

# United States Court of Appeals for the Federal Circuit

2006-1382

HARVEY D. GILLESPIE,

Plaintiff-Appellee,

v.

DYWIDAG SYSTEMS INTERNATIONAL, USA,

Defendant-Appellant.

Marvin A. Glazer, Cahill, von Hellens & Glazer, P.L.C., of Phoenix, Arizona, argued for plaintiff-appellee.

Michael R. Weiner, Marshall, Gerstein & Borun LLP, of Chicago, Illinois, argued for defendant-appellant. With him on the brief was Thomas I. Ross.

Appealed from: United States District Court for the District of Utah

Senior Judge Bruce S. Jenkins

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DECIDED: September 6, 2007

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Before NEWMAN, SCHALL, and BRYSON, Circuit Judges.

NEWMAN, Circuit Judge.

Dywidag Systems International, USA appeals the decision of the United States District Court for the District of Utah, entering final judgment that claims 1-5, 8, 9, and 11 of Harvey D. Gillespie's U.S. Patent No. 5,230,589, and claim 15 of Gillespie's U.S. Patent No. 5,259,703, are literally infringed by Dywidag's mine roof bolt.<sup>1</sup> We modify

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<sup>1</sup> Gillespie v. Dywidag Systems Int'l, Inc., 437 F. Supp. 2d 1261 (D. Utah 2005).

the claim construction, and conclude that on the modified construction, literal infringement cannot be found. Accordingly, the judgment of infringement is reversed.

### ***The Patented Invention***

The patented invention is a mine roof bolt. It is known to reinforce and support the rock formation above a mine roof by installing long bolts in bore holes in the rock. The Gillespie bolt is made of steel cable with various structural components, as described in the "Summary of the Invention":

The improved mine roof bolt of the present invention is constructed of a length of pre-stressed, multi-strand steel cable, commonly formed of six individual pre-stressed steel strands spirally wrapped around a seventh steel strand. The head of the bolt is formed by positioning a two-piece tapered plug around the stranded steel cable at one end, and then slipping a hexagonal- or other drive-headed internally tapered collar around the tapered plug. Pressing the internally tapered hexagonal head collar down over and against the two-piece tapered plug urges serrations on the interior circumference of the plug sections to "bite" into the stranded steel cable to form a rigid hexagonal bolt head on the cable that further tightens against the steel strands as tension is applied to the mine roof bolt.

'589 Patent, col. 2, line 65 - col. 3, line 11.

The invention is described as solving several problems associated with the use of mine roof bolts. Such bolts may be several feet long, and in the threaded rod systems of the prior art, very long bolts were assembled by coupling shorter sections of threaded rod, using couplers into which the rods were screwed. Since these couplers necessarily have a larger diameter than the threaded rods themselves, larger bore holes were necessary, with attendant loss of support strength and requiring larger amounts of adhesive resin to fill the space surrounding the bolt. In contrast, the system of the '589 and '703 patents provides roof bolts that can be constructed to the desired

length without the need for couplers. This permits the assembly of bolts of any length at the mine site. Mr. Gillespie explains that in operation a hole the length of the bolt is drilled into the rock of the mine roof and a packet of adhesive is inserted into the hole, followed by the bolt. When the collar is turned by a driving tool, the turning and advancing of the bolt breaks the packet of adhesive, mixing and distributing the adhesive in the bore hole, thereby contributing to anchoring the bolt in the rock.

Claim 1 of the '589 patent was taken as representative, with emphases added to the claim terms at issue:

1. A mine roof bolt comprising:
  - (a) a length of multi-strand cable defining a bolt shank;
  - (b) a tapered plug comprising a body portion having an internal bore and a frusto-conical outer surface essentially concentric with said internal bore, said tapered plug being mounted about an end of said cable at said internal bore; and
  - (c) an internally tapered **drive collar** having a frusto-conical inner surface that engages said frusto-conical outer surface of said tapered plug, and **having an outer surface defining a drive head that accepts a driving mechanism** for rotating and linearly translating said bolt, wherein said tapered plug is mounted on an end of said cable, and said drive collar is pressed down upon said tapered plug, forcing said tapered plug against said cable, such that said drive collar, said tapered plug, and said cable, when fitted tightly together, define said mine roof bolt.

Claim 15 of the '703 patent, a continuation of the '589 patent, is as follows:

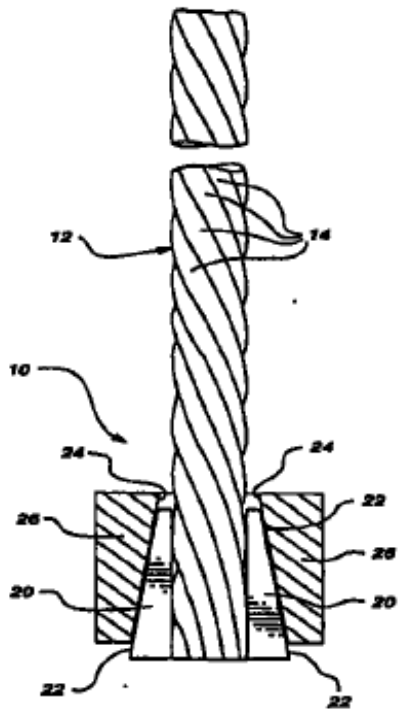
15. A mine roof bolt comprising:
  - (a) a length of multi-strand cable defining a bolt shank;
  - (b) a tapered plug comprising a body portion having an internal bore and a frusto-conical outer surface essentially concentric with said internal bore, said tapered plug being mounted about an end of said cable at said internal bore;
  - (c) an internally tapered **drive collar** having a frusto-conical inner surface that engages said frusto-conical outer surface of said tapered plug, and **having an outer surface defining a drive head that accepts a driving mechanism** for rotating and linearly translating said bolt, wherein said tapered plug is mounted on an end of said cable, and said drive collar is pressed down upon said tapered plug, forcing said tapered plug against

said cable, such that said drive collar, said tapered plug, and said cable, when fitted tightly together, define said mine roof bolt; and

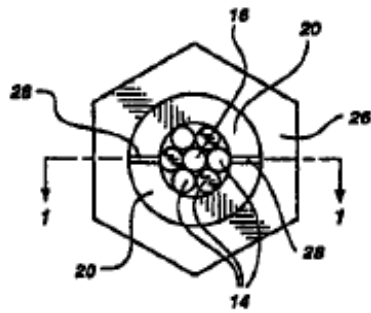
(d) a stiffner sleeve mounted on said cable adjacent said drive collar for minimizing buckling of said cable as said mine roof bolt is being inserted into a bore hole, and for protecting said cable from damage from a mine roof bolt plate as said mine roof bolt is being rotated into a bore hole.

The accused Dywidag device was conceded to meet all of the claim limitations literally except for the drive collar of claim clause (c), and specifically the meaning of "drive collar . . . having an outer surface defining a drive head." Both patents describe as the preferred embodiment a drive collar **26** configured in hexagonal shape as shown

in Figure 2, and shown in section in Figure 1:



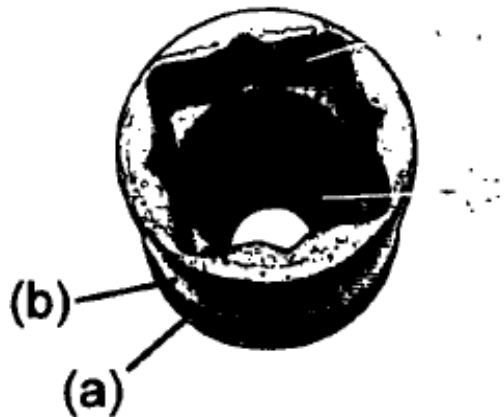
**Fig. 1**



**Fig. 2**

According to the specification's description of the drive collar, "a square head or any other shaped head that accepts a mine roof bolt driver mechanism and boom should function adequately for the intended purpose." '589 Patent at 3:38-58. Gillespie argued, and the district court ruled, that the collar is not limited to the hexagonal shape in the drawing. However, the issue was whether the drive collar and its "outer surface" are correctly construed to include the Dywidag structure for turning the bolt.

In the Dywidag structure, instead of a drive collar that surrounds the tapered plug, the Dywidag cable bolt is rotated by way of a key socket recessed in the end of the bolt head. This structure was pictured as follows:



Dywidag conceded that this was its only difference from the Gillespie structure; that all other claim elements are contained in the Dywidag bolt.

Dywidag points out that Gillespie's claims define a bolt having a "drive collar . . . having an outer surface defining a drive head that accepts a driving mechanism," whereas the Dywidag structure for turning the bolt is located on the inner surface, not the outer surface, of the bolt head or collar. Dywidag states that during prosecution Gillespie argued this construction in order to distinguish a cited reference. Applying that construction, Dywidag states that there can not be literal infringement because the Dywidag bolt does not have a collar with an outer surface defining a drive head. The district court did not accept Dywidag's position. The district court ruled that the term "outer surface" in the claims does not mean the exterior surface of the drive head, but means outer "relative to the frusto-conical 'inner' surface portion thereof." On this meaning, the court ruled that the square hole at the end of the Dywidag bolt cylinder is at an "outer surface defining a drive head that accepts a driving mechanism."

The parties stipulated to literal infringement if this claim construction were sustained on appeal. Gillespie agreed to dismissal of his claim for infringement under the doctrine of equivalents, Dywidag agreed to dismissal of its counts of patent invalidity, and final judgment was entered.

### ***Claim Construction***

The claims of a patent define what is protected, i.e., what a patentee has the right to exclude the public from making, using, importing, offering for sale, or selling. See Phillips v. AWH Corp., 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*) ("It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'"). The meaning and scope of patent claims are reviewed as a matter of law. Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1456 (Fed. Cir. 1998) (*en banc*). Precedent establishes that no deference is owed to the district court's claim construction or to any underlying factual findings predicate to construing the meaning and scope of the claims. Id. at 1451.

Dywidag states that the prosecution history negates the district court's claim construction. During prosecution Gillespie distinguished his invention from a cited reference, U.S. Patent No. 4,798,501 (the Spies patent), that shows a bolt-like rock anchor having a head with a recess in the end whereby a tool can rotate the bolt. When the examiner rejected Gillespie's application on the ground of obviousness in view of Spies, Gillespie argued that the collar at the end of the Spies bolt was cylindrical on the outside and was impractical for engagement by a mine roof bolting machine:

There is nothing in the Spies patent to suggest that the collar 17 should be used for this purpose. In fact, Spies teaches away from such an



interpretation of the drawings. Collar 17 appears to be cylindrical on the outside, thus impractical for being rotated by a mine roof bolting machine.

'589 Patent Application (Paper No. 3).

However, Gillespie stresses that his claims should not be limited in a way that excludes the Spies structure, because the Reasons for Allowance did not depend on how the drive collar is rotated:

The following is an Examiner's Statement of Reasons for Allowance: The prior art does not teach a tapered plug and a tapered drive collar, as recited in the claims, wherein the tapered plug is placed over the end of a cable and inserted into a recess of the internally tapered drive collar and wherein the drive collar is rotated.

Mr. Gillespie also argues that the term "outer surface" in the specification and claims means the surface outer of the mine roof, not the outside of a hexagonal collar. He argues that the "outer" surface is thereby distinguished from the usage of "inner" for the conical surface that wedges the cable into the bolt head. The district court accepted this construction, stating:

It does not appear to this court that the prosecution history should be read in such a limited way.

. . . .  
The central point of Gillespie's argument was that the *Spies* bolt has a fundamentally different construction which would prevent it from being driven by the collar, no matter its shape. And although the patent specification consistently describes a mine roof bolt having a drive collar with a *hexagonal outer* surface defining a drive head, the surrender of other-shaped outer surfaces defining the drive head must be clear and unmistakable, which it is not. Rather, the patent specifications of the 589 and 703 patents state "[a]lthough the collar 26 is shown as a hexagonal head, obviously a square head or *any other shaped head* that accepts a mine roof bolt driver mechanism and boom should function adequately for the intended purpose"

Moreover, although DSI argues that the plain meaning of the term "outer" means "exterior," the court must determine the *ordinary meaning that would be attributed to those words by persons skilled in the relevant art*. In which case, the meaning of the word "outer" is not limited to merely the

"exterior" surface. This claim term clarifies that a surface of the drive collar that is "outer" (relative to the frusto-conical "inner" surface portion thereof) provides a drive head . . . .

The drive head may be of any shape or configuration that accepts such a driving mechanism.

437 F. Supp. 2d at 1266-67.

We agree with the district court to the extent that the mechanism by which the bolt is grasped by a tool and rotated is not the only difference from the Spies bolt. However, we do not agree that a person of ordinary mechanical skill would read the specification, the drawings, and the claims to construe "outer surface" of the drive collar to include a collar whose interior, not exterior, accepts the drive tool. The specification and drawings describe and illustrate a drive collar whose inner (interior) surface engages the tapered plug, and whose outer (exterior) surface accepts the drive tool. Although we agree that the surface need not be hexagonal, it must be outer with respect to the collar. This is the meaning that Gillespie used when he argued during prosecution that the Spies reference was distinguished by its smooth outer surface, as contrasted with Gillespie's angular outer surface. In this argument, Mr. Gillespie clearly used "outer" to refer to the outside surface of the bolt head, and pointed out that the cylindrical outside surface of the Spies bolt head rendered it incapable of being driven by a mine roof bolting machine. Although Gillespie argues that this distinction was not material to the grant of his patent, citing the examiner's Reasons for Allowance, supra, he nonetheless argued this distinction from the Spies mine roof bolt. The words of a claim are generally given the ordinary meaning that they would have to a person of ordinary skill in the field of the invention, see Phillips, 415 F.3d at 1312, and are read in

view of the specification, of which they are a part. Phillips, 415 F.3d at 1315. In addition, "claim terms are normally used consistently throughout the patent," Phillips, 415 F.3d at 1314, the words "inner" and "outer" appearing several times in each claim.

Gillespie's specification and argument are directed to an exterior surface of the drive collar, shaped to accept the drive tool. This is the meaning that Gillespie used when he argued the difference from Spies. A cylindrical outer surface that is not adapted to be grasped by a drive tool characterizes the Spies and the Dywidag bolt heads. Such construction was negated during prosecution. The patentee is held to what he declares during the prosecution of his patent. North American Container, Inc. v. Plastipak Packaging, Inc., 415 F.3d 1335, 1345-46 (Fed. Cir. 2005). See also Springs Window Fashions L.P. v. Novo Indus., L.P., 323 F.3d 989, 995 (Fed. Cir. 2003) ("The public notice function of a patent and its prosecution history requires that a patentee be held to what he declares during the prosecution of his patent.")

On this construction, the judgment of literal infringement cannot stand. See Wilson Sporting Goods Co. v. Hillerich & Bradsby Co., 442 F.3d 1322, 1326 (Fed. Cir. 2006) ("in reviewing claim construction in the context of infringement, the legal function of giving meaning to claim terms always takes place in the context of a specific accused infringing device or process"). The judgment of infringement is

REVERSED.