COMMISSIONER'S DECISION

Obviousness simplification by the patentee of his patented apparatus by eliminating previously considered essential gearing structure that had been accepted as the norm in the printing art and yet retaining effective results was considered acceptable. Rejection withdrawn.

This decision deals with Applicant's request for review by the Commissioner of Patents of the Examiner's Final Action on application 397,246 (Cl. 101-80.1). The application was filed on February 26, 1982, by Heidelberger Druckmaschinen Aktiengesellschaft and is entitled MAIN DRIVE FOR ROTARY OFFSET PRINTING PRESSES. The inventor is Willi Jeschke. The Examiner in charge issued a Final Action on July 23, 1985, refusing to allow the claims. A Hearing was held on October 12, 1988 at which the Patent agent, Mr. Warren Hall, represented the Applicant, and submitted an amendment to claim 1. The amendment was confirmed by letter dated October 17, 1988. Subsequent amendments to claims 5 and 6 were made by letter dated November 2, 1988.

The invention relates to a rotary offset printing machine having a plurality of meshing identical in line printing units, to form a serially disposed array for printing both sides of a web moving horizontally through them, as depicted in figures 1 and 2 produced below:

Fig 1

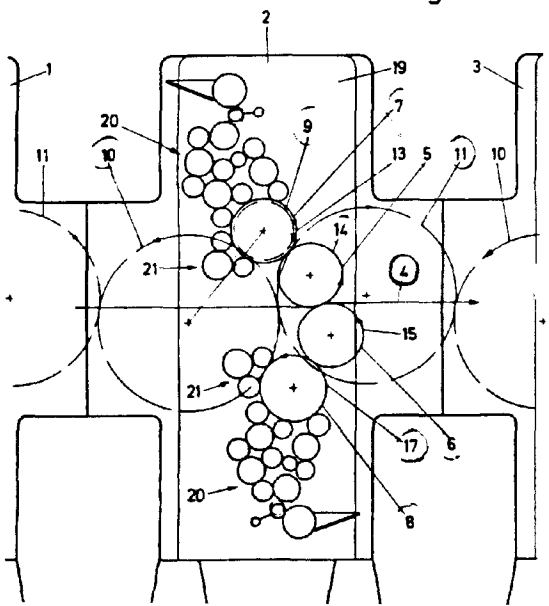
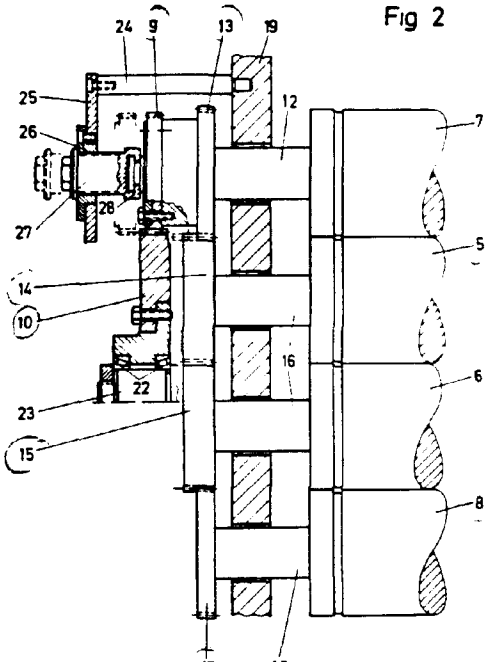


Fig 2



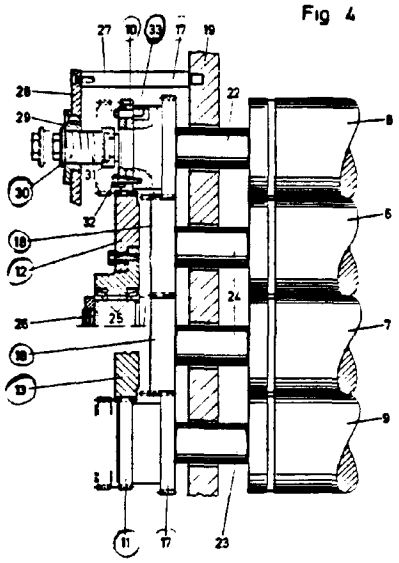
Each unit has main cylindrical drive gears 10, 11. Gear 10 drives cylindrical gear 9 to provide the only driving connection with one of the second cylindrical gears 13, 17, which are connected to separated plate cylinders 7, 8 respectively. Printing cylinders 5, 6 are in mutual contact to permit a web 4 to pass therebetween and each includes a first gear 14, 15 for engagement with gears 13, 17 respectively.

The claims were refused in view of the following United States Patent:

4,154,165 May 15, 1979 Jeschke

The Jeschke Patent discloses an in-line array of printing units for printing a horizontally moving web. As shown in figure 4 reproduced below, main driving gears 12, 13 through plate cylinder drive gears 10, 11 power a closed gear train. Each gear 10, 11 has an offset spur gear 17. When separate actuators 30 move gears 10 and 11 into mesh with the respective main gears, gears 17 drive plate cylinders 8, 9 and also mesh with spur gears 18 to obtain the closed gear train and rotate blanket cylinders 6, 7 between which a paper web is moved. To ensure proper tensioning or bracing of the gears during operation an adjustment means 33 is provided.

Fig 4



In his Final Action the Examiner said, in part, as follows:

> The alleged invention pertains to a rotary offset printing machine, particularly to a simplified construction of the main drive cylindrical gear and a simplified construction of the main drive. As cited in the rejected claim 1, the provision of the alleged invention is the improvement of
>
> > "gear means for providing the only drive connection between a predetermined one of said drive gears and predetermined one of said second gears whereby said predetermined diameters can be selected to establish desired separation distances between individual ones of said printing units in dependence upon said predetermined diameters while maintaining the same first and second gears."
>
> This structure was rejected in the Official Action of January 18, 1985 as being obvious to one skilled in the art and aware of the teachings of the citation. The critical feature of the alleged invention, as the applicant states in his letter of May 17, 1985, is a two point mesh contact: the first between the gears 10 and 11, which is distinguished from the reference, which shows the same structure having three point mesh contact where the third is between gears 11 and 13, (fig. 2 of the reference). This is true that the presented "new" structure is distinguished and superior over the old, simply because <u>any</u> three point mesh contact is costly and difficult to align and regulate and this is obvious common general knowledge. The "new" structure was achieved by improving the old by removing gear 11 and the actuating mechanism (fig. 4 of the reference) and differs from the older only in simplification of its operation.

The Applicant disagreed, and replied in part as follows:

> . . .
>
> The claims of the present application distinguish over the prior art, in that the diameters of gears 11 and 13 can be preselected to achieve a particular spacing between serially disposed printing machines <u>without</u> varying the drive arrangement of the plate cylinders 7 and 8 and offset cylinders 5 and 6. This is possible, as the main cylindrical gears 10 and 11 only mesh with each other and one gear of a plate cylinder and as such have a "two point" mesh contact. There is a host of different diameter main cylindrical gears which can cooperate and maintain the two point mesh contact, thus allowing variation in the effective spacing between serially disposed printing machines, previously predetermined by a "three point" mesh contact. The drive train of the plate cylinders and the offset cylinders only has one point of direct meshing engagement with the main cylindrical gears, and as such, a defined force transmission through the gears of the cylinders is provided, again not found in the prior art.
>
> The drive of the cylinders is disengagable by a single releasable coupling significantly reducing the capital expense.
>
> The improved printing press is more adaptable for onsite conditions, requires less gears and actuators and still provides the required quality of printing.

United States Patent 4,154,165 is the present inventor's earlier patent ... Two embodiments are disclosed in the detailed description, one of which is shown in Figures 1 through 3 and an alternate embodiment shown in Figure 4. The first embodiment does not include the necessary meshing gear drive arrangement between the offset cylinders 6 and 7 and requires the additional actuated drive gear 11 in mesh with spur gear 13 of the main drive system. It is apparent, gear 11 of the structure illustrated in Figures 1 through 3 can not be eliminated as offset cylinder 7 would not be driven by the drive arrangement. Furthermore, it is essential to the Jeschke structure to maintain this drive relation as stated in Column 2, lines 24 to 44 which read as follows:

> With the foregoing and other objects in view, there is provided, in accordance with the invention, in a rotary printing machine having a plurality of serially disposed printing units, each including two blanket cylinders in mutual contact and two plate cylinders respectively cooperating with one of the blanket cylinders, and a main drive system individually driving each of the plate cylinders, the main drive system of each of the printing units comprising two spur gears in mutually meshing engagement and in meshing engagement with the spur gears of the respective main drive systems of the printing units immediately adjacent thereto, each of the plate cylinders having a drive gear in meshing engagement with one of the two spur gears and, in combination with the main drive system, a drive system serially associated therewith and comprising two additional spur gears coupling each of the plate cylinders to a respective blanket cylinder, the additional spur gears being disposed adjacent the main drive system in a gear line different from that of the main drive system. (emphasis added)

. . .

The Jeschke reference when consider in its entirety, establishes that 3 point mesh contact is essential to the drive arrangement of the printing press and, therefore, an "unimaginative technician" with knowledge of the reference would not consider deleting what are clearly stated as essential elements to the printing press. The Examiner's statement regarding 3 point mesh contact is considered in isolation of the teaching of the reference which when considered as a whole, leads a person away from the invention claimed. Why would a person consider eliminating a component which is stated as necessary to achieve the desired result?

The issue before the Board is whether or not the claims define patentable subject matter in view of the cited art. Amended claim 1 reads:

> In a rotary offset printing machine, of the type adapted to cooperate with like printing machines to form a plurality of serially disposed identical printing units for printing on a web moving along a substantially horizontal web path and having a common drive,
> said printing machine including:
> a pair of journalled horizontally offset and parallel printing cylinders in mutual contact with one another to allow a web to pass therebetween; said printing cylinders

> including first cylindrical gears in mesh with one another;
>
> a pair of journalled and vertically separated plate cylinders, each of said plate cylinders including a second gear and being operatively intermeshed with a predetermined respective one of said first cylindrical gears associated with said printing cylinders;
>
> a pair of drive cylindrical gears of predetermined diameters each intermeshed with one another and capable of intermeshing with one of a similar pair of drive cylindrical gears of adjacent serially disposed printing units; and cylindrical gear means for providing the only drive connection between a predetermined one of said drive cylindrical gears and a predetermined one of said second cylindrical gears whereby said predetermined diameters can be selected to establish desired separation distances between individual ones of said printing units in dependence upon said predetermined diameters while maintaining the same first and second cylindrical gears.

At the Hearing, Mr. Hall explained the Applicant's invention as basically being the realization that it was not essential to have a constant drive applied at both ends of the gear train as shown in the Jeschke Patent. Resulting from this new concept, the Patent Agent says the Applicant found that satisfactory printing quality was obtained by retaining only one actuator and one spur gear means that operated with only one drive gear, and by eliminating the second actuator as well as the tensioning or bracing means previously considered essential in the Applicant's cited prior patent. The Agent emphasized that a quality product is obtained by the Applicant's two point mesh contact described in his application, whereas previously the Applicant had considered a three point mesh and bracing of the gearing was essential. In response to questions, the Agent described how different sizes of main drive gears may be made to mesh with the closed gear train of the invention set out in the application without requiring rearrangement of the gears in the train as would be required in the patented device. He drew attention to the simplification the Applicant achieves by having only one drive point to produce quality printing. In responding to blurring of print, he detailed how the web was contacted individually on two sides which permitted satisfactory printing with no detectable blurring or slippage that affected quality.

Mr. Hall noted the Applicant here was the patentee of the cited reference, who in that patent was concerned with a more compli-

cated, expensive gear drive in a search for quality, and was working within the constraints of what had been accepted at that time. He stressed that the removal of a drive means from one end of the gear train was a significant advance in the art of offset printing. Mr. Hall argued that the cited patent nowhere suggested that a simpler arrangement of known parts could produce acceptable quality printing, nor did it indicate or provide any reason to think along the lines that it would be possible to eliminate either one of the mesh points or the bracing. He referred to the decision in Canadian General Electric Co. Ltd. v. Fada Radio Ltd. XLVII R.P.C. (1930) 69, at 88, 89

> The law on this subject is, in their Lordship's opinion, accurately summarized by Maclean J. in his judgement. His statement is as follows: "There must be a substantial exercise of the inventive power or inventive genius, though it may in cases be very slight. Slight alterations or improvements may produce important results, and may disclose great ingenuity. Sometimes it is a combination that is the invention; if the invention requires independent thought, ingenuity and skill, producing in a distinctive form a more efficient result, converting a comparatively defective apparatus into a useful and efficient one, rejecting what is bad and useless in former attempts and retaining what is useful, and uniting them all into an apparatus which, taken as a whole, is novel, there is subject-matter. A new combination of well known devices, and the application thereof to a new and useful purpose, may require invention to produce it, and may be good subject matter for a patent."

The Examining staff expressed a concern that a balance of loads at the pressure point between the cylinders 5 and 6 during printing would not be obtainable due to imbalances produced at various points in the gear train as a result of only one drive point. Due to the accumulating slippage they doubted that there would be acceptable alignment during printing. The Agent explained that the open end gear train only provides slight slippage at most, and that the Applicant's system provides for printing on opposite sides of the web. Therefore, he pointed out that any variation would not be noticeable in the end product since exact synchronisation is not needed when printing.

The Examining staff regarded as obvious the reduction of the number of gears from 9 in the patent to 8 in the application, and the actuators

from 2 to 1. For his part, the Agent pointed to the decreased cost benefit as being an extremely important factor that should not be forgotten in assessing the advance brought to the printing art. Nor, he stressed, should the significance of the concept be dismissed lightly.

The Examining staff regarded the new combination as no more than a simplification of the patented structure by merely removing one gear and the actuating mechanism. The Agent stressed the significance of the Applicant's system saying the concept of removing both the need for bracing, and for a drive from each end of the previously patented system, could not be considered as an expected approach to take in view of the teaching provided by the patented arrangement that such elements were essential.

In view of the direction provided by the decision in Canadian General Electric Co. v. Fada Radio Ltd., supra, we think the Applicant has demonstrated independent thought and ingenuity in producing a combination that produces useful results. We believe there has been an exercise of the inventive faculty to improve upon the known apparatus by changing from what had been accepted as the norm in the printing art to an arrangement that dispenses with previously required elements to achieve unexpected results. Moreover, the new combination produces effective results with reduced costs.

We are satisfied the distinctiveness of the Applicant's gearing system set out in the application, and clearly defined by amended claims 1, 5, and 6, and claims 2 to 4, and 7, merits patent protection.

We recommend acceptance of amended claims 1, 5 and 6, as well as dependent claims 2 to 4, and 7.

M.G. Brown
Acting Chairman
Patent Appeal Board

S.D. Kot
Member

After carefully reviewing the prosecution, I concur with the findings and the recommendation of the Patent Appeal Board. Accordingly, I accept the amendment to claims 1, 5, and 6, and the claims dependent thereon. I withdraw, therefore, the refusal of the claims, and I remand the application to the Examiner for prosecution consistent with the recommendation.

J.H.A. Gariepy
Commissioner of Patents

Dated at Hull, Quebec
this 10th day of January 1989