

DEVELOPMENTS AFTER THE WORK OF ARISTIDE CAVAILLÉ-COLL IN THE PAST, THE PRESENT AND TO THE FUTURE

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ALTERATIONS

Time does not stand still, not in our days but also in the past. On every (both artistic as technical) field the development continues. The whole life moves us into a certain direction; the political and social circumstances contribute the whole. Since the period of Napoleon the industry rise with as result inventions on all levels. In earlier days in general artisans had personal influence on products, but now the period arrived to develop products together, this to acquire larger and more impressive results. The need for the massive also influenced the culture in a very important way. People found relaxation in alterations of the exuberant massive whereby recognition was found in the natural phenomenon's and nature like rolling thunder or the quiet ripple of a brook. The personal romantic of handcraftsmanship was more and more lost in industrialization and this influenced the community too.

DEVELOPMENTS IN ORGANBUILDING

From this breeding ground also the organ culture changed in an important way. In all European countries (at that time leading for the whole world) we found this desire for both the technical as artistic part. De most important organ builder who contributed to this certainly is the Frenchman **Aristide Cavallé-Coll** (1811–1899). He developed the organ by means of inventions (partly made by others but these inventions were transferred and adapted by CC) to a complete different instrument. This in all respect for the tradition (he spoke quite often about the fine work of, for example, Clicquot and in several instruments he re-used parts of this builder. He searched for the very best realized in times past in order to let this result in a personal style, as sample we can see the organ of St.Sulpice). He built over 500 organs, but built them different, both technical as in sound and voicing. Remarkable is that he returned at the end of his life to the classical compositions of composed stops as made by Dom Bedos. As mentioned his instruments are different but one can see the hand of the master, like by paintings of a famous artist. The importance of his work found a response, in Europe and after a while all over the world. Many organ builders re-used the developments and inventions or made their own artistic variations.

A very important development was the Barker-lever machine. This system was an invention of the English **Charles S. Barker** and was a perfect godsend to improve the complicated mechanical action system of the organ Cavallé-Coll built in 1841 for the Basilica St. Denis (71 stops). Another very important technical development was the invention of the parallel-bellow (with in- and outgoing folds) which contributed to a much more stable wind supply, especially for large organs. On the artistic (sound) level we remind the re-discovery of overblowing flutes and the Bertounèche shallots for reeds.

As mentioned not only Cavallé-Coll developed new possibilities after these discoveries, but also other organ builders in and outside France. Afterwards one can add the (international) organ builders trained by Cavallé-Coll to this list. From correspondence it is shown Cavallé-Coll had a very open mind and clear vision. He dissociated from unclear, highfalutin inventions to pull the wool over someone's

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eyes to make him more interesting, this in contrast what some organ builders and organ experts in our days *alas* do. For a personality as Aristide Cavallé-Coll *all* was clear, *and it was without secret allowed being clear for everyone!*

INFLUENCE

In France we find influences of Cavallé-Coll in the work of his contemporaries like **Daublaine**, **Callinet**, **Ducroquet** (although the CC influences on the company “Daublaine et Callinet” were minimal, the influence become more clear at the time this company was continued by Ducroquet. Doublaine and Barker worked in this company and in 1851 pipes of the Flûte Harmoniques at St.Eustache were signed by Doublaine) and lateron **Merklin** (Merklin followed the French style and did not pass CC who was at that time already the most important French organ builder). In Germany he did not built organs and a different romantic organ style was developed with a typical recognizable sound which was grafted on the fundament of each stop and the positioning of very soft, sweet voices, and sometimes free reeds. A remarkable zenith at that period was the **Walcker** organ in the Dome at Riga. By way of Merklin the connection went to Switzerland, especially the company of **Kuhn**, and to Belgium (organ builder **Pierre Schijven**). (Merklin built several smaller instruments in Switzerland. After the bankruptcy of the Merklin Company at Lyon the company was bought by Kuhn, in the beginning the influences were more noticeable, possibly due to the influence of some employees and customers, but in general Kuhn imposed his own style. The CC influence was also noticeable in the organ, built by Kuhn, at Victoria-Hall, Geneva. This instrument with 45 stops possessed a composition in the French tradition and was inaugurated by Charles M. Widor who composed his 3rd symphony for organ and orchestra for this occasion).

In the Scandanavium countries, and especially in Sweden, was the influence of one of Cavallé-Coll' s pupils **Akermann** of great importance; a remarkable example is the beautiful organ at the Dom of Upsalla. In England the tradition started a little later: in this country Cavallé-Coll built several instruments, especially in his later period. These instruments certainly contributed to the, for the rest, typical own English organ style. In Spain Cavallé-Coll built several important instruments. A specific own Spanish symphonic organ tradition is further unknown to me. To Canada emigrated the Frenchmen **Casavant**. In the Netherlands Cavallé-Coll had already in an early stage contacts with the organ builder **Bätz-Witte**. Afterwards he built in Holland several small instruments as well as the larger, and for that time very important, organ at the ‘Paleis voor Volksvlijt’ in Amsterdam (at this moment the ~ modified ~ organ can be found in the concert hall of Haarlem). Important for the influence in Holland was the French Consul **Charles Marie Godefroy Philbert** who was trained by Cavallé-Coll. Philbert stimulated this French Symphonic style in an important way. His influence was also large on the work of the Dutch organ builder **Adema** although these organs are, as well as those of **Maarschalkerweerd** and the late instruments of **Witte**, more based on the German romantic tradition. Anyway Adema applied the French reeds. Also outside Europe Cavallé-Coll possessed many contacts: he built instruments and shipped them all over the world where they often were assembled and finished by local organ builders.

TECHNICAL DEVELOPMENTS

Coming from his French-Spanish tradition Cavallé-Coll added each time new developments without loosing the old traditions. He remained loyal to the mechanical tracker action. Cavallé-Coll was interested in all possible

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developments, which he could use in his instruments, even in the electric action. His son **Gabriël** made his preference known for electric actions but was not supported by his old father. For this reason he grounded together with **Albert Kastner Boursault** his own company. In 1892, after the delivery of the organ at St.Ouen in Rouen, the company of his old father had financial difficulties and on May 14th Gabriël wrote a circular letter into which he wrote he took the company of his father over. Charles-Marie Widor supported the initiative of Gabriël after many years of friendship with Aristide. On June 21st 1892 Aristide Cavallé-Coll sent a circular letter into which he wrote that nobody was allowed to use the established name Cavallé-Coll. On March 18th 1893, the “Tribinal de Commerce de la Seine” prohibited Gabriël to use the company name Cavallé-Coll. In November 1893 Gabriël closed his company and moved to Spain where he built organs with electric and pneumatic actions.

It is known Cavallé-Coll also resist against pneumatic cone-valve chests.

Some years after Cavallé-Coll used the Barker lever system for the first time (1841, St.Denis) he paid a considerable amount to Charles S. Barker as redemption money for the pneumatic machine. Afterwards he altered and improved the machine several times and the final system possessed two pallets (for the in- and outlet wind) at the bottom. He also developed the Barker-system for stop actions as he installed in the huge organs of St. Sulpice, Notre-Dame and Sacré-Coeur in Paris. An advantage of this system is that the wind can be disconnected from certain parts so that the organist can prepare new registrations. After opening of a pallet the stop alteration will take place. It is more or less the first free combination system, invented from the pneumatic system.

From this system he also developed the pneumatic off-set chest (the so called “moteur”) which was extremely important for a good wind system to the large flue pipes, especially the 32’ and 16’ pipes but sometimes also for the large 8’ pipes as well as the display pipes. These off-set chests are activated from the note channels but receive the wind for pipes direct from the wind supply (bellow). Due to this, the note channels of the wind chests can become smaller and there is no risk the huge pipes do not receive enough wind.

To make a crescendo and decrescendo Cavallé-Coll split the wind chest in two parts: the “**Jeux de Fonds**” (foundation stops ~ all flues 16’ 8’ and 4’) and the “**Jeux de Combinaisons**” (combinations stops ~ higher pitches flue, mixtures and reed stops). The advantage of this system is that wind is better divided in the chests which result the large pipes do not take too much wind from the note channels so that the other, smaller, flue pipes and reeds do not receive enough. When using Barker levers, the touché did not become heavy. A large valve, controlled by the organist from the console, connected or disconnected the wind to the “Jeux de Combinaison” chest. When disconnected from the wind system, the organist or his assistant can prepare a new registration, which can add by the organist during the performance.

Besides the above mentioned items there are several other technical developments like the parallel bellows, the different wind pressures for each manual (in two or even three steps increasing between the bass and treble, this to make the higher notes sound more soloistic), the construction of the swell box etc. A detailed review of each detail will take too much space for this article.

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THE SOUND

With regards to the sound, the overblowing (harmonic) flute stops ask special attention as result of the special construction and scaling as well as Cavallé-Coll's theory about the positioning of the hole. The scaling of different stops were outlined by him and for example from the scaling of the Viole de Gamba are 12 variations known divided in 4 progressions. From this extensive schema Cavallé-Coll composed the scaling for each organ: one can conclude he colored the sound from this gigantic palette in relation and combination with circumstances like the acoustics of the church, concert hall or room. Besides this a large staff of voicers (guided by the main voicers and under supervision of Cavallé-Coll himself) carried the artistic work out which contributed to the personal character of each instrument.

One can ask: "What is so characteristic of the Cavallé-Coll sound?"

To be brief: The very harmonic overtone formation and voicing of all stops except the Bourdons. Due to this an organist can color and influence the sound with *each* stop. When playing on a plenum of all 8' stops, and while adding the Viole de Gambe 8', the overtones (harmonics) of this stop add a wonderful gloss to the other sound. Where is this found except in typical French symphonic organs?

The same can be said for the use of the overblowing flutes which bring a full fundamental sound due to the fact that the natural overtones of the 8' are from 16', the 4' from 8', and of the 2' from 4'.

Cavallé-Coll always played with the harmonic overtones when he designed or voiced an organ. In the organs of for example the Cathedral Notre-Dame (Paris), the organ of Baron de l'Espee at d' Ilbarritz (which was installed at the beginning of this century at Sacré-Coeur, Paris) as well as in the proposal for an organ at St. Pierre (Rome) he disposed besides this a stop structure with 8 natural overtones. (from 32': 32' - 16' - 10 2/3' - 8' - 6 2/5' - 5 1/3' - 4 4/7' - 4' ; from 16': 16' - 8' - 5 1/3' - 4' - 3 1/5' - 2 2/3' - 2 2/7' - 2' and from 8': 8' - 4' - 2 2/3' - 2' - 1 3/5' - 1 1/3' - 1 1/7' - 1'). What to think about the characteristics of the reed stops, the increasing wind pressures etc.to describe all these items detailed is alas too comprehensive for this article. The statement of **César Franck** (organist of the C.C. organ in **Notre-Dame de Lorette** and afterwards at **St. Clothilde**, Paris) is quite well to understand: "My organ is my orchestra". It is clear the organ culture revived in an unprecedented way from France, especially due to the personal and spiritual leading of the great master organ builder Aristide Cavallé-Coll!

DETERIORATION

After the decease of Aristide Cavallé-Coll on October 13th 1899, the level of the organ culture alas relapsed quite fast. His successor **Charles Mutin** continued some years at the high level of his old master but little by little this quality in construction and choice for materials became less and less. With cheaper materials and constructions Mutin tried to reach a result which was acceptable for the first decades of this century. The high artistic level as was usual during the life of Aristide Cavallé-Coll however was not reached again: one can say the company rest on Cavallé-Coll's laurels.

After Cavallé-Coll's decease the pneumatic and electric actions were more and more accepted and many organists where impressed and enthusiast about all possible accessories and new inventions (or enlargements!). A great number of organ builders and organists no longer gave attention to details of vital importance, like the onset of speech (from note channels), a healthy and harmonic overtone formation and an artistic touché etc.

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After several years most organ builders even could not, or were not interested to maintain the Cavallé-Coll organs in a proper way, and many of them were spoiled and electrified, as this was seen as an easier solution. Barker levers and consoles were dismantled and moved to the refuse dump for the simple reason they did no longer recognized the enormous value. In our days it is said this happened under pressure of organists and organ experts, but an organ builder with respect for tradition will never agree to spoil a monument, even not under pressure. Thanks to a few organists, organ experts, organ builders and lack of money, there are still Cavallé-Coll organs original, or more or less original.

RENEWED INTEREST

This situation continued until the early seventies of this century. During this period a new generation of organists, organ admirers and a few young organ builders came into action and started to convince others about the great value and importance of the beautiful Cavallé-Coll organs. One of the main questions asked be: "Which organ builder really understands the oeuvre of the great master?" Is the passionation to restore and to reconstruct Cavallé-Coll organs based on personal honor and financial success, or is the work realized by the master the most important point of departure? Alas the personal input of organ builders and experts involved in restorations is quite often demonstrated both on artistic as on technical levels. It is clear this policy is detrimental to the great personality of Aristide Cavallé-Coll.

THE PRESENT

"What has the work of Cavallé-Coll to say to the present organ builders?"

Certainly very much for everyone who works, like Cavallé-Coll, according to the traditional methods in the symphonic organ tradition. After he met with our work, in 1972, the well-known Parisian organist Daniel Roth invited me (as Jung artisan, designer and voicer of organs) to come to Paris. He strongly stimulated me and my brother to invest Cavallé-Coll organs. The narrow Dutch organ horizons disappeared and a New World was opened for us! We had ample opportunities to visit, re-visit and analyze not only the huge and famous organs (like Notre-Dame, St.Sulpice and Sacré-Coeur in Paris) but also a great number of smaller instruments in France.

Catched by the enormous qualities of Cavallé-Coll, we built after several smaller one's, from 1981 to 1983 our first large symphonic 32' organ (**Katwijk aan Zee, NL, Nieuwe Kerk**, IV/P 80 stops, 104 Ranks). This instrument, built with a mechanical stop and key action, represents a style, which may be said to be contrary to what was acknowledged as fashionable at that time. Fortunately, fashions are subject to changes and this organ became a turning point in organ building. For the first time since many years the classical Barker lever machines for the manual keyboards were again constructed as well as separated wind chests for the 'Jeux de Fonds' and 'Jeux de Combinaisons', a console with 'terasses' etc. Although traditional made, the organ is no copy of any Cavallé-Coll organ. Contrary to what should have the highest priority during restorations, an organ builder should not create copies or imitations when realizing new instruments. My preference is to search for the very best realized in times past, in an exceptional way, and mainly for what is done by Cavallé-Coll, in order to let this result in a very personal style.

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Afterwards we built several other 32' organs in this particular style like, for example, the organs at **St. Eustache** (Paris), **Victoria Hall** (Gênève), **St. Franziskus** (München) and at this moment for **St. Katarina** at Stockholm.

The organs in Paris, Geneva and Stockholm received Barker levers, but these machines are built in sound absorbing triple wall rooms. In all instruments we used the Cavallé-Coll 'moteurs' for large flue pipes. In St.Eustache we included on a large scale increasing wind pressures for the 'Jeux de Combinaisons' in three steps (C1-h24, C25-c#38, d39-c61) and for the Solo even six different wind pressures increasing between 105mm up to 167mm.

In Geneva and Stockholm we included two wind pressures (for the bass and treble, like at St.Sulpice). Furthermore all above-mentioned instruments, except the Katwijk aan Zee organ, possess an electric stop action as well as an extensive state of the art combination action system.

THE FUTURE

"Together with Aristide Cavallé-Coll to the symphonic organ of the 21st century?"

I am convinced that Cavallé-Coll is the founder of the actual symphonic organ. This instrument should serve as point of departure. However, we must bear in mind that much is changed since the 19th century, also at the musical area. Many musical instruments were improved. The expression to the higher pitches became more and more important. Everyone should realize the enormous difference between a modern orchestra and one of 150 years ago. For this reason a typical 19th century pipe organ does not blend well with a 21st century orchestra.

If one considers building new organs in the style of Cavallé-Coll it is advisable to make the following adaptations:

a. THE WIND SUPPLY:

The reservoirs and bellows should be built with folds and installed close to the wind chests and possess ample capacity. This type of folding bellow gives a very stimulating influence on the onset of speech of the organ sound, especially in the plenum. The sag of the bellow results in a little over-pressure and a professional organist knows how to handle with this property by which the sound becomes natural and not unimaginative.

For a steady wind system, it is important to supply each group of ± 20 stops with a separate blower and bellow-system. This results for huge concert organs in separate wind supplies for each manual division as well as for the pedal.

To improve the voicing to the treble, which is indispensable when the organ has to function with a modern symphony orchestra, the wind pressures for every division should be divided at least in two (bass and treble) but better is three or more. As mentioned before all from their own folding bellow! This was already the ideal of Cavallé-Coll but as far as known he never built more than three increasing wind pressures per manual division. On the Pedal division the Foundations and Reeds should receive each a separate folding bellow as well as a separate wind pressure. The organ we built at St. Eustache possesses for 147 Ranks 23 folding bellows with different wind pressures ranging between 90 and 175mm and 7 blowers.

As sample I mention the increasing wind pressures we used at the Solo division:
(Manual V): C1 – A22 = 105mm; A#23 – G32 = 115mm; G#33 – C#38 = 125mm;
D39 – E41 = 135mm; F42 – A46 = 148mm; C#47 – C61 = 167mm.

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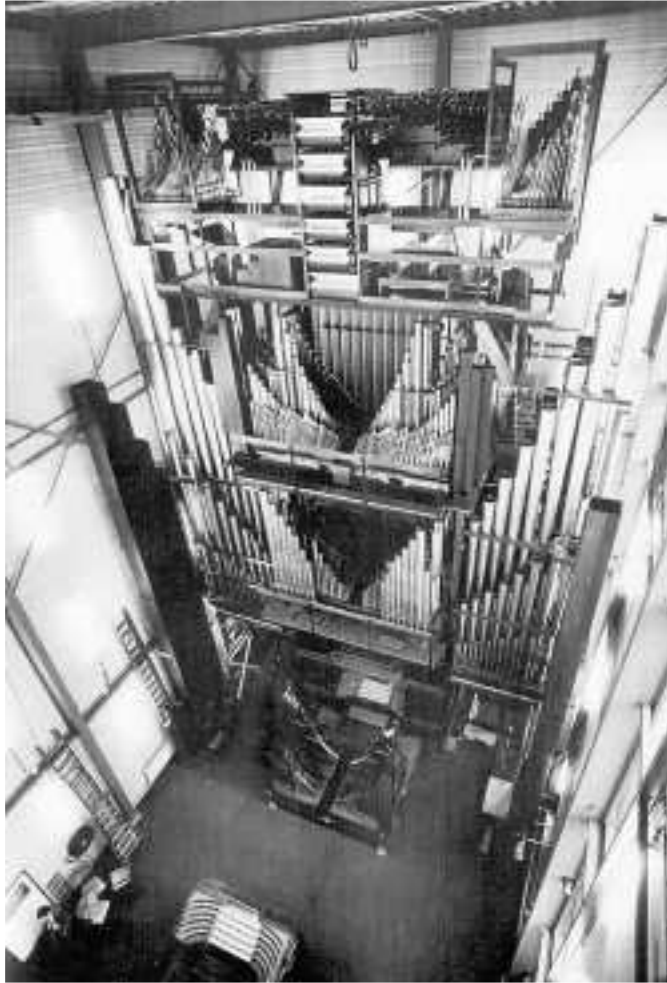


Figure 1: The 60 feet tall St. Eustache organ completely playable in the assembly hall. On top the Solo division with bellow system.

b. THE WIND CHESTS:

For a good blend of sound it is important the pipes receive wind from a wind chest with note channels. For this reason mechanical slider chests are quite important. To guarantee a quiet onset of speech the length of a note channel should not be more than around 100cm. The use of two or even more pallet boxes per division is quite soon necessary for larger divisions. When using an electric stop action, it is no longer necessary to use the dividing between the combination and foundation stops. Important however is to keep the possible influence of pitches in mind, so never situate 8' stops next to each other and the same is important for 4' stops, Mixtures etc.

It is preferable to situate large flue pipes on off-set chests (moteurs) with their own wind supply and own pallet(s). The operation can take place from the note channel wind (see plan made according to the Cavallé-Coll principle). With the additional regulation screw it becomes possible to adjust the wind-outlet. Large pipes have much more suction on the pallets than small pipes and need for a fast repetition a much smaller outlet.

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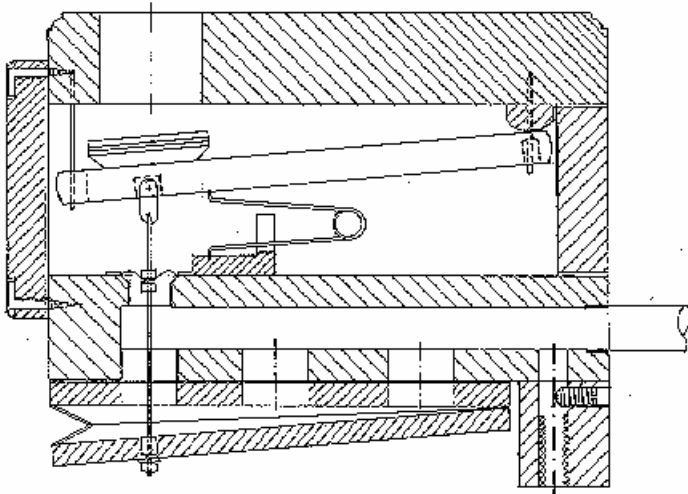


Figure 2: The "moteur" à la Cavallé-Coll, but with regulation screw at the outlet.

c. THE KEY ACTION:

We have good experience with Barkerlevers (made according the principle of Cavallé-Coll, see plan). They are very well adjustable and recommendable for wide scaled symphonic organs larger than ± 50 stops.

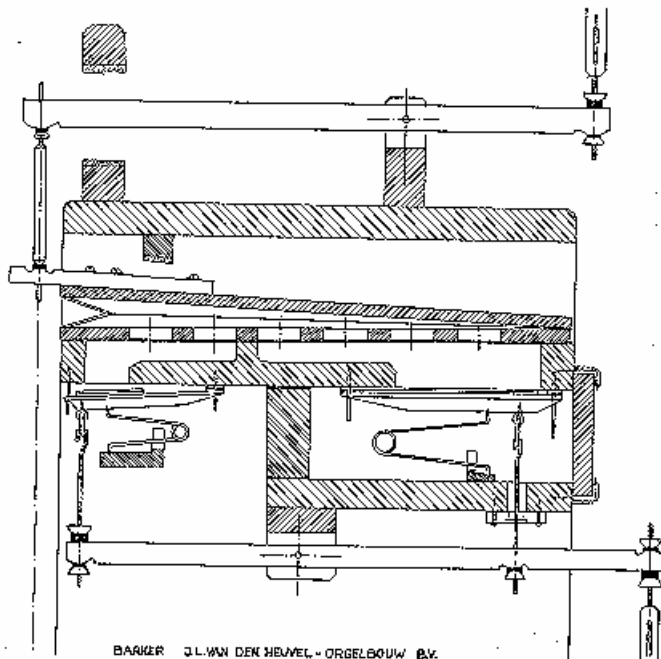


Figure 3: The Barker mechanism after the Cavallé-Coll principle.

An advantage of a well-regulated Barker lever machine is that the organist has a better contact with the wind chest pallet than when playing a traditional electric action system. From studies we noticed that the onset of speech is very fast via this kind of Barkersystem, but that the release is a fraction slower. This is almost not noticeable when using one machine, but much more when using the mechanical couplers to another machine! (example: coupler I + II, coupler II + III en play from manual I the third manual). A possibility to avoid this problem is to use electric couplers instead of mechanical ones.

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Another possibility is to install the proportional coupling system as we did as first organ builder in our organ at St. Franziskus, München. The mechanical tracker action *and* the electric coupling system (the electromagnet) run parallel and the organist keeps direct contact with the wind chest pallet. The Canadian Company **Syncordia** developed this kind of innovating system also for organs with a pure electric action that opens many possibilities in future.

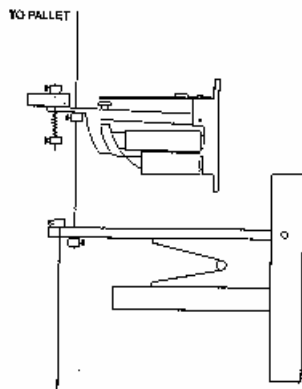


Figure 4: Clutching mechanism implemented in Munich on the Van den Heuvel organ. The spring of the lever must be adjusted only to compensate the mechanic's weight, which implies to reduce the pallet spring of the same strength.

A disadvantage is the noise of Barker machines as result of the enormous power activating the tracker action. Due to this reason we supplied the Barker machines not only with their own bellow but installed them also in a triple wall sound absorbing room. Another advantage hereby is that this part of the action can be easily humidified and remains dust free.

d. THE STOP ACTION:

In our days of fast and secure alterations of sounds, an electric stop action with a modern state of the art combination action system is a must and contributes the possibilities in an important way. For modern (concert) organs I can not name any subjects be detrimental to such a fine system.

e. A (SECOND) MOVABLE ELECTRONIC CONSOLE:

The desire of a second movable console is quite well understandable is very important for a great number of additional possibilities.

In St.Eustache we made the well-considered choice for an organ with mechanical key action and we installed the pulling down magnets of the second console just under the Barker levers.

Besides the great number of couplers we installed the following couplers: a **Soprano Solo/Grand-Orgue** and the **Alto Grand-Choeur/Grand-Orgue**.

With accompanying on the Récit or Positif it is possible to play on the G.O. whereby the highest note (soprano) is coupled to the Solo and the second note (the alt) is coupled to the Grand-Choeur division. The other notes used on the G.O. are not coupled to the Solo or Grand-Choeur divisions. With his two hands the organist can perform on two manuals and four different sound-colors!

Additional we installed on the Positif, Récit and Solo divisions **Sostenuto**'s. As one of the first organ builders we developed together with **I.C.M.I.** (U.S.A.) several new Possibilities like the recording system whereby it is possible to record all functions of the organ as well as the performance of the organist on tape.

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Afterwards it is possible to replay the system and the organ replays, without organist, the same composition or improvisation in exact the same way, and with the same sound-colors.

There are many advantages:

1. The organist is able to record his own performance and can afterwards listen to it from a seat in the church or concert hall.
2. Without presence of the organist (or even after his decease) the organ can replay his compositions or performed interpretations of organ works.
3. During the recording session disturbing sounds of the environs are no longer important: how much time is not spent due to disturbing sounds (like noisy cars etc.) during recording sessions? Inspiration becomes less after many repeats and tiredness influences the technique of the artist. With a recording system the artist can record all, and under all circumstances. When he or she is satisfied with the result the official sound recording session can start whereby the artist can listen as relaxed auditor.
4. One organist can perform a "double concert" (four hands and four feet) on the organ, during the replay of the first part he can play the 2nd part.
5. After adding a second recording system in the organ it would be possible to add more and more parts. By doing so one can use the organ as an orchestra. Important is of course that the wind supply of the organ is sufficient. What a future for composers: it would be possible to make compositions for organ consisting of 10 or even 12 parts. In this way an organ really sounds like an orchestra with only one or more artists behind the console!

The above mentioned items 1 to 4 are installed in the St.Eustache organ in Paris.

f. THE SWELL BOX:

It is recommendable to supply the enclosed Swell divisions with a much higher wind pressures than used on the Grand-Orgue division. To improve the swell effect we have developed a special construction of three walls between each wall we have an air chamber. Important is that the sound-resonance does not find passage to the outside except through the swell shutters. For this reason we make the inside wall of the swell box 'floating', even for screws we use vibration-damper. Also the swell shutters (jalousies) are made according to a special construction with a three-fold touch. These ± 60 mm thick shutters contribute to a quite spectacular effect which makes the sound can become nearly inaudible when the box is closed.

g. THE SOUND:

Important is the very harmonic overtone formation and voicing as was usual by Cavallé-Coll. Important is the scaling does not become too small up to the treble as the overtones should keep their leading accent. Especially the expression of the harmonic flutes, strings and reeds (trumpets) should be considerable to blend in an optimal way with an orchestra. All is possible to realize when using increasing wind pressures.

The *musical instrument* trumpet blows several times over and together with a trumpet player I carried out experiments to measure the pressures and to analyze the sound. For a Trompette en chamade 8' it turned out as follows: I-III ranks ~ C1-G56 resonators in natural length, from F30 resonators in double length and from A#35 two times the double length for the resonators. We have built this stop in our St. Eustache organ in the Solo division on the wind pressures mentioned before. The result is quite fascinating. There are many possibilities for other reeds, like for example a Hautbois and Clarinette.

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Another very important subject is the family of overblowing stops. Successful is a combination of 8' - 4' - 2 2/3' - 2' - 1 3/5' and 1' stops which we realized in the Solo division at St. Eustache. These stops offer many possibilities to color sound combinations. We also developed a very wide scaled Grosse Flûte 8' I-II ranks. On C1-C61 this stop has natural body length, from C37-C61 double body length (harmonique). The sound effect is extremely large and an advantage is that attack of the overblowing pipes, which is seen by many as disturbing, is less audible. In the instrument we have under construction for Stockholm (St.Katarina Church) this stop is built on a high situated toe-board to accentuate the solistic character even more.

For pipe work it is extremely important include all possible pitches in the specification and to create much as possible different scaling for all stops. Mixtures (upperwork, possible with a wide scaling to the treble), should not overlap each others too much and it should be avoided to situate them to close together. This will eliminate tuning problems when using these stops together.

At St. Eustache we positioned (from C1) two 32' stops on the manual divisions (Contre-Basson 32' and Montre 32') and the Trompeteria II is 32' + 16' from C37. The Grande Fourniture (G.O.) possesses from D#40 a 21 2/3' (Acoustic 64'). Interesting is also the Plein-Jeu Harmonique 2-8 rgs on the Grand-Choeur as continuation on the work of Cavallé-Coll and bases on a wide Cornet-scaling. The composition is as follows:

C1					2'	1 1/3'			
F#7					2 2/3'	2'	1 1/3'	1'	
c#14			4'		2 2/3'	2'	1 1/3'	1'	2/3'
f#19			5 1/3'	4'	2 2/3'	2'	1 1/3'	1'	2/3' 1/2'
c#26		8'	5 1/3'	4'	2 2/3'	2'	1 1/3'	1'	2/3'
c#38		10 2/3'	8'	5 1/3'	4'	2 2/3'	2'	1 1/3'	1'
c#50	16'	10 2/3'	8'	5 1/3'	4'	2 2/3'	2'	1 1/3'	

It would be interesting to position this stop also on a high level situated toe-board to accentuate the specific character even more.

CONCLUSION:

As organ builders we certainly have possibilities to continue with the developments of Cavallé-Coll and make even more variations in actions and scaling of flue and especially reed stops. To mention all possibilities would be too extensive for this article. It would be a pleasure for me to cooperate with other passionate organ builders, organ experts *and* organists to develop the best realized in times past in order to let this result in the future symphonic organ style of the 21st century!

This article was published in German, English and French in the ISO (International Society of Organbuilders) Journal, 1999.