

Why Was the Valve Invented?

To make brass instruments chromatic--the idea that the valve was invented as a "mere crook changing device" is a myth.

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A major point that has frequently been made in the existing literature on the early valved horn is the idea that the valve was invented only to make quick changes of crook--to eliminate the need for the loose crooks of the natural horn to change key--and that only later did hornists realize the chromatic possibilities of the valve. Many sources state this as a fact, and when I started my own research into the history and technique of valved and natural horns in the nineteenth century I thought that it should be very easy to find evidence to support this idea. But the evidence is just not there. Jeffrey Snedeker observed in his 1991 study of Meifred and early valved horn technique in France that "In view of the various comments and accounts surrounding Stölzel's invention and its initial use, it is clear that perhaps an argument as to Stölzel's original intent could be revived." I must second his statement. After examining the evidence I have been forced to conclude that the idea that the valve was invented as a mere crook changing device is a myth. The earliest sources are unanimous in stating that Stölzel and Blühmel, the co-inventors of the valve, clearly intended to perfect the brass instruments by making them chromatic.

Heinrich Stölzel (1777-1844), a member of the band of the Prince of Pless, invented a valve which he applied to the horn by July of 1814 [Heyde, part 1, 30]. See Figure One.

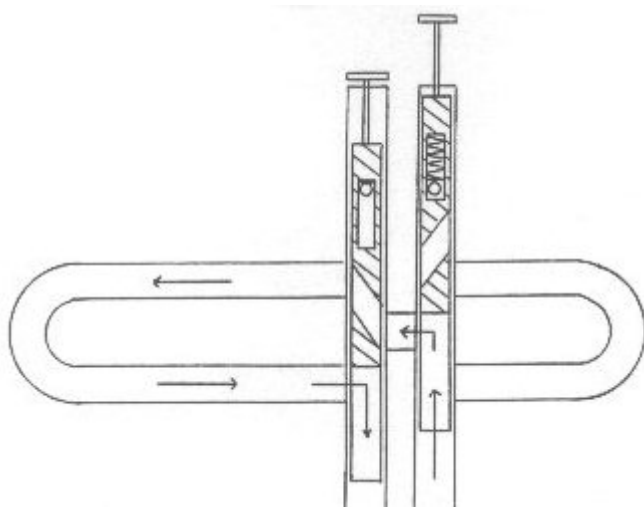


Figure One. Stölzel valves.

[NOTE: While the Stölzel valve bears his name, it is not entirely clear what Stölzel's original valve design was. Brass historian Reine Dahlqvist states that Stölzel originally constructed a double piston "Vienna" valve (Dahlqvist, 133); this design is known with certainty to have been produced by C. F. Sattler of Leipzig by 1819 (ibid, 114--sources which still point to the

Uhlmann 1830 patent of this design are out of date). Stoelzel himself had settled on the Stoelzel valve by 1818, but Blümel's rival patent application of 1818 resulted in both men settling upon Blümel's box valve (Heyde, *ibid*, 17-19). See below.]

Stoelzel reported his invention in the following letter, dated December 6, 1814, which was sent to Friedrich Wilhelm III, King of Prussia:

Most illustrious, most mighty King

Most gracious Lord and Majesty!

The horn, to which I have chiefly dedicated myself, is most defective as regards the inequality of its notes and the impossibility of producing them with the same purity and strength. This fact often made me very impatient and led me to make experiments which might alleviate the problem, which at the beginning were all failures, but which finally led me to an invention, which rewarded me for all my trouble and satisfied my demands on the instrument. My horn can play all the notes from the lowest to the highest with the same purity and strength without having to stop the hand into the bell. The mechanism of my invention is most simple, can be employed easily and quickly and everyone who plays the instrument can make himself thoroughly familiar with its application in a few days. This device renders the many crooks superfluous and makes it possible for the artist to play all the notes without losing any of the instrument's tone. This mechanism can also be applied to the far more imperfect trumpet and even to the bugles. Because the trumpet, whose compass hitherto consisted of 13 notes and through my invention has received 24 additional notes, which sound just as beautiful and pure as those 13 and for which now composers may write in not so limited fashion, but in any major or minor key as they wish, I believe that I do not exaggerate in promising your Majesty that by means of these instruments music may be made which will astound the world. I submit myself to every examination and am of the assumption that your Majesty may assist me further in this matter which is so important to the world of music ... [trans. in Heyde, *ibid*, 11-13].

From the above passage it is crystal clear that the original intention of Heinrich Stoelzel in inventing the valve was to make brass instruments fully chromatic. Note these passages again: "My horn can play all the notes from the lowest to the highest with the same purity and strength without having to stop the hand into the bell.... This device renders the many crooks superfluous and makes it possible for the artist to play all the notes I believe that I do not exaggerate in promising your Majesty that by means of these instruments music may be made which will astound the world."

The first published notice of the invention of the valved horn was a short article published in *Allgemeine musikalische Zeitung* on May 3, 1815, written by composer Gottlob Benedikt Bierey (1772-1840), music director of the theater in Breslau. Bierey had personally examined Stoelzel's horn and gave the invention a very favorable report.

Heinrich Stölzel, the chamber musician from Pless in Upper Silesia, in order to perfect the Waldhorn, has succeeded in attaching a simple mechanism to the instrument, thanks to which he has obtained all the notes of the chromatic scale in a range of almost three octaves, with a good, strong and pure tone. All the artificial notes--which, as is well known, were previously produced by stopping the bell with the right hand, and can now be produced merely with two levers, controlled by two

fingers of the right hand--are identical in sound to the natural notes and thus preserve the character of the Waldhorn. Any Waldhorn-player will, with practice, be able to play on it. ...

I have become convinced of this mechanism and its usability and declare, as a matter of both my insight and the truth, that its use imparts to the Waldhorn a perfection not hitherto attained, and produces an effect in full-voiced music not previously known.

... What a new realm of beautiful effects this has opened up to composers! [trans. in Janetzky & Bruchle, 73].

According to Bierey, the notes which were previously performed stopped with the hand are now "identical in sound to the natural notes." Stölzel expanded on the same thought as he began the process of applying for a patent on his invention. In a document dated December 29, 1815 Stölzel stated that

I have, namely, invented a device for the horn, which enables the player, in all simplicity, to produce all notes from the lowest to the highest with the same strength, fullness, and purity, the majority of which were hitherto only obtainable by stopping the hand into the bell and then were only dull and unclear [trans. in Heyde, *ibid*, 15].

Leipzig music director, organist, and composer Friedrich Schneider (1786-1853) also examined Stölzel's horn and reported on it in *Allgemeine musikalische Zeitung* in 1817. He too gave the invention a very positive review, vividly explaining how music would benefit from the invention.

Because of its full and strong, yet soft and attractive tone, the Waldhorn is an extremely beautiful instrument; but, as is well known, it has until now been far behind almost all other wind instruments in its development, being very restricted to its natural notes

Herr Stölzel of Breslau has now completely removed these shortcomings He has simply provided his horn with two airtight valves, which are depressed with little effort by two fingers of the right hand, like the keys of the pianoforte, and restored to their previous position by the same two fingers with the help of attached springs; with these it is not only possible but also easy to produce a pure and completely chromatic scale from the lowest to the highest notes with a perfectly even tone. On this horn, therefore, there is no need to change from one key to another, and the same passage can be repeated immediately in a different key; even passages which previously were absolutely impossible to play on the normal horn can now be performed without difficulty.

How solo horn-playing will benefit from this invention is easy to imagine: one only has to think of the eternal monotony of passages played on the horn in concert music up to the present.

Now it is particularly striking and effective to hear low notes with the full, even strength of the horn's tone [trans. in Janetzky & Bruchle, 74-75].

Schneider states that with valves "it is not only possible but also easy to produce a pure and completely chromatic scale from the lowest to the highest notes with a perfectly even tone." So he too clearly saw the new valved horn as being a completely chromatic instrument, one capable of modulating and performing "passages which previously were absolutely impossible to play."

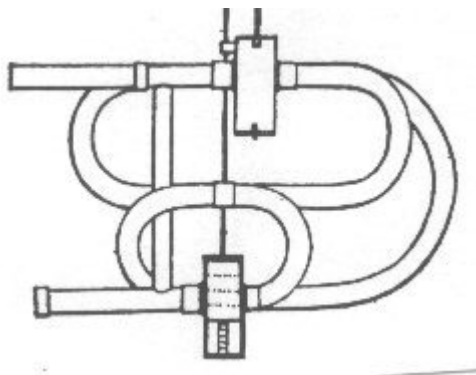


Figure Two. Blümel's box valve applied to the tuning slide of the horn, as illustrated in *Revue Musicale* 2 (1827-28).

Friedrich Blümel (fl. 1808-before 1845), a miner who played trumpet and horn in a band in Waldenburg, is also associated with the invention of the valve [NOTE: The older literature often describes Blümel as an oboe player, which is in error]. Blümel designed a valve independently from Stoelzel, his experiments with what were apparently rotary valves dating back to 1811/12 [Heyde, *ibid*, 22, 29]. [NOTE: Dahlqvist (122-23), however, believes that this was a tubular valve of some sort--Stoelzel or double piston "Vienna" valve]. While Stoelzel and Blümel eventually agreed to apply for a common patent on the box valve, a design which Blümel had developed in 1817/18 [Heyde, *ibid*, 22, 30] (see Figure Two), a document from Blümel survives from his separate, rival, patent application of February, 1818, where he states why he wanted to add valves to brass instruments. Blümel began by relating that the imperfections of the horn and trumpet, on which he had performed since 1808, had led him to experiment. He continued,

The numerous uses of the mechanical forces, which I had an opportunity of seeing during my presence in Upper Silesia, particularly the various air pipes used in the blast apparatus of the high and low furnaces which always led me back to the basic idea of executing an improvement on these instruments, I believe I could use to reach my goal and therefore sought the company of the keepers of the machines and other experts in order to comprehend the closing and opening of the wind pipes, whilst I started out with the idea of which way the air must pass through the tubes of the instrument, to lengthen or shorten according to certain dimensions, in order to make up the missing notes of the compass. ...

Collecting all the keys together soon made it clear, that the addition of a semitone and a whole tone loop, which could be opened and closed whilst remaining in close contact with the instrument and which lowered the note played by a semitone, whole tone or 1 1/2 tones could be effected.

In Waldenburg I experimented with my idea and learned to solder in order to reduce costs In 1816 I finally got results, whereby all the whole tones and semitones could be played on the trumpet by means of 2 valves and now there

was nothing left for me to do but to simplify the mechanism even more and to confine it within a narrow space [trans in Heyde, *ibid*, 21-22].

We can clearly see as well that Blümel also wished to fill in "the missing notes of the compass" of the brass instruments--to make the brass instruments chromatic--and that he considered his idea "an improvement on these instruments."

Reviews of performances of the first known work for the valved horn are also notable. The Concertino for three natural horns and chromatic horn by hornist, composer, and conductor Georg Abraham Schneider (1770-1839), was premiered on December 14, 1818; a hornist named Pfaffe performed on the valved horn. This important early work was unfortunately unavailable to the author for study, and is very likely not extant today, but certainly something important can be deduced from the title--it has a part for the *chromatic* horn. If Stoelzel's invention were seen by the very first performers and composers who worked alongside Stoelzel in Berlin as being merely a crook changing horn of some sort, would the part request an instrument called the chromatic horn? [See the article on the topic of [The First Works for the Valved Horn](#) for more information on this work.] It is also very notable that other early works for the valved horn like Schubert's *Nachtgesang im Walde* (1827) and *Auf dem Strom* (1828) do not require the use of valves as crooking devices. [See the article on the topic of [Schubert and the Lewy Brothers](#) for more information on these works].

One other later document from Stoelzel also deserves a brief examination. He applied for the reinstatement of his ten year patent in August, 1827, and listed the following reasons for needing an extension of his patent.

... most brass players were used to playing on the old instruments and did not want to submit themselves to the drill necessary to learn to handle the new device that makes the instruments chromatic. Also it must be remembered that the pieces of music were not written for the perfected instruments and that first the composers had to get acquainted with the great advantages and possibilities of them, so as to be able to use them adequately.

Consequently many years went by until the benefit and the effect of my invention for music in general was being recognized. During these years the patent was of little use to me, so that now I find myself in needy circumstances, in spite of the greatest austerity exercised by me.

... the valves have only now met with general approval and are being used more here and there [trans. in Heyde, part 3, 82].

Again, we see Stoelzel mentioning "the new device that makes the instruments chromatic," and that the old natural instruments had been "perfected."

Stoelzel and Blümel wanted to make brass instruments chromatic. The idea that the valve was invented as a mere crook changing device is a myth. [NOTE: Much more information on the roots of this myth may be found in *The Horn Call* version of this article]. Repeating a false idea many times does not make it a fact, even if it does sound plausible. The evidence simply does not support the theory that valves were invented as mere crook changing devices. Only a few works dating from the mid nineteenth century are seen to actually use this technique [be watching for an online version of my article published in *The Horn Call Annual* no. 9, with sections on "Works By J. R. Lewy" and on "J. R. Lewy and Later Works of Wagner"--some information on this may now also be found in the section of [Horn Folklore and "Urban](#)

[Legends](#)"], and it is abundantly clear that valves were originally seen by Stoelzel and Blühmel as a way to play chromatic passage work not before possible on the horn, and especially as a way to fill in the missing pitches of the natural horn without resorting to right-hand technique. They wanted to "perfect" the horn by making it possible to perform every chromatic note as an open pitch. Stoelzel did not simply wish to make the instrument more portable by eliminating the crooks, although the French were working on this concept in the form of the omnitonic horn [see the related article, [What Was the Omnitonic Horn?](#)]. And the earliest surviving works for the valved horn, like Schubert's *Nachtgesang im Walde*, show no evidence whatsoever that the valve was originally used to make crook changes [see also [Schubert and the Lewy Brothers](#)].

Why did Stoelzel invent the valve? In his own words he invented it to perfect the horn so that it could "play all the notes from the lowest to the highest with the same purity and strength without having to stop the hand into the bell."

SOURCES

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[Index](#)

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