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Datasheet for the decision of 14 January 2010

Case Number: T 0950/07 - 3.2.08

Application Number: 97117229.1

Publication Number: 0844415

IPC: F16G 13/16

Language of the proceedings: EN

Title of invention:
Cable drag chain

Patentee:
Tsubakimoto Chain Co.

Opponent:
igus Spitzgussteile für die Industrie GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step - (yes)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0950/07 - 3.2.08

D E C I S I O N
of the Technical Board of Appeal 3.2.08
of 14 January 2010

Appellant: (Opponent)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 2 April 2007 concerning maintenance of European patent No. 0844415 in amended form.

Composition of the Board:

Chairman: T. Kriner
Members: M. Alvazzi Delfrate
E. Dufrasne

Summary of Facts and Submissions

I. In its interlocutory decision, posted on 2 April 2007, the opposition division held that the European patent 844415 in amended form according to the main request then on file satisfied the requirements of the European Patent Convention.

II. The opponent lodged an appeal against this decision on 4 June 2007, paying the appeal fee on the same day. The statement setting out the grounds for appeal was filed on 20 July 2007.

III. Oral proceedings before the Board were held on 14 January 2010, at which the following requests were made:

The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed or, in the alternative, that the decision under appeal be set aside and that the patent be maintained on the basis of the auxiliary request filed with the letter dated 14 December 2009.

IV. Claim 1 of the main request underlying the appealed decision reads as follows:

"A cable drag chain (10) wherein a plurality of link members (12) each comprising a pair of right and left side plates (14, 16; 62, 62) and connecting plates (18, 20; 64) which connect transversely upper and lower

edges, respectively, of said side plates are connected together contiguously in a bendable manner,
a pair of elastically deformable connecting arms (22; 54; 66) spaced from each other in the longitudinal direction of the cable drag chain are projected at each end of at least one said connecting plate (18; 64),
a connecting arm receptacle portion (24; 68) for receiving said connecting arms (22; 66) therein is recessed in each said side plate (14, 16),
engaging pins (26; 52; 70) are projected from abutment surfaces of either said connecting arms (22; 54; 66) or said connecting arm receptacle portion (24; 68) in the longitudinal direction of the cable drag chain,
while engaging pin receptacle holes (28; 56; 72) are formed in the abutment surfaces of the other of the connecting arms (22; 54; 66) and the connecting arm receptacle portion (24; 68), said engaging pin receptacle holes (28; 56; 72) being closed in a connecting plate disconnecting direction,
wherein each said side plate (14, 16; 62) has a first inward fall correcting portion (40; 80) projecting upward from the bottom of said connecting arm receptacle portion (24; 68);
said at least one connecting plate (18; 64) has a second inward fall correcting portion (36; 82) formed at each end portion thereof and projecting between the connecting arms (22; 66),
said first and second inward fall correcting portions (40, 36; 80, 82) being formed on a central side in the transverse direction of the cable drag chain relative to a position of fitting engagement between said engaging pins (26; 52; 70) and said engaging pin receptacle holes (28; 56; 72); and

said first and second fall correcting portions (40, 36; 80, 82) come into abutment with each other to correct an inward fall of said side plates (14, 16; 62) for positioning said engaging pins (26; 52; 70) and said engaging pin receptacle holes (28; 56; 72) before the concave-convex engagement of the engaging pins (36; 52; 70) and the engaging pin receptacle holes (28; 56; 72), characterized in that each said side plate (14, 16) has a pair of connecting arm holding arms (38, 38) spaced from each other in the longitudinal direction of the cable drag chain and projecting toward another side plate (16, 14) for receiving therebetween the connecting arms (22; 54), said at least one connecting plate (18; 64) has a pair of shoulder portions (34, 34) located laterally outside said connecting arms (22; 54),

a front end of each of said connecting arm holding arms (38) forms a third inward fall correcting portion,

each of said shoulder portions (34) forms a fourth inside fall correcting portion,

and said third and fourth inside fall correcting portions (38, 34) are formed on a central side in the transverse direction of the cable drag chain relative to a position of the fitting engagement between said engaging pins (26;52) and said engaging pin receptacle holes (28; 56) and come into abutment with each other to correct an inward fall deformation of said plates (14, 16) for positioning said engaging pins (26; 52) and said engaging pin receptacle holes (28; 56) before the engaging pins (26; 52) are fitted in the engaging pin receptacle holes (28; 56)."

V. In support of its submissions the appellant referred to the following documents:

D2A: DE-C2-4313075;

D2b to D2e: explanatory drawings obtained from the drawings of D2A; and

D1: DE-A-3709740

VI. The arguments of the appellant can be summarised as follows:

D2A disclosed a cable drag chain exhibiting all the features of the preamble of claim 1, wherein a first inward correcting portion and a second inward correcting portion were represented by the surfaces of the elements 8 and 9. Moreover, the elements 8 could also be regarded as a pair of connecting arm holding arms. Furthermore, the cable drag chain disclosed in D2A additionally comprised third and fourth inward fall correcting portions, being indicated as EKA5 and EKA6 in annexes D2b and D2e.

Therefore, the cable drag chain of the patent in suit departed from the one shown in D2A essentially in that the connecting arm holding arms were arranged for receiving therebetween the connecting arms. However, this novel arrangement could be obtained by a simple mirroring operation starting from the cable drag chain shown in D2A. Since this mirroring had no technical effect, the cable drag chain obtained thereby was merely an alternative arrangement of the known cable drag chain, which could not involve an inventive step.

VII. The arguments of the respondent can be summarised as follows:

The claimed cable drag chain was distinguished from the one disclosed in D2A by the arrangement described in the characterising portion of claim 1, which provided an increased stability, especially before the fitting engagement of the pins in the receptacle holes. Since the prior art provided no hint to modify the cable drag chain shown in D2A to arrive at the claimed one, the subject-matter of claim 1 of the main request involved an inventive step.

Reasons for the Decision

1. The appeal is admissible.

2. *Inventive step*

2.1 D2A discloses a cable drag chain wherein a plurality of link members (1) each comprising
a pair of right and left side plates (2, 3) and connecting plates (4, 5) which connect transversely upper and lower edges, respectively, of said side plates are connected together contiguously in a bendable manner,
a pair of elastically deformable connecting arms (7) spaced from each other in the longitudinal direction of the cable drag chain are projected at each end of at least one said connecting plate,

a connecting arm receptacle portion (6) for receiving said connecting arms therein is recessed in each said side plate,
engaging pins (11) are projected from abutment surfaces of said connecting arms in the longitudinal direction of the cable drag chain,
while engaging pin receptacle holes (13) are formed in the abutment surfaces of the other of the connecting arms and the connecting arm receptacle portion, said engaging pin receptacle holes being closed in a connecting plate disconnecting direction (see column 3, line 16-29),
wherein each said side plate has a first inward fall correcting portion (portion of protrusions 8 indicated as EKA3 in D2b) projecting upward from the bottom of said connecting arm receptacle portion;
said at least one connecting plate has a second inward fall correcting portion (9) formed at each end portion thereof and projecting between the connecting arms,
said first and second inward fall correcting portions being formed on a central side in the transverse direction of the cable drag chain relative to a position of fitting engagement between said engaging pins and said engaging pin receptacle holes;
and said first and second fall correcting portions come into abutment with each other to correct an inward fall of said side plates for positioning said engaging pins and said engaging pin receptacle holes before the concave-convex engagement of the engaging pins and the engaging pin receptacle holes,
wherein said at least one connecting plate has a pair of shoulder portions (indicated as EKA6 in D2b) located laterally outside said connecting arms.

The protrusions 8 can additionally be regarded as a pair of connecting arm holding arms spaced from each other in the longitudinal direction of the cable drag chain and projecting toward another side plate, which however are not arranged for receiving therebetween the connecting arms.

2.2 Starting from the cable drag chain disclosed in D2A the object to be achieved by the claimed invention can be seen in providing an improved stability.

According to claim 1 this object is achieved in that the connecting arm holding arms are for receiving therebetween the connecting arms and in that a front end of each of said connecting arm holding arms forms a third inward fall correcting portion which comes into abutment with the fourth inside fall correcting portion formed by each of the shoulder portions to correct an inward fall deformation of said plates for positioning said engaging pins and said engaging pin receptacle holes before the engaging pins are fitted in the engaging pin receptacle holes.

The interaction of the third and fourth inward fall correcting portions so defined credibly provides a further security against inward fall of the side plates also before fitting of the pins in the corresponding receptacle holes.

2.3 In order to arrive at the claimed subject-matter, the cable drag chain shown in D2A needs substantial modifications, as shown in Figure 5A of D2d. The protrusions 8, which interact with the element 9 in a position between the connecting arms 7 (see D2A,

column 3, lines 6-9 and lines 30-35), have to be moved on the other side of the connecting arms to form with the shoulders third and fourth inward fall correcting portions to correct an inward fall deformation of the plates before the engaging pins are fitted in the engaging pin receptacle holes. At the same time the protrusions 8 must be replaced by other elements to form first inward fall correcting portions which can interact with the second inward fall correcting portions projecting between the connecting arms, as defined in the preamble of claim 1 of the patent in suit.

The appellant has not shown any reason why the man skilled in the art would have performed said modifications in an obvious way. Since neither D2A nor D1 address the problem of the inward fall correction of the side plates, and since D1 merely shows different orientations of the pins, the provision of the inward fall correcting portions and the arrangement of the connecting arms and the pins according to claim 1 could only be arrived at by the use of hindsight.

Therefore, the subject-matter of claim 1 is regarded as involving an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

V. Commare T. Kriner