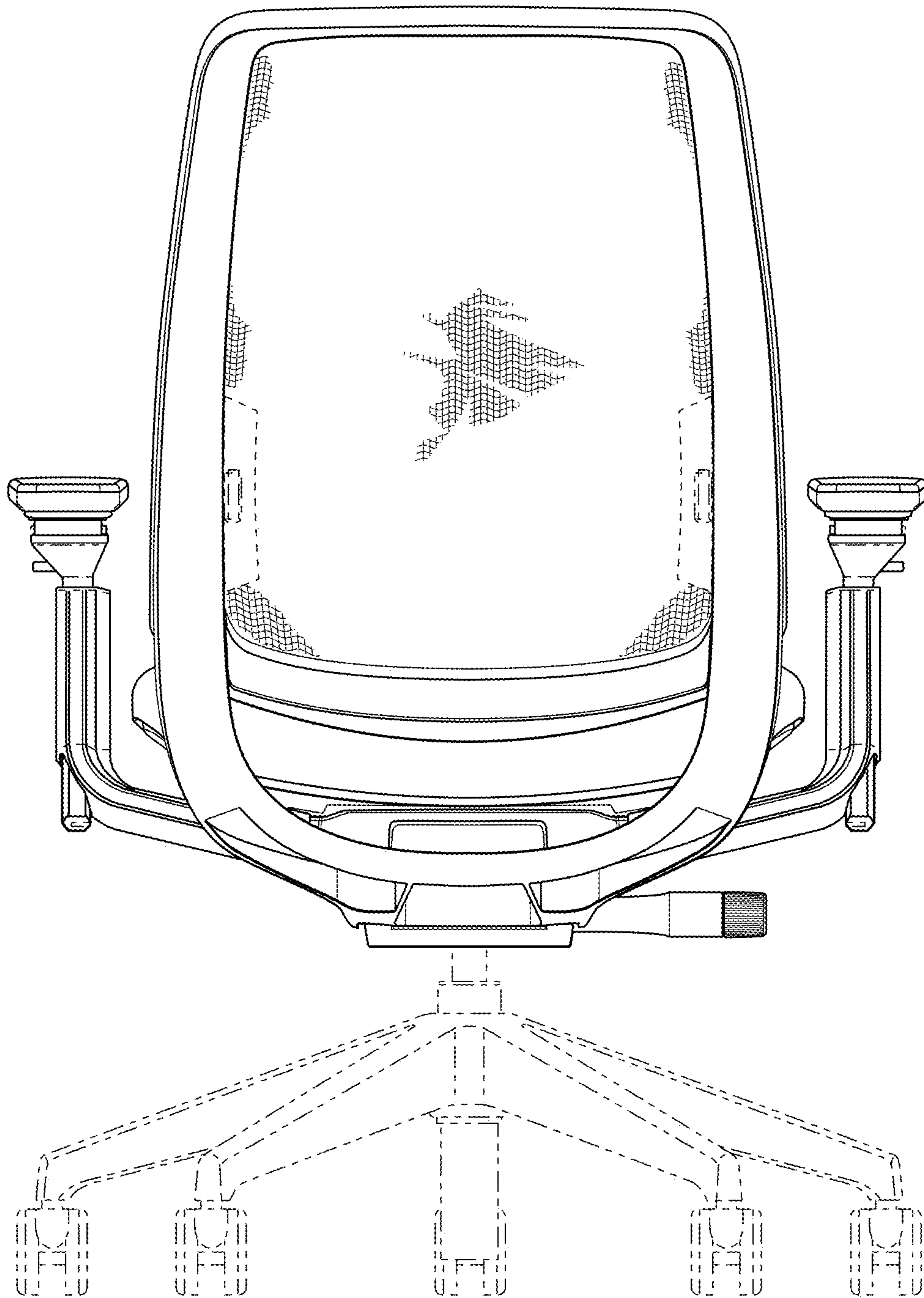


FIG. 5

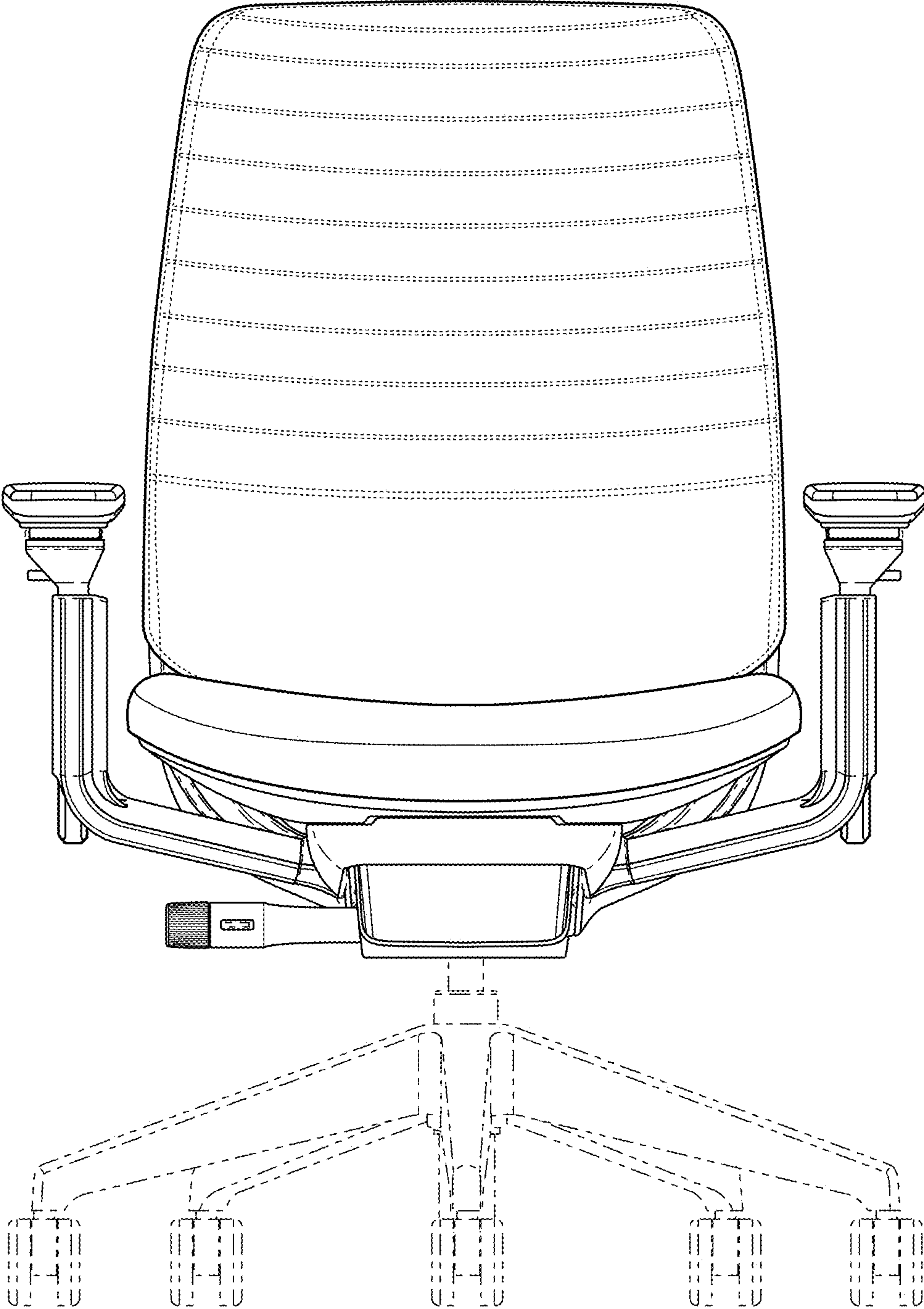


FIG. 6

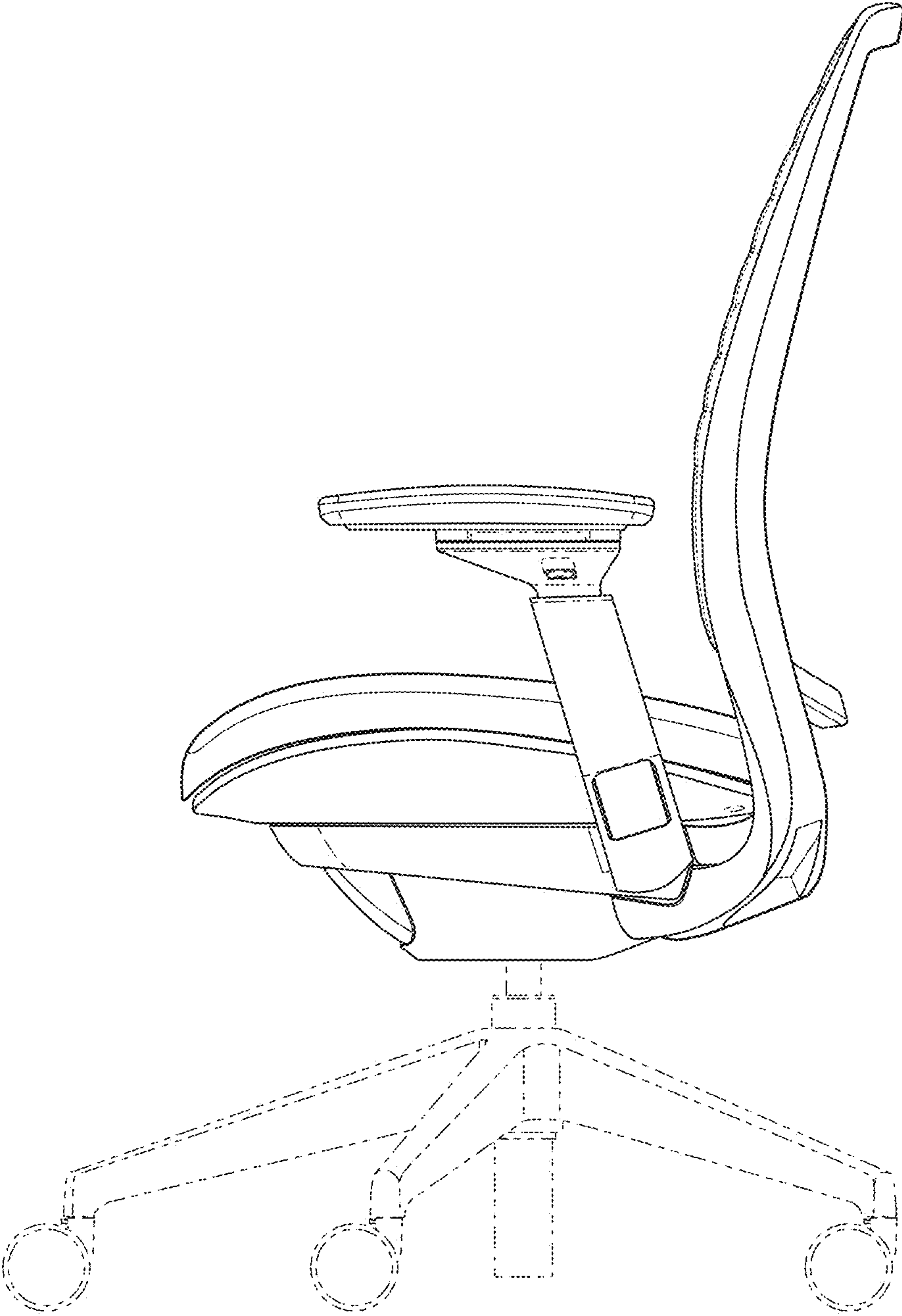


FIG. 7

