

FUSION ORTHOPEDICS, LLC,
Petitioner,

v.

EXTREMITY MEDICAL, LLC,
Patent Owner.

IPR2023-00894 (Patent 11,298,166 B2)

September 13, 2024

Petitioner's Presentation

Summary

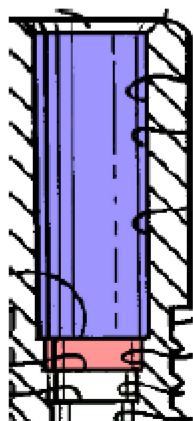
- I. Claim Construction SLIDE 2
 - A. "bore"
 - B. "at a terminal end"
- II. Patentability of Claims 1–15 SLIDE 6
 - A. Cognet anticipation and obviousness
 - B. Simon anticipation and obviousness
- III. Revised Motion to Amend SLIDE 13
 - A. Mazur anticipation and obviousness
 - B. Cognet + Zhang obviousness
 - C. Cognet + Melkent/Gooch obviousness

Construction of "bore"

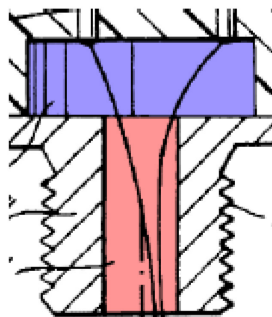
DI 13: "bore" includes "holes or passages having tapered or stepped longitudinal cross-sections"

~ ~ ~

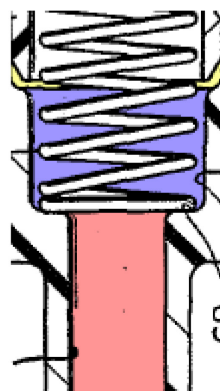
Reply 18:



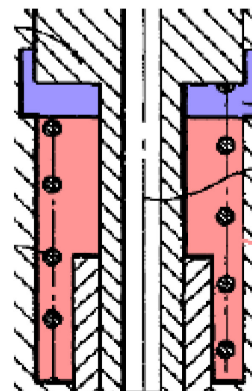
Jackson
Ex. 1019:
"the bore"



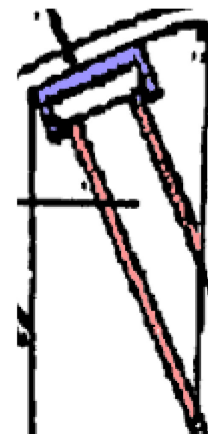
Brånemark
Ex. 1021:
*"an inner
through bore"*



Brown
Ex. 1026:
*"the stepped
cylindrical bore"*



Staev
Ex. 1027:
*"the cylindrical
bore"*



Cognet
Ex. 1004:
"the tunnel"

Construction of "bore"

DI 13: "bore" does not exclude "holes or passages having tapered or stepped longitudinal cross-sections"

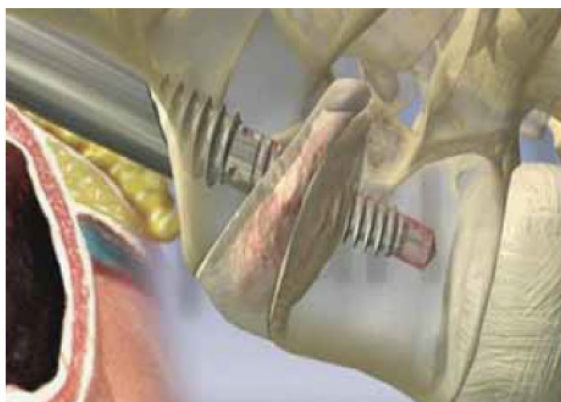
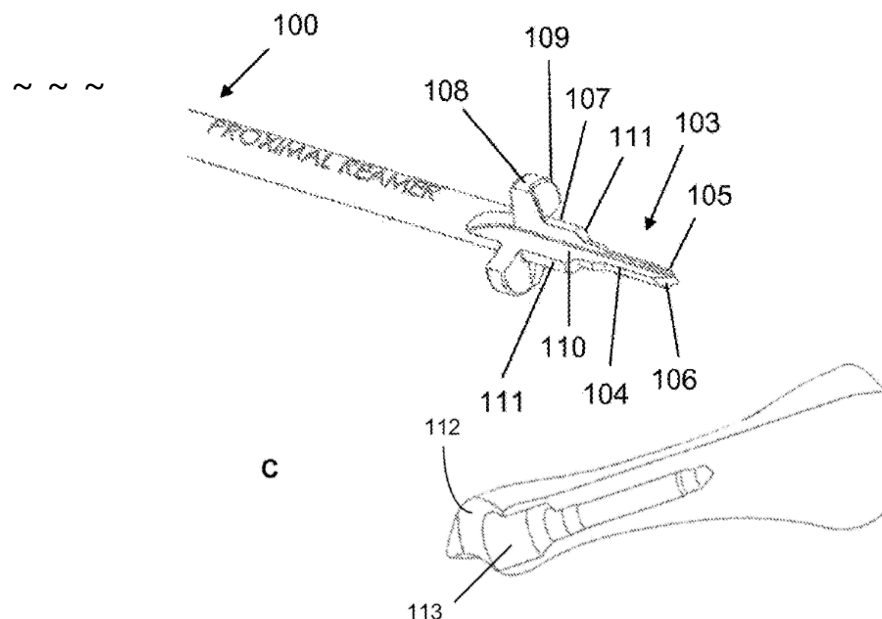


Figure 3. A transosseous tunnel is formed through the sacrum across the L₅-S₁ disc space and the Axial Fixation Rod is inserted.

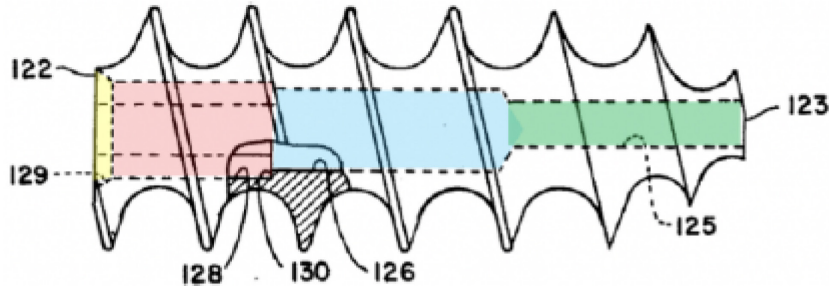
Reply 8: Dr. Ledet describes "[a] transosseous tunnel" (Ex. 1023, 330)



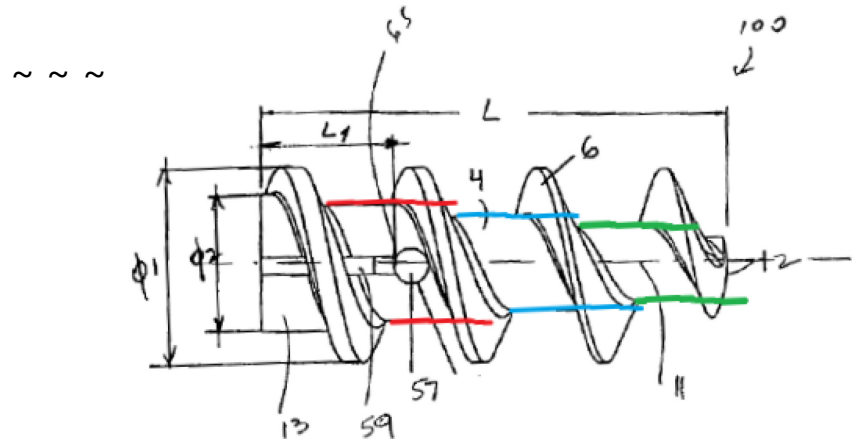
Reply 7: '299 patent discloses "The hole cut by the proximal reamer 100" (Ex. 2017, 15:28)

Construction of "bore"

DI 13: "bore" does not exclude "holes or passages having tapered or stepped longitudinal cross-sections"



Sur-Sur-Reply 1: Small's
"axial bore 125 ...
extends through the
entire length of the
screw"
(Ex. 2025, 8:45–46)



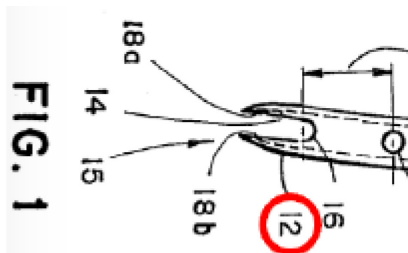
Sur-Sur-Reply 3: "inner
diameter [ø2] tapering in
stepped fashion"
(Ex. 2035 ¶ [0028])

Construction of "at a terminal end"

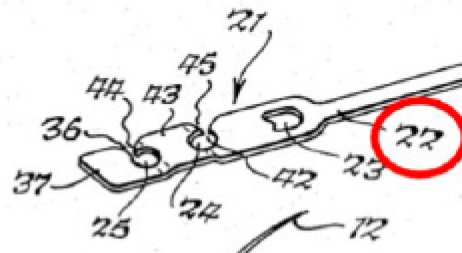
DI 13: "at a terminal end" does not "demand placement of the first aperture ... at the extreme proximal end"

~ ~ ~

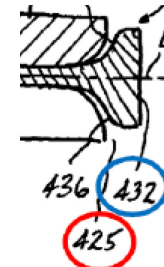
Reply 10–14: prior-art examples of "terminal end"



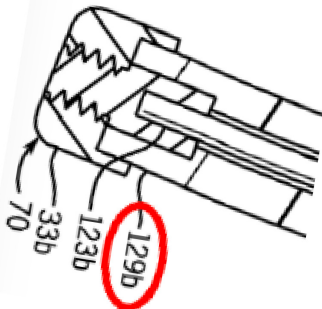
Ex. 1039: "terminal end 12"



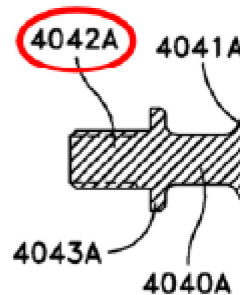
Ex. 1042: "terminal end 22"



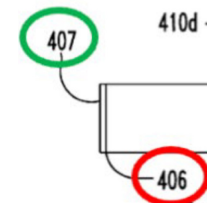
Ex. 1043: "terminal end 425"



Ex. 1040: "terminal ends 129a-b"



Ex. 1041: "terminal ends" 4042A-B

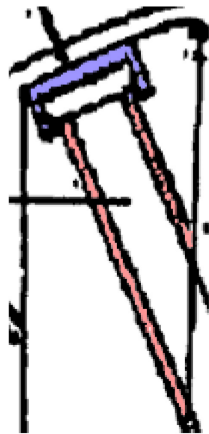


Ex. 1044: "terminal end 406"

Anticipation by Cognet

Issue: whether Cognet discloses “a first bore extending . . . from a first aperture to a second aperture”

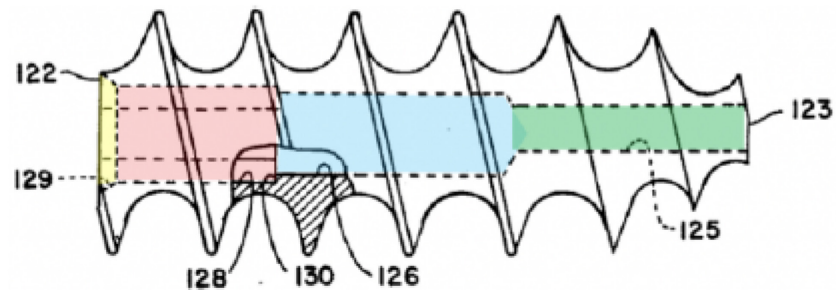
Reply 18:



Cognet
Ex. 1004:
“the tunnel”

~ ~ ~

Sur-Sur-Reply 1:



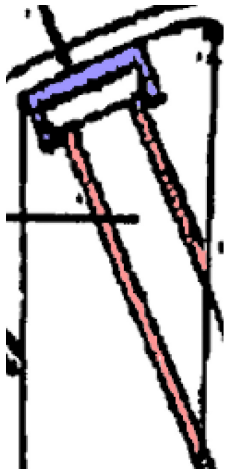
Small’s “axial bore 125 ...
extends through the entire
length of the screw”
(Ex. 2025, 8:45–46)

Anticipation by Cognet

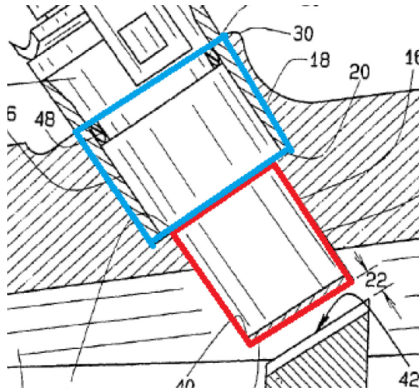
Patent Owner argues: "bore" and "counterbore" are distinct structures (POR 22)

~ ~ ~

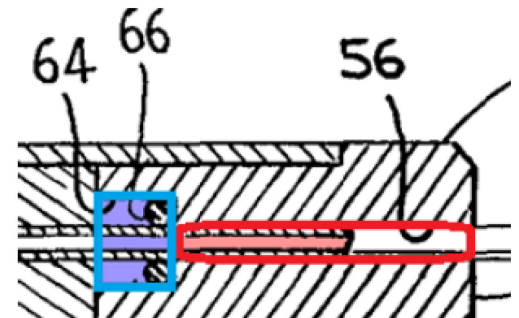
Reply 18–19:



Cognet: "*the* tunnel"
(Ex. 1004, 4:20)



Laps: "bore 16
includes a
counterbore 18"
(Ex. 1028 ¶ [0033])

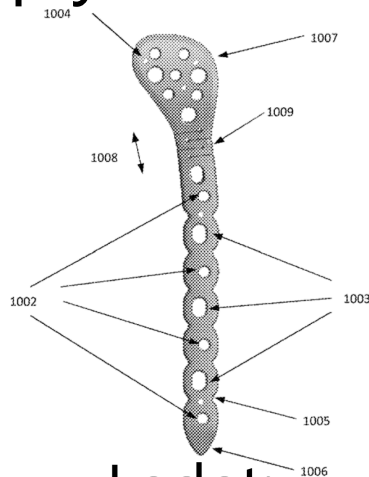


Martinez: "bore 56 has
a counterbore 64"
(Ex. 1029, 3:61)

Anticipation by Cognet

Patent Owner argues: "bore" and "counterbore" are distinct structures (POR 22)

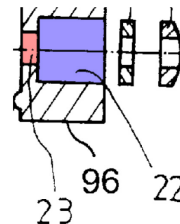
Reply 8–9, 20:



Ledet:

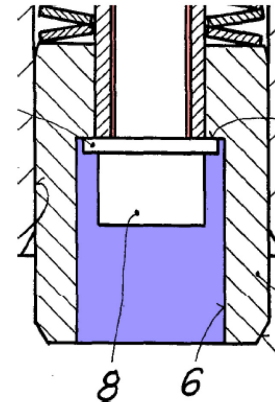
"counterbored"
aperture 1002
(Ex. 1022, 29:3–5)

~ ~ ~



Seo Fig. 4 detail (annotated)

Seo: "counterbored
bore 23"
(Ex. 1031, 3:46)



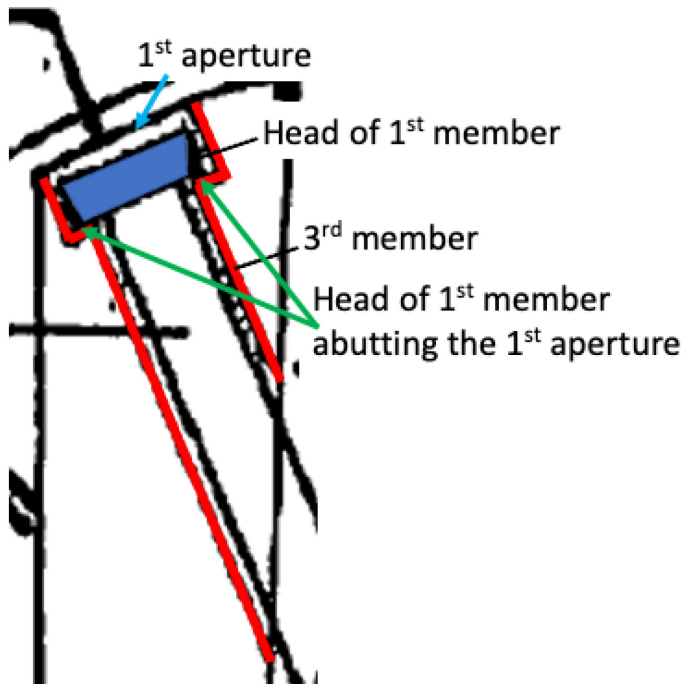
Exner Figure detail (annotated)

Exner:
"counterbored
axial bore 6"
(Ex. 1032, 2:16)

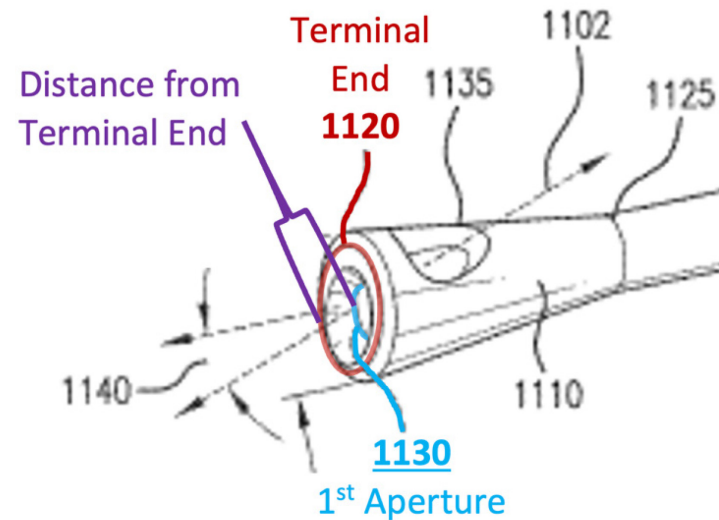
Anticipation of Claim 3 by Cognet

Issue: whether Cognet's screw head abuts "at" the first aperture

~ ~ ~



Petition 24–25
(Cognet Fig. 1
annotated)



Prelim. Reply 5
(‘166 patent Fig. 11
annotated)

Anticipation of Claim 3 by Cognet

Issue: Patent Owner's inconsistent position on location of "first aperture"

~ ~ ~

Patent Owner
Sur-Reply
(Paper 43),
14:1-3

Patent Owner's Sur-Reply

configurations. In Figure 11 of the '166 Patent, there is a first aperture on the top surface of the screw 810 and a tapered aperture 1130 just below the first aperture that extends through tapered portion 1110 to a second aperture on side exterior surface 1135. Ex.1001, 9:46-49. And, as shown in the Figures of the '166 Patent

'680 application
prosecution
Ex. 1015,
109:10-11
(DI 14)

second elongated body for advancing the second screw member 810 into a second bone or bone fragment, as shown in Figure 8. The second elongated body further comprises a first aperture 1130 at a terminal end 1120 of the second end of the second elongated body, and a bore extending along a third axis 1102 from the first aperture 1130 to a second aperture on an exterior

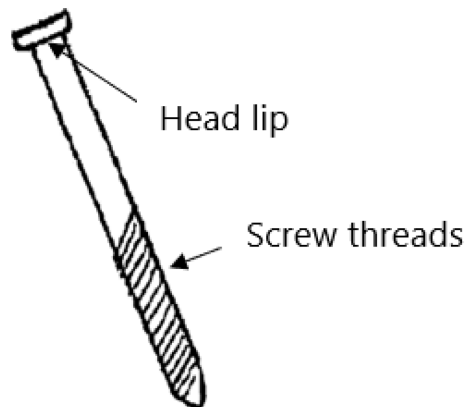
Anticipation of Claim 4 by Cognet

Issue: whether Cognet's screw head has a "torque transmitting aperture"

~ ~ ~

"Almost all screws accomplish this with a torque transmitting aperture, so a POSA would assume Cognet is disclosing this"

Pet. 25, Ex. 1002 ¶ 76



Cognet shows "surface features of the screw"

Reply 24, Ex. 1018 ¶ 48

"Cognet discloses that the [screw] head has a diameter (Ex. 1004, 3:14)"

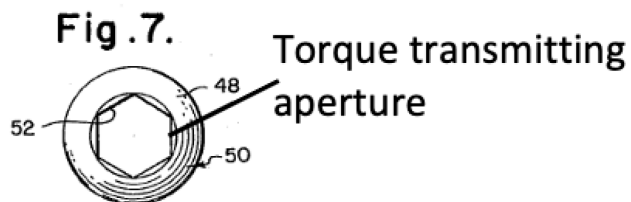
Reply 24, Ex. 1018 ¶ 48

Obviousness over Cognet and Brumfield

Issue: whether conventional screw features would have been obvious

~ ~ ~

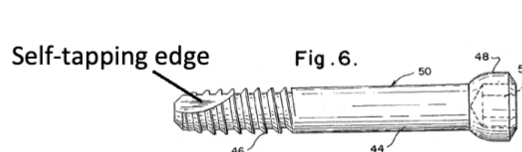
Claim 4: torque-transmitting aperture



Brumfield Fig. 7 annotated

Pet. 33–34, Reply 26

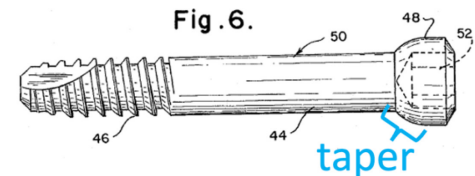
Claims 10, 11: self-tapping ends



Brumfield Fig. 6 annotated

Pet. 34–35, Reply 26–27

Claims 8, 14, 15: tapered head



Brumfield Fig. 6 annotated

Pet. 34–35, Reply 26

Revised Motion to Amend:

Claims 16 & 27

of the first end of the third elongated body, wherein the first aperture is on a portion of a first exterior surface of the third member and on a portion of a second exterior surface of the third member, and a first bore extending along a first bore axis from the first aperture to a second aperture on [[an]] a side exterior surface of the third member,

Claims 20 & 28

first bore, and further wherein the first exterior surface of the third member is a top exterior surface of the terminal end, and further wherein the second exterior surface of the third member is the side exterior surface of the third member.

Revised Motion to Amend: Anticipation by Mazur

Issue: whether Mazur discloses that the Figs. 16A–E embodiment may have a straight hub

~ ~ ~

Sur-Reply (Paper 58) 1–2:

“[0055] FIGS. 16A–E shows various views . . .”

“[0094] . . . a straight . . . hub . . . may be used with the above combinations . . .”

“[0095] Referring to FIGS. 12A through 20B, further examples of the hubs discussed above are shown . . .”

Dr. Ledet: “the curved hub in Figures 16A–16E and *in situ* Figures 12G–12I” (Ex. 2037 ¶ 34)

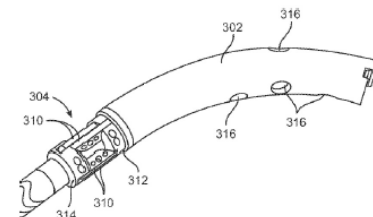


Fig. 11A (detail)

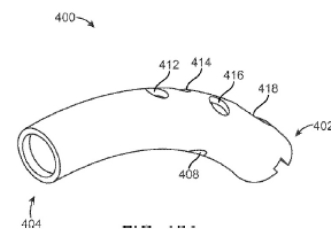


Fig. 12A (detail)

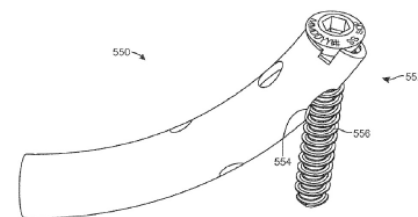


Fig. 16A (detail)

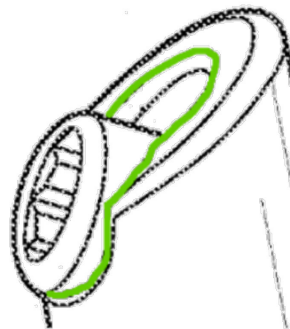
Revised Motion to Amend: Anticipation by Mazur

Issue: whether Mazur's hub end and sidewall notch meet the proposed "first aperture"

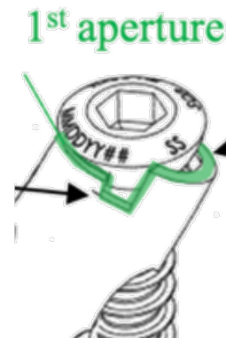
~ ~ ~

Patent Owner: "purpose of the claimed aperture" (Reply 3)

Proposed claim 16: "... a first aperture at a terminal end of the first end of the third elongated body, wherein the first aperture is on a portion of a first exterior surface of the third member and on a portion of a second exterior surface of the third member ..." (RMTA 7)



RMTA 7 (detail)



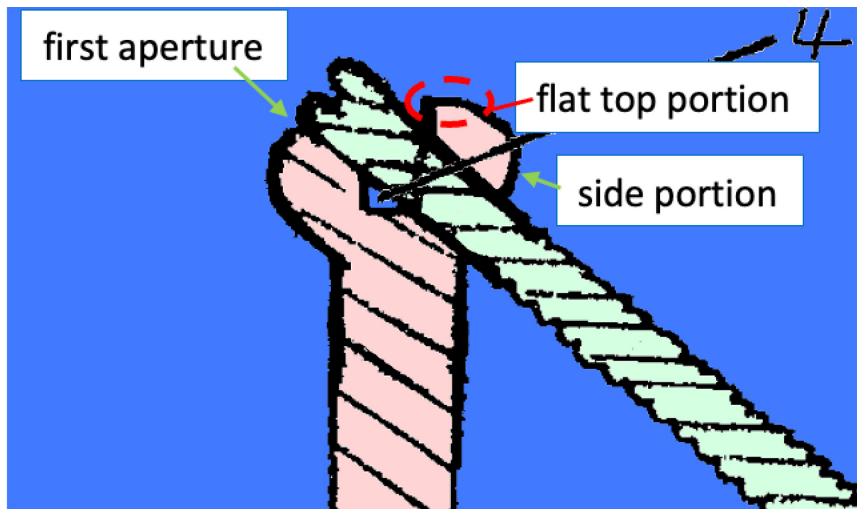
Mazur, Fig. 16A detail
(annotated)

Revised Motion to Amend: Cognet and Zhang

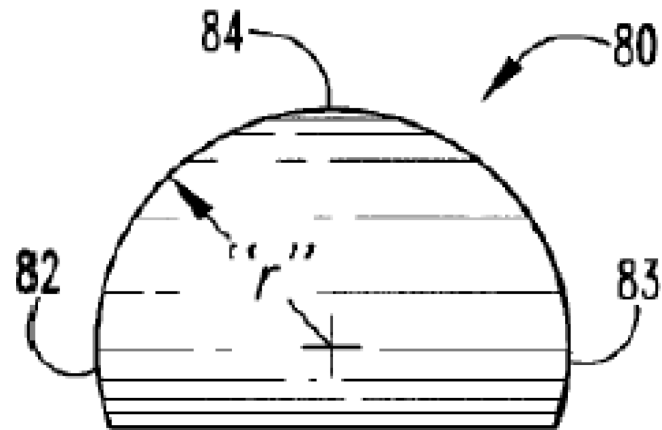
Issue: whether Zhang's nail tail has both "top" and "side" exterior surfaces

~ ~ ~

Sur-Reply 8–9:



Zhang, Figure detail (annotated)



McKay (Ex. 1044), Fig. 15A
"top surface 84"
"end surface 83"

Revised Motion to Amend: Cognet and Melkent

Issue: whether a POSA would understand how to modify Cognet's bore angle

~ ~ ~

Sur-Reply 9-10, Opposition 19-20:

Depending on the anatomical variations of the patients being operated on and the particulars of embodiment:

The diameter and the length of the nail may vary

The nail may be solid or hollow

The diameter and the length of the screws may vary

The material used for manufacturing the nail or the screws may vary

The angle of the proximal tunnel relative to the axis of the nail may vary

The number and position of the distal tunnels may vary.

"This hypothetical person would be capable of performing various design tasks and would understand the basic mechanical features and operation of orthopaedic implant devices."

Cognet, 3:10–19

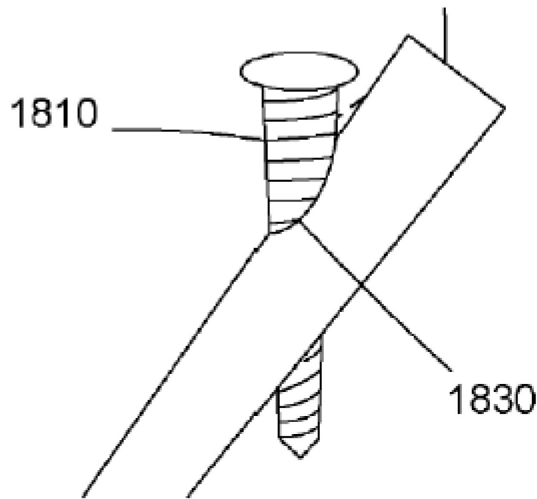
Ledet Ex. 2012 ¶ 32

Revised Motion to Amend: Cognet and Gooch

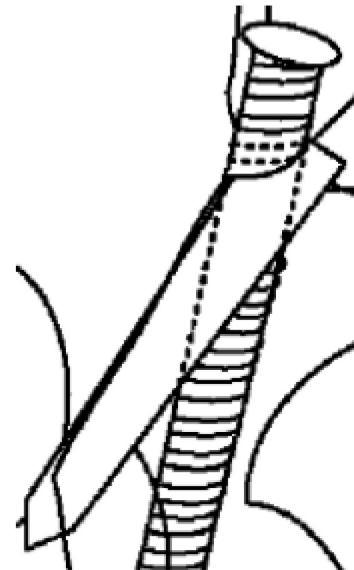
Issue: whether Gooch Fig. 20 discloses a bone anchor with an aperture through the top and side surfaces

~ ~ ~

Opposition (Paper 49) 21:



Gooch Fig. 18 detail
(bore in side)



Gooch Fig. 20 detail
(bore in top and side)