Guided Tour
MAGIC PIANO – SELF-PLAYING MARVELS

Scene 1

Welcome to our guided tour in the Museum for Musical Automatons in Seewen; the tour takes about one hour and is led under the title “Magic Piano – Self-playing Marvels” through three halls that tell the story of mechanical music.

The history of mechanical music deals a lot with Switzerland. There was a veritable marriage of Swiss music boxes and disc music boxes in the 19th century. Especially in the French-speaking part of Switzerland, but also in a few centres in the German-speaking part of Switzerland, quite a few people lived from this tradition that had grown out of the watch-making industry.

The application to include watchmaking as a living tradition on UNESCO's list of intangible cultural heritage emphasised the combination of watchmaking and music box production. This application was submitted to UNESCO jointly by Switzerland and France in 2019, as the two countries practice this form of craftsmanship on both sides of the Jura Mountains. UNESCO recognised watchmaking, including music box and automaton production, as a living tradition in late 2020.

The Museum of Music Automatons is dedicated to keeping the knowledge of this living tradition alive. Here in Seewen, we are just as much part of the Jura Mountain region as Geneva or Sainte-Croix, where the music box industry was (and in parts still is) based.
If you’d like to learn more about this topic, please consult the posters in the foyer.

Some 60 years ago, Dr. h.c. Heinrich Weiss (1920-2020) began to take an interest in the topic of music boxes. He noticed that no one in Switzerland was collecting Swiss music boxes and built up his own collection. In 1979 he opened this museum and collected everything that had some connection to the topic of mechanical music. This ultimately resulted in one of the world’s largest collection of objects ranging from musical finger rings up to the unavoidable and unmistakable giant fair organ standing here at the front of the museum's foyer. Heinrich Weiss and his daugther Susanne Weiss donated the building, land and

collection to the Swiss Confederation in 1990. A modern museum has arisen from the collection with an entrance area, restaurant, foyer, exhibition rooms, shop, library, photographic studio, archive and administrative room. Today, the Museum of Music Automatons is organisationally integrated into the Federal Office of Culture.

The museum's collection comprises around 1400 objects and over 12,000 storage mediums. Just some of the objects are currently on display in the exhibition rooms, at the moment in an exhibition with the name “Magic Piano”.

The Museum is one of the world’s leading centers of competence for mechanical music.

HALL 1: WORKSHOP ROOM

Scene 2

Barrel organs are perhaps the best-known instruments from the world of mechanical music. But the world of mechanical music is actually much bigger, as we will see over the course of the next hour.

The *Gebrüder Bruder barrel organ* originates from Waldkirch from the famous organ builders and was built there in 1862 (the instrument is signed and dated by the company).The *L. Bacigalupo Violinopan barrel organ* was built 1910 in Berlin.

Scene 3

We are now located in the wotkshop – in other words you can get to see some of the automatons opened – to get a better insight into the functionality. The hall deals with technical fundamentals. To better understand how mechanical musical instruments work, we teach in this room the different components that are needed to make them work.

The «*Black Forest flute clock»* here before you is from the mid-19th century, you see one object, but what is it about: namely sound generation – here via flutes – it is about a sound carrier – in this case a drum – and about the drive, that for this automaton is pulled up via a weight using a crank. We already saw crank

drives with the barrel organs. You can also see that the object is a clock – and you can hear the chime on the hour...

Let's turn now to sound generation: For this instrument sound is generated via flutes or pipes – or in scientific terms: via vibrating air columns.

Another way to generate sound is the bell – or, to put a bit more complicated: a metal shell hanging on a point.

The bell takes a number of forms – from the gong to a cow bell, from the church bell to the metal shell here in the Glockenspiel.

Think for a moment of the church tower bells and so-called Glockenspiels. The origins of mechanical music go back to this type of Glockenspiel in the 14th century. An innovative bell ringer designed a drum with pins that directly hit levers connected by hammers. The hammers in turn hit the bells and generated sound. The Glockenspiels got smaller with the passing centuries and were widely distributed in jewelry and clocks among the 18th century upper class – the period of powdered wigs.

Yet another possibility to generate sound after flutes and bells is via strings: a string, a wire, a piece of gut string. The sound generated after plucking or striking it is generally amplified with a resonance body. This can be just about anything, a shell, the armor of an armadillo or a light wood box.

Also special is to generate sound with the help of free reeds.

Of particular importance to the Swiss music box industry is generating sound with the help of combs: A piece of a slim, hardened spring steel, that is tapped and generates sound through vibration. Place a number of these together and you have a comb. The original tuned teeth technique is found, for example, in this African finger piano, the Sanza...

...I will demonstrate a advanced form of sound generation using combs with tuned teeth using a mechanism taken out of a Swiss music box.

The discovery of the common principle of the music box is attributed to Antoine Favre from Geneva, who, in 1796, built a musical work based on a comb and pin wheel into a pewter box. In the years that followed, this type of musical work

was built into signet rings, pocket watches, snuff boxes, necessaires and, in a larger form, in the base of tabletop clocks. The music box finally emancipated itself from other forms around 1820. Simple housings with combs and a cylinder were created in Geneva and Sainte-Croix.

Sound generation can also occur using drum skins, wooden sticks, castanets, etc.

Scene 4

In addition to generating sound we also need to find a way with mechanical music to store the sounds or melodies, in other words a sound carrier. There has to be a way to determine the sequence that we hit our bells or plucked our tuned teeth.

A cylinder can be a sound carrier. It turns and transmits its information with the help of set pins. The pins pluck the tuned teeth directly in turn. The principle of the cylinder and comb is used in all traditional Swiss music boxes.

Here is another way: rolls or cards made of paper, cardboard or metal with punched holes in a certain order. The system was originally invented for looms and then copied for makers of musical automatons. The perforated roll is pulled over a scanning system.

The sound carrier may, however, also be a plate. The metal disc has pins in the form of punched hooks. When the disc is turned, the hooks hit star gears that in turn pluck the proper tuned teeth in the correct order. The metal disc was implemented in disc music boxes.

The disc music box shares the tuned teeth comb with the original music box. The perforated disc serving as the sound information carrier does not, however, directly pluck the steel pins as is the case with music boxes. A so-called star wheel was added. The disc music box replaced music boxes due to its considerable advantages. The tedious task of placing the pins on the cylinder was no longer required. Punching out the disc was significantly easier and cheaper. The music friend was now able to expand his or her repertoire in a reasonably priced manner.

Paul Lochmann from Leipzig invented the principle around 1886. Paul Wendland's invention of the star wheel in 1889 turned out to be particularly beneficial. Here you see a removed sample from a Lochmann Symphonion built in 1905.

As you can see, sound carriers exist in a wide variety of forms and materials.. All of them represent different solutions to the same problem. How do I get music without having to play it myself?

Scene 5

In addition to sound generation and sound carrier we now need a drive – I have no desire to use my muscles to generate my music, like organ grinders, but rather want to sit back and listen in comfort. In other words, the energy needs to be stored somehow. But even the organ grinder or barrel organ, like the one we saw at the start of the tour also has a drive, namely the crank drive.

The oldest form of drive altogether is the weight drive, with even a weight drive having a crank. But the crank does not directly impact the instrument; only indirectly via the weight.

Lifting the weight provides an energy reservoir. The weight drops and uses its force to drive a gear; I now just need a process to ensure that the force is applied evenly and there you have it: we have just invented a weight drive!

This hand crank helps me to tension a spring in a housing – for example a steel band. The wound-up spring wants to release the tension and release energy in this manner. I can in turn dispense it using a synchronization control and you have now just invented the spring drive!

Suction and pressure was widely used in the 1920's for mechanical musical instruments. Here you see two wind motors that use suction to generate rotation. Multiple bellows are opened and closed with a lag to create even rotation. Finally, these motors are suitable for musical instruments due to the fact that they are silent.

The motor with three bellows controls the supply and exhaust of the wind using a rotary slide (point to the projection). A flywheel is still needed to ensure optimum concentricity of the motor.

For other motors, a kind of four cylinder, we have a crankshaft of wire and a slide to control the wind.

Another type of drive is the electric motor, as was used for numerous modern Orchestrions and we can see here in the drive module for a Welte Company piano from Freiburg in the Breisgau. The electric motor is placed in front of the wind motor.

That's enough for now on the quick introduction to the principles of mechanical music.

What all drives have in common is that they serve to generate energy. The energy must be transmitted to the mechanical music instruments and this occurs with larger Orchestrions as we can now see on the other side of the hall, often via suction and pressure.

Scene 6

The **«***Piano-Orchestrion Sinfonie-Jazz***»** gets its drive from a plug using an electric motor, as we just learned.

This Orchestrion includes a number of instruments or sound sources including a piano *Rönisch*, mandolin, drum, cymbals and triangle. The piano can also be played manually.

The wind motor drive is an electric motor in this case. The wheel to the right moves the bellows that provide the suction and pressure wind for the instruments as well as the control. The air is guided via bundles of lead pipes to the individual instruments: To the organ pipes, piano and percussion instruments. Where valves or hammers are activated to trigger sound.

A perforated paper band is the sound carrier for this instrument. It controls the individual functions. The band is led over a so-called floating block with lots of small holes that trigger the appropriate function as soon as air enters into a hole in the paper.

Scene 7

And now to a completely different subject. In an additional to musical automatons there are also figurines that move automatically. As a conclusion to this hall, you see some of the figurines on display.

All mechanical figurine automatons operate using the same principle. They are driven by a spring motor with the cam disc that acts on a lever. The lever transmits the movement with rods to the arms, legs, eyes and so on and so forth. All the levers and joints are built into the doll bodies, which makes the manufacture of these automatons quite costly. They generally have a musical work as well.

To understand how an automaton works, take a look at the “Turner” automaton here. It was manufactured in 1860 by Gustave Vichy / Triboulet in Paris. The musical mechanism plays four pieces.

The “Magician” automaton features a figurine that conjures up different objects from under his hat after a coin is inserted. It was originally manufactured by Roullet & Decamps in Paris around 1890. We believe it was rebuilt around 1950 using old parts and fitted with an electric drive.

Manufactured by Gustave Vichy / Triboulet in 1878 in Paris, the "Clown with Umbrella" rotates on a pedestal, spinning an umbrella with a spinning plate on top. In his left hand, he holds a fan that he turns at a 45-degree angle. A ball spins on the upper edge of the fan. The clown moves his head back and forth, turns left and right and also moves his eyelids. On the clown's belly, there is an image of a full moon whose eyes open and close.

The "Painter" figurine automaton, manufactured by Michel Bertrand in Switzerland around 1980, features a music box that plays two musical pieces.

HALL 2: SALON BLEU

Scene 8

This room primarily focuses on the period from 1870 to 1910. This period marks the golden age of Swiss music boxes.

At the beginning of this era, the first telephones were introduced in Switzerland and the Gotthard tunnel was built. Then the first cinemas appeared. In 1913, Oskar Bider became the first pilot to fly an airplane over the Alps, and from 1914 to 1918, Swiss soldiers stood at the borders to neighbouring countries during World War I.

The emergence of tourism and the hotel industry in the late 19th century was also important for Switzerland. In the late 18th century, people had already begun to discover the Alps and conquer peaks. Edward Whymper's climb of the Matterhorn in 1865 is famous, as several people died during the descent. The Swiss tourism industry experienced its first golden age around 1900 until the First World War.

You just heard the music box "Orchestre - Jeu continu", which would be perfect in a private drawing room where business partners and guests are received. Here we have a reconstruction of the private quarters of a fictional hotel owner, as he might have lived around 1900. We've just walked through the hotel lobby, where there's also a self-playing piano, which we'll turn our attention to later.

Now I want to show you what kind of music this hotel owner, or more generally our ancestors, listened to and how they were able to do it. This elegant music box table was made by a company in Geneva called François Conchon around 1895. With six interchangeable cylinders, it was definitely not cheap – you would have needed to be a business owner to afford a masterpiece like this. As its name suggests, this ornate box houses an entire orchestra with a harmonium, music box, bells and other percussion instruments. A special technical solution also allows longer musical pieces to be played. The company was particularly proud of this "Jeu Continu" (Continuous Play) system. The manufacturer, called Conchon, exhibited a music box table of this kind at the Swiss National Exhibition in Geneva in 1896.

Scene 9

What you just heard was a Geneva music box by Nicole Frères from the 1860s. This music box was sold to a customer in England, as Swiss music boxes were a globally desired luxury item – much like expensive Swiss watches today. During the peak from around 1880 to 1900, Swiss music boxes accounted for 0.5% of our country's exports, equivalent to 3.15 million Swiss francs. This is comparable to the export volume of luxury Swiss watches today.

Musical pieces that were in high demand at that time were arias and choruses from well-known operas. Composers like Giuseppe Verdi, Giacomo Meyerbeer, Gaetano Donizetti and Charles Gounod are particularly common, but many lesser-known names can also be found.

After 1880, titles from major operettas and popular music began to appear more frequently on the programmes of Swiss music boxes. Jacques Offenbach, Carl Millöcker and the Viennese waltzes of the Strauss dynasty are frequent finds.

Around 1860, there were no records or sound recordings yet. The music box made it possible to play music at home at the touch of a button.

Here you can see the Mermod family, a well-off family of manufacturers, perfectly staged for photography. The Mermod family, in Sainte-Croix in the Vaud Jura, owned a company of the same name that produced pocket watches. From 1880 onwards, the company primarily produced music boxes. Sainte-Croix, along with the neighbouring municipality of L'Auberson, was the global centre for music box manufacturing in the second half of the 19th century. Various companies set up shop there, with names like Paillard, Cuendet, Junod and Thorens becoming well-known.

Here is an example of a music box from the company Mermod Frères, representing the technical peak of its time. This is the "Idéal Sublime Harmonie" model, manufactured around 1900 in Sainte-Croix. The case is made of beech and spruce wood and veneered with walnut. The musical mechanism has 2 steel combs with 39 tongues each and a zither effect.

If the lady or gentleman of the house wanted to play a specific piece, they could select it directly from a catalogue of six titles. This model allowed the user to change the cylinders to have a wider selection of music. In total, there are five

interchangeable cylinders for this music box, each with six musical pieces. Three of these cylinders can be stored directly in the drawer at the base of the box.

To simplify the delicate process of changing cylinders, there were also music boxes with a revolver mount. The "Forte-Piccolo" music box from the company Elise Karrer-Hoffmann is one such example with a revolver mount featuring three cylinders. It was located at the company Jenny & Co., a dyeing factory in Aarau, where it was regularly demonstrated to customers. This certainly must have had a positive effect on business. The 3 cylinders contain 24 melodies with a total playing time of 20 minutes.

This music box is also noteworthy because it does not originate from Western Switzerland – neither from Geneva nor Sainte-Croix – where most manufacturers were based, but from the canton of Aargau. In German-speaking Switzerland, music boxes and watches were also produced in various locations until the late 19th century, and watches continue to be produced there to this day..

Scene 10

The music box introduced mechanical music to the living rooms of the well-to-do and also brought it into respectable business settings.

But how did people who weren’t rich listen to music?

Of course, music boxes were also available in simpler and smaller versions. But around 1890, a more affordable sound storage medium emerged in Germany – the disc record. This made it cheaper to buy different musical pieces. At first, people in Geneva and Jura dismissed these records as a passing fad. But when the sales of Swiss music boxes significantly declined in favour of competing products from Germany and the US, Swiss manufacturers were forced to switch to the disc-playing system for their music boxes.

Disc-playing music boxes are louder, more robust and less nuanced than cylinder music boxes, so there was also a shift in the repertoire. From the "Old Bern March" to yodelling songs to "Nearer, My God, to Thee," everything was available from the Maurer company in Spiez, to name one example. Club anthems and folk songs were also widely available. In some families, the disc-

playing music box was used as an accompanying instrument for singing performances at home – at least if the advertisements are to be believed. For example, a family from Arch near Büren wrote in 1913: “The music box No. 9 has been a valuable addition to our living room. We play all our favourite songs on it, and we can also cheerfully sing along, because it plays as clearly as a piano." We are fairly certain that they were referring to an "Edelweiss" disc-playing music box from the Thorens company in Sainte-Croix.

The standard model number 6 without any extras was available for as little as 50 francs. Although a Zurich or Bern tram driver would still have to spend around ten days' wages to buy one, these disc-playing music boxes were far cheaper than larger music boxes and therefore more widespread.

But there were also more sophisticated disc-playing music boxes – such as this "Mira" model by the Mermod company in Sainte-Croix from around 1905. This is an exquisite piece in mahogany wood and fire-gilded fittings, which only entrepreneurs or hotel owners could afford.

Scene 11

Children had – and still do – a direct and spontaneous relationship to mechanical music. Something moves here, you can turn the crank, sounds emerge from it and you can repeat it as many times as you like.
Grown ups have taken advantage of such things from time immemorial: going to bed becomes a ritual with musical accompaniment. Children, however, find their own rituals.

The children’s book author Olga Meyer remembers a worn-out, beat-up music box that she and her sister really loved. It just had to replace the organ at a wedding or christening, or...

"When night fell in the garden, I often sat with it in a small shed surrounded by leaves, bowed my head low on the singing little box, ardently turned the lever and forgot about time and space."

Of course they were told “don’t touch” when it came to the large music boxes. But as a special reward, the mother would then take the expensive music box from its safe redoubt and play perhaps a waltz by Strauss – much as today in

some families, children are only allowed to use their mobile phone at certain times.

Our hotelier didn't just collect music boxes and disc music boxes. As you can see, his hotel was doing so well that he could also afford exquisite masterpieces like this temple automaton with a clock and music mechanism, or this ornate clock with musical and singing birds. On the walls you can see pictures with musical mechanisms, and the cigars that he offers to business partners are stored in a holder with a music box. And when the family visits him in this room, it's a fun treat for his children to sit on this children's chair featuring a musical mechanism. The music starts playing as soon as someone sits down.

There's an incredibly wide and creative range of objects outfitted with musical mechanisms. We've been through the private rooms. As already hinted at, this could have been the private collection of a wealthy hotelier.

Now let's turn to the hotel lobby, the front area of the hall. Here we can also find a self-playing piano, just like the one found still entertaining hotel guests today in the Hotel Waldhaus in Sils Maria, in the canton of Graubünden. Please follow me into the lobby

Scene 12

It used to be common for good middle-class families to have one or more members who could play instruments, usually the piano. An upright piano or grand piano was indeed present in many middle-class homes. The piano was the instrument of the 19th century and contributed to the spread of music like no other. Just think of Robert Schumann, Frédéric Chopin or Franz Liszt – great piano virtuosos and composers who were appreciated all over the world at that time.

After dinner, educated hosts and hostesses would sit at the piano and perform a piece. However, since not everyone was musically proficient, mechanical pianos were built that could play by themselves. This naturally led to protests on the part of piano teachers, music critics and the educated classes. Could a machine ever really be capable of artistic expression? Yet the machines prevailed, as it turns out that they could imitate artistic expression very well.

You can see one of these self-playing pianos right here: an American "Duo-Art" instrument by the Aeolian Company, which were built starting in 1914. Our grand piano dates from 1924, a genuine Steinway, in a Louis XV mahogany case. You can also play it normally, of course, but now we'll let the invisible hands work their magic...
Here we'll start taking a look at the star of our special exhibition, the "Magic Piano". We'll cover the history and output of global companies that were extremely innovative with recording and playback technologies for piano music from around 1900 to 1930. In Europe, these were primarily the German companies Welte and Hupfeld, and in the US, the Aeolian Company and the American Piano Company.

The recording process of the Aeolian Company, whose instrument you can see right here, was relatively simple and initially only recorded the notes and their duration. A recording director rehearsed the piece with the musician to familiarise themselves with the interpretation and then documented volume information using a special device. Aeolian encouraged their pianists to be an active part of the editing process that followed. The idea was for the resulting music rolls to sound like an ideal version of what the artist performed. From 1919 onwards, recording operations expanded from New York to London. In addition to the classical repertoire – still considered important – the new musical tastes of the roaring 1920s were immortalised in excellent recordings of popular titles from the era.

When developing the Duo-Art reproducing piano, the Aeolian Company considered it important for customers to have the option of influencing music rolls according to their own tastes. That's why there are levers below the keyboard to adjust the dynamics and tempo – features that Aeolian had already introduced for their Pianola. This also made it possible to play older Pianola rolls on the Duo-Art. The name "Duo" comes from this dual-use option.

Here's a Pianola for us to admire, here in the hotel lobby. Pianolas had been offered by Aeolian since 1898 and were the world's most widespread player piano. In the US, for example, around two million of these instruments were sold between 1890 and 1920. The Pianola also served as the basis for the "Duo Art" grand piano that we just heard.

The Pianola also controls the keys via music rolls. However, unlike with the grand piano we saw before, this model from about 20 years earlier left the

dynamics entirely up to the performer. They could use the levers to regulate the strike force, speed up, and press the pedal, following the lines on the music roll as a guide. Full control via the music rolls was not yet possible on this instrument.

Using your left hand, you can control the damping and the volume from pianissimo to fortissimo, and on the right, you can use the lever to regulate the speed or rewind the music roll. The pedals are used to operate a vacuum.

The original version of the Pianola could only control 65 notes of the keyboard. An improved version capable of playing all 88 tones only hit the market in 1908. In the 1920s, most pianos sold in the US were equipped with a self-playing mechanism.

There is a nearly inexhaustible repertoire of music rolls, showing how a specifically American musical identity also developed in parallel with the economic rise of the country. Initially, the Pianola contributed to the classical musical education of the general population, which was oriented towards European styles. By the 1920s, however, modern American genres of entertainment and popular music came to dominate.

Here we have a third instrument from the Aeolian Company, a Harmonium Orchestrelle, which was built around the turn of the 19th to the 20th century. Organettes like this one were popular both in people’s homes and as organ substitutes in churches. Similar to pianos, they could also be equipped with a self-playing mechanism. The typical tone quality of an organette is very well suited for playing arrangements of orchestral works.

Here in the display cases, we have jewellery and watches with musical mechanisms, as well as singing bird boxes and cages. Our hotel magnate liked to show off to his hotel guests, too.

Another instrument displayed in this hall is the Piano-Orchestrion Violano-Virtuoso De Luxe Grand by the Mills Novelty Company, manufactured in Chicago around 1925. This violin-piano hybrid instrument was developed primarily for use in public spaces in 1909 and was very popular in the US. The deluxe version shown here features two violins. Unlike most automatic pianos and orchestrions of the time, all the functions here are electric, and the orchestrion contains no pneumatic elements.

HALL 3: KLANGKUNST ROOM

At the back of the hall, you can see the impressive Britannic organ, a Welte Philharmonie organ that has been in the possession of Heinrich Weiss and/or the Museum of Music Automatons since 1969-70. However, we only learned in spring 2007 that this instrument was intended for the Britannic – one of the two sister ships of the Titanic. More on that later.

As part of the “Magic Piano” exhibition, this space is currently dedicated to two companies that were big players in the reproducing piano business. They were producers of instruments and music rolls, and both enjoyed immense popularity among consumers until the early 1930s. On the right side of the hall, you can see instruments from the Welte company, which was based in Freiburg im Breisgau during the first half of the 20th century. On the left, we cover the Hupfeld company, which operated out of Leipzig, the music capital of Germany at that time. Other important producers of reproducing instruments from this era are also in the exhibition and include Philipps in Frankfurt am Main and Aeolian and Ampico in the US.

Our “Magic Piano” exhibition also focuses on the research collaboration between the museum and the Bern Academy of the Arts (HKB), which has been ongoing for about 20 years now. And if you haven't already done so, I invite you to do some self-directed listening after the tour. We have music stations, ten radio play stations where you can listen to the radio play "Bastofl", a science table in the research corridor, and a station for music comparisons and games in the ballroom and the cinema.

Scene 13

Founded in 1832, Welte enjoyed an excellent reputation for its high-quality musical clocks, which were sold around the world. From around 1845, the company also began building their first orchestrions. Starting in 1865, the company operated under the name M. Welte & Söhne and soon offered various orchestrion models, called "Cottage Orchestrions”, which were sold worldwide. Welte was among the very first companies to begin controlling their orchestrions not mechanically with pin barrels, but purely pneumatically, using perforated paper music rolls. This was an important prerequisite for the development of the reproducing piano. A second prerequisite was experience with pneumatic or

electro-pneumatic control systems for organs, which Welte had as a result of being involved in pure organ building from the 1890s on.

Welte was already well-known as a specialist for mechanical musical instruments when Edwin Welte and his brother-in-law Karl Bockisch patented a recording and playback process for piano music that they had developed in 1904. In 1905, the first reproducing instrument hit the market, a cabinet instrument called the “Mignon”, initially as a “Cabinet” model. The fact that its exterior did not look much like a piano significantly contributed to its perception as a mysterious box of wonder. However, the missing keyboard proved to be a problem, as tuning was significantly more complicated than on a normal piano.

Soon, however, the Welte-Mignon reproducing piano also became available, and from 1913 onwards, the reproducing grand piano as well. It was also available as a push-up piano player starting in 1908.

This Steinway/Welte grand piano dates from 1925. Starting in 1905, musicians in the Welte recording studio always played on a top-of-the-line grand piano produced by Feurich. All manufacturers of reproducing instruments strived to win over the best piano companies for partnerships. A Steinway grand piano with a Welte system, like the one you can see here, was a top-of-the-line model.

Perforated paper strips, known as music rolls or piano rolls, were used as the sound storage medium. Welte-Mignon was a novel recording and playback process that also recorded key pressure – meaning the volume, the forte and the piano of the performance – and the pedal values, which captured and replayed the individual artistic expression of the performer. This technology basically allowed customers to have famous pianists as guests in their living rooms. The debut of this system shocked Welte’s competitors. In 1905, they were not yet in a position to react immediately. Welte kept their methods for recording volume a closely guarded secret, one that will probably never be revealed.

Over the years, Welte built up a repertoire of ca. 4,000 rolls. Our own collection here at the museum encompasses some 2,500 rolls.

Welte hired the most famous pianists at the time to create samples for the music rolls in Freiburg: Edvard Grieg or Gustav Mahler even played their own works!

The list of customers, publicized by the Welte Co. as advertisement was a virtual European “Who’s who”. The royal houses of Italy, Belgium and Greece bought artistic pianos as did "the Right Honourable Winston Churchill, M.P." A little closer to home, the list included for example "Manufacturer Brown" in Baden (Brown-Boveri) or "Mrs. Page in Cham" (Nestlé-Angloswiss). A heavy wallet was required.

Scene 14

Here we see the long lost organ for the *Britannic* – i.e. the organ for the sister ship of the *Titanic* that sank in 1912. The instrument, which was documented in drawings and photographs, had disappeared for nearly a century. The discovery was made during the restoration of this Welte Philharmonic Organ in our museum in the spring of 2007. The contracted organ builder cleaned three parts not normally accessible below the museum organ’s wind chest and each time found the same note stamped: «Britanik». We always believed that our organ must have originated between 1912 to 1914, but there was a lack of evidence for any instrument of this kind before 1920. Historical Welte catalogues in our archive do contain an illustration of an organ in the staircase of the Britannic, but we never imagined that our organ was the same instrument.

The construction of this organ is nearly identical to the M. Welte & Söhne recording organ in Freiburg, where recordings were also made with organists – just like with reproducing pianos, but somewhat later, starting around 1911.

Perhaps there had been plans to install an organ like this, the latest achievement of the Welte company, on the Titanic. However, the maiden voyage of the Titanic in April 1912 was a bit too early for a Philharmonic organ to have been completed in time. Instead, Welte pursued the project of working on a small salon organ for the Titanic. However, they couldn’t get this ready in time either, so the organ never saw the high seas. This "Titanic organ" – an orchestrion without a console – can be admired today in the German Museum of Mechanical Musical Instruments in Bruchsal.

The Britannic was the third sister ship of the Olympic class (Olympic, Titanic and Britannic were three almost identical ocean liners in the White Star Line). There were indeed plans to install an organ on the Britannic; these plans still survive to this day. The organ was designed to be two stories high and was

supposed to be installed in the first-class staircase area for the entertainment of passengers.

Originally, the ship was supposed to be christened with the name Gigantic, but after the Titanic sank on 15 April 1912, the ocean liner was hastily renamed the Britannic, a somewhat more modest name. However, the outbreak of the First World War in late July 1914 changed everything. The British Admiralty seized all large passenger ships for war-related purposes as troop transport or hospital ships. The Britannic underwent refitting until December 1915 and was then used in war service for about eleven months. As a floating hospital ship, it hit a German sea mine off the island of Kea in the Aegean Sea on 21 November 1916. It sank without ever having transported a single civilian passenger or having sailed even once on its intended North Atlantic route. A photo of the converted Britannic shows a completely bare staircase with naked, white-painted metal walls.
However, wooden parts from the steamer's staircase surfaced in collector circles in later years, indicating that the interior construction of the Britannic was already well underway when it was commandeered by the state in July 1914. There is also an illustration, complete with sketches, from the Welte summer 1914 catalogue, proving that an organ of this magnitude was intended to be installed on the Britannic. The inscription "WELTE-PHILHARMONIE-ORGEL on S.S. Britannic of the White Star Line" in the Welte company's catalogue suggests that the organ must have been on the ship.

The history of this organ can be read in a brochure available in the museum shop. Our Philharmonie organ came to us here Seewen via Stuttgart and Wipperfürth, where it was presented to a small circle of acquaintances and friends on 30 May 1970, with a festive inauguration in the studio of museum founder Heinrich Weiss (which was still private at the time). The organ builder Werner Bosch (1916–1992) was also present. He offered to sell Heinrich Weiss 1,230 recording rolls from the Welte company that were in his possession from the company's estate. That’s why the Museum of Music Automatons today not only possesses an extraordinary instrument with an extraordinary history but is also the only institution worldwide that also possesses the original recordings. Renowned artists are immortalised on the recording rolls, such as the famous composer and organist Max Reger, as well as composers better known in English-, French- and Italian-speaking areas like Edwin Lemare, Alfred Hollins, Joseph Bonnet, William Wolstenholme, Eugène Gigout, Clarence Eddy and Marco Enrico Bossi.

The museum’s restored Welte Philharmonie organ, originally from the Britannic in 1913–14, along with its music roll collection, is an extremely valuable instrument in terms of music history. The music rolls can be played on an almost fully authentic instrument, giving us insight into the interpretation of musical works from that time – insights into the performance style of an era when hardly any organ recordings were made for phonograph records.

What’s more, this museum is the only place in the world that houses the sole surviving recording device for reproducing instruments. It was most likely not used for piano recordings, but rather for recordings for the Welte Philharmonie organ. Nevertheless, it is unique, since unfortunately no device for piano has survived. Our recording device comes from the recording studio of M. Welte & Sons in New York, where the company had a presence on 5th Avenue. It likely started being used around 1912, as this was when Welte first began making recordings of organists in New York.

This device, electrically connected to a recording organ, drew ink lines on a continuously running paper roll whenever keys on the organ console were pressed. This allowed for pitch, note onset and note duration to be precisely recorded on a paper roll. It was also possible to record switching the organ's stops on and off.

Scene 15

Let’s turn our attention to the competition, a company called Hupfeld. Welte and Hupfeld were not on equal footing as competitors. At its peak, Welte in Freiburg im Breisgau employed about 200 workers, while Hupfeld had around 1,500 workers, meaning the company was considerably larger. Moreover, Hupfeld was not located in a remote province, but in Leipzig, which was the music capital of the German Empire and, after 1918, of the Weimar Republic.

With the advent of the Welte-Mignon, a rather small company named Welte, which had previously only built orchestrions, managed to bring a fully developed reproducing piano to market on its first attempt. Their success put pressure on companies that had been offering mechanical pianos for years.

The German market leader in this segment was in the Leipzig-based company Hupfeld, which produced the Phonola. Hupfeld introduced the Phonola in 1902 as a counterpart to the American Pianola, which was a market leader in the US and had been aggressively marketed in Germany since 1899. The Phonola set itself apart from the competition by being the first to allow independent control of the volume for the left (low) and right (high) halves of the keyboard.

Both the "Pianola" and the "Phonola" are considered to be artistic player pianos. Players had to set the roll in motion by pressing pedals, and they also had to influence the speed and volume of the playback themselves, since the music roll only contained the notes and was not recorded by an artist.

This "Phonola" was built by Ludwig Hupfeld AG around 1908, based on a piano by the Dresden piano maker Carl Rönisch. Here in the exhibition, we don't use this instrument as a "Phonola", but rather as a piano body for the "DEA" reproduction attachment.

However, Hupfeld introduced music rolls recorded by pianists to the market for the first time in 1905, almost at the same time as Welte. Presumably, Hupfeld had also been developing a reproducing instrument for optimal playback of these recordings since 1905. But it was not until 1907 that they launched the DEA – a reproducing piano that played completely independently with similar quality to the Welte-Mignon. Despite enthusiastic reviews, the DEA remained marginal compared to the Welte-Mignon. DEA instruments and music rolls are extremely difficult to find today. That makes it all the more special that we have a DEA here in the Magic Piano exhibition, built as a push-up unit in Leipzig around 1920.

Scene 16

Alongside automatic pianos, Hupfeld's orchestrions also enjoyed great popularity. At the end of the tour, one of these orchestrions called the "Phonoliszt Violina" will play. The Violina – which featured three violins played by mechanical fingers and a rotating circular bow – was a sensation at the time of its release. The instrument is accompanied by Hupfeld's automatic "Phonoliszt" piano, a simple predecessor to more complex reproducing pianos.

The "Phonoliszt Violina" could replace a smaller salon orchestra. Hupfeld started building this orchestrion in 1908, and it remained in the company's

catalogue for over 20 years. The one here, for instance, dates from 1927 and was already sold under the company name Leipziger Pianoforte- und Phonola-Fabriken Hupfeld-Gebr. Zimmermann AG, as Hupfeld had been forced to merge with the Leipziger Pianoforte-Fabrik Gebr. Zimmermann in 1926 due to poor business performance.

To buy a Phonoliszt Violina, you would have needed to cough up 20,000 francs. For this money, one could have easily employed a small orchestra for 150 evenings. But would this orchestra always have the newest pieces in its repertoire? No problem for this orchestrion, since the music could be stored on rolls [show the rolls]. In the 1920s, successful hit songs were basically released simultaneously on shellac records and perforated rolls.

Instruments of this kind were also sold to Switzerland at that time. There was one in the Gasthaus Bären in Langenbruck, less than ten kilometres from here – and there was also one on the Bienenberg between Liestal and Frenkendorf. One requirement for setting up an orchestrion like this was electricity – which was already available around 1910 here in Seewen and the surrounding area.

Also on display is a Piano Melodico "Orchestrion-Automat", Carl Bendel, Saulgau / Wilhelm Spaethe, Gera, around 1900. The Piano Melodico was developed in the 1880s by Giovanni Racca in Bologna. A somewhat smaller variant with 30 tones was manufactured under license by Wilhelm Spaethe. For long notes, the hammers strike the strings repeatedly, creating a "tremolo" effect that is reminiscent of a mandolin and that gives the small instrument a surprisingly orchestral sound.

This instrument was restored in 2024 as part of a Master's thesis at the Haute Ecole Arc Neuchâtel (HE-Arc) and with the support of the Society of the Museum of Music Automatons Seewen (GMS).

Scene 17

The Welte company, founded in 1832, got its start with musical clocks. Michael Welte – and soon after, his sons – built Black Forest musical clocks like this one, of various types and sizes, initially in Vöhrenbach, where the company was based until its move to Freiburg im Breisgau. The base is a clock, which is coupled with a musical mechanism driven by weights. On the hour, the clock

triggers the musical mechanism. After each hourly chime, one of eight musical pieces stored on a wooden pin barrel starts to play.

This Black Forest clock is called "The Bride of Messina" and was manufactured by the Welte Brothers in Vöhrenbach in the Black Forest around 1860. The name of the clock refers to a tragedy by Friedrich Schiller.

We were recently able to acquire this musical clock with the support of the Society of the Museum of Music Automatons Seewen (GMS). This club is always looking for new members and offers attractive membership conditions...