Although there are several different Concertina fingering systems which are now available, many others have been proposed over the last one and a half centuries. With the exception of the new Hayden System, the others which are now found have been around for a long while and through their different advantages have stood the test of time. But what of the others; what were the features of these forgotten systems and why didn't they prove popular? Most of the surviving information on the unusual and different systems is available from the Patent office, although these records may not always be easily found as fingering systems are often hidden in a Patent which describes an unrelated invention. Also, several systems came into use without a Patent being filed to protect the invention. Our Patent Office holds copies of Patents from worldwide, so I expect that the similar Offices overseas will also hold British Patents if anyone wants to search for further information and details. So, what the following articles will do is use the British Patent records to describe briefly each of the various fingering systems, giving the date and number for each Patent for those wanting to look further. Finally I will discuss other systems which were never in the Patent literature.

1829: No. 5803 Wheatstone
This patent deals mainly with his 'Symphoniums', but towards the end he includes a bellows driven instrument including the 'English' fingering system.

This is the first article in a series written by Brian Hayden, in which he discusses the wide range of Concertina fingering systems.
1844: No. 10041 Wheatstone

The introduction gives a complete description of the 48-key treble English concertina which had by this time evolved to the form in which it has been made up to today. I think that it is worth mentioning that there are many variations to this system including Piccolo instruments pitched an octave higher than usual, and Baritone and various Bass instruments pitched lower than usual. There are also instruments with extended ranges as well as those which have a smaller compliment of notes. Then, there are the transposing instruments, especially in Eb, but also in Ab, which were made for playing brass band parts. The total of the variations is very wide indeed.

Anyway, back to this Patent, as it describes other fingering systems as well. It shows a 4-column instrument (Fig. 7) in a chromatic system which predates the Continental Chromatic system. This 4-column keyboard exists incidentally on a half instrument prototype in the Neil Wayne collection, where all the keys act on a single reed of the 'Gliding Symphonium' type (- more later on this type of instrument; see the Wheatstone and Stroh Patent of 1879, No. 39). This system was also reintroduced on the left hand side of the Kusserow Bandoneon, but turned through 90° and with two repeated rows, and was reinvented again in 1957, with 3 repeated rows, as a free bass system for the accordion (Merret, 1957, No. 856926).

This 1844 patent is a direct relative (Fig. 8) which system shown slightly altered (Fig. 10) is of all the notes of the key of
This 1844 Patent also shows an 8-column Duet system (fig. 9) which is a direct relation to the English system, and another chromatic system (fig. 8) which on closer inspection is essentially the same as the system shown in Fig. 9 except that the angles and spaces have been slightly altered. (See also Hush, 1901). Finally, a split octave system (Fig. 10) is described ( - the English is a split octave system - ) with all the notes of the key of Eb major in the left hand and all the notes of the key of E in the right hand.
1861: No. 2152 Jewel

An Anglo-chromatic system is described, the patent being for the improvement introduced by the introduction of the third row of keys since the C and G were already well established in the public domain. The third row described is very different to the pattern which is now found, and clearly was still intended for the meantone system as one of the buttons is Al/Bb; in this same year Wheatstone chose the equal tempered scale (see next patent).

1862: No. 1976

This patent is for a new set of buttons to make the sythesia to scrubble the notes (Lewenthal),
This patent describes a 7-column Duet system which is basically the same as the idea presented as the 8 column system in the 1844 patent, but in which the enharmonic repeats have been removed with the result that a row has been saved.

1862: No. 1976 Rust

This patent introduced the piano keyboard system to the buttons of the concertina. In practice you need plenty of movement left and right to make the system work, along with the use of the thumb to enable you to scramble the hand from left to right. Surprisingly, the piano system wasn't applied more sensibly to the melodeon until 1888, (No. 13217, Lowenthal), to give a basic piano-accordion.

This article on fingering Systems will be continued in future issues.
FINGERING SYSTEMS

In the first article in this series, I started to discuss the various fingering systems for the Concertina. Using the British patents, we looked at the systems which were described in the initial 35 years of Concertina development, up to the Rust patent of 1862. In the present article this chronology of development is continued.

1875: No. 2945 & No. 3193  Montgomery

These patents described a Duet Concertina system that placed two complete piano octaves one above each other on each side of the instrument. While this considerably reduced the width, it is still too wide to play easily without much use of the thumbs. However, several instruments were made; I have seen some of them.

[Ed: The copy of the specification in our library is only a Provisional Specification, without any diagrams, and there is no copy of a Final Specification. We will check further to see if a Final Specification including a keyboard diagram was ever filed. ]

1881: No. 3568  Berry

This system is of the Anglo type, being push-pull in nature. The keyboard uses the first three buttons of the octave, that is C/D, C/E, C/G, and then, leaving out the leading note B, goes on to an octave higher, that is, C/D, C/E, C/G, and so on. This C row is coupled with a second row based on Gb, with the notes arranged as C#D#, Gb/Ab, Bb/B and so on to higher octaves. In each case the leading note of each key (the one that is missed out in its own row) can be borrowed as a pull note from the other row, and it is possible to play in any key by combining the two rows. So far so good, although the system may be difficult for playing chords. However, he then adds an almost impossible mechanism on the same principle as the Chromatic Mouth-organ slide but with six(!) different positions so as to give all the other possible combinations of keys. The keyboard system is described in the text of this patent, and the diagrams relate to the slide mechanism.

1884: No. 9314  Jones

This patent describes the Jones Anglo-Chromatic system. He completely ignores Jewel and states that this system is the first to add chromatic notes to the basic C/G rows. He also ignores many German bandoneon systems that had long ago done the same. However, we must assume that none of these had had any impact in England previously. The eventual third row system which became common differs significantly from Jones' patent.

This article continues the series written by Brian Hayden on different concertina fingering systems.
1864; No. 4752  MacCann

This system is too well known and does not need a detailed discussion. However, there are several points which do need to be noted. There is a missing step in the derivation from the Wheatstone 1861 system. I think that it may have existed at the time that MacCann filed his Provisional Patent in March, or he was trying at that time to make something of this type work. The Provisional Patent specifies that the natural notes are in the 4 centre columns and that the sharps and flats are outside. It shows a diagram with the positions of the buttons marked but not which notes they represent; just as black dots with six columns of dots and two odd buttons outside these - 58 keys. The centre four rows could then have been arranged in the oscillating form that consistently separated the lines from the spaces on the stave, and still leave many of the chords on equilateral and isosceles triangles. This scheme would leave a couple of notes with no obvious place on the outer rows; was this therefore the intention of the two additional buttons? This is all uncertain. What is clear is that by November, when the Final Specification was filed, he had changed the system to one which was basically already in existence, the Wheatstone system which, in the 24-key prototype for 23 strings, added more sharps and flats to the range. Shortly after this he recently left the company.

I have come across other official and obvious mistakes, the present article is a list of different keys, none of which number of keys being of little used or found. There are various to make it easier swapping the O's and C's. Other variations have derived from these rows have been such:

This series on...
key prototype form, played in the keys of C and G only. MacCann simply added more sharps and flats to this earlier system and extended its range. Shortly afterwards he sold this patent to Lachenal who had recently left wheatstones.

I have come across many variations to the MacCann system, both official and obvious user variations. It would be beyond the scope of the present article to discuss them all in great detail. However, the types of variations which can be seen include instruments pitched in different keys, in different ranges down to bass and with almost any number of keys between 39 and 82. Odd low notes can be inserted instead of little used low semitones, such as a low Eb instead of a low F#. There are variations in the fourth column with the D's and D#/s so as to make it easier to play in flat keys. Many user alterations involve swapping the D's and E's to make the runs of notes go straight across. Other variations which can look strange at first glance are those which have derived from MacCann systems in other keys such as Eb where some rows have been swapped.

This series on Fingering Systems will be continued in future issues.
FINGERING SYSTEMS

In the initial parts of this series we have discussed the various fingerling systems which are described in British Patents up to 1884. These patents include the majority of the well-known systems including the English, the Anglo-Chromatic and the MacCann Duet. There were many further inventions up to the end of the Edwardian period which I shall now continue to describe, but none had the appeal to fully supersede these original designs.

1890: No. 12135 Sharp

This system is a squashed piano system, thus being similar to a Jeffries duet, in the key of C with two rows. The buttons on the left hand side are arranged in a 'sharks tooth' manner while those on the right hand side are in a wave form similar to an anglo with press notes on the upper row and pull notes diagonally to the left below. The sharps and flats were then placed on incomplete rows above and below.

This article continues the series written by Brian McMillan on different facsimilie
1896: No. 9503  Hank

This system is in piano octaves with the natural notes on the lower two rows, covering two octaves, and the accidentals on a pair of shorter rows above them. The system looks most peculiar, but does allow pairs of notes in octaves to be played with one finger.

1901: No. 20299  Hush

This system is an asymmetrical version of one of the systems described in the Wheatstone 1844 patent, the one labelled Figure 8.
1902: No. 26911 Field and Hanson

This system has me completely stumped! The right hand side has two octaves in Anglo style, g/a, c/b, e/d, g/f, with the higher octave immediately below the lower one - this seems fair enough so far - with extra buttons providing a high c/a and a g#/f#. Interestingly, there is no c# at all. On the left hand however there appears to be a really odd collection of notes. Some buttons play the same note in both directions, English style, while others are Anglo style like those of the right hand. On closer inspection, the left hand notes appear as though they are intended to make up the chords of F, C and G major, each with their root notes detached, plus notes A and E to make up the scales. It seems additionally that B is only available with D. Apart from the fingering system, this patent also includes a very good mechanism. This is similar to the stickers on an American reed organ and the reeds are placed in the same manner on the upper side. Clearly this mechanism would be useful for a cheap instrument.
1908: No. 7568 Schonholtz and Tuihof

This patent, by two who describe themselves as Black Forest miners, is obviously intended more for the Bandoneon type of instrument. On the left hand side the notes played are different in both directions, but not in the Anglo arrangement, and are intended to play bass notes with major or minor chords. Overall, the 6 rows provide notes to play all the major and minor chords. On the right hand side the buttons give the same note in both directions, and is somewhat similar to the right hand side.
of the Krusrows Bandoneon. I have only included this patent in this article since it is the only one of the bandoneon type which was granted an English patent; probably the only one applied for as well.

An improved concertina, characterized by the following arrangement of the keys:

In the treble range extending over three octaves, six rows are provided in which the single sounds are from left to right:

1. row—d, d sharp, e, f, f sharp, g
2. row—g sharp, a, b flat, b, c, c sharp
3. row—d, d sharp, e, f, f sharp, g
4. row—g sharp, a, b flat, b, c, c sharp
5. row—d, d sharp, e, f, f sharp, g
6. row—g sharp, a, b flat, b, c, c sharp, d.

On the bass side, also six rows are provided in which the single sounds are:

a) at the compression of the concertina,
1. row—f sharp, b flat, c sharp, f sharp, a
2. row—c, g sharp, b, c, g
3. row—d, f sharp, a, d, f
4. row—c, e, g, c, d sharp
5. row—b flat, d, f, b flat, c sharp
6. row—a flat, c, e flat, a flat, b.

b) at the expansion of the concertina,
1. row—b, d sharp, f sharp, b, d
2. row—e, e sharp, b, e, c
3. row—g, b, d, g, b flat
4. row—f, e, c, f, g sharp
5. row—e flat, g, b, e flat, f sharp
6. row—d flat, f, a flat, d flat, f.

Fig. 2.
FINGERING SYSTEMS

In the previous articles I have described the development of Concertina fingering systems as seen through British Patents up to the end of the Edwardian period. After this date only two men took out patents for the arrangement of notes until I applied for protection of my Hayden Concertina Keyboard System. Both these men took out several patents during the 1910's and 1920's, each it seems rushing to the Patent Office whenever a new variation occurred to them. In continuing this article, I have considered these patents in groups by applicant rather than in a strict chronological order.

1912: No. 24523
1926: No. 260199
1926: No. 259703
1930: No. 338094

Mitchell

All of these systems are basically piano keyboards with eight notes and with the sharps and flats split between both hands by an octave system, with higher octaves starting again from the left hand. He gradually introduces the sharps and flats of the higher notes as pull notes with the naturals as push notes. Finally he reduces the system to 4 rows with all the push notes as naturals and all the accidentals on the pull notes, giving 4 octaves on a key pattern 4 wide on each hand. Any note is instantly available, but many chords are not possible.

MITCHELL'S COMPLETE SPECIFICATION

Fig. 1.

This is the final article in this series on Concertina fingering systems, written by Brian Hayden.
In continuing my experiments with the expansion of the concertina, I have come to the conclusion that the use of eight notes in a row is most convenient, and I have therefore adopted this system. This system can be expanded to include any number of notes, subject to the limitation that the number of notes in a row should not exceed eight.

Fig. 1.

In the figure above, the notes are arranged in rows, with each row containing eight notes. The rows are labeled with letters from A to H, with the rows below the rows above them. The notes are arranged in a diagonal pattern, with each note being one semitone higher than the previous note.

1916: No. 102552
1917: No. 109423
1918: No. 136300
1921: No. 208274
1923: No. 220824
1924: No. 233813

All these patents were issued to F. S. Pitt-Taylor, who describes himself as a Bachelor of Medicine, Bachelor of Surgery, General Medical Practitioner. The 1916 patent describes a chromatic concertina, each octave of which contains six consecutive semitones. All the concertina systems are based on this principle. There are two rows of six notes per octave, with the third row repeating the first row an octave higher, the fourth repeating the second, and so forth. The right hand is an octave higher than the left, and with one exception, the mirror image. The 1917 patent system is distantly related to the MacCarr system, and the 1918 patent is a variant in which some accidentals have been moved around.

In his 1921 patent, he includes another chromatic system, with mirror images again, which is based on all that has gone before. He also includes in this effort several ideas on the construction of his concertinas. The 1923 patent does not present a new keyboard as such, but gives numerous different angles between the runs of notes and gets quite complicated towards the end.

His final, 1924, patent looks quite complicated, but if you have worked through all the variations of angles in the previous patents, you...
will see that the naturals are arranged in exactly the same way as the Wheatstone MacCann (or Chidley) system as he always repeats the octaves on each pair of rows of buttons. He gives the left and right hands as mirror images as well as the more normal way, both running from left to right. The sharps and flats are arranged differently however. The F♯'s are in the middle (where the D♯'s are usually located), the left hand column has the Eb's and Bb's while the right hand column has the G♯'s and A♯'s. Thus apart from the F♯'s, none of the sharps or flats are next to their corresponding naturals. If in fact you were to reverse the D's and E's, which I have seen on several 'standard' MacCann's and took the F out of its row and put it to the left, between the Eb's and G's, it becomes a distorted variation of my system.

Incidentally, it is my opinion that the way the 1924 system is arranged has several advantages over the standard MacCann. For playing in C, the MacCann uses only four columns, G, F and Bb use five columns, while all other keys use all six columns. I have been told for example, that D is an awkward key to play on the MacCann. On the Pitt-Taylor 1924 system, A, C and G use only four columns, and Bb, F and D use five columns; this is one of the popular keys.

With Pitt-Taylor I would have every key looked so different from such.

Well, try to find at the other keyboards, such as free imitations with a similar layout, to look somewhat welcome. They have searched my American and British
columns; this is a marked improvement on the MacCann system for the most popular keys.

With Pitt-Taylors parallel work on neutral chromatic keyboards, he would have eventually arrived at my key system, although it would have looked so distorted that it would have been almost unrecognizable as such.

Well, those are all the concertina keyboards that I have been able to find at the Patent Office (although I have information on numerous other keyboards for organs, pianos, accordions and other instruments such as free reed instruments that look like guitars or stringed instruments with a keyboard attached). There may of course be other keyboards lurking somewhere which I haven't found. (Any more information is most welcome.) The Patent Office didn't come up with anything else when they searched my Patent, and this included a search of European, North American and Commonwealth Patents.
Nevertheless, there are three very important concertina systems which are not covered by the patent literature, the Crane, the Jeffries Duet and the Linton systems.

There is no record of the Crane at the Patent Office. Perhaps its application failed because it fell within the claims of the MacCann Patent, which is more than the MacCann patent does! The early Crane handouts all state that it is a new 'patent' system! The smaller sizes seem pretty standard compared with the MacCann, that is 48 or 55 key models. Large sizes vary a bit; some large instruments have odd notes here and there outside the five columns, for instance low Eb's and Bb's. Also, it was made in Bb, to play along with the Salvation Army Brass Bands.

The Jeffries Duet system is found in many sizes and variations with 54 keys being most common, although it is said that many 44 key Jeffries Anglos have been converted from original Duets. Wheatstones also made these instruments, and one of their instruments which I came across had the very top notes on a fifth row nearer the hand rests rather than going unreachably to the right as some of the Jeffries made instruments did. The basis of the Jeffries system has been described and illustrated by Paul Clapp in Concertina Magazine #12 and by Phil Inglis in Concertina Magazine #14.

Jeffries instruments were also made in Bb (fairly common) and I have found one in Ab. Indeed, it was this instrument that started me off thinking that there must be a better way of arranging the notes, and eventually this lead to the development of my own Hayden System.

The final Concertina system which I know has been made is the Linton system. This is sometimes incorrectly called the Linton Duet System, but it is not a Duet but rather a split octave system like the English Concertina. The Linton System, and some notes on its inventor, Charles Linton, have been described earlier by Malcolm Clapp in Concertina Magazine #13, and in Free Reed #11, 1973.

This is all the information which I have on concertinas, unless you want to include the SQUARE (or almost square), MULTIEROOFED instruments which in Britain are usually known (incorrectly) as 'Bandoneons' but which are always called Concertinas in the USA. There is no generic name for this group of instruments; perhaps I should coin the name 'Squumuretnas'? This would lead to another quantity of information. I believe some small eight sided instruments were once made in the Chemnitzer system of the large instruments so these may turn up somewhere sooner or later. In conclusion, I would like to say that if anyone has any further information both Concertina Magazine and I would be very keen to hear about it.
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ACKNOWLEDGEMENTS: The editor wishes to thank all the people who have given assistance in producing the Concertina Magazine. Financial support by donations: Ian Chesters, Jerry Epps, Ron Falk, Kingsley Forbes-Smith, Linda Key, Robert Knighton, Gary Lovejoy, David Oliphant, Jim Szymanski and those listed in previous issues. Articles, etc.: Richard Ashbrook, Bob Bolton, Peter Ellis, Bryan Hayden, Peter Hyde, John Meredith, John Ramshaw, Ian Simpson, Alan Scott and Chris Sullivan.

CONCERTINA MAGAZINE: Registered by Australia Post,
Publication No. VBH 5585
Editor: Richard Evans, Lot 5 Sandham Rd, Bell, NSW 2785 (063 552621)
Published Quarterly: Annual Subscription, 1986.
Individual: $7.50. Societies, Institutions: $20.00
Overseas Individual: (Air) A$12.00, (Surface) A$9.00

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ACKNOWLEDGEMENTS: The editor wishes to thank all the people who have given assistance in producing the Concertina Magazine.
Financial support by donations; Please see those listed in previous issues.

Articles, etc.: Bob Bolton, Fark Butler, Malcolm Clapp, Peter Ellis, Brian Hayden, John Meredith, John Ramshaw and Ormande Waters.

CONCERTINA MAGAZINE: Registered by Australia Post, Publication No. VLB 5586
Editor: Richard Evans, Lot 5 Sandham Rd, Bell, NSW 2705 (063 552621)
Published Quarterly: Annual Subscription, 1986.
Individual: $7.50. Societies, Institutions: $20.00
Overseas Individual: (Air) A$12.00, (Surface) A$9.00

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ACKNOWLEDGEMENTS: The editor wishes to thank all the people who have given assistance in producing the Concertina Magazine.
Financial support by donations: Please see those listed in previous issues.
Articles, etc. : Peter Ellis, Ron de Grauw, Brian Hayden, John Ramshaw, Alan Scott and Reuben Shaw.
Production: John Ramshaw.

CONCERTINA MAGAZINE: Registered by Australia Post, Publication No. VBN S585
Editor: Richard Evans, 5 Sandham Rd, Bell, NSW 2785 (6355262)
Published Quarterly: Annual Subscription, 1987.
Individual: $10.00. Societies, Institutions: $25.00
Overseas Individual: (Air) $15.00, (Surface) $12.00

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EDITORIAL

Well, the last few months this year have already been a year of issues, informed by the information sent in by various contributors. We would like to disseminate our financial fortunes to them a gift subscription as our thanks.

I have heard of financial written in the Concertina Magazine and sure we can prevent us from going broke unless we were able to produce a system built into the notation for this. We thank Chris Sullivan for his "suggestion in Sacred Harp" article on Sacred Harp notation. In the future we will pursue further and will publish an early Anglo tuning.

ACKNOWLEDGEMENTS

The editor wishes to thank all the people who have given assistance in producing the Concertina Magazine.


Articles, etc. : Bob Bolton, Peter Ellis, Brian Hayden, John Ramshaw, Mark Rummery, Reuben Shaw, Chris Sullivan.

Production: John Ramshaw.

CONCERTINA MAGAZINE

Registered by Australia Post, Publication No. VH 5585

Editor: Richard Evans, Lot 5 Sandham Rd, Bell, NSW 2785 (063 552621)
Published Quarterly: Annual Subscription, 1987.

Opinions expressed by others in this Magazine are not necessarily those held by the Editor.

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