Consideration of Connections between Technical Features for Evaluating Inventiveness

Featured Article

When judging the inventiveness of a claimed invention, the distinguishing technical features of the claimed invention from the prior art shall be accurately and correctly determined, which is crucial to the judgement of the technical contribution and innovation of the claimed invention over the prior art and directly affects the determination of the technical problem to be solved by the claimed invention and thus the judgement of "obviousness". For accurately and correctly determining the distinguishing technical features, it is crucially important that the connections between technical features or technical means of the claimed invention shall be taken into consideration and further be accurately and correctly determined. The connections between technical features included in a claimed technical solution (hereinafter referred to as "the claimed solution") may determine which technical features should be considered together as a whole, which is always a challenge for patent prosecution but may directly affect the decision on the inventiveness of the claimed solution.

I. General principle for determining the connections between technical features for evaluating inventiveness

Generally, the determination of the connections between technical features shall still follow the principle of comprehensive consideration of the overall technical solution. Specifically, it is necessary to fully understand the inventive concept of the claimed solution and the inventive concept of the prior art and thus find out the technical problems to be solved respectively thereby. On this basis, the relations between the technical features or technical means and the technical problems to be solved, along with the technical effects produced thereby, shall be specifically analyzed for the claimed solution and for the prior art respectively, so as to determine the connections between the technical features in the claimed solution.

Based on the analysis, the technical features shall be considered individually as independent features from each other if they solve different technical problems and produce different technical effects respectively. On the contrary, the technical features shall be considered as one unitary technical feature or a combination of technical features as a whole if they function jointly in close connection and relation to one another to solve the same one technical problem and produce the same one technical effect.

When determining the distinguishing technical features, the claimed solution shall not be simply split into individual technical features isolated from each other which are considered separately for comparison with the features of the closest prior art. Instead, connections between the technical features shall be carefully examined for determining which features can be compared separately and which features are closely connected and shall be combined with one another for comparison as a whole. As such, it

might be avoided to disregard some distinguishing technical features because they are split and considered separately.

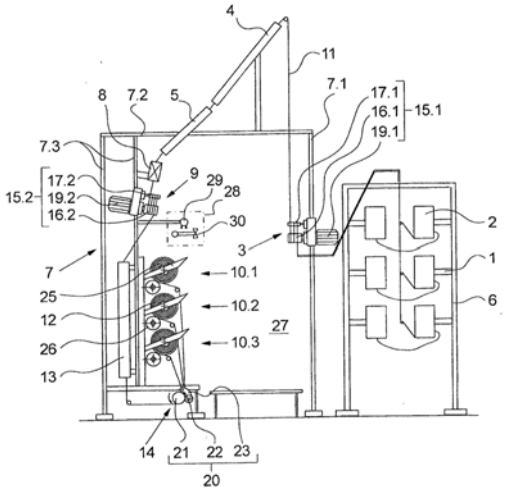
II. Typical case study

In the following, considerations for determining the connections between technical features will be discussed in conjunction with two typical guiding cases issued by the Supreme People's Court.

Case 1: (2020) Supreme People's Court Zhixingzhong No. 279

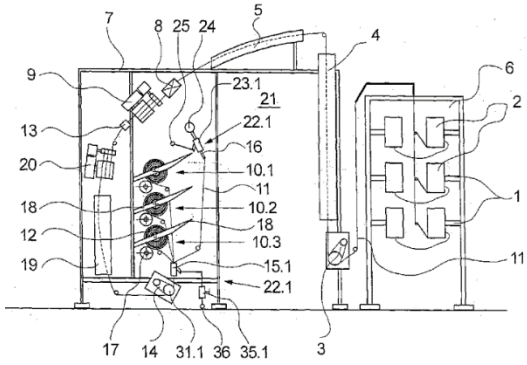
The patent involved in case 1 is a Chinese invention patent No. 200810175661.2 entitled "false twist texturing machine" issued to OERLIKON TEXTILE GMBH & CO. KG. The patent right of the involved patent was sustained by the Examination Decision on Request for Invalidation No. 32984 (hereinafter referred to as the invalidation decision), which was subsequently revoked by the Administrative Judgment (2018) Jing 73 Xingchu No. 787 (hereinafter referred to as the first-instance judgment) made by the Beijing Intellectual Property Court, while the first instance judgment was in turn revoked by the Supreme People's Court in Administrative Judgment (2020) Supreme People's Court Zhixingzhong No. 279 (hereinafter referred to as the second-instance judgment).

Independent claim 1 of the involved patent reads as follows:



A false-twist texturing machine for texturing a plurality of multifilament threads, having a plurality of conveying mechanisms (3, 9, 14), a heating device (4), a cooling device (5), a false-twisting device (8) , and a winding device (10.1) for drawing, stretching, deforming and winding at least one of the threads (11), the winding device having a driven drive roller (26), wherein a combined deformation/stretching area is formed between a first conveying means (3) and a second conveying means (9), and a post-processing area is formed between the second conveying means (9) and a third conveying means (14) provided before the winding device (10.1), characterized in that the first conveying mechanism (3) and the second conveying mechanism (9) comprises a winding conveying mechanism (15.1, 15.2) respectively, and the third conveying mechanism (14) comprises a clamping conveying mechanism (20).

The dispute in the second instance focuses on whether the arrangement of the three conveying mechanisms should be considered as a whole when identifying the distinguishing technical features, that is, whether the features "the first conveying mechanism (3) and the second conveying mechanism (9) comprises a winding conveying mechanism (15.1, 15.2) respectively, and the third conveying mechanism (14) comprises a clamping conveying mechanism (20)" should be considered in combination as a unitary technical feature.



Evidence 1 (PCT application No. WO2007/036242A1 and its Chinese national phase application No. CN101272975A) discloses a textile machine, each processing point of which has a plurality of feeding devices for pulling and

guiding the yarn 11 and a winding device. Evidence 1 specifically discloses two embodiments. In the first embodiment of Evidence 1, the three feeding devices 3, 9, and 14 are all winding conveying mechanisms (as shown in the figure), and in the second embodiment of Evidence 1, the three feeding devices are all clamping conveying mechanisms.

According to the first-instance judgment, the first and second conveying mechanisms and the third conveying mechanism of the involved patent each have different functions and are simply mechanically connected to each other, so that they are independent of each another in terms of configuration, function and cooperation. Accordingly, the three conveying mechanisms do not have inseparably close connections, and thus, when determining the distinguishing features, the three conveying mechanisms should not be combined with one another as a whole for comparison. Therefore, in comparison with the closest prior art (the first embodiment of Evidence 1), the only distinguishing technical feature of the involved patent lies in that the third conveying mechanism comprises a clamping conveying device.

In this regard, both the State Intellectual Property Office and the patentee believe that the first-instance judgment does not reasonably define the capability of those skilled in the art based on the state of the art and does not correctly identify the distinguishing technical features of claim 1 of the involved patent. They both consider that the improvement made by the involved patent over the prior art lies in using different types of conveying mechanisms in cooperation, instead of choosing the type of a single conveying mechanism, and thus the arrangement of the conveying mechanisms should be regarded as a unitary distinguishing technical feature, which is supported by the second-instance judgment.

As mentioned in the second-instance judgment, "when judging the distinguishing technical features of the claimed invention with respect to the closest prior art, it is necessary to start from the inventive concept of the invention in order to determine the technical difference between the invention and the closest prior art. If the inventive concept of the invention lies in the combination of corresponding technical means, and the prior art neither directly or implicitly discloses any teaching of this combination, nor discloses the technical effect that this combination can produce, the combination of technical means claimed by the invention should be treated as a whole when determining the distinguishing technical features, and it is not appropriate to use a single technical means as a basic element for identifying the distinguishing technical feature".

Specifically, in this case, the Supreme People's Court concludes by analyzing the relevant description of the involved patent that the inventive concept of the involved patent lies in that, by arranging different types of conveying mechanisms in combination, i.e., by providing each of the first conveying mechanism and the second conveying mechanism as a winding conveying mechanism while providing the third conveying mechanism as a clamping conveying mechanism, a technical effect is obtained to guide the thread to the post-processing area without any damage, and to ensure that the thread tension can be kept constant in the post-processing area and would not be slackened during the winding cylinder changing process.

On the contrary, the wire feeding devices disclosed in the first and second embodiments of Evidence 1 are both comprised of one single type of conveying mechanisms, and neither teach nor disclose a feeding device composed of a combination of different types of conveying mechanisms, let alone the technical effect that can be achieved by the combined arrangement of different types of conveying mechanisms. Therefore, when determining the distinguishing technical features of the involved patent with respect to the closest prior art, the combined arrangement of different types of conveying mechanisms in the involved patent should be considered as a whole.

In summary, the Supreme People's Court holds that the first-instance judgment does not start from the inventive concept of the invention and disregards the inherent connections between the three conveying mechanisms of the involved patent along with the technical effect produced thereby, and improperly considers each conveying mechanism as a basic unit for identifying the distinguishing technical feature. On the contrary, the distinguishing technical feature should be "the first conveying mechanism (3) and the second conveying mechanism (9) comprises a winding conveying mechanism (15.1, 15.2) respectively, and the third conveying mechanism (14) comprises a clamping conveying mechanism (20)".

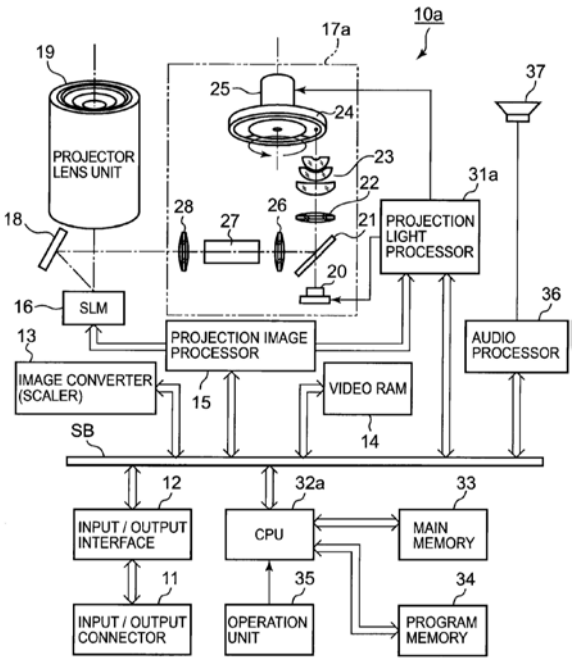
Case 2: (2020) Supreme People's Court Zhixingzhong No. 155

The patent involved in case 2 is a Chinese invention patent No. 201010293730.7 entitled "Light source unit, projection apparatus and projection method" issued to Casio Computer Co. Ltd. The patent right of the involved patent was sustained by the Examination Decision on Request for Invalidation No. 34530 (hereinafter referred to as the "invalidation decision"), which was subsequently revoked by the Administrative Judgment (2018) Jing 73 Xingchu No. 2210 (hereinafter referred to as the first-instance judgment) made by the Beijing Intellectual Property Court, while the first-instance judgment was finally revoked by the Supreme People's Court in Administrative Judgment (2020) Supreme People's Court Zhixingzhong No. 155 (hereinafter referred to as the "second-instance judgment").

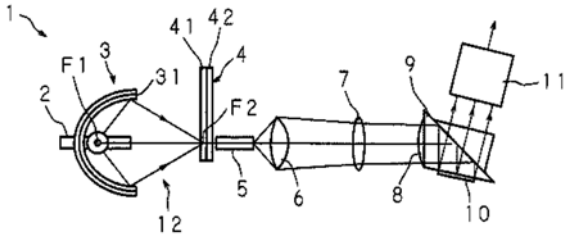
In this case, the invalidation decision and the second-instance judgment differs from the first-instance judgment in the judgement of inventiveness of independent claim 1 mainly because they have different opinions on the identification of the technical features distinguishing independent claim 1 of the involved patent from Evidence 1 (JP2007156270A), and, more specifically, they have different opinions on whether all the features defining the light source controller should be considered as one unitary technical feature.

Independent claim 1 of the involved patent reads as follows:

1. A light source unit comprising:
a light source configured to emit light in a predetermined wavelength range;
a light-source light generator configured to generate light-source light of a plurality of colors with different luminous efficiencies by time-sharing by using the light emitted from the light source; and
a light source controller configured to control timings of driving the light source and light-source light generator, so that the light-source light of a plurality of colors generated by the light-source light generator are cyclically generated, by setting a light-emitting period of at least one light-source light color having a higher luminous efficiency out of the plurality of colors generated by the light-source light generator, shorter than those of the other light-source light colors(Feature 1), and setting a drive power of the light source during generation of the light-source light color whose light-emitting period is set shorter, greater than a drive power of the light source during generation of the other light-source light colors(Feature 2),
wherein the light-source light generator is a color wheel that has an area coated with a fluorescent substance to emit light in a predetermined wavelength range.



The technical solution of independent claim 1 of the involved patent can be better understood with reference to Figure 1 of the involved patent. The data projector 10a includes a light source unit 17a which cyclically emits primary color light of red, green, and blue by time-sharing. The light source unit 17a has a semiconductor laser 20 to emit blue laser light (corresponding to the "light source") that emits blue laser light. A color wheel 24 (corresponding to the "light-source light generator") is rotated by the motor 25 at a substantially constant speed. when the color wheel 24 is rotated, the blue light emitted from the semiconductor laser 20 is cyclically applied to the red fluorescence reflection part 24R, green fluorescence reflection part 24G, and blue light diffuse reflection part 24B on the circumference. A projection light processor 31a (corresponding to the "light source controller") controls the emission timing and intensity of the semiconductor laser 20 of the light source unit 17a, and the rotation of the color wheel 24 by the motor 25. The projection light processor 31a is given a timing signal of image data from the projection image processor 15. In the involved patent, the light source controller (projection light processor 31a) can coordinately control the driving timing of the light source and the light-source light generator, so that the light-source light generator is set to have a shorter light-emitting period for the light-emitting process of at least one light color having a higher luminous efficiency within a certain period of time (for example one frame), while the light source is set to have a drive power during generation of the light color greater than a drive power during generation of the other light colors. Obviously, in the involved patent, the light-emitting period of a certain light color and the driving power of the light source during the light-emitting time are controlled at the same time, so as to improve the overall light-emitting efficiency of the light source in combination with the phosphor.



In Evidence 1, the light source device 12 of the projector 1 has a light source 2, a reflector 3, and a color wheel 4; the light source 2 (equivalent to the "light source" of the involved patent) is an ultra-high pressure mercury lamp, and the light generated includes visible light and ultraviolet light. The reflector 3 is used to reflect the light emitted from the light source 2, and the light emitted from the light source 2 as well as the light emitted from the light source 2 and reflected by the reflector 3 are incident on the color wheel 4; the color wheel 4 (equivalent to the “color wheel” of the involved patent) is provided with a phosphor layer 41 made of fluorescent glass and a filter 42 made of a multi-layer film, R color phosphor layer 43, G color phosphor layer 44, B color phosphor layer 45 disposed in a sector-shaped arrangement each having an appropriate angular range respectively along the circumference of the color wheel 4, so as to convert the ultraviolet light generated by the light source 2 into visible light of R color, G color and B color respectively, wherein the angular range of the R color phosphor layer 43 is larger than that of the G color phosphor layer 44 and the angular range of the G color phosphor layer 44 is larger than that of the B color phosphor layer 45. Since the rotational speed of the driving color wheel is constant, the phosphor layers of R, G, and B colors have respectively different light-emitting time depending on their respective angular ranges when the color wheel rotates for one revolution (that is, one frame). The light-emitting time of the R color phosphor layer 43 is longer than the light-emitting time of the G color phosphor layer 44 which is longer than the light-emitting time of the B color phosphor layer 45. In this way, the red phosphor layer having a larger angular range can provide more red light, thereby improving the color balance, solving the problem of the insufficient red component in the white light emitted by the ultra-high pressure

mercury lamp. However, in Evidence 1, even though the light-emitting time of the color wheel for different colors is regulated, this regulation has nothing to do with the differences in the luminous efficiency of the phosphors of different colors, nor does it involve regulation of the driving power of the corresponding light source.

When identifying the distinguishing technical features, the first instance court separates Feature 1 of the light source controller in claim 1 of the involved patent from Feature 2 thereof and compares them separately with Evidence 1. The first instance court holds that, by disclosing the relations of the angular ranges of the aforementioned three phosphor layers, Evidence 1 correspondingly discloses Feature 1, i.e., "setting a light-emitting period of at least one light-source light color having a higher luminous efficiency, shorter than those of the other light-source light colors". Accordingly, the first instance court concludes that claim 1 of the involved patent differs from Evidence 1 merely in Feature 2 (setting a drive power of the light source during generation of the light-source light color whose light-emitting period is set shorter, greater than a drive power of the light source during generation of the other light-source light colors).

The second instance judgment gives clear guidance on how to judge the synergistic relationship between technical features for evaluating inventiveness and holds that Feature 1 and Feature 2 should be considered as a unitary technical feature for comparison. According to the second instance judgment, when identifying the distinguishing technical features, the relationship between the features stated in a claim and their functions in the technical solution, the technical problems to be solved, and the technical effects produced thereby should be comprehensively considered. Attention shall be paid to the connections between the features and their correlation with the overall technical solution. On the basis of accurately understanding the inventive concept, the relationship between each feature of the technical solution and the inventive concept proposed by the invention to solve the technical problem along with the technical effect to be produced shall be precisely and accurately determined. The technical features that constitute the overall technical means should not be simply mechanically split into pieces and considered separately from each other.

Specifically, the second instance judgment recites the reasons why Features 1 and 2 should be considered as a whole in view of the differences between claim 1 of the involved patent and Evidence 1 in terms of the respective technical concepts thereof and the technical means used thereby for solving their technical problems respectively.

The technical problem to be solved by the involved patent is not only to avoid the deterioration of the luminous efficiency due to the saturation of the phosphor, but also to prevent the lack of absolute light amount due to the undersaturation of the phosphor. In order to solve the above problem, the involved patent proposes an inventive concept of combining the light source with the phosphor to jointly impro ve the luminous efficiencies of various light colors, so as to not only avoid the saturation of the phosphor but also ensure sufficient absolute light amount, and thus provide an image with both as much brightness as possible and high colo r reproducibility. In claim 1, by the coordination and corporation of the above-mentioned Feature 1 in combination with Feature 2 of the light source controller, the light-emitting time and the driving power of the light source are controlled simultaneously. When the light source irradiates a fluorescent material that is liable to saturation, the light-emitting time can be longer and the driving power can be smaller, so as to improve the light output while avoiding the saturation of the fluorescent material. On the contrary, when the light source illuminates a fluorescent material that is not liable to saturation or the color wheel that is not coated with any fluorescent material, a greater driving power can be provided in combination with a correspondingly shorter irradiation time, thereby improving the overall luminous efficiency of the combination of the light source and the phosphor. It can be seen that Features 1

and 2 jointly solve the above-mentioned technical problem of phosphor saturation and insufficient absolute light amount, resulting in such a combined technical effect that makes the image as bright as possible and provides high color reproducibility, and thus Features 1 and 2 should be considered as one unitary technical feature or a combination of technical features as a whole. In contrast, Evidence 1 is directed to the problem of the insufficient red component in the white light emitted by the ultra-high pressure mercury lamp. In Evidence 1, it adjusts the light output of three colors in a time unit by adjusting the light-emitting time. The purpose of the invention of Evidence 1 is different from that of the involved patent, and it does not involve adjustment of the driving power of the light source. Therefore, Evidence 1 does not disclose such a combination of technical features.

In summary, the technical feature distinguishing claim 1 of the involved patent from Evidence 1 lies in: "a light source controller configured to control timings of driving the light source and light-source light generator, so that the light-source light of a plurality of colors generated by the light-source light generator are cyclically generated, by setting a light-emitting period of at least one light-source light color having a higher luminous efficiency out of the plurality of colors generated by the light-source light generator, shorter than those of the other light-source light colors, and setting a drive power of the light source during generation of the light-source light color whose light-emitting period is set shorter, greater than a drive power of the light source during generation of the other light-source light colors".

III. Summary

From the above two typical guiding cases, it can be seen that, when evaluating inventiveness, whether the connections between the technical features in a claim can be correctly and accurately understood is very important for the grouping and identification of the distinguishing technical features. First of all, in order to determine the connections between technical features, not only the claimed inventive concept shall be understood as a whole, but also the technical concept of the closest prior art shall be figured out. Only the differences between the two concepts are made clear, can the improvement of the claimed solution with respect to the prior art be found out precisely. It should be avoided to mechanically split the technical features of the claimed solution for comparison with the prior art separately. Secondly, when grouping the technical features of the claimed solution, it is necessary to pay attention to which technical features are closely connected and functionally cooperate with each other in the claimed technical solution. If the technical features produce a technical effect cooperatively, they should be grouped into a unitary technical feature for comparison with the closest prior art. Otherwise, we might disregard what contribution the claimed invention really makes if the focus is on how each individual technical feature functions separately. In practice, attention can be paid to the following points:

1. When determining the connections between technical features, the inventive concept of the claimed invention shall be understood before the technical features thereof are grouped for comparison. If a feature seems to be more similar with the closest prior art than other features, more attention shall be paid to the inherent connections it may have with other features under the inventive concept. For example, in the mechanical field, in order to avoid disregarding any possible distinguishing technical feature, attention needs to be paid to the features defining position or connection relationship in the claimed solution, and such features shall be considered in combination with related features. The combination may result in a distinguishing effect from the prior art which is produced by an arrangement that seems similar to the prior art.

2. When evaluating inventiveness, attention should be paid not only to the connections between technical features in the claimed solution, but also to the connections between technical features and non-technical features. In particular, for inventions related to Internet technology and business rules, it is necessary to consider whether the business rule features can cooperate with those non-technical features such

as application environmental features to solve a corresponding technical problem and produce any technical effect. If so, the business rule features shall be considered in combination with the non-technical features for evaluating inventiveness, rather than be considered individually.

3. When judging the connections between technical features in patent prosecution, the most important basis for judgment is the written description reciting the functions of the technical features and the experimental data or charts reflecting the technical effects. Accordingly, when a patent application is drafted, on the basis of the inventive concept, the connections between the technical features for solving the technical problem and producing the technical effect shall be clearly recited in the specification. In particular, how the features cooperate to function with each other for producing the technical effect shall be made clear. Such an effect is not obtained merely by simply building up the known effect, but is a new technical effect produced by cooperation for implementing the inventive concept.

The "Featured article" is not equal to legal opinions. If you need special legal opinions, please consult our professional consultants and lawyers. The email address of our company is: ltbj@lungtin.com *which can also be found on our website* www.lungtin.com

For more information, please contact the author of this article:

*NIE, Huiquan: Partner, Assistant General Manager, Senior Patent Attorney:*ltbj@lungtin.com

NIE, Huiquan

Partner, Assistant General Manager, Senior Patent Attorney

Ms. NIE Huiquan has been practicing Chinese and foreign patent law for more than 20 years in a wide range of mechanical, automatic, electrical and electronic technologies. Her focus is on patent invalidation, patent litigation, patent prosecution, patent analysis, patent strategy and portfolio management, patent due diligence and FTO search, etc. Ms. NIE has represented well-known companies from around the world in over 1,000 patent cases. She has been recognized by many clients for helping them win a lot of important invalidation and litigation cases, including CIMC, LG Electronics, Delta Electronics, ZTE, Midea, and Dajiang.

隆天知識產權
LUNG TIN IP ATTORNEYS

18th Floor, Tower B, Grand Place, No 5, Huizhong Road,
Chaoyang District, Beijing 100101, P. R. China
Tel: 0086-10-84891188 Fax: 0086-10-84891189
Email: LTBJ@lungtin.com Web: www.lungtin.com