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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CMS CEP COR LTD., and
CMS CEP COR AMERICAS LLC,
Petitioners,

v.

SANDVIK INTELLECTUAL PROPERTY AB,
Patent Owner.

Case No. IPR2024-01380
Patent No. 9,827,568

**PETITION FOR INTER PARTES REVIEW OF
U.S. PATENT NO. 9,827,568**

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PETITIONER’S EXHIBIT LIST

Ex. 1001	US Patent No. 9,827,568
Ex. 1001-1	File History for US Patent No. 9,827,568
Ex. 1002	Declaration of David Smith MSME, MBA, PE, CSP under 37 C.F.R. § 1.68.
Ex. 1002-1	<i>Curriculum Vitae</i> of David Smith MSME, MBA, PE, CSP
Ex. 1002-2	Deposition and Trial Testimony of David Smith MSME, MBA, PE, CSP
Ex. 1002-3	Documents considered by David Smith MSME, MBA, PE, CSP in creating Declaration
Ex. 1003	https://www.linkedin.com/in/niklas-åberg-0a30a116b/
Ex. 1004	https://www.linkedin.com/in/fredrik-rosdahl-431b91219/
Ex. 1005	https://www.nature.com/articles/d41586-021-02612-5
Ex. 1006	https://www.drivesphalt.org/why-asphalt
Ex. 1007	https://pubs.usgs.gov/periodicals/mcs2022/mcs2022-stone-crushed.pdf
Ex. 1008	https://i.ytimg.com/vi/vQCgnGrSz7M/hqdefault.jpg
Ex. 1009	https://aggregates.seprosystems.com/history-of-rock-crushers/
Ex. 1010	https://ogden_images.s3.amazonaws.com/www.mininggazette.com/images/2022/04/01160835/4-2-CCPP.gj-.jpg
Ex. 1011	U.S. Patent No. 3,813,047
Ex. 1012	https://aggregates.seprosystems.com/history-of-rock-crushers/
Ex. 1013	https://savree.com/en/encyclopedia/gyratory-crusher
Ex. 1014	https://savree.com/en/encyclopedia/gyratory-crusher
Ex. 1015	U.S. Patent No. 4,410,143
Ex. 1016	U.S. Patent No. 6,270,026
Ex. 1017	U.S. Patent No. 4,060,205
Ex. 1018	https://pbase.com/mainecruising/fitting_a_prop
Ex. 1019	https://www.surpluscenter.com/Hydraulics/Hydraulic-Pumps/Clutch-Pumps-Hydraulic/2-32-cu-in-Hydraulic-Pump-w-Tapered-Shaft-for-Electric-Clutch-Rexroth-AZPN10036RXR12MA-9-1738-P.axd
Ex. 1020	https://img.directindustry.com/images_di/photo-g/20030-2339083.jpg
Ex. 1021	https://www.brandnewengines.com/cdn/shop/products/SAM_3681_1024x.jpg

Ex. 1022	https://ashdowntooling.co.uk/products/1-5mm-13mm-lathe-tail-stock-drill-chuck-morse-taper-3-mt3-to-b16-arbor
Ex. 1023	Machine Design Data Handbook, K. Lingaiah, c1994
Ex. 1024	https://www.cgtek.co.uk/metalwork/data/morse
Ex. 1025	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3779551/
Ex. 1026	SAE J755
Ex. 1027	SAE J1419
Ex. 1028	ASME B18.8.2
Ex. 1029	U.S. Patent No. 4,019,344
Ex. 1030	U.S. Patent No. 3,343,376
Ex. 1031	U.S. Patent No. 2,840,399
Ex. 1032	U.S. Patent No. 3,228,102
Ex. 1033	U.S. Patent No. 4,829,718
Ex. 1034	U.S. Patent No. 2,764,437
Ex. 1035	“Accurate mounting of bearings, propellers and gears has never been quicker...” by SKF (3603e_skf_hydraulic_bearing_techniques.pdf)
Ex. 1036	“Hydraulically Fitted Hubs, Theory and Practice” by Michael M. Calistrat (T91-10.pdf)
Ex. 1037	“Hydraulic Removal of Coupling Hubs – Keyed and Keyless” by Michael Calistrat and Robert Parker (T22153-160)
Ex. 1038	U.S. Patent No. 1,402,255
Ex. 1039	U.S. Patent No. 4,037,800
Ex. 1040	U.S. Patent Pub. No. 2011/0006143

1. INTRODUCTION

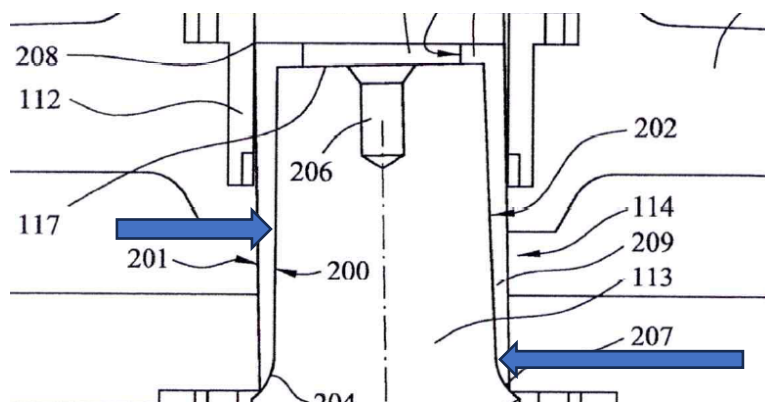
Pursuant to 35 U.S.C. §§ 311, 314(a), and 37 C.F.R. § 42.100, CMS Cepcor Ltd. and CMS Cepcor Americas LLC (“CMS Cepcor” or “Petitioners”) respectfully request that the Board review and cancel as unpatentable under 35 U.S.C. §103 claims 1-10 (the “Challenged Claims”) of the ‘568 Patent.

The claims of the ’568 patent relate generally to gyratory rock crushers “used for crushing ore, mineral and rock material to smaller sizes.” Ex 1001, Abstract 1:19-20. Particularly, the claims of the ’568 patent are directed to the geometry of the connection between a main shaft and a surrounding protective sleeve such that the shaft with a surrounding sleeve is “tapered.” Ex. 1001, at 2:4-5. The patent states that the problem to be solved by the alleged invention is facilitating the attachment and removal and replacement of such “protective sleeve” covering the shaft. Ex. 1001, at 2:1-2. As evident from the file history, such geometry components of rock crushing machines has existed for decades, as has the alleged contribution of these claims for the purpose of facilitating the attachment and removal of similar parts on other devices. Also, the prior art in this crowded field, shows, as discussed herein and more fully in the accompanying Declaration of David Smith, MSME, MBA, PE, CSP (Ex. 1002), that there is no novel invention or non-obvious addition from the instant claims. Thus, all claims in the ’568 patent are obvious to a person of ordinary

skill in the art (“POSITA”).¹

The Summary of the invention states that “the present invention to provide a sleeve for a main shaft of a gyratory crusher that enables convenient attachment and detachment at the shaft...by providing a shaft that tapers inwardly in the axial direction towards a longitudinal axis of the sleeve from a first (lower) end to a second (upper) end.” Ex. 1001, at 1:66-2:6.

The purported invention is best exemplified by Figure 2 of the patent where the blue arrows show the claimed “tapering.”



The dependent claims of the '568 patent concern well-known features (e.g., gyratory crusher, main shaft, internal and external facing surfaces), the combination with independent claim 1 of which do not purport to provide any technical benefit or solve any purported problem. *See* Ex. 1001.

During the prosecution of the '568 patent, the Examiner rightly rejected the

¹ A POSITA may have advanced education, real-world work experience, a combination of both. A lack of education may be remedied by additional work experience, and a lack of work experience may be remedied by additional education, or any combination of many other factors set forth by the Federal Circuit Court of Appeals. *See Daiichi Sankyo Co., Ltd. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007).

originally offered claims 1–13 as either anticipated and/or obvious by well-established prior art including Sandborn, U.S. Patent No. 1,402,255 (“Sandborn”) (Ex. 1038). Though similar rejected limitations were included in originally offered claim 14 and 15, neither was rejected as either anticipated or obvious. These claims also **were not found** to be in condition for allowance once the indefiniteness issues were addressed. Applicant, without traversing or even trying to traverse that art cited against claims 1–13, cancelled those claims and reasserted rejected limitations in claims 14 and 15 and new dependent claims. Other than an Examiner initiated interview which resulted in the cancelation of claim 14, the ’568 patent was issued. From the record of the file history of this patent, no meaningful examination of the issued claims appears to have occurred. Ex. 1002 ¶ 74. A review of other prior art patents issued to this very same Patent Owner, albeit in separate patent families, including expired patents and applications and not cited to the Examiner of the ’568 patent, nor the Patent Owner in an Information Disclosure Statement, shows that the Patent Owner seeks merely to extend improperly its monopoly over this market area.

Putting aside the art considered by the Examiner, as explained below, other relevant art NOT presented to the Examiner further renders the claims of the ’568 patent invalid. Doing so is the textbook definition of obviousness: combining “known” components to yield “predictable results.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007).

Petitioners also cite to additional prior art (*see* U.S. Patent No. 3,813,047 to Torrence (Exhibit 1006), U.S. Patent No. 1,402,255 to Sandborn (Ex. 1038), U.S. Patent No. 4,037,800 to Coxhill (Ex. 1039), U.S. Patent Pub. No. 2011/0006143 (Exhibit 1008), U.S. Patent No. 4,410,143 to Polinski (Ex. 1015), U.S. Patent No. 6,270,026 to Peipho (Ex. 1016), and U.S. Patent No. 4,060,205 to Pollak (Ex. 1017)) as evidence of a POSITA's background knowledge and to provide contemporaneous context to support Petitioner's assertions regarding what a POSITA would have understood from the prior art in the area. *Yeda Research v. Mylan Pharm. Inc.*, 906 F.3d 1031, 1041-1042 (Fed. Cir. 2018); 37 C.F.R. §42.104(b).

2. STANDING (§ 42.104(A))

CMS Cepcor Ltd. and CMS Cepcor Americas LLC ("CMS Cepcor") certify that that U.S. Patent No. 9,827,568, titled "Gyratory Crusher Main Shaft Sleeve" (hereinafter the "'568 patent") is available for *inter partes* review ("IPR"), and that CMS Cepcor is not barred or estopped from requesting *inter partes* review of the grounds identified in this Petition. Neither CMS Cepcor, nor any party in privity with CMS Cepcor: (a) has filed a civil action challenging the validity of claims 1–10 of the '568 patent; (b) has been served a complaint alleging infringement of the '568 patent more than one year prior to the present date; or (c) is estopped from challenging the claims on the grounds identified in this Petition. Claims 1–10 of the '568 patent also have not been the subject of a prior *inter partes* review or a finally

concluded district court litigation.

3. STATEMENT OF THE PRECISE RELIEF REQUESTED FOR EACH CLAIM CHALLENGED

CMS Cepercor requests review of claims 1–10 of the '568 patent under 35 U.S.C. § 311, 314(a), and 37 C.F.R. § 42.100 on the grounds that such claims are unpatentable under 35 U.S.C. § 103 as rendered obvious by prior art according to a POSITA.²

4. LEVEL OF ORDINARY SKILL IN THE ART

For purposes of this Petition, a person having ordinary skill in the art would be a person who has a bachelor's degree in mechanical engineering or a related field, and at least 2 years of experience with industrial equipment design and development. Ex. 1002, ¶ 30. A POSITA may also have a combination of more formal education and less work experience or a combination of less or different formal education and more work experience. Ex. 1002, ¶ 30.

5. THE APPLE/FINTIV FACTORS SUPPORT INSTITUTION OF AN *INTER PARTES* PROCEEDING, SO DISCRETIONARY DENIAL IS NOT APPROPRIATE

In the U.S. District Court for the District of Delaware, there is a parallel proceeding involving the '568 Patent in front of The Honorable Jennifer Lynne Hall. *See generally Sandvik Mining & Construction, et al. v. CMS Cepercor Ltd., et al.*, Case No. 1:24-481-JLH (the "Delaware Litigation"). However, the Apple/Fintiv factors

² Petitioners do not concede that any claims satisfy other requirements for patentability that cannot be raised in IPR, including but not limited to §§101 and 112.

support institution despite the existence of the Delaware litigation, *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020). The Board should not exercise its discretion to deny institution under 35 U.S.C. § 314(a). If the Board considers exercising its discretion to deny institution, Petitioners respectfully request leave to file a reply to address any discretionary denial arguments Patent Owner makes in its preliminary response.

Factor 1: Whether the Court granted a stay or evidence exists that one may be granted if a proceeding is instituted. This factor is neutral or weighs in favor of institution. Petitioner is about to file a motion with the Delaware Litigation to request a stay, so at worst this factor is neutral. Attorney Docket No. 48100-0004IP1 IPR of U.S. Patent No. 9,550,223. *Sand Revolution II, LLC v. Continental Intermodal Group⁵ Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative). Congress intended for district courts to be liberal in granting stays pending PTAB proceedings, especially in cases where petitioners moved quickly after service of a complaint. 157 Cong. Rec. S1363 (Mar. 8, 2011) (Sen. Schumer) (Congress placed “a very heavy thumb on the scale in favor of a stay being granted”). Because Petitioners have moved expeditiously (see Factor 2, *infra*), this factor favors institution. Delaware Courts have recently granted a stay pending IPR in a case where a stay is requested. *See, e.g., Dental Monitoring v. Get-Grin, Inc.*, No. 22-647-WCB, 2024 WL 1603403 (D. Del. Apr. 9, 2024).

Factor 2: Proximity of the Court’s trial date to the Board’s projected statutory deadline for a final written decision. This factor weighs in favor of institution. The time for Defendants to answer or move against the Complaint has not yet run. That answer date is September 23, 2024. In fact, the Court has not issued any schedule at all. And, even in the unlikely case that Judge Hall does not grant a stay, any trial is likely to be set no earlier than 18 months from the time scheduled for an answer—i.e., March 2026. The PTAB will issue an institution decision significantly earlier than that date. The PTAB’s governing procedures thus provide a reasonable certainty that the PTAB will resolve the issues raised by this Petition in advance of the Court’s trial date.

The gap widens considering that trial dates are commonly subject to delays and should not support discretionary denial. The *Sand Revolution* decision properly questioned anchoring denial of institution on such an inherently unreliable schedule. IPR2019-01393, Paper 24 at 8–9 (PTAB June 16, 2020) (“It is unclear that the court in the related district court litigation will adhere to any currently scheduled jury trial date or, if it is changed, when such a trial will be held.”). The certainty that the PTAB would issue a final written decision well in advance of the district court’s trial date combined with the definite uncertainty of when trial will occur weighs strongly in favor of institution.

Factor 3: Investment in the parallel proceeding by the Court and the

parties. The third factor favors institution. The Delaware litigation has not even begun, much less has any discovery been sought, and will still be in the early stages by the time the Board issues an institution decision. It is unlikely that any fact depositions will have taken place by then. Further, Court will not have addressed invalidity in light of prior art. The district court litigation is likely to be stayed once the present Petition is instituted. Furthermore, as part of a holistic analysis, the Board considers the speed with which the petitioner acted. *Apple Inc. v. Seven Networks, LLC*, IPR2020-00156, Attorney Docket No. 48100-0004IP1 IPR of U.S. Patent No. 9,550,223 8 Paper 10 at 11–12 (PTAB June 15, 2020). Where the petitioner acted diligently and without delay, as here, investment of the parties in the parallel district court litigation is minimized. *HP Inc. v. Neodron LTD*, IPR2020-00459, Paper 17 at 40 (PTAB Sept. 14, 2020). Petitioners here are notably more diligent by filing this Petition within 6 weeks of having been served with the Complaint in the Delaware litigation and before their time to answer or otherwise respond has expired. Such diligence by Petitioners favors institution.

Factor 4: Overlap between issues raised in the Petition and in the parallel proceeding. This factor weighs in favor of institution. All Challenged Claims are asserted in the district court action. (See generally IS1018.) But, while the Petition challenges the same claims asserted in the parallel district court proceeding, there is a high likelihood that Judge Hall will grant a stay. Even without a stay, a final written

PTAB decision will still issue before the beginning of a district court trial. The final written decision, once issued, will trigger estoppel in the district court litigation for grounds that were raised or reasonably could have been raised during IPR. See 35 U.S.C. § 315(e)(2). Petitioners intend to file in the parallel district court litigation a stipulation that, if IPR is instituted, they will not pursue in the parallel litigation any ground that is raised or that could have been reasonably raised in an IPR or any subsequent appeal if pursued. *See Sotera*, IPR2020- 01019, Paper 12, at 19.

Factor 5: Whether the Petitioner and the defendant in the parallel proceeding are the same party. The fifth factor, whether the parties are the same, weighs against institution as is typical when, as here, the Petitioners here are the Defendants in the parallel district court case brought by Patent Owner. *Sotera*, IPR2020-01019, Paper 12, at 19.

Factor 6: Other circumstances that impact the Board’s exercise of discretion, including the merits. Finally, other circumstances strongly favor institution. The strength of the present Petition strongly weighs in favor of institution. Petitioners advance a targeted Petition with art which had not been previously presented in prosecution. The primary reference, Polinski, U.S. Patent No. 4,410,143 (“Polinski”), teaches almost all of the limitations of all the Challenged Claims. The allowed claims and prosecution history of the ’568 Patent evidence an incomplete examination. (Ex. 3 ¶74; *See* § 7, *infra*.) For example, Applicant did not submit known prior

art references with the application. (*Id.*) The Examiner allowed what were in essence the cancelled claims without explanation. (*Id.*) And there is only three prior art references of record, cited by the Examiner, but never addressed to the balance of the non-rejected claims. Given the strength of the prior art as detailed below, and the concerns surrounding the prosecution of the '568 Patent, it is in the public interest to address invalidity, especially under prior art known to Applicant but never submitted during prosecution. As the Supreme Court recently explained, there is a significant public interest against “leaving bad patents enforceable.” *Thryv, Inc. v. Click-To-Call Techs., LP*, 140 S. Ct. 1367, 1374 (2020). The Board’s policy is to “not deny institution of an IPR or PGR under Fintiv (i) when a petition presents compelling evidence of unpatentability.” Director Vidal Memorandum (June 21, 2022) (“Memo”), 9. “Compelling, meritorious challenges are those in which the evidence, if unrebutted in trial, would plainly IPR2024-01283 Petition Inter Partes Review of 11,223,601 19 lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence.” Memo, 4. The prosecution examiner allowed the claims without evaluating their unpatentability in view of any of these prior art references. Thus, the evidence of unpatentability is compelling here, and the PTAB should not deny institution under Fintiv.

6. OVERVIEW OF THE PATENT

The '568 patent, titled “Gyratory Crusher Main Shaft Sleeve” issued on

November 28, 2017 from Application No. 14/418,535 (the “’535 Appl.”) filed June 20, 2013 (Ex. 1001-1 at 1), and purports to state that it was assigned to Sandvik Intellectual Property AB and claiming priority to Foreign Application 12179089 filed August 2, 2012. Ex 1001 Cover. On information and belief, the ’568 patent is exclusively licensed to Sandvik Mining and Construction USA LLC. For purposes of this Petition, the effective priority date is 2012. The cited and relied-upon prior art predates August 2, 2012. Accordingly, Petitioners have not undertaken a priority date analysis in this Petition. Petitioners do not waive any right or opportunity they may have to dispute the priority date in this or another forum where relevant.

7. PROSECUTION HISTORY

In the original prosecution of the ’568 patent, there were 15 claims. Ex. 1001-1, at 34–38, Ex. 1002 ¶ 70. According to the first Office Action **all 15 claims** were rejected as indefinite, and claims 1–11 were rejected by the Examiner because they were rendered obvious by Coxhill (Exhibit 1007) or Sanborn (Exhibit 1005) in view of Gunnarson (Exhibit 1008). Ex. 1002, at ¶ 72. Specifically, Coxhill and Sanborn each disclosed gyratory crushers with virtually all elements of the ’568 patent. Ex. 1002, at ¶ 72. And Gunnarson would have been known by a POSITA as providing ducts and a groove to lead lubricating oil to the crusher. Ex. 1002, at ¶ 72.

Rather than trying to traverse the claims rejected under 35 U.S.C. §§ 103, Applicant cancelled those claims, and seemingly went with the original claims which

were not rejected for anticipation or obviousness. Although, the basis for the new claims not being rejected on the very same art is unclear and suggests no real examination of those claims was done.

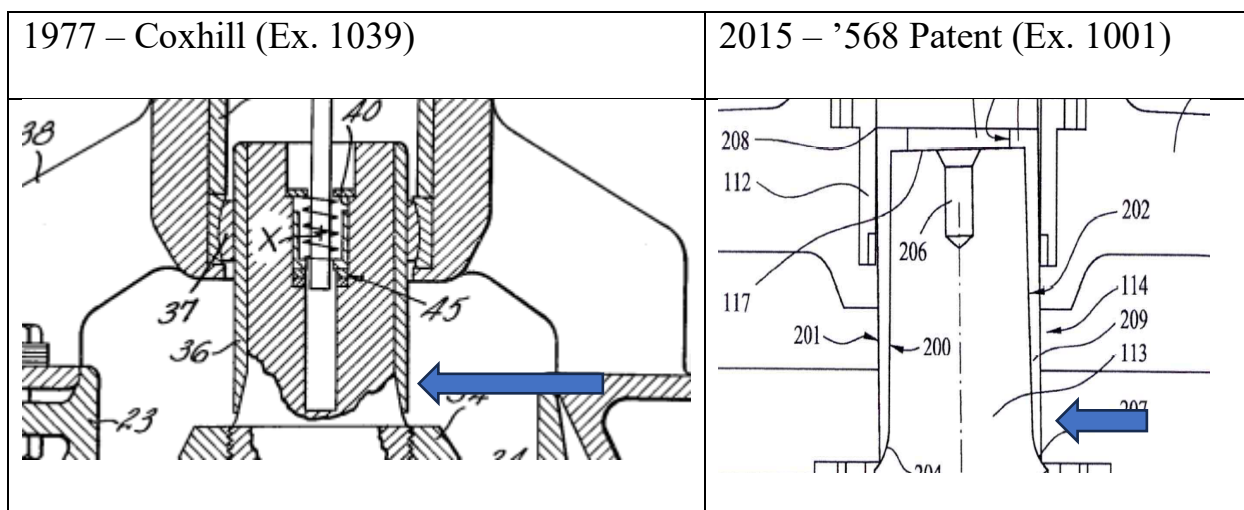
In further response to the rejection, Sandvik made only superficial changes to remaining claims without changing their substance. Ex. 1002 ¶¶ 73–76. Specifically, the Examiner issued claims, that she had previously rejected, on “a gyratory crusher comprising:” instead were allowed with the mere addition of “gyratory crusher main shaft sleeve comprising:” Ex. 1002 ¶¶ 73–76. Otherwise, the claims remained predominantly unchanged. Ex. 1002 ¶¶ 73–76. The examiner did not state why this change remedied the previous issues with the claims. Ex. 1002 ¶¶ 73–76. Effectively there was no substantive examination of these claims.

Rather, it is clear that the Applicant to the ‘568 patent acquiesced to the Examiner’s rejection of the alleged invention in the rejected claims (a tapered sleeve around a main shaft in a gyratory crusher, and a bore for the introduction of fluid to aid in the removal of such sleeve from the shaft). *See* Ex. 1002 ¶ 77. Faced with the rejection, Applicant acquiesced and cancelled the claims. In *TorPharm, Inc. v. Ranbaxy Pharmaceuticals, Inc.*, the U.S. Court of Appeals for the Federal Circuit, overturned the District Court decision and recognized that “the public is entitled to equate an inventor's acquiescence to the examiner's narrow view of patentable subject matter with abandonment of the rest” and indicated that by amending a claim a

patentee may have “acquiesced” to the proposition that a claim lacking the amendments would be invalid. 336 F.3d 1322, 1330 (Fed. Cir. 2003).

In that case, all that the amended claims offered that could even marginally be different (in language only) was a tapered shaft that fit under the tapered sleeve. As the Examiner found that the tapered shaft (tapered on the inner surface of the sleeve) was not novel, then that the shaft would be tapered on the shaft outer surface could not be novel. *See* Ex. 1002 ¶ 72. Rightly so given even a cursory examination of the art.

In the Coxhill specification, it states that: “The upper portion of the crusher head shaft 33 is fitted with a bearing sleeve 36 and received in a pivot bearing member 37.” Ex. 1039, 2:44-46. The figure of this element in the Coxhill patent clearly demonstrates that the described “sleeve” is tapered.



Nothing in the original nor the issued independent claims require any degree, amount, nor specifics of the claimed “tapering.” The most notable amendment to the

claims was the amendment which changed the preamble of the claims from “a main shaft sleeve” to a “gyratory crusher comprising ... a sleeve fitted over the tapered region of the second end of the main shaft...” *See* Ex. 1002 ¶ 74–75. There is no substantive difference in the cancelled and issued claims.

8. 37 C.F.R. § 42.104(b)(4): HOW THE CONSTRUED CLAIMS ARE UNPATENTABLE

An explanation of how claims 1–10 are unpatentable, including identification of how each claim feature is found in the prior art and the motivation to combine the prior art, is set forth below in Section 11.

9. 37 C.F.R. § 42.104(b)(5): SUPPORTING EVIDENCE

The List of Petitioners’ Exhibits is set forth above, and an Appendix of Exhibits supporting this Petition is attached. In addition to other art generally known by a POSITA, as explained in the Declaration of David Smith (Ex. 1002), the prior art that Petitioners claim specifically render the ’568 patent include:

Exhibit	Reference	Publication Date	Basis Prior Art
1009	US Patent No. 4,410,143 (“Polinski”)	October 18, 1983	§ 102(a)(1)
1010	US Patent No. 6,270,026 (“Piepho”)	August 7, 2001	§ 102(a)(1)
1011	US Patent No. 4,060,205 (“Pollak”)	November 29, 1977	§ 102(a)(1)
1012	US 2,764,437 (“Bratt”)	September 25, 1956	§ 102(a)(1)

Such art was not cited to the Examiner by the Patent Owner.

10. CLAIM CONSTRUCTION

Claims are to be given their “broadest reasonable construction in light of the specification.” 37 C.F.R. § 42.100(b). Claims only need to be construed to the extent necessary to resolve a controversy. No terms need construction because the claims read on the prior art identified below under any construction consistent with *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2004). The claim terms should thus be given their plain and ordinary meaning under *Phillips*. Pursuant to 37 C.F.R. § 42.100(b), claims subject to IPR are construed according to their plain and ordinary meaning. Petitioner does not waive, and expressly reserves, its claim scope arguments, constructions, and evidence that it may raise in other proceedings.³ The preamble in the independent claims “a gyratory crusher comprising” is not a limitation of the claims. *Poly-America LP v. GSE Lining Tech. Inc.*, 383 F.3d 1303, 1310, 72 USPQ2d 1685, 1689 (Fed. Cir. 2004).

11. CLAIMS 1–10 ARE NOT PATENTABLE UNDER 35 U.S.C. § 103.

All ten claims in the ’568 patent are not patentable because they are obvious to a person of ordinary skill in the art. The ’568 patent consists of one independent claim (claim 1) and nine dependent claims (claims 2–10), which derive from claim 1. Each claim is not patentable as described in the table below:

³ Petitioners submit that no construction of any terms is necessary for the institution phase of this proceeding. As discussed below, the prior art teaches each and every feature of the claims of the ’568 Patent under any reasonable construction. However, Petitioners note that nothing in this Petition should be construed as Petitioner’s acquiescence that the claims meet the requirements of 35 U.S.C. § 112.

Grounds	Claims	Basis
#1	1-8	35 U.S.C. § 103 over Polinski and Piepho
#2	9	35 U.S.C. § 103 over Polinski, Piepho and Bratt
#3	10	35 U.S.C. § 103 over Polinski, Piepho and Pollak

Accordingly, all claims of the '568 patent are not patentable under 35 U.S.C § 103.

11.1. Claims 1–8 are rendered obvious by Polinski in view of Piepho

Claims 1–8 of the '568 patent do not disclose anything other than a gyratory rock crusher with a tapered joint between a main shaft and a sleeve. Polinski and Piepho each disclose a gyratory rock crusher. *See* Ex. 1015, 1010. Piepho is further designed to crush coal. Ex. 1016. Furthermore, Piepho further teaches the interchangeability between a cylindrical joint and a tapered joint. Specifically,

The present invention provides an intervening material between the shaft end (25) and the mating bore in yoke bushing (18) fitted within the bore of yoke (12) to prevent fretting damage. For accurate alignment and for reliable Support of the yoke, this joint (21) must be capable of accepting radial, axial, and bending or overturning loads. Preferably, the joint (21) is a tapered joint with the tapered end (25) of shaft (14). The yoke bushing (18) has a mating bore similarly tapered. Shaft end (25) may be constructed for either a keyless or a keyed fit. Also, Shaft end (25) alternatively may be cylindrical rather than tapered as seen in FIG. 4.

See Ex. 1016, at 3:24–35.

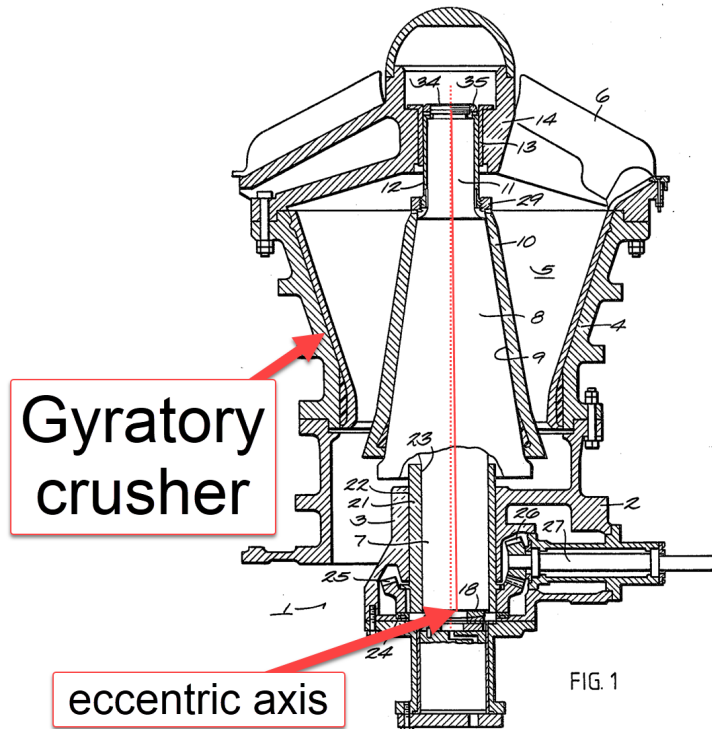
A POSITA would be motivated to combine the tapered joint of Piepho with the teachings of Polinski based on the explicit teachings of the prior art. Ex. 1002 ¶ 81. Piepho teaches the interchangeability between a cylindrical joint and a tapered joint, and Piepho is in the same field of endeavor as Polinski and the '568 patent. *See* Ex. 1003 ¶ 80. In addition to this, a POSITA would understand the advantages afforded by the use of a tapered joint as compared with a cylindrical joint. Ex. 1002 ¶ 81. For example, tapered interference joints, while more expensive to manufacture, provides advantages in assembly, alignment, and fit-up. Ex. 1002 ¶ 81.

Accordingly, Claim 1–8 are rendered obvious by Polinski in view of Peipho. Accordingly, and, thus, are not patentable. For ease of comparing the Petition with the expert analysis of the '568 patent's invalidity, the following subsections utilize headers that correspond to designations included in Smith Declaration, Ex. 1002.

11.1.1. Claim Element 1P

A gyratory crusher comprising: ...

This preamble is not limiting, Polinski discloses a gyratory crusher in Figure 1 that is substantially identical to the gyratory crusher in the '568 patent.



Polinski states that “The present invention relates to **gyratory crushers** and, in particular, to the main shaft supporting the crusher head or mantle within the crusher.” Ex. 1015, at 1:6–8. Furthermore, the name of the Polinski patent is “Main Shaft Assembly for a Gyratory Crusher,” which inherently discloses a gyratory crusher.

Furthermore, Piepho, which discloses another rock-crushing apparatus in the same field of endeavor as Polinski, teaches a similar rock crusher. Ex. 1002, at 48. “The present invention relates in general to an improved main Shaft for a **coal pulverizer**, and more particularly to an improved main shaft for use in B&W Type E and EL pulverizers.” Ex. 1016, at 1:5–8.

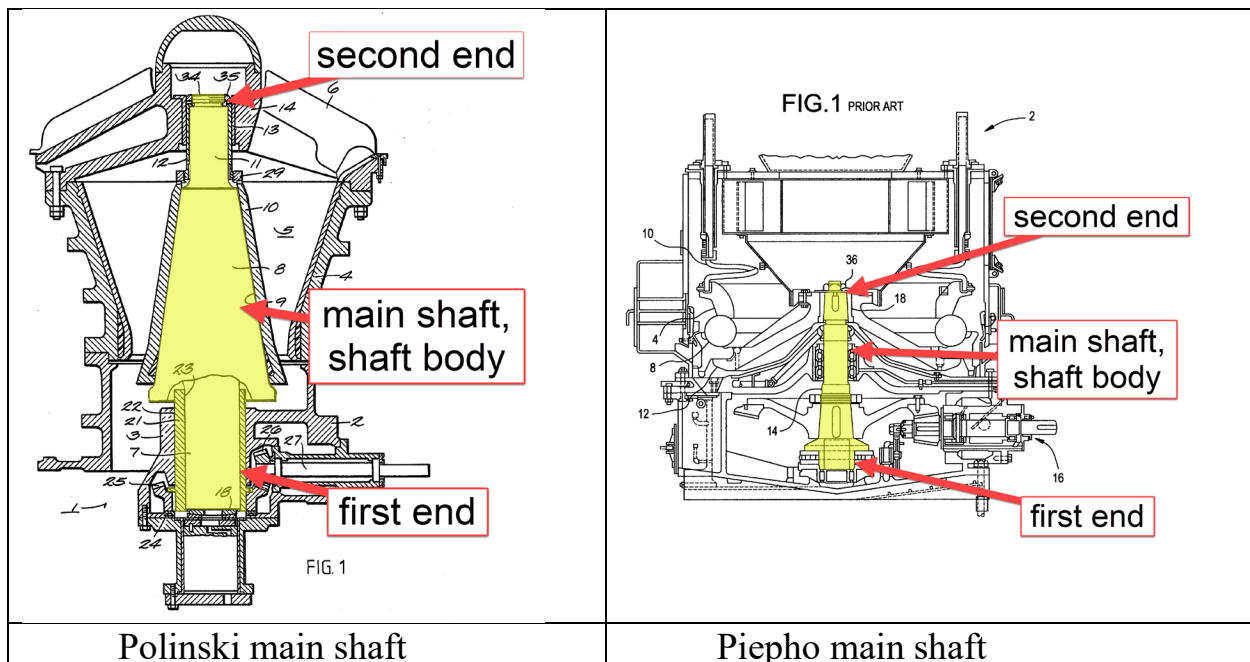
Accordingly, Polinski contains everything in the Preamble of Claim 1 of the

'568 patent.

11.1.2. Claim 1a1

... a main shaft including a shaft body having a first end for positioning at a lower region of the crusher and a second end for positioning at an upper region of the crusher relative to the first end ...

Polinski, in view of Piepho discloses a main shaft including a shaft body having the same specifications as disclosed in the '568 patent—specifically, a lower first end and an upper second end.



As shown above, both Polinski and Piepho disclose a main shaft including a shaft body. The shaft body has a first end which is positioned at a lower region of the crusher. Further the shaft body has a second end which is positioned at an upper region of the crusher relative to the first end. Accordingly, Polinski and Peipho each contain everything in Claim 1a1.

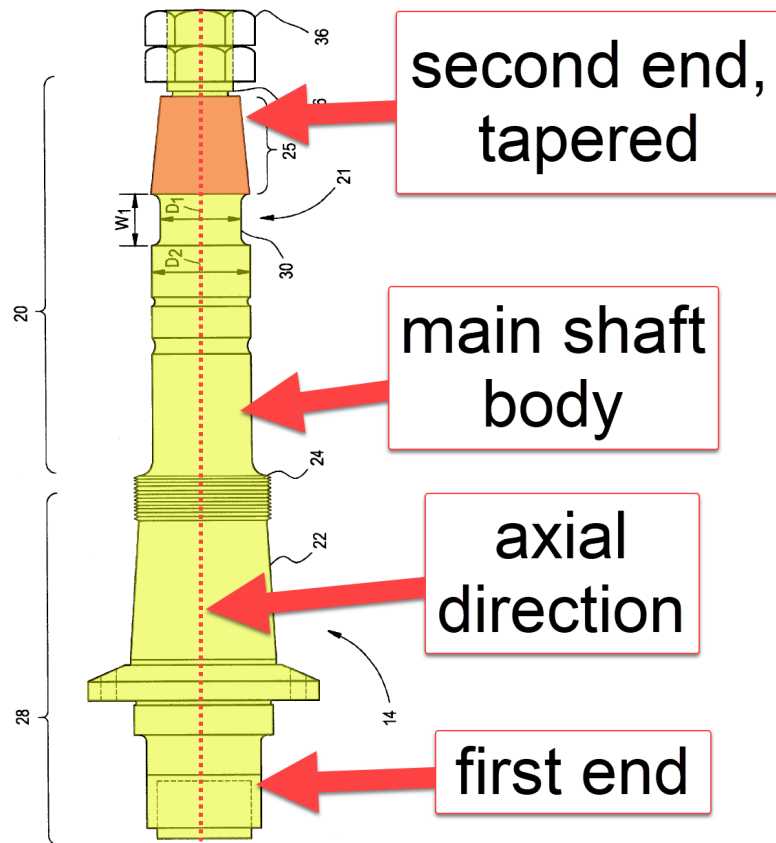
11.1.3. Claim 1a2

... a thickness of the shaft body being tapered in an axial direction of the main shaft at a region of the second end so as to decrease in cross-sectional area ...

Polinski, in view of Piepho, discloses a thickness of the shaft body being tapered in the axial direction of the main shaft at the region of the upper second end so as to decrease in cross-sectional area. Specifically, Piepho states, “The present invention provides an intervening material between the shaft end (25) and the mating bore in yoke bushing (18) fitted within the bore of yoke (12) to prevent fretting damage. For accurate alignment and for reliable Support of the yoke, this joint (21) must be capable of accepting radial, axial, and bending or overturning loads. Preferably, **the joint (21) is a tapered joint with the tapered end (25) of shaft (14).**” Ex. 1016, at 3:23-31 (emphasis added).

This taper can be seen in the figure from Piepho, below:

FIG.3

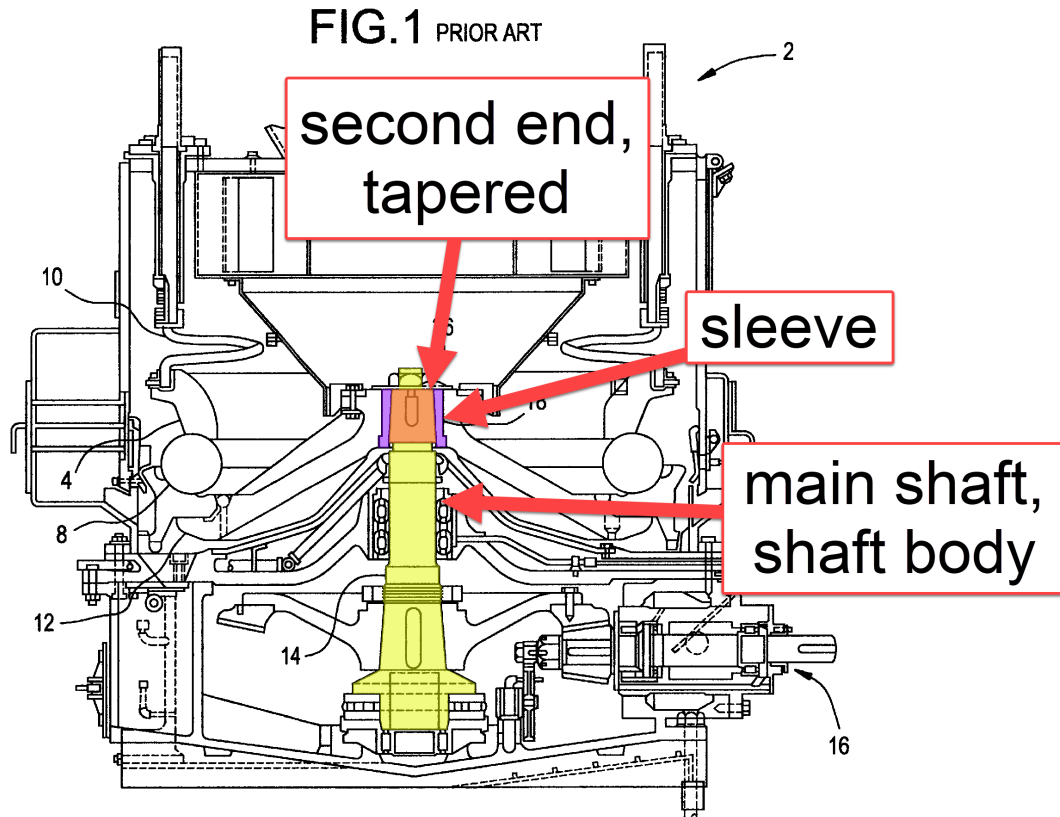


A POSITA would have been motivated to incorporate the tapered end on the main shaft of Piepho with the main shaft on Polinski. Ex. 1002, at 51. As Piepho describes, the tapered shaft aids in accurate alignment which is notoriously more difficult with purely cylindrical shafting. Ex. 1002, at 51. Accordingly, Polinski, viewed in light of Piepho, renders obvious Claim 1a2 of the '568 patent.

11.1.4. Claim 1b1

a sleeve fitted over the tapered region at the second end of the main shaft ...

Polinski, in view of Piepho, discloses a sleeve fitted over the tapered region at the second end of the main shaft.



As shown above, Piepho teaches a sleeve fitted over the tapered region at the second end of the main shaft. Ex. 1016. This sleeve is the bushing 18 (highlighted in purple above). Piepho teaches that the bushing has a tapered internal surface that is fitted over the tapered region of the main shaft.

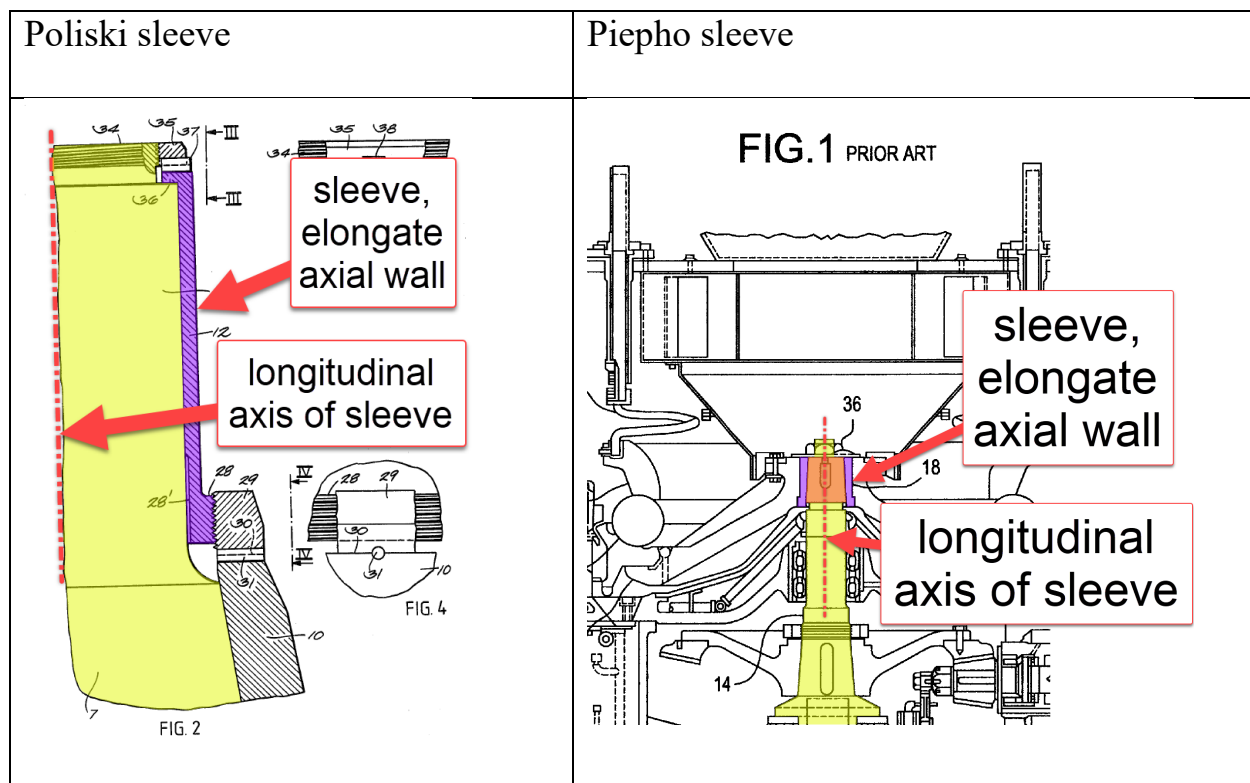
Further, the main shaft of Polinski also has a sleeve. The sleeve of Polinski is fitted over a cylindrical portion of the main shaft body of Polinski, however, as explained in the Declaration of David Smith, a POSITA would be motivated to use the tapered sleeve of Piepho as it aids in alignment and fit-up. Ex. 1002, at 52.

Accordingly, Polinski, in view of Piepho, renders obvious Claim 1b1 of the '568 patent.

11.1.5. Claim 1b2

... the sleeve including an elongate axial wall extending around a longitudinal axis of the sleeve ...

Polinski and Piepho each disclose a sleeve including an elongate axial wall extending around a longitudinal axis of the sleeve. The sleeves in Polinski and Piepho can be seen in purple in the figures below:



As shown above, both Polinski and Piepho have a sleeve with an elongate axial wall. See Exs. 1009, 1010. Further, as shown, the axial wall of the sleeve extends around the longitudinal axis of the sleeve. In either sleeve, a POSITA would recognize that the length is greater than the diameter of the sleeve, demonstrating it is elongate in shape. Ex. 1002, at 54. However, even if the sleeve was shorter, the

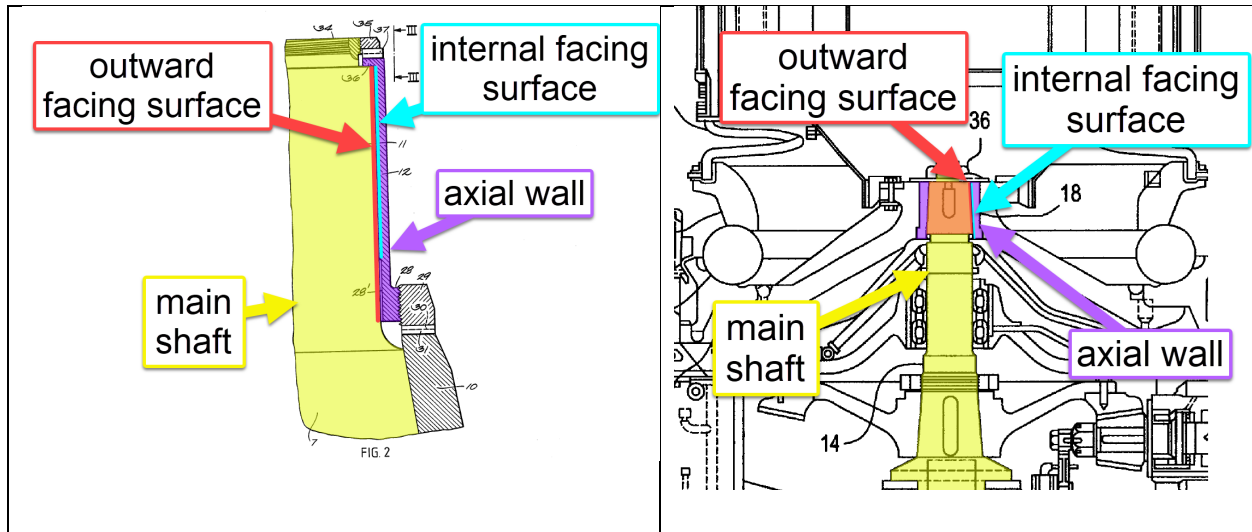
axial wall would still be elongated along the longitudinal axis of the sleeve. Ex. 1002, at 54. Accordingly, Polinski, in view of Piepho, renders obvious Claim 1b2 of the '568 patent.

11.1.6. Claim 1b3

... the axial wall having an internal facing surface for positioning in contact with an outward facing surface of the main shaft ...

Polinski, in view of Piepho, discloses that the axial wall has an internal facing surface for positioning in contact with an outward facing surface of the main shaft. Specifically, Polinski and Piepho each disclose such contact, more commonly referred to as an “interference fit” or “shrink fit,” between the main shaft body and the sleeve. Exs. 1009, 1010. Piepho states that “[t]he fit or joint between the yoke bushing (18) and upper taper (25) is an interference type fit,” (Ex. 1016, at 3:6–7), and Polinski states that “[w]hen the bearing sleeve 12 is installed on bearing journal 11, it is initially heated so that as it cools it forms **a heat-shrink type fit** releasably securing it to the journal 11” (Ex. 1015, at 3:15–18). Such contact between the shaft and the sleeve can be seen in the following figures from Polinski and Piepho.

Poliski contact fit	Piepho contact fit
---------------------	--------------------



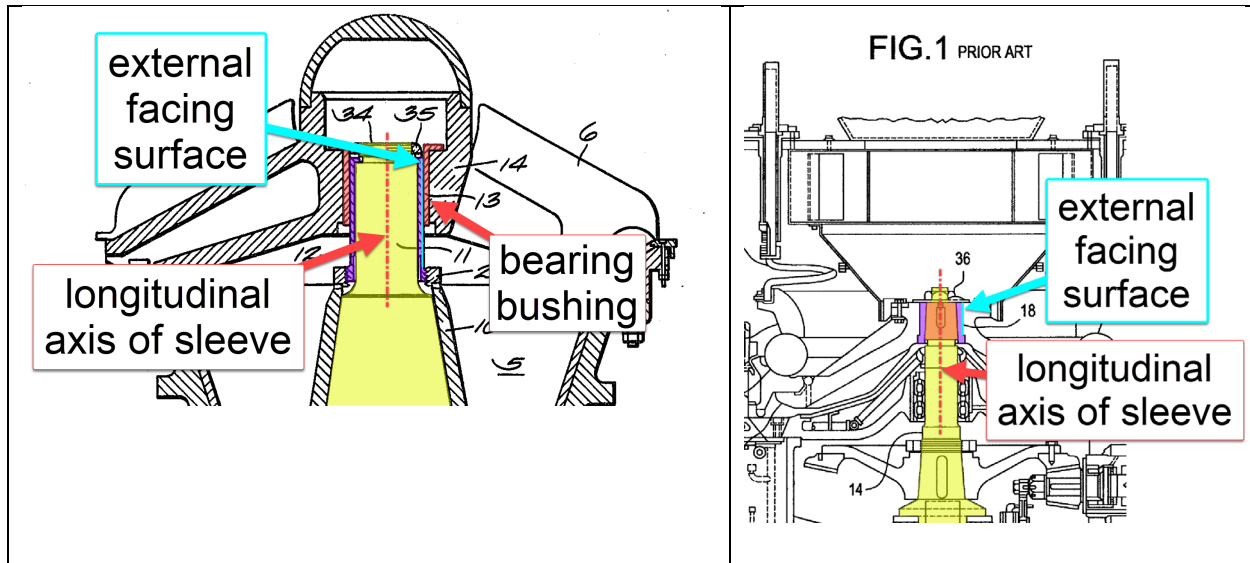
As shown above, both Piepho and Polinski teach that the axial wall the sleeve has an internal facing surface which is positioned in contact with an outward facing surface of the main shaft. Ex. 1002, at 55. Each of the sleeves of Piepho and Polinski have an interference fit which generates heavy amounts of contact pressure between the inside face of the axial wall and the outside face of the main shaft. Ex. 1002, at 55. Accordingly, Polinski, in view of Piepho, renders obvious Claim 1b3 of the '568 patent.

11.1.7. Claim 1b4

... an external facing surface relative to the longitudinal axis ...

Polinski, in view of Piepho, discloses an external facing surface relative to the longitudinal axis. This external facing surface can be seen in the following figures (see Ex. 1002, at 56):

Polinski external facing surface	Piepho external facing surface
----------------------------------	--------------------------------



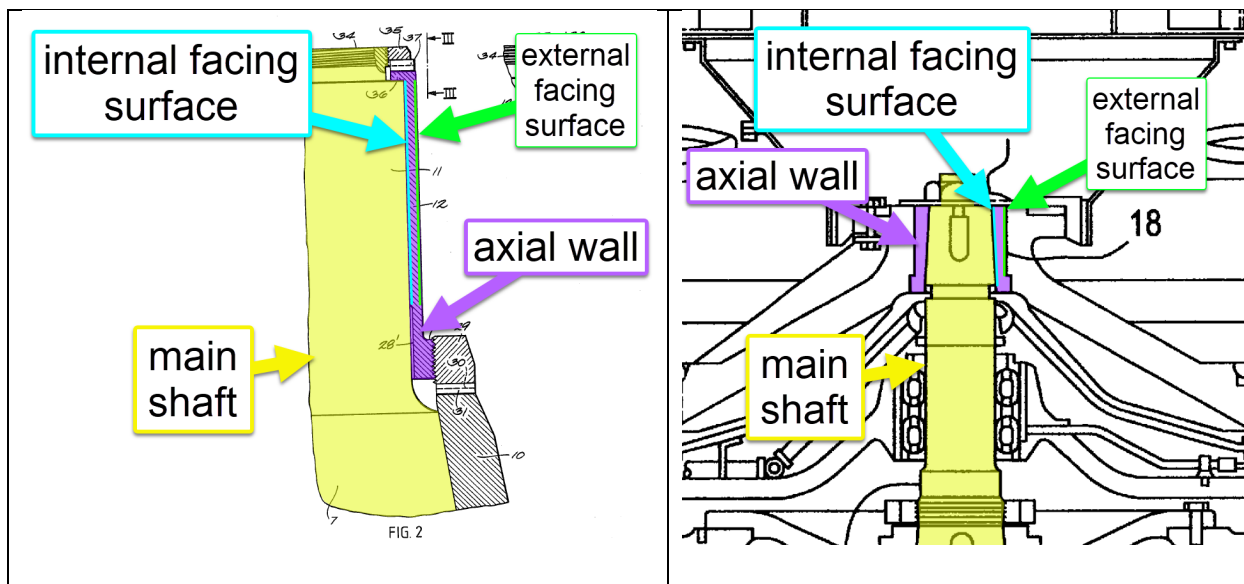
Accordingly, both Polinski and Piepho each contain Claim 1b4 of the '568 patent.

11.1.8. Claim 1b5

... the axial wall extending between the internal and external facing surfaces ...

Polinski in view of Piepho discloses a that the axial wall extends between the internal and external facing surfaces. Specifically, see the figures below which disclose an axial wall (*see* Ex. 1002, at 57–58):

Polinski axial wall	Piepho axial wall
---------------------	-------------------



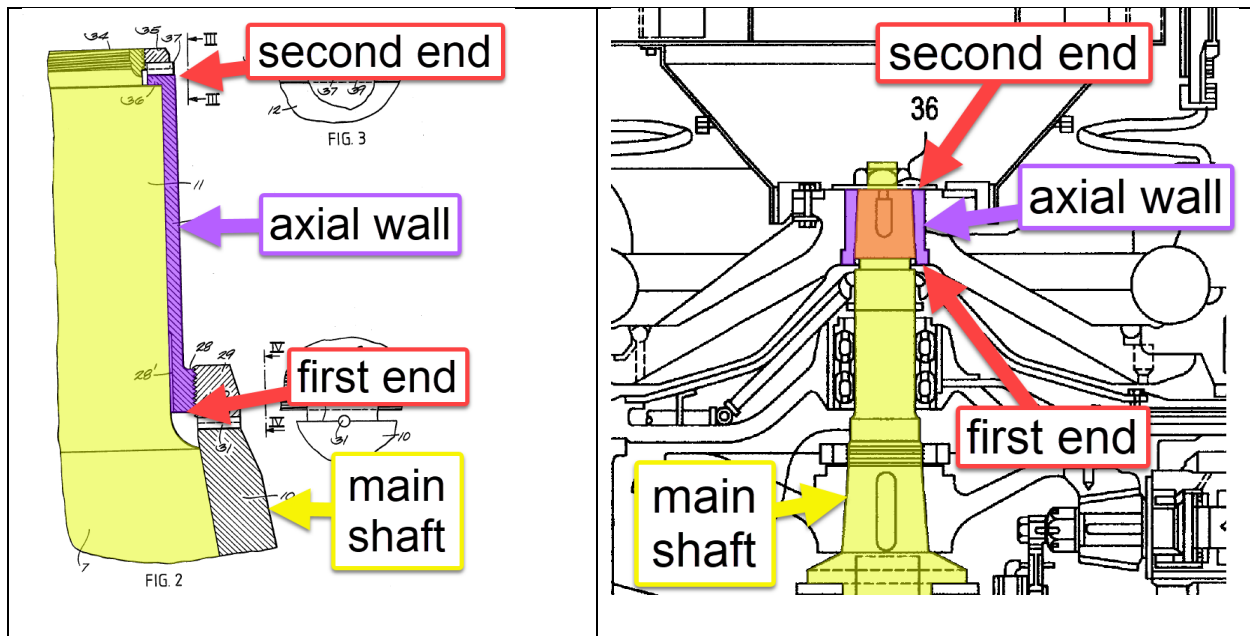
Accordingly, Polinski, in view of Piepho, renders obvious Claim 1b5 of the '568 patent.

11.1.9. Claim 1b6

... the axial wall having a first end for positioning at a lower region of the main shaft and a second end for positioning at an upper region of the main shaft relative to the lower region ...

Polinski, in view of Piepho, discloses an axial wall having a first end for positioning at a lower region of the main shaft and a second end for positioning at an upper region of the main shaft relative to the lower region. The two ends of the sleeve's axial wall are shown in the figures below:

Ends of Polinski axial wall	Ends of Piepho axial wall
-----------------------------	---------------------------



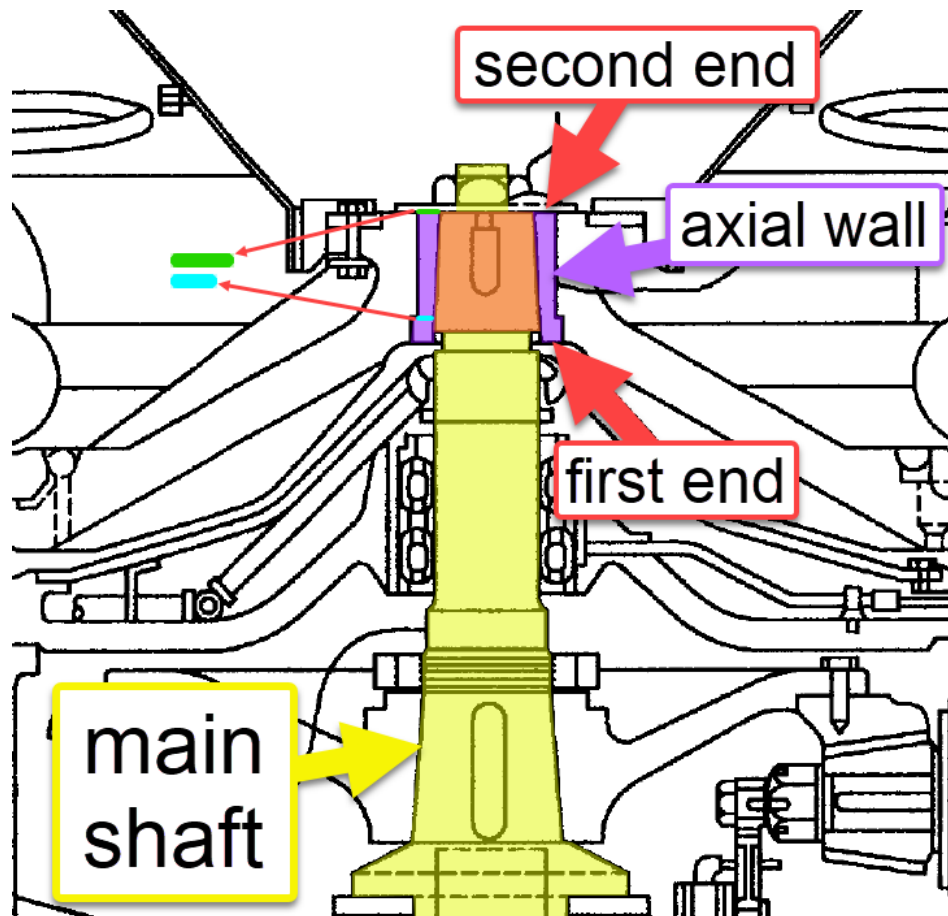
Although both ends of the axial wall of the sleeve are at the upper end *of the shaft*, a POSITA would recognize that the important fact is that the first end of the sleeve is at a lower end *relative to the second end of the sleeve*, not relative to the shaft, itself. See Ex. 1002, at 59. This is consistent with the claim in the '568 patent. Accordingly, Polinski, in view of Piepho, render obvious Claim 1b6 of the '568 patent.

11.1.10. Claim 1b7

... wherein a thickness of the axial wall at a region between the first and second ends decreases in a direction from the second end to the first end in the axial direction ...

Polinski in view of Piepho discloses that the thickness of the axial wall at a region between the first and second ends decreases in a direction from the second end to the first end. Specifically, Piepho clearly discloses such decrease in the

thickness of the axial wall in the figure, below:



As shown above the thickness of the axial wall decreases from the second end to the first end. This is demonstrated by the figure above which shows the turquoise line at the first end is shorter than the green line at the second end. Ex. 1002, at 61. This is because the internal surface of the sleeve bushing (18) is tapered to match the tapered portion of the main shaft. Ex. 1002, at 61.

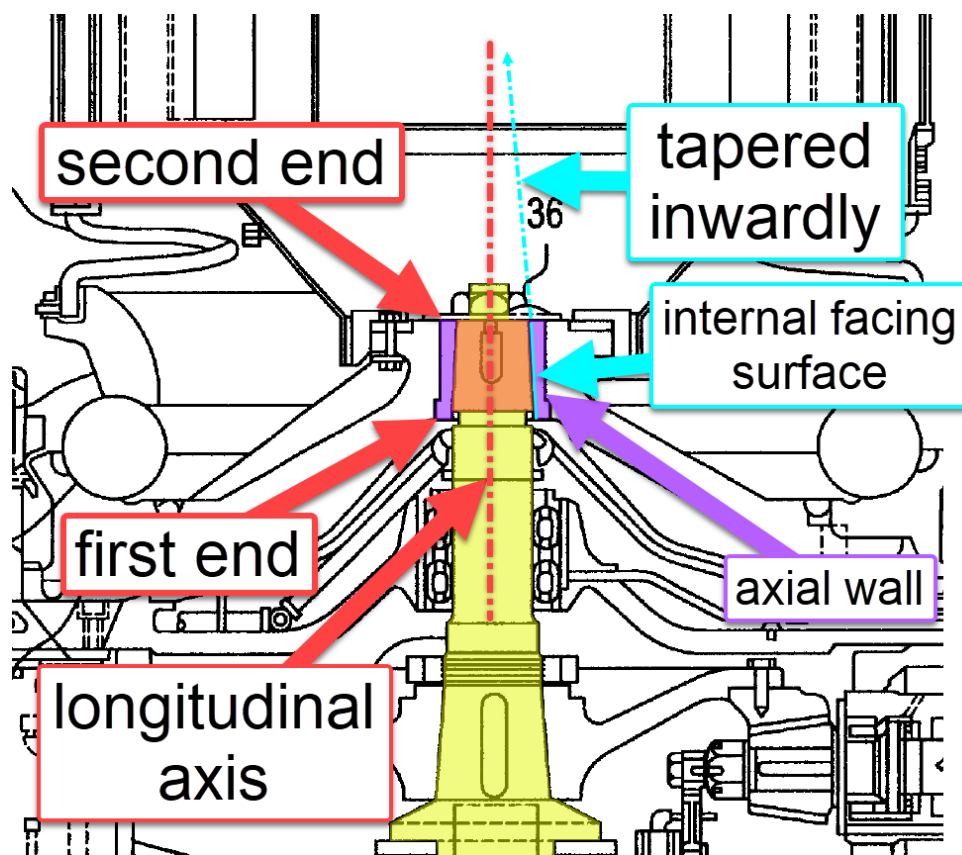
A POSITA would be motivated to incorporate the tapered joint of Piepho with the sleeve of Polinski as discussed above including that Piepho teaches that a tapered joint is preferable to a cylindrical joint. Ex. 1002, at 61. Accordingly, Polinski, in

view of Piepho, renders obvious Claim 1b7 of the '568 patent.

11.1.11. Element 1b8

... the internal facing surface at said region between the first and second ends extending transverse to the longitudinal axis so as to taper inwardly towards the longitudinal axis in the direction from the first to the second end ...

Polinski in view of Piepho discloses that in the axial direction, the internal facing surface at said region between the first and second ends extends transverse to the longitudinal axis so as to taper inwardly towards the longitudinal axis in the direction from the first to the second end. Such taper can be seen in the figure, below:



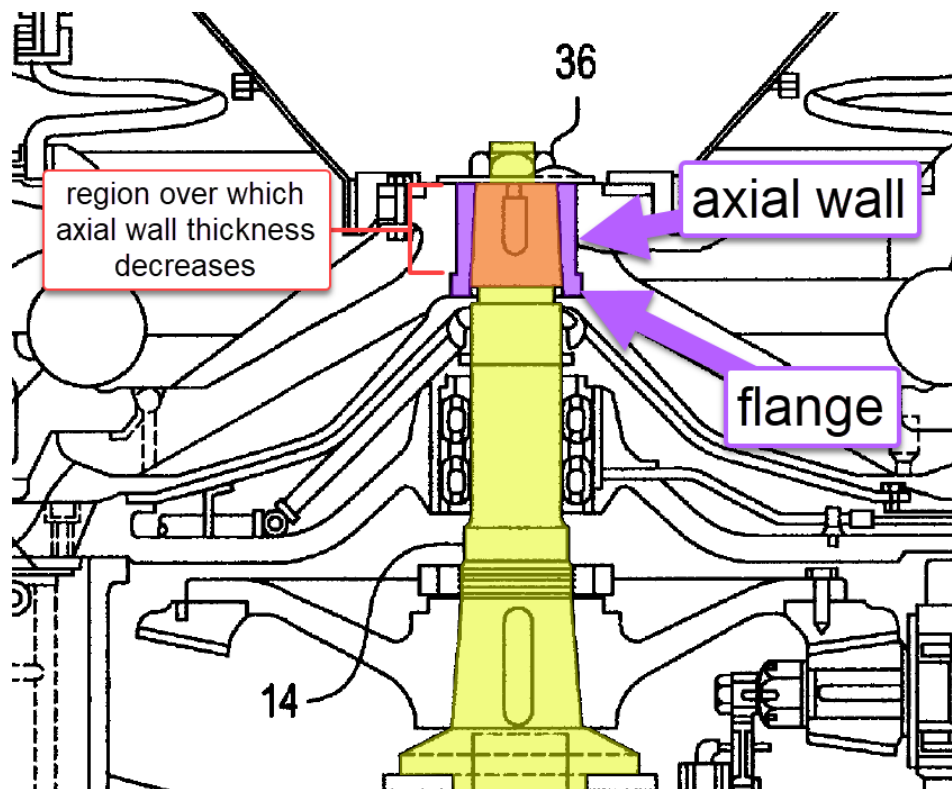
As shown above the internal facing surface at the region between the first and

second ends of the axial wall tapers inwardly towards the longitudinal axis in the direction from the first end of the sleeve to the second end of the sleeve. Ex. 1002, at 62. This is because the sleeve bushing (18) is tapered to match the tapered portion of the main shaft. Ex. 1002, at 62. Accordingly, Polinski, in view of Piepho, render obvious claim 1b8 of the '568 patent.

11.1.12. Claim 2 (Dependent)

The gyratory crusher as claimed in claim 1, wherein the region over which the thickness of the axial wall decreases extends substantially the full axial length of the sleeve.

Polinski, in view of Piepho, discloses a region over which the thickness of the axial wall decreases extends substantially the full axial length of the sleeve.



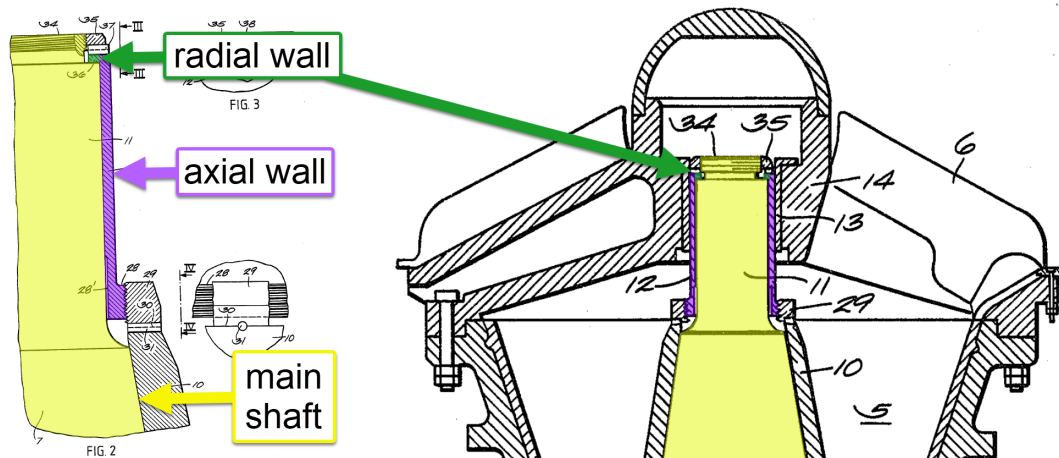
As shown above, the region over which the thickness of the axial wall decreases extends substantially the full axial length of the sleeve. Ex. 1002, at 63. The internal tapered bore of the sleeve bushing (18) spans its entire length. There is also a flange (labeled above) which extends from the base of the flange, which a POSITA would recognize is common for bushings. Ex. 1002, at 64. These flanges provide a suitable depth stop when performing the shrink-fitting operation and provide a shoulder bearing surface which can transmit axial loads. Ex. 1002, at 64. Notwithstanding the flange portion of the bushing (18) it is clear to a POSITA that the region over which the thickness of the axial wall decreases extends at least substantially the full axial length of the sleeve (bushing 18). Ex. 1002, at 64.

Accordingly, claim 2 of the '568 patent is rendered obvious by Polinski, in light of Piepho.

11.1.13. Claim 3a1 (Dependent)

The gyratory crusher as claimed in claim 1, further comprising a radial wall extending perpendicular or transverse to the axial wall ...

Polinski in view of Piepho discloses a radial wall extending perpendicular or transverse to the axial wall.

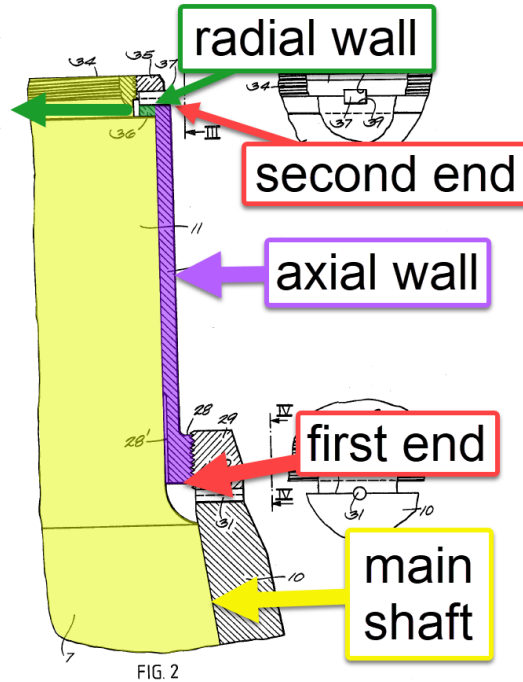


As shown above Polinski discloses a radial wall that extends transversely to the axial wall. Specifically, Polinski discloses “a threaded lug 34 is provided on the end of the journal which is adapted to receive a sleeve nut 35 which axially overlies an inwardly projecting annular lip 36 on the upper end of the sleeve 12.” Ex. 1015, at 3:25–29. This feature serves as a shoulder that sets the depth of the sleeve during fit-up and provides a shoulder for potentially bearing axial loads. Ex. 1002, at 65. Accordingly, Polinski, in view of Piepho, render obvious Claim 3a1 of the ’568 patent.

11.1.14. Claim 3a2 (Dependent)

... the radial wall being positioned at or towards the second end and extending inwardly towards the longitudinal axis.

Polinski in view of Piepho discloses that the radial wall is positioned at or towards the second end and extends inwardly towards the longitudinal axis.

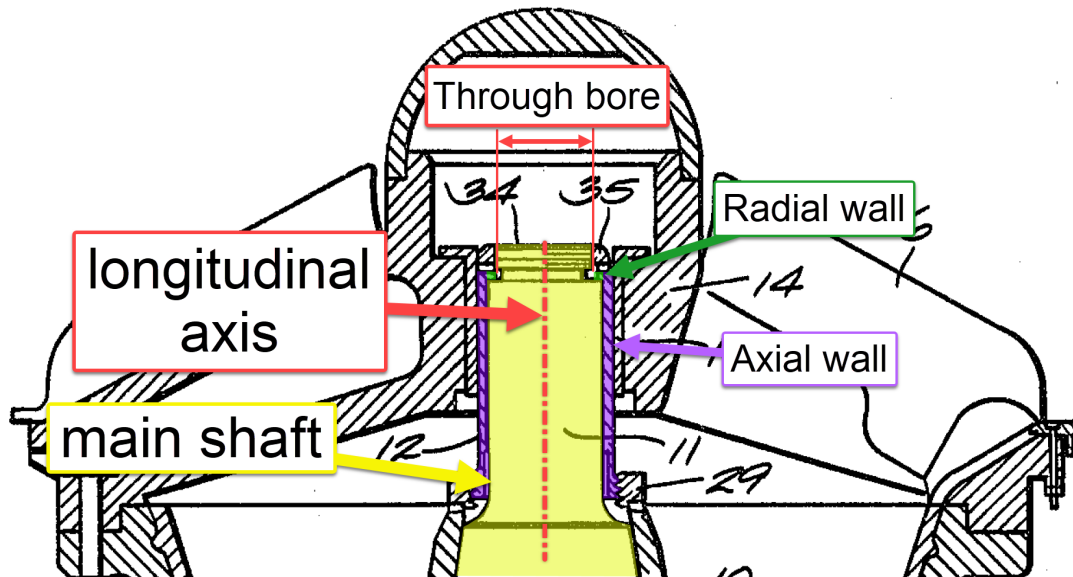


As shown above the radial wall of Polinski is positioned at the second end of the sleeve. Further it extends inwardly towards the longitudinal axis. Ex. 1002, at 66. A POSITA would be motivated to include this radial wall in the combination of Polinski in view of Piepho as it makes for a more predictable assembly process and provides additional bearing surface for the top sleeve securing nut. Ex. 1002, at 66. Accordingly, Polinski, in view of Piepho, renders obvious Claim 3a2 of the '568 patent.

11.1.15. Claim 4 (Dependent)

The gyratory crusher as claimed in claim 3, wherein the radial wall includes a through bore positioned at the longitudinal axis of the sleeve.

Polinski in view of Piepho discloses that the radial wall includes a through bore positioned at the longitudinal axis of the sleeve.



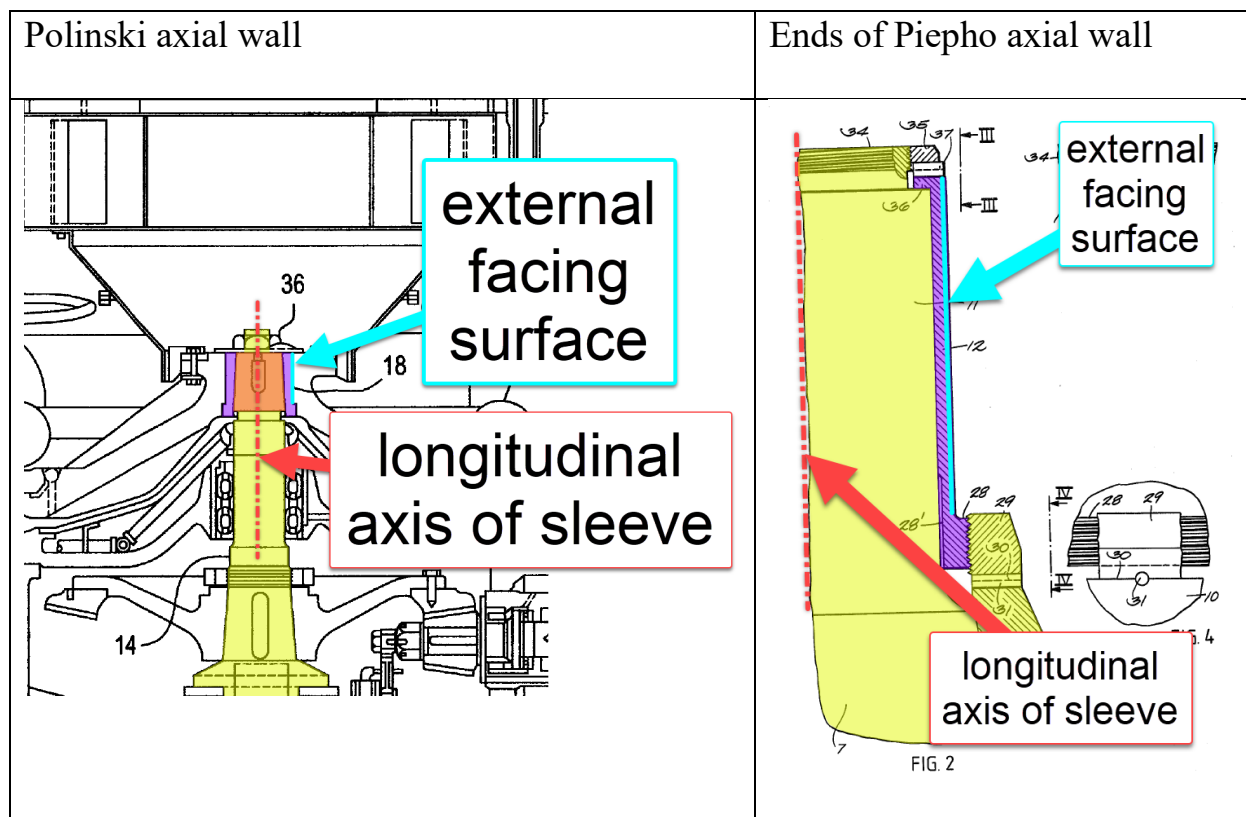
As shown above, the radial wall includes a through bore. Further, the through bore is positioned at the longitudinal axis of the sleeve. Ex. 1002, at 67. It is clear to a POSITA that, in the Figure above, which shows that the topmost threaded portion of the main shaft aligned with the longitudinal axis, extends through the opening bore in the radial wall of the sleeve. Ex. 1002, at 67. The threaded lug 34 is adapted to receive the sleeve nut 35 and axially overlies the inwardly projecting annular lip 36. Ex. 1002, at 67. Being axially overlain is consistent with the bore in the radial wall being positioned at the longitudinal axis. Ex. 1002, at 67. Accordingly, Polinski, in view of Piepho, renders obvious Claim 4 of the '568 patent.

11.1.16. Claim 5 (Dependent)

The gyratory crusher as claimed in claim 1, wherein a cross-sectional shape profile of the external facing surface is substantially circular.

Polinski in view of Piepho discloses that the cross-sectional shape profile of

the external facing surface is substantially circular.



Piepho describes the external facing surface as a “yoke bushing (18) fitted within the bore of yoke (12) to prevent fretting damage.” Ex. 1016, at 3:24–24. A POSITA would understand that the bore feature in yoke 12 would be circular in shape. Ex. 1002, at 68.

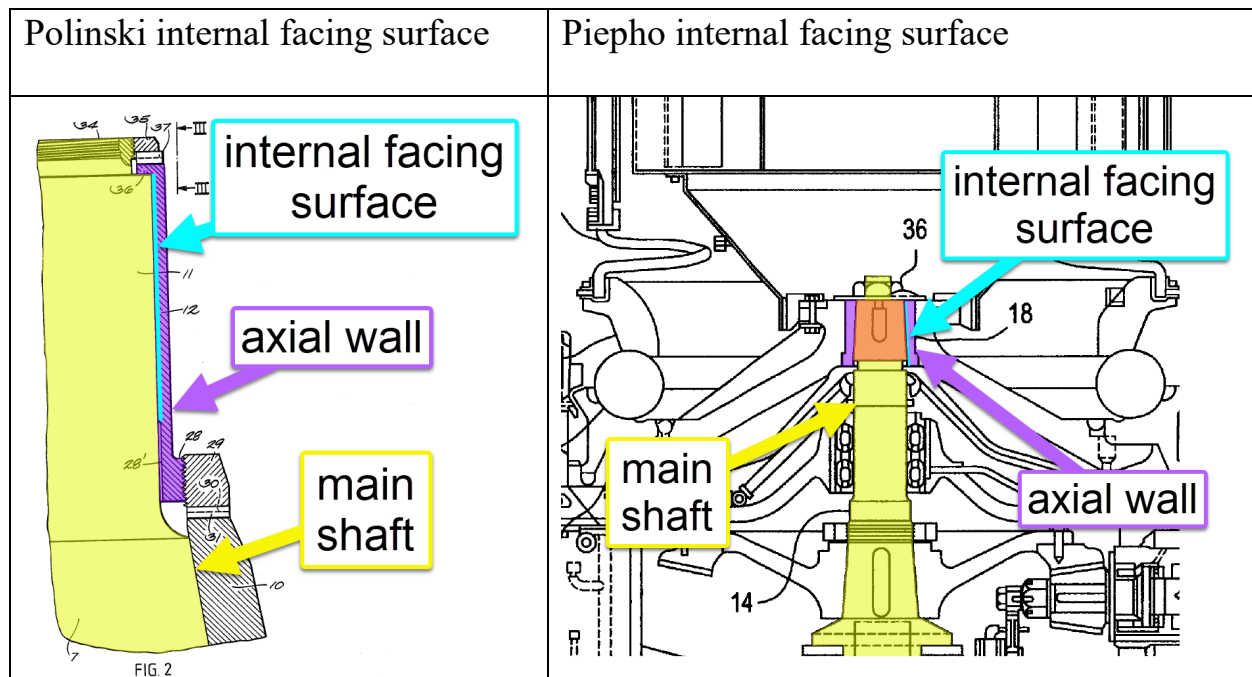
Additionally, Polinski describes the external facing surface as “a cylindrical bearing sleeve 12 rotatably retained within a bearing bushing 13 secured within a coaxially aligned hub 14.” Ex. 1015, at 2:41–47. As described, the bearing sleeve (12) is cylindrical in shape. A POSITA would understand that a cylindrical shape has a circular cross section. Ex. 1002, at 69.

Further, a POSITA would know that the components are used in power transmission shafting which is generally circular in shape. Ex. 1002, at 69. Accordingly, Polinski, in light of Piepho, renders obvious Claim 5 of the '568 patent.

11.1.17. Claim 6 (Dependent)

The gyratory crusher as claimed in claim 1, wherein a cross-sectional shape profile of the internal facing surface is substantially circular.

Polinski in view of Piepho discloses that the cross-sectional shape profile of the internal facing surface is substantially circular.



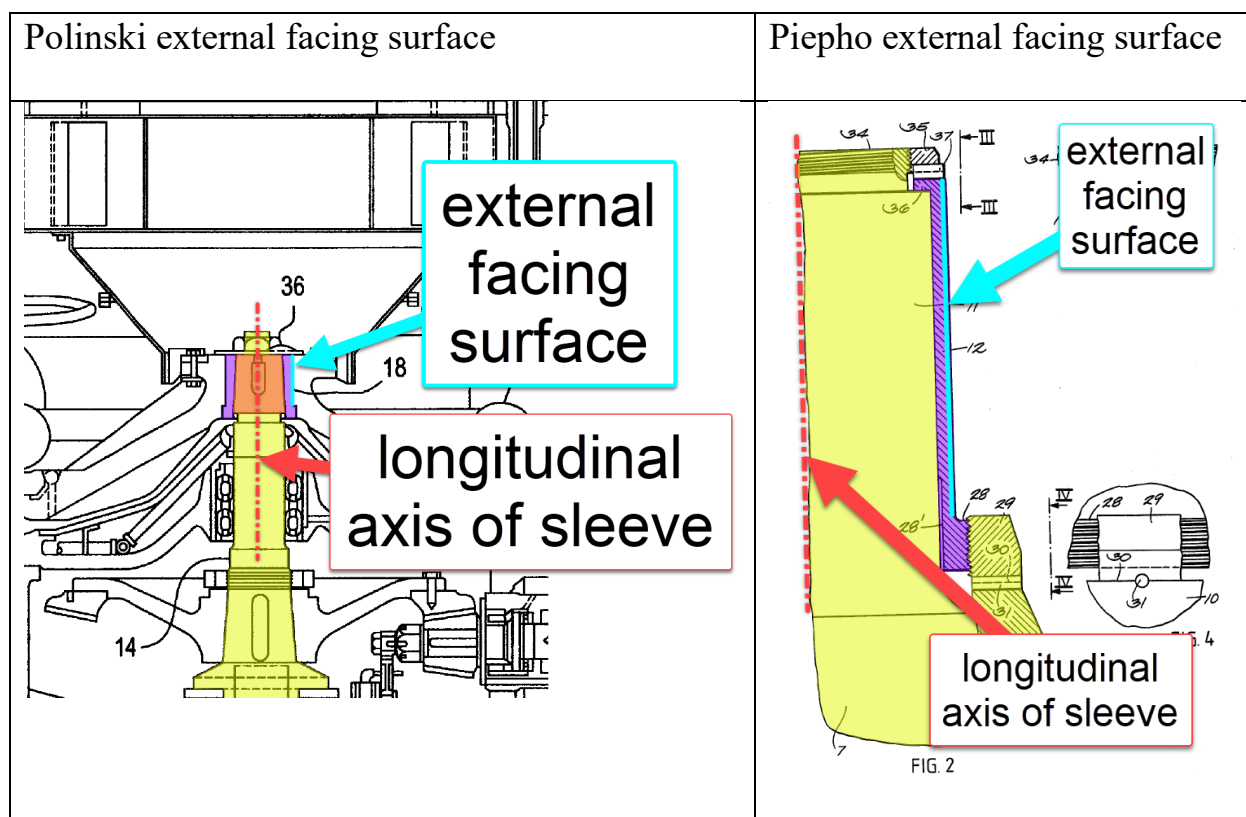
As shown above, both Piepho and Polinski have internal facing surfaces that have a circular cross-sectional shape. Ex. 1002, at 71. A POSITA would understand that a cylindrical shape has a circular cross section. Ex. 1002, at 71. Further, the components are used in power transmission shafting which is generally circular in

shape. Ex. 1002, at 71. Since Polinski and Peipho each have a circular cross-sectional shape, it is reasonable that a combination of Polinski and Peipho would have a similarly circular cross-sectional shape. Ex. 1002, at 71. Accordingly, Polinski, in view of Piepho, renders obvious claim 6 of the '568 patent.

11.1.18. Claim 7 (Dependent)

The gyratory crusher as claimed in claim 1, wherein a shape profile of the external facing surface defines a section of a cylinder in the axial direction.

Polinski in view of Piepho discloses that the shape profile of the external facing surface defines a section of a cylinder in the axial direction.



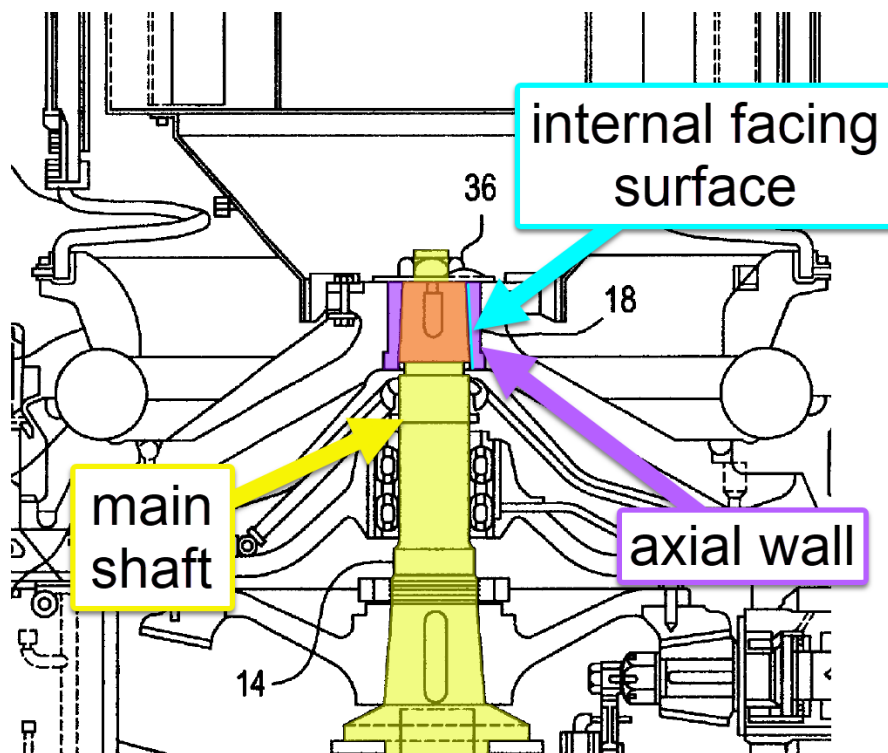
As shown above, both Piepho and Polinski have external facing surfaces that

a section of a cylinder and further that such a cylinder is oriented in the axial direction. Thus, a POSITA would easily find that the combination of Polinski in view of Piepho would meet this limitation as well. Ex. 1002, at 73. Accordingly, Polinski, in view of Piepho, renders obvious Claim 7 of the '568 patent.

11.1.19. Claim 8 (Dependent)

The gyratory crusher as claimed in claim 1, wherein a shape profile of the internal facing surface defines a section of a cone in the axial direction.

Polinski in view of Piepho discloses that the shape profile of the internal facing surface defines a section of a cone in the axial direction.



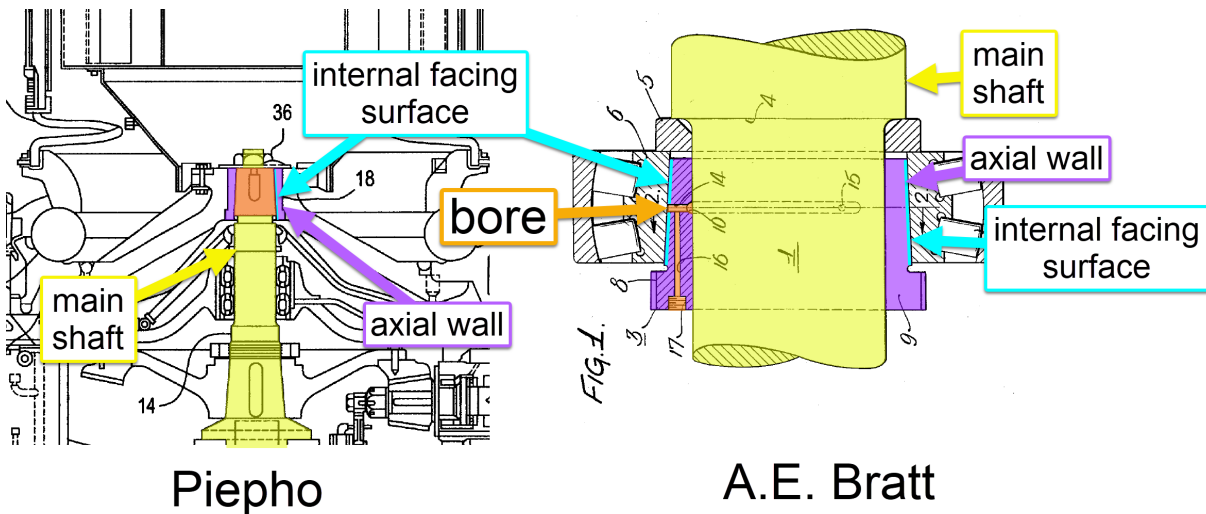
As shown above in Piepho, the shape of the internal facing surface of the sleeve bushing (18) is tapered to fit up with the tapered portion of the main shaft.

Ex. 1002, at 74. A POSITA would recognize that a tapered internal facing surface is a section of a cone and it is oriented in the axial direction. Ex. 1002, at 74. This is consistent with the description in the specification of Piepho. Accordingly, Polinski, in view of Piepho, renders obvious Claim 8 of the '568 patent.

11.2. Polinski in view of Piepho, and in further view of A.E. Bratt, render obvious Claim 9 (Dependent)

The gyratory crusher as claimed in claim 1, further comprising at least one bore provided through the axial wall to allow the passage of a fluid to the internal facing surface.

Polinski in view of Piepho and further in view of A.E. Bratt (US 2,764,437 (“Bratt”)) discloses further comprising at least one bore provided through the axial wall to allow the passage of a fluid to the internal facing surface. A POSITA would be motivated to use the teachings of Polinski (Ex. 1015) and Piepho (Ex. 1016), in combination of the teaching of A.E. Bratt (Ex. 1034). Ex. 1002 ¶ 83. A.E. Bratt is merely an example of the use of lubricating oil to assist with making or breaking tapered interference joints, which would be “extremely well known” to a POSITA. Ex. 1002 ¶ 83.



As shown above, A.E. Bratt has a tapered interference fit joint as would be well-known to a POSITA and such as is common in the prior art. Ex. 1002, at 76. A.E. Bratt uses the interference-fit joint for fixturing the inner race of a spherical roller bearing. Ex. 1002, at 76. A POSITA would understand that a joint design such as A.E. Bratt discloses could easily be adapted for any type of bearing surface. Ex. 1002, at 76.

A.E. Bratt discloses an apparatus for delivering lubricating oil through a bore in the axial wall of a tapered sleeve to assist in the making or braking of a tapered interference-fit joint. Ex. 1002, at 77. A POSITA would understand that this is the only reasonable function of adding lubricating oil to the mating surfaces of a tapered interference-fit joint. Ex. 1002, at 77. Accordingly, Polinski in view of Piepho, and in further view of A.E. Bratt, renders obvious Claim 9 of the '568 patent.

11.3. Polinski in view of Piepho, and in further view of Pollak, render obvious Claim 10 (Dependent)

The gyratory crusher as claimed in claim 1, wherein at a curved region of the first end, the internal facing surface is curved radially outward relative to the longitudinal axis in a direction towards the external facing surface such that the axial wall thickness decreases to zero at the curved region.

Polinski in view of Piepho and in further view of Pollak, and/or the knowledge of a POSITA, discloses wherein at a curved region of the first end, the internal facing surface is curved radially outward relative to the longitudinal axis in a direction towards the external facing surface such that the axial wall thickness decreases to zero at the curved region. A POSITA would be motivated to apply general principles of power transmission shafting in designing a gyratory rock crusher. *See* Ex. 1002 ¶ 85. Such principles could allow a POSITA to enhance the assembly process and improve the part fit-up and stress flow. Ex. 1002 ¶ 85. One such choice a POSITA would be motivated to make would be to flare the internal bore of the upper wear sleeve so as to permit the sleeve to sit lower and more evenly distribute loads and stresses thereby improving the expected fatigue life of the power transmission shafting of the gyrating crusher. Ex. 1002 ¶ 85. As a mere example, U.S. Patent 4,060,205 to Pollak shows this “minor” design choice being made. Ex. 1002 ¶ 85.

radially outward from the longitudinal axis of the sleeve is the same as the direction from the internal facing surface towards the external facing surface. Ex. 1002, at 81. As can be clearly seen above, a POSITA would recognize that this sleeve geometry results in the gradual decrease in the thickness of the axial wall (the wall of the sleeve) from the full thickness down to zero. Ex. 1002, at 81. Accordingly, Polinski, in view of Piepho, and in further view of Pollak, renders obvious Claim 10.

12.CONCLUSION

For all of the reasons stated above, CMS Cepcor requests the cancellation of claims 1–10 of the '568 patent because such claims are unpatentable as obvious to a person of ordinary skill in the art under 35 U.S.C. § 103.

13.MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(a)(1)

Pursuant to 37 C.F.R. § 42.8(a)(1), CMS Cepcor sets forth the following mandatory notices.

13.1. Real Party in Interest

CMS Cepcor Ltd. and CMS Cepcor Americas LLC are the real parties in interest for Petitioner.

13.2. Related Matters

The '568 patent is presently the subject of a patent infringement lawsuit brought by the assignee, Sandvik Intellectual Property AB, and licensee, Sandvik Mining and Construction USA LLC, against CMS Cepcor, in the U.S. District Court for the District of Delaware, captioned *Sandvik Mining and Construction USA LLC, et al. v. CMS Cepcor Ltd., et al.*, Case No. 1:24-cv-00481-JLH.

13.3. Lead and Back-up Counsel

CMS Cepcor designates the following attorney as lead counsel:

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13.4. Service Information

Petitioner consents to electronic service. Service on CMS Cepcor may be made via email to:

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14. PAYMENT OF FEES UNDER 37 C.F.R. § 42.103

The required fees are submitted herewith in accordance with 37 C.F.R. §§ 42.103(a) and 42.15(a).

15. CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §42.24(d), the undersigned certifies that this Petition complies with the type-volume limitation of 37 C.F.R. §42.24(a). The word count application of the word processing program used to prepare this Petition indicates that the Petition contains 8,001 words, excluding the parts of the brief exempted by 37 C.F.R. §42.24(a).

Date: September 6, 2024

s/ Terry M. Sanks

Terry M. Sanks

Reg. No. 45,069

CERTIFICATE OF SERVICE

I hereby certify that, on September 6, 2024, a true and correct copy of the foregoing Petition (and accompanying exhibits) was served on the Patent Owner via electronic means (by agreement of the parties) at the address listed below:

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