

1 The opinion in support of the decision being entered
2 today is *not* binding precedent of the Board.
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5 UNITED STATES PATENT AND TRADEMARK OFFICE
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7
8 BEFORE THE BOARD OF PATENT APPEALS
9 AND INTERFERENCES
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11
12 *Ex parte* STEVEN W. WENTWORTH and ROBERT F. CRANE
13

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15 Appeal No. 2007-2378
16 Application No. 10/837,098
17 Technology Center 3600
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20 Decided: August 28, 2007
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23 Before WILLIAM F. PATE, III, TERRY J. OWENS, and DAVID B. WALKER,
24 *Administrative Patent Judges.*

25
26 OWENS, *Administrative Patent Judge.*
27

28
29 DECISION ON APPEAL

30 The Appellants appeal from a rejection of claims 1-20, which are all of the
31 pending claims.

32 THE INVENTION

33 The Appellants claim a pipe bursting and replacement apparatus and
34 method. Claim 1 is illustrative:

1 (Brewis, col. 3, ll. 1-14). The expandable member comprises a cylindrical tube
2 having on its outer surface toothed ribs (46) with cutting profiles (Brewis, col. 3, ll.
3 7-8). Each rib has a main body (47) with a front end having a projecting sawtooth
4 section (47') (which corresponds to the Appellants' pipe gripping tooth) (Brewis,
5 col. 3, ll. 8-10). The rear of the expandable member has a frusto-conical bore that
6 is complementary to a frusto-conical expansion mandrel (45) (which corresponds
7 to the Appellants' tapered expander) and has at its rear an enlarged stop (56)
8 (Brewis, col. 3, ll. 17-20). The expansion mandrel has a threaded bore engaged by
9 the thread of threaded bolt 38 (which corresponds to the Appellants' means for
10 pulling the expander forward relative to the jaws) (Brewis, col. 3, ll. 19-20).
11 "Rotation of the shaft **38**, by means of the towing eye **42**, causes the mandrel **45** to
12 be drawn forwardly, urging expansion of the expandable member **44**, so that the
13 toothed ribs **46** are urged outwardly into the pipe [12]. The pipe is sandwiched
14 between the expandable member **44** and the [tubular body's rearwardly extending]
15 skirt **18**" (Brewis, col. 3, ll. 24-27).

16 The Appellants argue (Reply Br. 4-5):¹

17 Given the position of stop 56 far behind the rear ends of the jaws 47 in
18 the drawing, it would not contact the back of jaws (main bodies) 47 in use,
19 and acts as a stop only in the sense of preventing the jaws 47 from falling
20 out when the device is not engaging a pipe. This interpretation makes sense
21 especially in light of col. 3, lines 31-52 of the patent, wherein Brewis
22 discusses the possibility of pipe thinning and fracture, and teaches various
23 measures for dealing with it, such as providing teeth of progressively
24 different lengths (Brewis Fig. 5). If stop 56 were configured for such a
25 purpose, Brewis surely would have mentioned it at that point in the
26 specification. It cannot be reasonably concluded, taking the teachings of the
27 reference as a whole, the [sic, that] Brewis et al. describes the stop defined in

¹ The rejections are new rejections set forth for the first time in the Examiner's Answer. Hence, we do not address the Appeal Brief.

1 claim 1 on appeal. Thus, Brewis does not anticipate claim 1 or its dependent
2 claims.
3

4 The Appellants do not point out, and we do not find, any disclosure by Brewis that
5 the stop prevents the ribs' main bodies (47) from falling out when they are not
6 engaging a pipe. As for the argument that the stop is far behind the rear ends of the
7 jaws in the drawings, the Appellants' stop flange 122 also is far behind the rear
8 ends of the jaws (84; fig. 4). Brewis's silence regarding the stop in the portion
9 referred to by the Appellants does not indicate that the stop does not limit forward
10 travel of the expansion mandrel and prevent outward radial travel of the jaws after
11 the ribs have engaged the wall of the pipe. Brewis's disclosures that 1) the
12 expansion mandrel has a frusto-conical surface complementary to the rear frusto-
13 conical surface of the expansion element (Brewis, col. 3, ll. 17-19), 2) the
14 expansion element is drawn forwardly urging expansion of the expandable element
15 so that the toothed ribs are urged outwardly into the pipe (Brewis, col. 3, ll. 25-27),
16 3) the rear of the expansion mandrel has thereon an enlarged stop (56) (Brewis,
17 col. 3, ll. 17-19), and 4) the enlarged stop is positioned such that as the expansion
18 mandrel is drawn toward the expansion element the only thing the stop can hit is
19 the back of the expansion element (fig. 1), indicate that the stop functions to stop
20 the movement of the expansion mandrel toward the expandable element and
21 thereby stop further outward radial travel of the expandable element.

22 We therefore are not convinced of reversible error in the rejection under
23 35 U.S.C. § 102(b).²

²The Appellants correctly argue that claims 14 and 17-20 should have been rejected under 35 U.S.C. § 103 with claim 4 (Reply Br. 5), but the Appellants do not provide a substantive argument as to the separate patentability of claims 14 and

1 Rejection of claims 2 and 6 under 35 U.S.C. § 103

2 The Appellants argue (Reply Br. 6):

3 Brewis et.[sic] al. teaches a variety of possible solutions to dealing with
4 problems such as pipe thinning, breakage and necking. He cites gaps 52 as
5 one means of preventing breakage (col. 3, lines 33-35), along with use of
6 teeth/ribs 146 of progressively different lengths (col. 3, lines 36-46) and also
7 a radiused corner 147 that helps prevent necking (col. 3, lines 47-51). There
8 is no suggestion that stop 56 be used to limit how far the teeth/ribs can
9 penetrate, nor any suggestion as to the relationship between the
10 configuration of stop 56 and how much penetration can be tolerated. Brewis
11 et al[.] effectively teaches away from the present invention by directing one
12 skilled in the art towards other measures. There is no motivation for one
13 skilled in the art to configure the position of stop 56 so that it prevents
14 overpenetration of the teeth.

15
16 Brewis first discloses that there is an enlarged stop at the rear of the expansion
17 mandrel (Brewis, col. 3, ll. 18-19). Then Brewis discloses that drawing the
18 expansion mandrel forward urges the expandable member to expand so that its
19 toothed ribs are urged outwardly into the pipe (Brewis, col. 3, ll. 24-27). Those
20 disclosures would have indicated to one of ordinary skill in the art that the function
21 of the enlarged stop is to stop the forward movement of the expansion mandrel so
22 that the toothed ribs are not further urged outwardly into the pipe. Thus, those
23 disclosures would have led one of ordinary skill in the art, through no more than
24 ordinary creativity, to position the enlarged stop such that the forward movement
25 of the expansion mandrel is stopped at the point where the desired penetration,
26 such as no more than 35%, of the toothed ribs into the pipe is obtained. *See KSR*
27 *Int'l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007) (In

17-20. In the event of further prosecution the Examiner and the Appellants should address the improper dependency of method claims 17 to 20 from an apparatus claim (14).

1 making an obviousness determination one “can take account of the inferences and
2 creative steps that a person of ordinary skill in the art would employ”). Brewis
3 then discloses three safety features (Brewis, col. 3, ll. 31-51). The disclosure that
4 they are safety features would have indicated to one of ordinary skill in the art that
5 the device is intended to work properly without them and that they are added for
6 safety. Those safety features are 1) gaps (52) in the ribs that reduce the risk that
7 the biting of the ribs into the pipe will weaken the pipe, 2) a flare at the rear of the
8 tubular body’s skirt (18) that allows expansion of the pipe to reduce the tendency
9 of the ribs at the rear portion of the expandable element from pushing relatively
10 deeply into the pipe, and 3) radiused corners at the rear end of the expandable
11 member that reduces stress on the pipe and thereby reduces the risk of pipe
12 necking. *See id.* As indicated by the functions of the safety features, they do not
13 take away the need for the enlarged stop to stop the forward movement of the
14 expansion mandrel before it causes the expandable element’s toothed to dig too
15 deeply into the pipe.

16 Hence, we are not convinced of reversible error in the rejection under
17 35 U.S.C. § 103 over Brewis.

18 Rejection under 35 U.S.C. § 103
19 over Brewis in view of Carter
20

21 Claims 7 and 9-13

22 Carter discloses a pipe parting and expanding device (pipe mole 40)
23 comprising 1) pipe parting fins or blades (56), and 2) a sleeve (156) and
24 screws (160) for engaging a replacement pipe pulled behind the pipe parting and
25 expanding device (Carter, col. 3, ll. 48-63; col. 4, l. 60 – col. 5, l. 2).

26 The Appellants argue (Reply Br. 7-8):

1 Assuming for the sake of argument that one skilled in the art had need for a
2 better pipe towing device than the rudimentary one Carter describes, and
3 consistent with the teachings of Brewis et al. in connection with back
4 reamers, one skilled in the art would connect the pipe towing head of Brewis
5 et al[.] to the back of Carter's mole and use it in place of the sleeve and
6 screws Carter provides for that purpose. However, such a combination
7 would not achieve either the method or apparatus of the rejected claims,
8 since there would be no pipe bursting projection on the towing head. There
9 is no suggestion present in either of the references that Carter's mole be
10 omitted in its entirety and a blade be provided on the front of what had been
11 used previously only as a pipe towing head. Only appellants recognized this
12 possibility.
13

14 The Appellants' argument does not follow from the references because there is no
15 disclosure of connecting a towing head behind a pipe bursting head. Carter's
16 disclosure of a towing head/pipe bursting projection combination would have led
17 one of ordinary skill in the art, through no more than ordinary creativity, to place a
18 pipe bursting projection on Brewis's towing head so that, like Carter's towing/pipe
19 bursting head, Brewis's towing head would also perform the function of pipe
20 bursting.

21 Claims 4, 5, 15 and 16

22 The Appellants argue (Reply Br. 8):

23 Carter's moles 40, 220 terminate in a towing eyelet 228, with the blades
24 projecting from the sides, not the front surface, of the mole. Thus, even if
25 there were reason to, moving Carter's blades to the pipe towing head of
26 Brewis et al. would still not achieve the claimed combination. There is no
27 "pipe bursting projection on its frontwardly facing outer surface" in the mole
28 of Carter et al.
29

30 The Appellants' pipe bursting head also terminates in a towing eyelet (14, fig. 1).

31 A pipe bursting projection on Brewis's towing head's tubular body (14) would be

1 on the frontwardly facing outer surface (fig. 1) as required by the Appellants’
2 claims 4, 5 and 14-16.

3 Claim 8

4 The Appellants argue that “it would not have been clear to one of skill in the
5 art that a housing having a hole running down its center could be used as a bursting
6 mole, which is solid at its front end as taught by Carter” (Reply Br. 8). The
7 Appellants do not point out, and we do not find, where Carter discloses that a
8 bursting mole must have a solid front end. One of ordinary skill in the art,
9 therefore, would have had a reasonable expectation of success, in view of the
10 applied prior art, in using Brewis’s towing head as a pipe bursting/towing head.
11 *See In re O’Farrell*, 853 F.2d 894, 904, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988)
12 (“For obviousness under § 103, all that is required is a reasonable expectation of
13 success.”).

14 For the above reasons we are not convinced of reversible error in the
15 rejection over Brewis in view of Carter.

