

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 72

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

THOMAS J. ELLIS and JAMES H. VICKERS,

Junior Party,<sup>1</sup>

v.

HERBERT J. HENRY,

Senior Party.<sup>2</sup>

---

Patent Interference No. 103,414

---

HEARD: May 10, 1999

---

FINAL DECISION AND JUDGMENT UNDER 37 CFR § 1.658

---

Before CALVERT, MARTIN, and CRAWFORD, Administrative Patent Judges.

MARTIN, Administrative Patent Judge.

---

<sup>1</sup> Application Serial No. 08/018,865, filed February 17, 1993. Assigned to Southco, Inc. Vickers was added as a coinventor pursuant to a decision by the Administrative Patent Judge (APJ) granting Ellis's motion under § 1.634, which decision Henry has not challenged at final hearing.

<sup>2</sup> Application Serial No. 07/988,067, filed December 9, 1992. Assigned to Unistrut International Corp.

The subject matter of this interference is a drive rivet, i.e., a rivet which carries a pin that when driven home forces the rivet into aligned holes in two or more members to be joined together and then causes the entry end of the rivet, divided into quadrants, to spread apart and fix the rivet in place. The drive rivet disclosed in each party's involved application has a shank consisting of two cylindrical shank portions of different diameters joined together by a tapered shank portion.

A. The count

Count 1, which is a copy of Henry's claim 1, is reproduced below with the numbers of the corresponding elements of Ellis et al.'s (Ellis's) disclosed rivet indicated in brackets:

Count 1

A rivet comprising:

a body having a head [14] at [sic, with] an outer peripheral surface spaced from a central axis of said head by a first radius;

a relatively large outer diameter portion [18] positioned on said body axially inwardly of said head, said relatively large outer diameter portion having an outer peripheral surface spaced from said axis by a second radius which is less than said first radius;

a relatively small outer diameter portion [22] positioned on said body spaced axially inwardly from said relatively large outer diameter portion, said relatively small

outer diameter portion having an outer peripheral portion spaced from said axis by a third radius which is less than said second radius;

a pin [32] extending axially through a bore [24] in said body, and at least through a portion of said relatively great [sic, large] outer diameter portion [18], said pin being movable further axially inwardly relative to said body;

at least said relatively small outer diameter portion [22] being formed of a plurality of quadrants [16a-16d] separated by slots [unnumbered] extending to an end of said small outer diameter portion [22], and said pin being movable axially inwardly relative to said relatively small outer diameter portion and through said small outer diameter portion to force said quadrants to bend radially outwardly and set said rivet body in a hole; and

blocking portions [unnumbered] extending radially inwardly into said bore such that they are at least partially coaxial with said pin when said pin has not been forced axially into said head.

## **B. The issue**

The only issue before us is priority. Because the parties' involved applications are copending, Junior Party Ellis has the burden of proving priority by a preponderance of the evidence. 37 CFR § 1.657(b).

Only Ellis submitted priority evidence, which consists of declaration testimony and exhibits by inventors Thomas Ellis and James Vickers and by a number of noninventors: Paul O'Rourke, William Frame, Mark Rayne, and Edmund Koza. Henry has not

challenged any of the testimony or exhibits of the inventors as lacking corroboration.

**C. Findings of Fact**

Henry agrees with and adopts (H.Br.<sup>3</sup> 3) Ellis's Statement of the Facts (E.Br. 4-14), which are provided as an Appendix to this opinion and include citations to the supporting exhibits and testimony. With the exception of Ellis's assertion, discussed infra, that Southco designed the pre-existing rivet (Statement of Facts, ¶ 6), we adopt Ellis's Statement of the Facts as our own Findings of Fact.

**D. The parties' positions**

Henry does not dispute Ellis's claim that the evidence establishes conception and an actual reduction to practice of the following two different rivet designs prior to Henry's December 9, 1992, filing date:

(a) a "three-stage" rivet (EX 9 and 12-14) that includes three cylindrical shank portions of different diameters, which rivet is not shown in the drawings of Ellis's involved application but is described therein (Spec. at 7:11-14); and

(b) a subsequently developed "partially tapered" rivet (EX 15 and 18) that includes two cylindrical shank portions of different diameters joined by a tapered shank portion, which rivet is depicted in Ellis's application drawings.

---

<sup>3</sup> Henry's brief. Ellis's opening and reply briefs are identified herein as "E.Br." and "E.Rep.Br." Ellis's records and exhibits are identified as "ER" and "EX."

As shown in Figures 3 and 4 of Ellis's application drawings and as explained in the testimony, Ellis's rivets were designed to accommodate as many as three structural members (elements 28a-28c), whereas the pre-existing rivets that were being supplied by Southco to Unistrut were capable of satisfactorily joining only two structural members (Statement of Facts, ¶ 6). Henry argues that neither of Ellis's rivet designs, both of which he characterizes as "three-stage" rivets, can be relied on as evidence of priority, because the count is directed to the pre-existing rivet, which Henry characterizes as a "two-stage" rivet of his own design (H.Br.7). For the following reasons, this "two-stage" characterization of the pre-existing rivet appears to be incorrect. The record before us does not include a drawing of the pre-existing rivet; although it is allegedly (H.Br. 7) shown in the sketch which accompanied Henry's preliminary statement (paper No. 9), § 1.629(e) precludes Henry from relying on it as evidence of priority.<sup>4</sup> Nevertheless, Henry correctly argues (H.Br. 7-10) that the structure of the pre-existing rivet can be deduced from the testimony and exhibits which explain the development of Ellis's rivet designs. We note in particular EX 9, one of the drawings of Ellis's three-stage rivet (Statement of Facts, ¶ 11), which shows a shank consisting of three cylindrical portions with diameters of 0.531", 0.500", and 0.406" joined by two tapered portions. The testimony that

---

<sup>4</sup> That provision reads: "A preliminary statement shall not be used as evidence on behalf of the party filing the statement."

this design was developed by adding the additional step at the insertion end of the pre-existing rivet (Statement of Facts, ¶ 6) suggests that the shank of the pre-existing rivet consists of two cylindrical portions with diameters of 0.531" and 0.500" joined by a tapered portion.<sup>5</sup> Moreover, there is no testimony or document suggesting that the shank of the pre-existing rivet consists of two cylindrical portions of different diameters without an intermediate tapered portion. As a result, we do not agree with Henry's characterization of the pre-existing rivet as a "two-stage" rivet or his argument that it is distinguishable in that respect on that basis from Ellis's three-stage rivet and from Ellis's partially tapered rivet, which Henry describes as a "three-stage rivet with a tapered middle stage" (H.Br. 6).

**E. The scope and meaning of the count**

Because the shank of the pre-existing rivet on which Henry relies consists of two cylindrical portions of different diameters joined by an intermediate tapered portion, it is not necessary to decide whether the count is broad enough to read on a rivet having a shank consisting of two cylindrical portions of different diameters without an intermediate portion, as urged by Henry. Nevertheless, in the interest of completeness we have considered that question and conclude that the answer is yes.

To construe the count we must look at the language as a whole and consider the grammatical structure and syntax. Credle v.

---

<sup>5</sup> These 0.531" and 0.500" diameters are also the diameters given in the preliminary statement sketch.

Bond, 25 F.3d 1566, 1571, 30 USPQ2d 1911, 1915 (Fed. Cir. 1994).

In the absence of ambiguity, it is fundamental that the language of a count should be given the broadest reasonable interpretation it will support and should not be given a contrived, artificial, or narrow interpretation which fails to apply the language of the count in its most obvious sense. Only when counts are ambiguous may resort be had to the application where the counts originated, and this court does not look to the specification to determine whether there is an ambiguity.

In re Baxter, 656 F.2d 679, 686, 210 USPQ 795, 802 (CCPA 1981)(citations omitted).

Genentech Inc. v. Chiron Corp., 112 F.3d 495, 500, 42 USPQ2d

1608, 1612 (Fed. Cir. 1997). As neither party contends the count is ambiguous, the count will be construed without resort to either party's involved application. Henry argues that the count

describes a rivet having a head and a shank with two stages - one stage having a relatively larger diameter than the other. What Junior Party Ellis has provided is evidence of an improvement - a third stage - to the pre-existing two stage rivet claimed in Count 1 and invented elsewhere by Senior Party Henry. [H.Br. 7.]

Ellis's briefs for final hearing do not challenge Henry's interpretation of the scope as reciting a "two-stage" rivet, arguing instead that the count is broad enough to encompass his three-stage and partially tapered rivets (E.Rep.Br.2).<sup>6</sup> However, at the oral hearing Ellis argued that Henry's interpretation of the count is incorrect because it fails to take into account the term "spaced" in the phrase "a relatively small outer diameter portion positioned on said body spaced axially inwardly from said relatively large outer diameter portion" (emphasis added).

---

<sup>6</sup> Ellis's opening brief does not address the question of count construction.

Henry's failure to include this argument in his brief(s) precludes him from having it considered at final hearing. See Rosenblum v. Hiroshima, 220 USPQ 383, 384 (Comm'r Pat. 1983):

The purpose of oral argument at final hearing is to emphasize and clarify written argument in the brief. Compare In re Chiddix, 209 USPQ 78, 79 (Comm'r. Pat. 1980). A party in an interference should not be permitted to raise for the first time orally at final hearing an issue which should have been briefed.

Consequently, we will treat Ellis as having conceded that the count does not require a third shank portion intermediate the claimed relatively large and relatively small diameter shank portions. As will appear, however, the outcome of the interference would be the same even if we agreed with Ellis's narrower interpretation of the count.

Henry argues that for the following reasons Ellis is precluded from relying on either of his rivets to prove priority with respect to the count:

Junior Party Ellis has not stated nor [sic] indicated through any evidence exactly how each limitation of Count 1 is satisfied. Party Ellis leaves the inventorship of the actual pre-existing subject of Count 1 mysterious. The Court of Appeals for the Federal Circuit clearly states that in establishing conception, a party must prove it conceived of every limitation of the count. Kridl [v. McCormick], [105 F.3d 1446, 1449,] 41 U.S.P.Q.2d [1686,] 1689 [(Fed. Cir. 1997)]; Coleman [v. Dines], [754 F.2d 353, 359,] 224 U.S.P.Q. [857,] 862 [(Fed. Cir. 1985)]. The reason Party Ellis has not explained how it conceived of each limitation of Count 1 is because Junior Party Ellis did not invent what is claimed in Count 1, Senior Party Henry did. Instead of inventing what is claimed in Count 1, Junior Party Ellis has set forth evidence of its improvement to the rivet of Count 1. [H.Br. 6-7.]

Henry's reliance on Kridl and Coleman is misplaced, as these cases do not preclude a party from proving priority based on a device which includes more elements than are recited in the count. Furthermore, the presence of "comprising" in the count's preamble permits Ellis to prove priority with a rivet that includes more than two shank portions, including Ellis's three-stage rivet and his partially tapered rivet. See Genentec, 112 F.3d at 501, 42 USPQ2d at 1613:

This interpretation of the count [as not excluding certain features] is consistent with the open-ended term "comprising." "Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim. In re Baxter, 656 F.2d [679,] 686, 210 USPQ [795,] 802 [(CCPA 1981)].

**F. Ellis's case for prior conception and prior actual reduction to practice**

Although Henry does not dispute Ellis's claim that both the three-stage rivet and the partially tapered rivet were conceived and actually reduced to practice prior to Henry's December 9, 1992, filing date, we hold that Ellis has failed to prove the alleged actual reduction to practice of the three-stage rivet, because O'Rourke's testimony establishes that Unistrut considered this design unsatisfactory for its intended purpose of joining together two tubes and a fitting (Statement of Facts, ¶ 13). See DSL Dynamic Sciences Ltd. v. Union Switch & Signal, 928 F.2d 1122, 1125, 18 USPQ2d 1152, 1154 (Fed. Cir. 1991):

[P]roof of actual reduction to practice requires a showing that "the embodiment

relied upon as evidence of priority actually worked for its intended purpose." Newkirk v. Lulejian, 825 F.2d 1581, 1582, 3 USPQ2d 1793, 1794 (Fed. Cir. 1987). This is so even if the "intended purpose" is not explicitly set forth in the counts of the interference. See, e.g., Elmore v. Schmitt, 278 F.2d 510, 125 USPQ 653 (CCPA 1960); Burns v. Curtis, 172 F.2d 588, 80 USPQ 587 (CCPA 1949).

However, the testimony does establish that by October 5, 1992, Unistrut considered the partially tapered rivet to be satisfactory for its intended use (Statement of Facts, ¶ 20).<sup>7</sup> The burden therefore shifts to Henry to prove a date of invention prior to that date. English v. Ausnit, 38 USPQ2d 1625, 1630 (Bd. Pat. App. & Int. 1993)(citing Kwon v. Perkins, 6 USPQ2d 1747, 1752 (Bd. Pat. App. & Int. 1988), aff'd, 866 F.2d 325, 12 USPQ2d 1308 (Fed. Cir. 1989); D'Amico v. Brown, 155 USPQ 534 (Bd. Pat. Int. 1967); and Fisher v. Gardiner, 215 USPQ 620 (Bd. Pat. Int. 1981)).

#### **G. Henry's case for priority**

Although the count under either party's construction is broad enough to encompass the pre-existing rivet, Henry's case for priority fails because the evidence fails to identify, directly or by implication, Henry as the inventor of that rivet. See I Rivise & Caesar, Interference Law & Practice § 112, at p. 323 (Michie Co. 1940) ("a person cannot claim to be the inventor

---

<sup>7</sup> Unistrut's September 29, 1992, expression of satisfaction with this rivet was conditioned on further testing (Statement of Facts, ¶ 15).

of an invention which was conceived by another person").<sup>8</sup> As a result, priority with respect to the count is being awarded to Ellis based on his actual reduction to practice of the partially tapered rivet.

#### H. Judgment

Judgment on the issue of priority as to Count 1, the sole count, is hereby entered in favor of Ellis's claims that correspond to the count (i.e., claims 1 and 6), which means Ellis is entitled to a patent including those claims. Judgment on the issue of priority therefore is hereby entered against Henry's claims that correspond to the count (i.e., claims 1-3 and 5), which means Henry is not entitled to a patent including those claims.

\_\_\_\_\_) )  
Ian A. Calvert )  
Administrative Patent Judge) )  
) )  
) ) BOARD OF  
) ) PATENT APPEALS  
\_\_\_\_\_) ) AND  
John C. Martin ) )  
Administrative Patent Judge) ) INTERFERENCES  
) )  
) )

---

<sup>8</sup> Nor does the testimony identify anyone else as the inventor of the particular pre-existing rivet at issue. While O'Rourke testified that "Unistrut is in the business of manufacturing metal framing and has been a long time customer of Southco since at least the 1960's[, ] purchasing various types of expanding rivets designed by Southco for use with Unistrut metal framing" (ER 1, ¶ 3), the cited testimony does not support the assertion in ¶ 6 of Ellis's Statement of Facts that "the [pre-existing] rivet sample which had been supplied to Unistrut was designed by Southco."

Interference No. 103,414

\_\_\_\_\_)  
Murriel E. Crawford )  
Administrative Patent Judge)

Interference No. 103,414

cc:

For the party Ellis:

Paul A. Taufer, Esq.  
PAUL & PAUL  
2900 Two Thousand Market Street  
Philadelphia, PA 19103

For the party Henry:

James V. Callahan, Esq.  
BANNER & WITCOFF, LTD  
Ten South Wacker Drive  
Chicago, IL 60606

JCM/cam

**APPENDIX - ELLIS'S STATEMENT OF FACTS**

Ellis's Statement of Facts (E.Br. 4-14) reads as follows, with our headings inserted in brackets:

[Background]

1. Southco is in the business of designing and manufacturing latches and access hardware for customers worldwide and has specialized in the design of expanding rivets since 1945 (O'Rourke, ER 1:5-7). Unistrut is in the business of manufacturing metal framing and has been a long time customer of Southco since at least the 1960's[,] purchasing various types of expanding rivets designed by Southco for use with Unistrut metal framing (O'Rourke, ER 1:8-12).

2. In June 1992 Southco was engaged in an effort to design for Unistrut an expanding rivet for Unistrut's "Telestrut" telescoping strut system (O'Rourke, ER 1:13-15).

[Problems with the pre-existing rivet]

3. On June 8, 1992, Mr. Paul M. O'Rourke, Manufacturer's Representative for Southco (O'Rourke, ER 1:1-4), received a telephone call from Mr. Thomas D. Wright, Sales Manager for Unistrut[,] concerning the performance of rivets which had been previously supplied by Southco to Unistrut. Mr. Wright informed Mr. O'Rourke that the rivets previously supplied by Southco did not satisfy certain requirements imposed by Unistrut's "Telestrut" telescoping strut system (O'Rourke ER 2:1-6). Mr. O'Rourke's handwritten memorandum of the telephone call with Mr. Wright is identified as "Ellis Exhibit 1".

4. On June 9, 1992, Mr. O'Rourke received from Mr. Wright a handwritten letter together with samples of the Unistrut tubes with the previously supplied rivets illustrating the conditions which Unistrut desired the rivets to meet and the failure of those rivets to satisfy the requirements (O'Rourke, ER 2:7-

12). Mr. James H. Vickers, Product Engineer for Southco and named inventor in the Junior Party Ellis patent application (Vickers, ER 11:1-4), also received a copy of the handwritten letter from Mr. Wright to Mr. O'Rourke that same day. (Vickers, ER 11:5-9). Mr. Wright's June 9, 1992 letter is identified as "Ellis Exhibit 2".

5. Mr. Wright identified in his June 9, 1992 letter three specific conditions which Unistrut desired to have met for its "Telestrut" telescoping strut system: in particular, a single rivet that could be used to connect a fitting to a single tube, tube to tube, and fitting to two tubes. Mr. Wright's comment in his letter that "we seem to have great difficulty when trying number 3" refers to the rivets which Southco had previously sent to Unistrut and the failure of those rivets to satisfy the third condition, which is to connect two tubes plus one fitting. (Vickers, ER 11:9-17). The problem presented by the Unistrut requirements was the range of grips required for a single rivet to provide a tight fit for a single tube as well as to provide a tight fit for two tubes together with a fitting. The rivet which has been supplied failed to satisfy the requirement of the larger grip. (O'Rourke, ER 2:13-17).

[The three-stage rivet]

6. On June 10, 1992, Mr. Vickers, Mr. Thomas J. Ellis, a Manufacturing Engineer for Southco and named inventor in the Ellis patent application (Ellis, ER 5:1-4), and Mr. William R. Frame, Manager of Manufacturing Technologies for Southco (Frame, ER 16:1-2), met at Southco's corporate headquarters in Concordville, Pennsylvania in order to discuss the design of the rivet sample previously supplied to Unistrut and Unistrut's reaction to that rivet sample (Ellis, ER 5:5-10; Vickers, ER 12:1-5; and Frame, ER 16:3-8). Mr. Vickers advised Messrs. Frame and Ellis at that meeting that Unistrut now wanted a single rivet to meet the multiple requirements imposed by Unistrut's "Telestrut" telescoping strut

system, and the previously supplied rivet did not satisfy those requirements. Also, Mr. Vickers advised that Unistrut was having difficulty installing the previous Southco rivet through three layers; in particular, through two tubes and one fitting in Unistrut's Telestrut system. (Vickers ER 12:5-13; Frame, ER 16:8-15; and Ellis, ER 5:6-13). Messrs. Vickers, Frame and Ellis discussed that the particular problem presented by the Unistrut requirements was that the rivet sample which had been supplied to Unistrut was designed by Southco for a limited grip range only to be installed through one tube and one fitting. (Ellis, ER 5:17-6:3; Vickers, ER 12:13-17; and Frame, ER 16:15-19). In the course of that meeting, Mr. Vickers made the suggestion of producing a three-stage rivet[,] which had not been done before to Mr. Vickers['], Mr. Ellis' or Mr. Frame's knowledge. (Ellis, ER 6:3-6; Vickers, ER 12:17-19; and Frame, ER 16:19-17:3). Mr. Vickers, Mr. Ellis and Mr. Frame each understood that the reduced diameter near the end of the shank provided by the additional step should reduce the driving force when installed through three layers while still functioning through two layers, and thus satisfy the Unistrut requirements. (Ellis, ER 6:6-11; Vickers, ER 12:19-24; and Frame, ER 17:3-7). It was agreed that Mr. Ellis would prepare the necessary drawings of the modified rivet, from which samples would be prepared and sent to Unistrut, (Ellis, ER 6:11-13).

7. On June 10, 1992, Mr. Vickers sent a handwritten letter by facsimile to Mr. O'Rourke responding to the matters raised by Mr. Wright in his June 9, 1992 letter. Mr. Vickers' letter is identified as "Ellis Exhibit 3". Mr. Vickers' comment in his letter regarding the "hard driving through three thicknesses" refers to the difficulty that Unistrut was having in attempting to use the previous Southco rivet to connect two tubes plus one fitting, which is identified as number 3 in Mr. Wright's June 9, 1992 letter. Mr. Vickers' comment in the letter that the hard driving through three thicknesses "is not surprising" refers to the

fact that the rivet which Southco had earlier supplied to Unistrut was specified to have a maximum grip of .356", which corresponds only to one tube and one fitting of the Telestrut system, and Unistrut was attempting to use the rivets to connect two tubes plus one fitting. In paragraph two of Mr. Vickers' letter he advised Mr. O'Rourke of his conception of providing an additional step on the shank[,] producing a three-stage rivet, which would work to reduce the driving force when installed through all three layers, and thus satisfy each of the three conditions set out in Mr. Wright's June 9, 1992 letter (Ellis "Exhibit 2"). Mr. Vickers' reference in his letter to "all three layers" refers to the condition in which the rivets would connect two tubes plus one fitting, corresponding to condition number 3 in Mr. Wright's June 9, 1992 letter. Mr. Vickers advised Mr. O'Rourke that samples would be sent to Mr. O'Rourke by June 17, 1992. (O'Rourke, ER 2:18-3:5 and Vickers, ER 13:1-20).

8. On or about June 11, 1992, Mr. Ellis prepared a first handwritten drawing of a three-stage rivet, which is identified as "Ellis Exhibit 12." In this drawing, the diameter of the third stage at the end of the shank is shown as being .468", and the distance from the top of the third stage to the under side of the rivet head is shown as being .408". Mr. Ellis' notation that [reads] "need Fri 12 June" refers to the date in which samples based on this drawing were needed. (Ellis, ER 6:14-21).

9. On or about June 12, 1992, Mr. Ellis prepared a second handwritten drawing of a three-stage rivet, which is identified as "Ellis Exhibit 13." The drawing shown in Ellis Exhibit 13 is a modification of that shown in Ellis Exhibit 12 in that the diameter of the third stage was changed to .437" and the distance from the top of the third stage to the under side of the rivet head was changed to .380". Mr. Ellis' handwritten note "need 6/15 Mon" again refers to the date that samples were needed (Ellis, ER 6:22-7:6).

10. On or about June 15, 1992, Mr. Ellis prepared a third handwritten drawing of a three-stage rivet, which is identified as "Ellis Exhibit 14". In that drawing, the diameter of the third stage again has been modified and is shown as .406," while the distance from the top of the third stage to the under side of the rivet head is shown as .380", which is the same as that shown in Ellis Exhibit 13. Mr. Ellis noted on this drawing "need soon" because Mr. Vickers had promised to have samples sent out by Wednesday, June 17, 1992. (Ellis, ER 7:7-15).

11. On June 15, 1992, Mr. Ellis prepared a fourth handwritten drawing of a three-stage rivet, which is identified as "Ellis Exhibit 9". In that drawing, the diameter of the third stage as well as the distance from the top of the third stage to the under side of the rivet is the same as that shown in Ellis Exhibit 14, which is .406" and .380", respectively. In addition, in the drawing of Ellis Exhibit 9 there are other dimensions that Mr. Ellis added for the entire rivet structure. Mr. Ellis also noted that the grip range was between .200" minimum to .460" maximum, which would satisfy the requirements imposed by Unistrut's "Telestrut" system. Mr. Ellis noted that at maximum grip of this design, the required driving force is 1500 [measurement units not specified] in order to provide a tight joint, which satisfied Unistrut's problem with the samples previously supplied that did not provide a tight fit for three layers, in particular two tubes together with one fitting. (Ellis, ER 7:16-8:7).

12. Samples were prepared based on the rivets shown in Ellis Exhibit 9 and were sent on June 15, 1992 by Mr. Vickers to Mr. Wright and Mr. Herbert J. Henry at Unistrut. (Ellis, ER 8:8-11 and Vickers, ER 13:23-24). The rivet samples were accompanied by a handwritten letter that Mr. Vickers had prepared, which is identified as "Ellis Exhibit 10". In Mr. Vickers' letter, he advised that the rivets were modified so as to reduce the driving force at the maximum

grip thickness in accordance with Unistrut's requirement. Mr. Vickers also advised the results of Southco's tests which showed that the driving force at the maximum grip, which is through two tubes plus one fitting, was approximately equal to the [driving force required for the] previous samples through the thinner grip, which is through one fitting to single tube. At the top of the page of Mr. Vickers' letter, the date is incorrectly identified as 15 June 93 and should instead read 15 June 92. (Vickers, ER 13:22-14:10).

13. Mr. O'Rourke subsequently received a telephone call from Unistrut, which he believes was from Mr. Wright, who expressed dissatisfaction with the three-stage rivet that he had received from Southco. (O'Rourke, ER 3:8-10). Mr. O'Rourke subsequently advised Mr. Vickers by telephone that Unistrut was not satisfied with the three-stage rivet. (Vickers, ER 14:11-14). Mr. Vickers in turn thereafter relayed this information to Mr. Ellis. (Ellis, ER 8:12-16).

[The partially tapered rivet]

14. In September 1992, Mr. Ellis conceived of an alternate design in which the three-stage rivet was modified to substitute a taper for the middle stage on the shank. The partially tapered shank design provided a grip range between .200" minimum to .460["] maximum, corresponding to that of the three-stage design. The primary differences in the partially tapered shank design from the three-stage shank design are seen at the maximum grip of the Telestrut system, which is through two tubes and one fitting. In particular, when installing the rivets, the partially tapered shank provides for easier driving than the three-stage design, however, the partially tapered shank also yields a less tight joint than that provided by the three-stage design. Samples of the partially tapered shank design were made and sent to Unistrut. (Ellis, ER 8:17-9:7).

15. On September 29, 1992, Mr. Ellis received a telephone call from Unistrut, he believes from Mr. Wright, who appeared to be satisfied with the partially tapered shank design, subject to further testing of a sample lot. (Ellis, ER 9:8-11). Mr. Ellis subsequently advised Mr. O'Rourke on or about September 29, 1992 that he had developed a rivet in which the three-stage rivet was modified to substitute a taper for the middle stage on the shank, which he had sent to Unistrut and that Unistrut appeared to be satisfied subject to further testing of a sample lot. (O'Rourke, ER 3:11-15). Mr. Ellis subsequently advised Mr. Vickers of the same information on or about September 30, 1992. (Vickers, ER 14:15-18). Mr. Vickers prepared a work order shown in "Ellis Exhibit 11" dated September 30, 1992 for the rivet with tapered shank per samples supplied by Mr. Ellis. (Vickers, ER[] 14:19-15:3).

16. On September 29, 1992, Mr. Edmund S. Koza, Engineering Technician for Southco (Koza, ER 20:1-2), received a Sales Request for Information from Mr. Mark S. Rayne, Modifications Coordinator for Southco (Rayne, ER 18:1-2), in which Mr. Rayne asked Mr. Koza to contact Mr. Ellis in relation to Mr. Ellis' modified rivet design in order to find out specifically what changes had been made. A copy of the Sales Request for Information is identified as "Ellis Exhibit 4". (Koza, ER 20:3-8).

17. Mr. Ellis, in response to Unistrut's interest in the partially tapered shank design, proceeded to prepare a Manufacturing Drawing for the production of prototypes based on the partially tapered design, which Mr. Ellis completed on October 5, 1992. The Manufacturing Drawing which Mr. Ellis prepared is identified as "Ellis Exhibit 15". (Ellis, ER 9:12-16).

18. Mr. Koza, pursuant to Mr. Rayne's request, contacted Mr. Ellis[, ] who advised Mr. Koza of the partially tapered shank design and also showed Mr. Koza a drawing of the partially tapered shank design which Mr. Ellis was preparing, from which Mr. Koza

revised an earlier blue print drawing to reflect Mr. Ellis' modification, which Mr. Koza completed on October 7, 1992. Mr. Koza's blue print drawing is identified as "Ellis Exhibit 18". Mr. Koza then forwarded this drawing to Mr. Rayne that same day, which is identified as "Ellis Exhibit 4". (Koza, ER 20:9-21:1).

19. On October 5, 1992, Mr. Ellis sent an in-house correspondence to Mr. Vickers to have a work order issued based on the drawings of the partially tapered shank that Mr. Ellis had prepared. Mr. Ellis' handwritten in-house correspondence to Mr. Vickers is identified as "Ellis Exhibit 16". (Ellis, ER 9:17-21).

20. On October 5, 1992, Mr. O'Rourke received a faxed message from Mr. Wright of Unistrut asking for a revised quotation on the tapered rivet for volume purchasing, indicating that Unistrut was satisfied with the product, which is identified as "Ellis Exhibit 5". Mr. O'Rourke forwarded the request to Southco on October 6, 1992[,], which is identified as "Ellis Exhibit 6". (O'Rourke, ER 3:16-21).

21. On October 6, 1992, Mr. Rayne received the memorandum from Mr. O'Rourke, requesting a Southco drawing as well as an updated quote for Unistrut if there is a cost difference in the tapered rivet design. (Rayne, ER 18:3-7).

22. On October 8, 1992, Mr. Rayne sent a revised quote together with a revised drawing in relation to the tapered rivet design to Mr. Wright at Unistrut. Copies of the revised quote and drawing are identified respectively as "Ellis Exhibits 17 and 18". The revised drawing of the tapered rivet was prepared by Mr. Roza based on the information from Mr. Ellis. (Rayne, ER 18:8-15).

23. On November 17, 1992, Mr. O'Rourke received a telephone order from Unistrut, which Mr. O'Rourke believes was from Mr. Wright, for 50,000 of the tapered rivets. Mr. O'Rourke's handwritten memorandum of that

telephone order is identified as "Ellis Exhibit 7". (O'Rourke, ER 4:1-3).

24. The tapered rivets were ordered by Unistrut and were manufactured and delivered by Southco. (O'Rourke, ER 4:4-5; Ellis, ER 14:1-2; Vickers, ER 15:1-3).

25. Southco's tapered rivets were illustrated in the 1993 Telestrut Catalog of Unistrut on pages 5, 7, 17 and 18, which is identified as "Ellis Exhibit 8". (O'Rourke, ER 4:4-7).