

Determination of Prior Art Disclosure

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I. Introduction

A main objective of the Patent Law is to boost scientific and technological progress, and the criterion to evaluate such progress is whether a patent application possesses novelty or inventive step over the prior art. Prior art, from another angle, is the starting point from which the inventor creates an invention. Without a clear knowledge of the disclosure of the prior art, improvements over the prior art are out of the question, nor is it possible to compare the technical solution of a relevant patent application with the disclosure of the prior art to judge the novelty or inventive step of the patent application. As the Chinese saying goes, “with the skin gone, what can the hair adhere to?” In this sense, an objective and accurate determination of prior art disclosure is crucial to the assessment of whether a patent application is novel or inventive. Furthermore, in patent invalidation and related proceedings, while the parties concerned attach much importance to grasping relevant technical contents, disputes often arise over the disclosure of the prior art, which may on the one hand reflect the views of the parties determined by their respective positions, and on the other hand reveal the parties’ inadequacies in understanding the prior art and determining the disclosure of the prior art.

Against this background, this article is going to summarise the essential elements of relevant examination criteria through analysis of several latest typical patent invalidation cases as an attempt to shed some light on how to bet-

ter determine prior art disclosure.

II. Understanding of “derived directly and unambiguously” in implicit disclosure

How to determine prior art disclosure in an objective and accurate manner? In accordance with the Guidelines for Patent Examination (2010) ², determination of prior art disclosure should be made from the standpoint of those skilled in the art and take into account not only contents expressly described in the reference document (i.e., technical contents expressly recited in the reference document), but also implied technical contents that can be derived directly and unambiguously from the reference document (i.e., technical contents implicitly disclosed in the reference document). That is to say, prior art disclosure comprises expressly recited as well as implicitly disclosed technical contents. Generally speaking, contents expressly recited in the reference document are easy to determine, while determination of contents implicitly disclosed in the reference document is prone to bias that may stretch the contents of the reference document to the extent of obviousness, or narrow the contents of the reference document to the point of regarding those skilled in the art as technically uninformed (see Fig. 1). It thus shows that understanding of the connotation of “derived directly and unambiguously” with a view to draw-

ing a clear boundary for implicit disclosure is of great significance, which is also the issue to be addressed in this article.

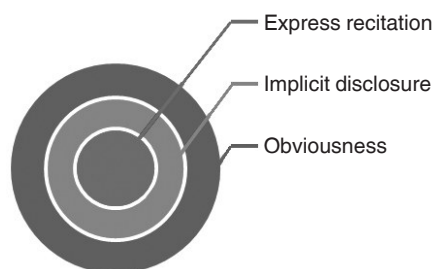


Fig. 1

There is a view³ that as long as the contents can be clearly derived and generalised from the drawings of a patent application, they belong to contents “derived directly and unambiguously”. If those skilled in the art, upon taking into account the recitation in the relevant specification, can directly and unambiguously determine contents of qualitative relations such as relative positions or relative dimensions of components shown in the drawings, these contents should be regarded as information recited in the specification. This view makes a differentiation of qualitative contents from quantitative ones, which is conducive to judging contents implicitly disclosed in the drawings; however, such approach may risk over-generalisation if contents clearly derived and generalised from the drawings are not properly grasped. There is another view⁴ which holds that the word “unambiguous” *per se* carries the “meaning of absolutely no doubt with complete clarity and certainty”, reflecting an emphasis on certainty, uniqueness, and exclusivity of a derived result. Hence, judgment made on the basis of this criterion is not one with a conclusion about a high or low degree of probability, and a proof of high probability cannot arrive at the conclusion of contents “derived unambiguously”. This view applies literal interpretation to the understanding of “derived unambiguously”.

The writers of this article concur with the view that “derived directly and unambiguously” in implicit disclosure should connote clarity, certainty, and uniqueness, because contents implicitly disclosed in the prior art should possess objectivity and reflect the standpoint of those skilled in the art. A prior art is characterised by a fixed state at the time of disclosure, and only those technical contents that are clear and can be unambiguously derived from the prior art, that is, technical contents possessing clarity, certainty, and uniqueness, can be regarded as disclosure of the prior art. There should be no room for multiple probabilities.

III. Typical implicit disclosures and case studies

On the basis of the above analysis on the connotation of “derived directly and unambiguously” in implicit disclosure, we are going to analyse in the following three typical circumstances of implicit disclosures, with the aid of some typical patent invalidation cases, from the perspectives of overall consideration of the prior art and judgment of whether the prior art possesses clarity, certainty, and uniqueness or otherwise.

(I) A technical solution that cannot be clearly, certainly, and uniquely determined from the prior art does not belong to prior art disclosure.⁵

Case 1 relates to Invalidation Decision No. 35082 issued by the Patent Reexamination Board (PRB). The patent at issue is directed to “a method and apparatus for deleting information in an input process”. Generally speaking, an input area comprises a character display area and a code input area (Fig. 2-1); for instance, when typing Chinese characters in a Word document, the area in the Word document where a cursor is flashing and characters are being inputted is the character display area, and Chinese *pinyin*s that are being inputted along with the list of candidate characters form the code input area (Fig. 2-2).

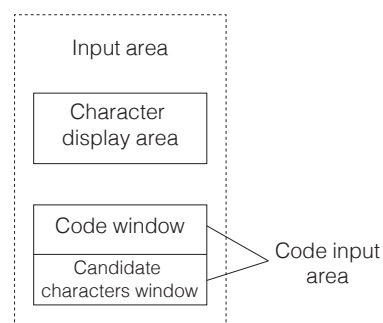


Fig. 2-1

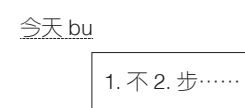


Fig. 2-2

If a user inputs a wrong *pinyin* that needs to be deleted, he will press the Delete key to remove the wrongly typed *pinyin*. However, if the user keeps pressing the Delete key, he will delete not only the wrongly typed *pinyin*, but also the Chinese characters already inputted into the character display area of the Word document, resulting in erroneous deletion. To solve this problem, claim 1 of this patent provides a method for deleting information in an input process, characterised in that an input area comprises a code input area and a character display area, and when inputting

is being conducted in the code input area, receipt of the command of the Delete key will delete the inputted code; upon deletion of all the codes, receipt of the command of the Delete key will be suspended; and when the pressing of the Delete key reaches a preset condition, the command of the Delete key will be received again to delete the characters in the character display area. In other words, while typing Chinese characters into a Word document, after all *pinyins* inputted by the user have been deleted, the Chinese characters already inputted into the Word document will not be deleted even if the Delete key is continuously pressed, thereby preventing erroneous deletion, unless the preset condition is met, for example, the user still presses the Delete key after a period of time or the user presses the Delete key again after a pause, indicating that the deletion is not inadvertent, but intentional for the purpose of deleting the characters in the Word document further to the deletion of the *pinyins*. Only then will characters in the Word document continue to be deleted according to the solution of this patent.

Prior Art E1' (E1') relates to a mobile phone A, which belongs to a product disclosed through public use. It shows from the compact disc attached to the notarial certificate as well as demonstration of the operation of the mobile phone at oral hearing before the court that: the mobile phone also provides a Chinese *pinyin* input method; while in text editing status, if one keeps pressing the Delete key, the *pinyin* is cleared; if releasing the Delete key and then long-pressing it, the Chinese character area is cleared; and where one still keeps pressing the key after the area is cleared, the screen will black out. By said demonstration, we can see that the input method of this mobile phone also includes an information deletion function. However, since different mobile phones come with different keyboard function settings, the conditions for triggering a corresponding function may not be the same from one phone to another. While a long-press of the Delete key triggers the clearing function in E1', it repeats the deletion operation in the patent of Case 1. Moreover, different brands of mobile phones differ in settings as to when a signal sent by pressing a phone key is received — the signal may be received upon the pressing of the key, or alternatively, upon the release of the pressed key. As such, it is not possible for those skilled in the art to affirm, merely on the basis of the actual operation of the mobile phone, how the background program functions with the mobile phone keyboard, for example,

whether long-pressing a phone key will execute the function of clearing all the *pinyins* in the *pinyin* area at one go, or it will lead to repeat performance of the deletion operation that deletes the Chinese characters one at a time but stops receiving the deletion signal sent by a key pressing upon clearing of all the *pinyins* in the *pinyin* area.

It shows that E1' can only prove that the mobile phone A may achieve some function of the Chinese *pinyin* input method, but lacks evidence to further prove how the background program and the hardware of the mobile phone A function together as well as what technical solution is used to achieve the function. In other words, a technical solution that cannot be clearly, certainly, and uniquely determined from the prior art does not belong to disclosure of the prior art.

In summary, since the background program and hardware of a device may employ various technical solutions to achieve a graphical user interface (GUI) function, such as an input method, the mere demonstration of the function at the GUI is unable to assist those skilled in the art in clearly and unambiguously affirming the technical solution actually adopted. For this type of prior art, if we wish to affirm the technical solution actually used, inadequacy of demonstration alone may be supported by supplementary evidence relating to the background program.

(II) A technical solution that can be clearly, certainly, and uniquely determined from the prior art belongs to prior art disclosure.

1. Technical contents that can be determined by those skilled in the art directly and unambiguously from the drawings belong to disclosure of the reference document.

Case 2 relates to Invalidation Decision No. 37553 issued by the PRB. The patent at issue claims “a filtering lifting cup, a filter with a filtering lifting cup, and a dishwasher with a filtering lifting cup”, wherein the filter of the dishwasher is a device for filtering debris such as food residue, and the filtering lifting cup is a key component of the filter. The filtering lifting cup in claim 1 of this patent comprises a peripheral grating part 12 and a middle grating part 13, wherein the peripheral grating part is drum-shaped and provided with a peripheral grating 120; the middle grating part connectedly arranged within the peripheral grating part is boss-shaped and provided with a middle grating 130 (Fig. 3-1). By virtue of gravity (Fig. 3-2), the filtering lifting cup of this patent enables foreign matters 9a of higher density to fall into the bottom grating along the boss surface of the middle

grating part, and allows small-sized foreign matters to be discharged out of the filtering lifting cup through the bottom grating and large-sized foreign matters to stack at the bottom of the lifting cup; on the other hand, food residue 9b of low density when falling can be discharged out of the lifting cup through the peripheral grating part so as to prevent low-density foreign matters or high-density, small-sized foreign matters from stacking in the filtering lifting cup, thus avoiding secondary contamination in the washing process, as well as preventing high-density, larger-sized foreign matters from blocking the discharge pump to thereby achieve the purpose of resisting foreign matters.

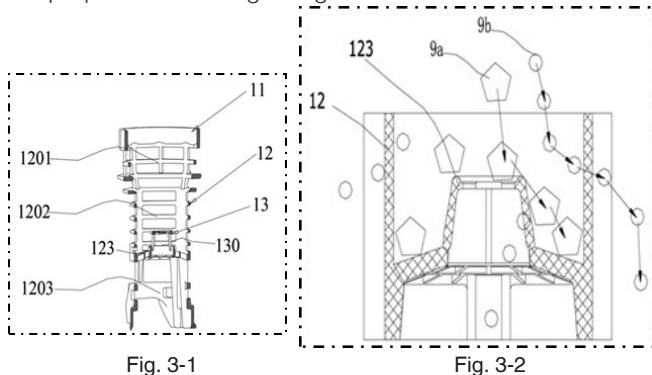


Fig. 3-1

Fig. 3-2

Reference 1 discloses a filtering device for a dishwasher, whose inventiveness lies in how a lifting cup 1, a planar filter 2, a microfilter 3, and a water cup 4 combine to form a filtering device. In light of this, the entire textual portion of the description in Reference 1 is devoted to how those components function together, with the absence of any mention of the specific structure of the lifting cup 1; however, drawings of the description in Reference 1 (Figs. 3-3 to 3-5) do show the lifting cup 1 for illustration of the functional relation between the components.

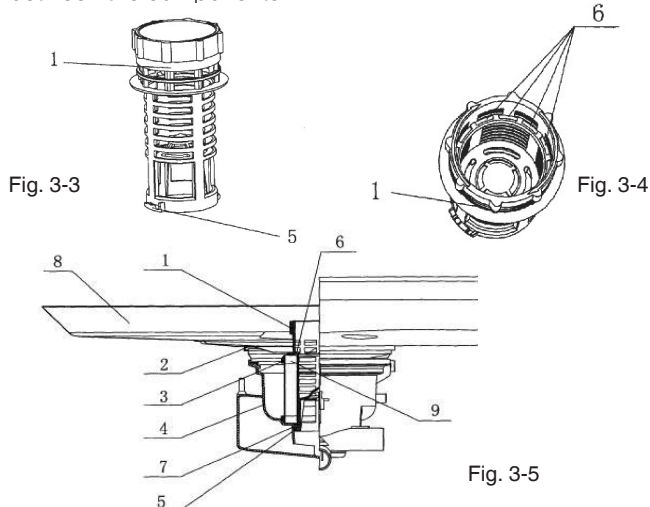


Fig. 3-3

Fig. 3-4

Fig. 3-5

It can be determined from Fig. 3-3 that the lifting cup 1 comprises a peripheral grating part and a middle grating part, wherein the peripheral grating part is drum-shaped and provided with a peripheral grating; in conjunction with Figs. 3-3 and 3-4, it can be determined that the middle grating part is connectedly arranged within the peripheral grating part; and in conjunction with Figs. 3-3 and 3-5, it can be determined that the middle grating part is boss-shaped; from Fig. 3-4, it can be determined that the middle grating part is provided with a middle grating. In other words, those skilled in the art can clearly, certainly, and uniquely determine from the three drawings of the description in Reference 1 a technical solution which is the same as that of the patent of Case 2.

Furthermore, although Reference 1 has not disclosed the technical effect of said technical solution, those skilled in the art would know that the filtering lifting cup of Reference 1, provided with the same structure as the present patent of Case 2, will also filter foreign matters of various densities and sizes by the principle of gravity, thereby avoiding secondary contamination in the washing process, as well as prevent high-density, large-sized foreign matters from blocking the discharge pump, thus achieving the purpose of resisting foreign matters. In other words, those skilled in the art, leveraging their knowledge and capabilities, can directly and unambiguously determine from Reference 1 the technical effect of the filtering lifting cup.

In summary, drawings of the description are a part of the patent documents, and contents disclosed therein belong to prior art disclosure, so technical contents that can be directly and unambiguously determined by those skilled in the art from the drawings, such as structure of the components and other qualitative contents shown in the drawings of the description, belong to disclosure of a reference document. In Reference 1, the middle grating part is arranged within the peripheral grating part, has a middle grating, and is boss-shaped. These are qualitative contents that can be directly and unambiguously determined by those skilled in the art from Reference 1.

2. Contents determined as possessing technical certainty by analytical judgment of those skilled in the art belong to disclosure of the reference document.

Case 3 relates to Invalidation Decision No. 28603 issued by the PRB. The patent at issue claims a "vacuum cleaner", which comprises a handheld vacuum cleaner 3 (Fig. 4-1) attached to an end of an elongate, rigid wand 5

and fluidly connected to a cleaner head provided at the other end of the wand, wherein the cleaner head is connected to the wand via a mechanical steering couple for steering the cleaner head within a plane in parallel contact with the floor as the wand is rotated about its axis, and wherein the handheld vacuum cleaner comprises a pistol grip handle and a cyclonic separation system 13 with a tangential inlet; the wand fluidly connects the hand-held vacuum cleaner to the cleaner head, and is axially aligned with the tangential inlet. The vacuum cleaner of this patent enables the dust-carrying air that enters a suction nozzle 11 to pass through the cyclonic separation system 13, where dirt is separated from the air. The dirt that is separated from the airflow inside the cyclonic separating system 13 is collected in a bin 15 for disposal, thereby reducing “discontinuity” pressure losses between the wand and the separation system and thus achieving good cleaning effect.

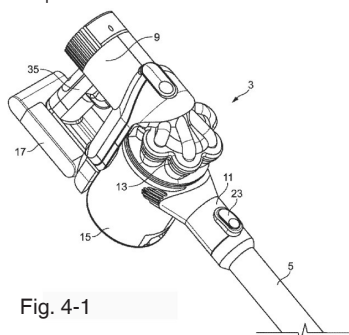


Fig. 4-1

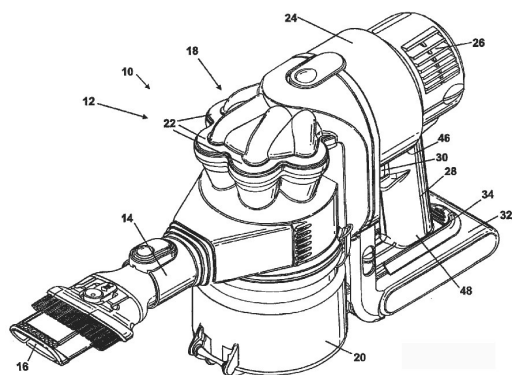


Fig. 4-2

Prior art E4 (Fig. 4-2) discloses a hand-held cleaning appliance, and more specifically a hand-held vacuum cleaner, which, like the patent of Case 3, also falls within the field of small hand-held cleaners. The hand-held cleaning appliance comprises a main body 12, which includes a suction conduit 14 connected to a suction opening 16 as well as a cyclonic separating apparatus 18 having an upstream cyclone 20 and a plurality of downstream cyclones 22. When operating, an airflow generator 36 draws into the suction opening 16 dirt and dust-carrying air, which passes through the suction conduit 14 and enters the cyclonic sep-

arating apparatus 18, dirt and dust-carrying air then enter the upstream cyclone 20, with the larger dirt and dust particles separated by cyclonic motion; these particles are then collected in the upstream cyclone 20, allowing the partially-cleaned airflow to enter the plurality of downstream cyclones 22.

It can be seen that neither the textual portion nor the drawings of E4 have explicitly disclosed that “the cyclonic separating apparatus 18 (equivalent to the cyclonic separation system 13 in the patent of Case 3) has a tangential inlet, and the wand is axially aligned with the tangential inlet”. However, those skilled in the art are able to understand that firstly, the cyclonic separating system means a simple cone-shaped cyclone centrifugal separation apparatus having a tangential inlet; secondly, according to the depiction of the positional relationship and functions of the upstream and downstream cyclones in E4, the airflow after entering the cyclonic separating apparatus is gradually purified in a paper plane from bottom to top in a direction perpendicular to the suction conduit 14. And those skilled in the art are able to understand that a standard countercurrent cyclonic separating apparatus works according to the principle of allowing the airflow to enter the separating apparatus through a tangential inlet to create a dual vortex countercurrent rotary motion. To begin with, the airflow rotates downwardly along the axial direction of the inner space of the separating apparatus, and as a result of the centrifugal action, dirt and dust in the airflow collide with the inner wall of the cone while moving downward along the inner side of the gradually tapering cone of the separating apparatus and accumulate at a dust discharge outlet, then the airflow rotates upwardly along the axial direction to enable the purified air to be finally discharged through a riser at the center of the top plate of the separating apparatus. It shows from the foregoing that the cyclonic separating apparatus in E4 is surely a dual vortex countercurrent cyclonic separating apparatus and has a tangential inlet, and in the paper plane, the axial direction of the airflow rotary axis of the cyclonic separating system must be perpendicular to the axial direction of the suction conduit 14, which means the suction conduit 14 is axially aligned with the tangential inlet of the cyclonic separating system so that a stable rotary airflow can be formed from the start. In other words, those skilled in the art with their knowledge and capabilities can uniquely determine by exercising objective analytical judgment from a technical perspective that in E4, the cyclonic separating system has

a tangential inlet and the wand is axially aligned with the tangential inlet. These are the technical contents that can be unambiguously determined from E4.

In summary, the technical contents that can be uniquely determined by those skilled in the art through objective analytical judgment of the prior art from a technical perspective based on their knowledge and capabilities are disclosure of the prior art. Such contents shall not involve any inventive labor and should be contents naturally obtained by a rational, objective skilled person with common knowledge of the art and conventional experimental capabilities after discarding subjective judgment. That is, contents determined as possessing technical certainty by the analytical judgment of those skilled in the art belong to disclosure of the reference document.

(III) Overall consideration of prior art

Case 4 relates to Invalidation Decision No. 35537 issued by the PRB. The patent at issue claims “a serial power supply circuit, a virtual digital coin mining machine, and a computer server”. A bitcoin mining machine comprises a plurality of computing units, with each of the computing units having low voltage, high current requirements, and generally powered by DC/DC parallel power supplies; how-

ever, DC/DC power supplies are low in conversion efficiency that will result in a waste of power energy, and DC/DC is more demanding in terms of circuit design, which will elevate the cost incurred by production design. For these reasons, this patent adopts a serial power supply circuit (Fig. 5-1). Specifically, at least two chips (computing units) to be powered are serially connected between the power supply end VCC and the ground, and a signal level conversion unit is serially connected between each two adjacent chips to be powered, with each chip to be powered being respectively connected to an auxiliary power supply unit, wherein the high-current core voltage of the chip to be powered is supplied by the serially connected power supply circuits, with their serial connection in the sequence of: the ground terminal of the first chip to be powered acts as the power supply end of the second chip to be powered, and the ground terminal of the second chip to be powered as the power supply end of the third chip to be powered.

E2 (Fig. 5-2) is the closest prior art. It also aims at addressing the problem of existing chips' limited achievement in realising high output currents and high power conversion efficiency concurrently, to thereby provide an improved voltage conversion system as well as improved

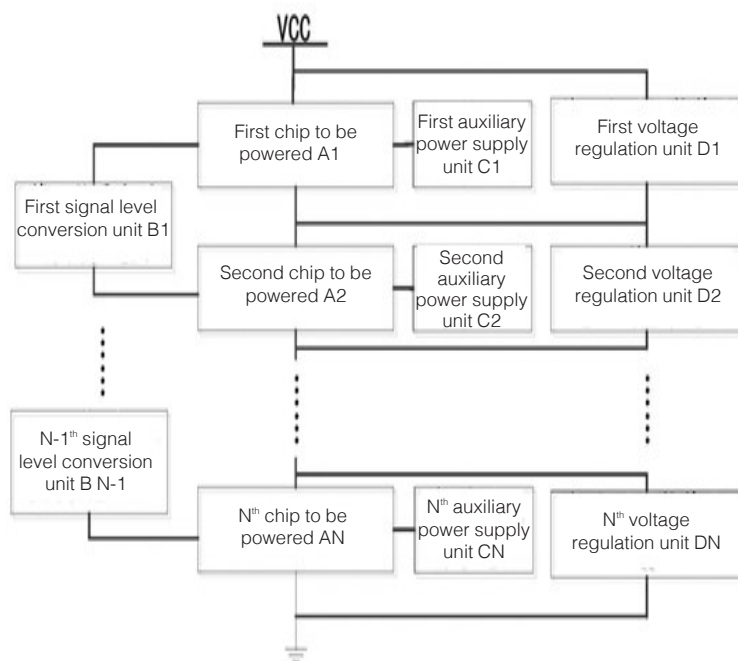


Fig. 5-1

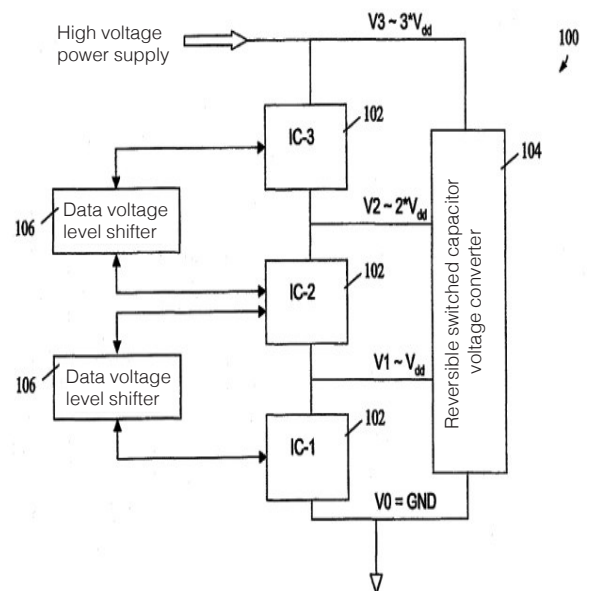


Fig. 5-2

overall system power management for application in integrated circuit devices. E2 provides an integrated circuit system having stacked voltage domains, voltage level shifting, and voltage stability, wherein the three chips to be powered, namely IC-1 to IC-3, are serially connected between the high voltage supply terminal and the ground, and two adjacent chips to be powered are respectively connected in series with a data voltage level shifter so that, for instance, logical data from IC-1 in the voltage domain of V1 to ground may be analysed by IC-2 in the voltage domain of V2 to V1; however, the voltage domains of the three ICs in E2 are all precisely controlled at one vdd, i.e., the difference between the high level and the low level of each IC is one vdd, to be precisely and holistically controlled by the reversible switched capacitor voltage converter 104 in Fig. 1. Hence, understanding of the contents disclosed in the prior art becomes the point in dispute of this case, specifically, does E2 work only on the premise of a precise control of voltage domains?

From overall consideration of the disclosure of E2, although Fig. 5-2 and relevant text have defined a precise voltage domain, it is not that the chips can only be serially connected after the arrangement of a precise voltage domain, but that after a plurality of chips are connected in series, it is possible to further implement multiple power regulating modes through a reversible switched capacitor voltage converter. That is, equal voltage is only one of the embodiments provided by the technical solution of E2, and E2 actually has other modes of implementation, such as equal current (in this case current is not shunted from various ICs, and voltage is only determined by the load of the IC itself, that is, voltage domain will no longer be taken into consideration as a prerequisite) and equal power. Therefore, a certain mode of implementation in the solution of a prior art should not be understood as representing the disclosure of the prior art as a whole. That is to say, E2 has disclosed all the features of claim 1 with the exception of the auxiliary power supply.

In summary, judgment of the technical contents disclosed in a reference document requires accurate grasping of the technical essence of the reference document by considering the contents of the technical document in its entirety from the standpoint of those skilled in the art. If the solution of a reference document comprises a plurality of modes of implementation, we should not simply take the conditions for carrying out one of the implementation

modes as the conditions that must be met by the solution of the reference document, with no consideration of the overall contents of the reference document.

IV. Conclusion

In conclusion, accurate determination of the disclosure of the prior art is the basis for objective judgment of novelty and inventive step, and only those contents that can be directly and unambiguously determined from the prior art may be deemed as implicit disclosure of the prior art. As illustrated in typical cases 1 to 4 above, technical solutions that can be clearly, definitely, and uniquely determined from the prior art by those skilled in the art on the basis of their knowledge and capabilities after consideration of the prior art as a whole belong to prior art disclosure, while technical solutions that fail to meet said conditions do not fall within the disclosure of the prior art.

The above case-based discussion is intended to shed some light on the differentiation between express recitation, implicit disclosure, and obviousness, in the hope of assisting in the understanding of the prior art and determination of prior art disclosure in an objective and accurate manner. ■

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¹ The author made equal contribution to this article as the first author.

² See Part II, Chapter 3, Section 2.3 of the Guidelines for Patent Examination 2010.

³ Huang Tao, Liu Zixiao, Li Ziwen, and Liu Jiang. Understanding and judgment of "derived directly and unambiguously from the drawings", in *Compilation of Papers (Part II) Presented at 2013 All-China Patent Attorneys Association Annual Conference cum the Fourth Intellectual Property Forum*, 1 July 2013.

⁴ Peng Rui. A brief discussion on understanding and judgment of disclosure "derived directly and unambiguously" from the reference, in *Compilation of Papers Presented at 2015 All-China Patent Attorneys Association Annual Conference cum the Sixth Intellectual Property Forum*, 22 May 2015.

⁵ What needs to be explained is, although the subject matter of this article is prior art disclosure, considering that the objective of the prior art is to evaluate the novelty or inventive step of a patent at issue, technical solution of the patent will be discussed in the case study for reference purposes.