# Rolling ball clock motor

See also: Clock from the turning of a ball from the 18th century. Example of a ball turning clock. Rolling ball clock is a clock that displays time using balls and rails. The story of the rolling ball clock was invented by Harley Mayenschein in the 1970s. He patented the project and founded the Idle Tyme Corporation in 1978, which produced these solid hardwood clocks. Later, the patent license was sold to Arrow Handicraft. In the 1970s and 1990s, the The following excerpts from a letter written by Patrice Gunville, daughter of Harley Mayenschein, give few details of the clock's history:[2] The first original design (before the patent) was a simple 1/4 × 1/4-inch strip of wood on which the balls would roll, as would the construction of the railway tracks. [Harley Mayenschein] showed his new invention to friends and everyone wanted to have it, so as his hobby, he created it. By the time he found out, he had more than 300 orders in a month. So my brothers and I started helping him create parts in his spare time and he would then put the clocks together and spray paint them black and sell them for $75.00 each. Within six months, it turned out that my father's hobby had grown into a business, so we converted the garage into a workshop, bought a small table saw, a drill, etc. Soon after, we had to find larger lodgings, quit jobs, and hire people to help create clocks for sale. As well as find suppliers of wood, engines, linecords, ballbearings etc. We moved to an industrial plant on Tower Hill Road in Schaumburg. [Harley Mayenschein] has also occasionally created different clock sizes just for fun and specialty for different companies/organizations. Ball clock for golf courses that used golf balls. Confectionery with balls of gums. Sports shop with baseballs. I personally own a small watch size clock, I could wear on my wrist made from BB's. What I just think is new is because ... you understand well. The largest ball clock he created stands on Western Lanes 904 S. Tayler Street in Green Bay, Wisconsin. For what they paid $10,000. It is 8 feet tall, 16 feet wide and 8 feet deep. It has 6 car shock absorbers, six timing devices, 1446 sets of screws, nuts and washers and one drive motor for one sixth of the horses. And it took 700 hours to build, so it's made for bowling balls. How it works The original design of the ball turning clock has three main rails - two marked per minute and one per hour. The lower rail represents the hours. The middle rail represents minutes in multiples of 5 or 10, while the top rail displays numbers 1 through 4. By adding the displayed values of the two rails, you can get an accurate measurement of the minutes. The electric motor collects the ball every minute. Every five minutes the upper rail will drop and deposit the ball on the second rail. Every hour, the upper and middle rails drop and one ball is lower rail to ming out the hours. At 1:00 a.m., all three rails drop the balls on to the bottom-powered rail. Varieties Original design used steel balls, while the Deluxe model sold in the 80s. There are home versions of the project that use a 9-minute top rail, with a middle rail representing multiples of 10. KinetiClocK, for example, is the latest rolling clock design with an emphasis on simplicity, durability and aesthetics. Arrow Handicraft also produced a coin clock that used pennies instead of balls. Testimonials ^ Weingarten, Gene (February 25, 2007). A Clock and Ball Story. The Washington Post. Retrieved 2009-02-22. ↑ For an even more detailed story of the clock and its inventor, visit the new clock homepage in These clocks are once again produced in a small store run by Harley's son Joe. Joe was a major clock builder when the store was in full production 25 years ago. See also Congreve Clock External Links Idle-Tyme homepage Stuart's Rolling Ball Clock Page Ball Clocks Page The Rolling Ball Web Barry's Arrow Ball Clock Page Rolling Ball Clock and Misc. Arrow Clocks Message Board Virtual Ball Clock Retrieved from Is an old 2011 thread about it and I don't know how this story ended. I need a new engine for this clock- we have determined that this engine is a problem. It is Kugeluhr 220/240v, 50Hz; 3W. (Battery also says Netzbetriebenes elektriches Gerat! - I do not speak German, but I think this is a warning). The clock was bought in Italy in 1991. Made in West Germany. Can anyone help? Hello JoannaC, and goodadd to this message board. After your description I have an idea that you have the original thing, namely Kugeluhr mattela, a famous manufacturer of toys and models at that time. There were later imitations/repros and as far as I know, a similar clock is still being produced in the far east. They all work differently. Yours is powered by a 220V 50Hz 1 RPM synchronous motor, others had a quarz module to trigger the arm to pick up one steel ball every minute. Black box containing the engine can be opened carefully, please show pictures of the engine, it should be deployed. Another option is to buy an incomplete donor clock e.g. (at the moment I have two, one original and one type of quarz) Come back with additional photos! Respectfully Burkhard Toggle signature Gigni de nihilo nihil, et nihil in nihilum posse reverti (Persius) Hello and thanks for the reply! Here are the pictures..... I live in hope! ah hang on- it seems that you are asking for a picture of the engine inside the box? I can't open it! A little peeing with a small screwdriver around the outside of the motor box cover should turn it off. Switch harold bain, member ch 33 If you won't tick, let me tock into it maybe if the engine is glued together, try with caution or see if you can work out the glue with the gap between the two covers that make up the engine box. Good luck! Anyway this is an example with synchrone movement, they should be replacable! Burkhard Toggle signature Gigni de nihilo nihil,et nihil in nihilum posse reverti (Persius) They look similar, if not identical, to the arrow rolling ball clock of the late 1970s. Arrow's use a 117VAC, 60 bike engine for which there are no longer replacements. I've had a few over the years and didn't run them as engines lately maybe a few to five years before I died. I tried repairing by cutting the casing along. Neither the internal motor nor the nylon gears can be found. NOS arrows appear on eBay quite often for as little as $50. I would like to stay away from being used because of a problem with the engine. In any case, they will not act as a replacement for you. My favorites, and I have a few, are the Harley Mayenshein Idle Tyme rolling ball clock from which Arrow bought the rights and made them more affordable by changing the wood form design to a plastic and cheap engine. Idle Tyme clocks use a 1 RPM time clock engine that can still be found, His son builds and sells limited editions of the original: just a little history ... Mort signature switch in York, PA Hello everyone. I found someone who, hopefully, can fix it. Thanks for all the contribution - thumbs up! today I had the opportunity to open my engine box, which is slightly different from yours: While both are held in place by two gills through a field projecting into two posts mine has another two gills visible only after taking the field from the masts. These sunken gills stick together two shels of the engine box and the engine itself in it. A few pics will show. HTH Burkhard Toggle signature Gigni de nihilo nihil, et nihil in nihilum posse reverti (Persius) Look for intermatic clock device in working condition, uses the same engine, even those made now. I bought this clock a few years ago in Flohmarkt (sale stand). Digging by crud revealed that it was made by Mattel (order No. 3636) under an exclusive license from Arrow Handicraft Corp., Chicago and is based on U.S. Patent 4.077.198. The patent (issued in March 1978) is available online here. Installation and cleaning was needed for this to work. Then tuning began to increase its reliability: Some horns cried out for smoothing, added a small fence on the upper rail... in the end, it worked (almost) flawlessly in my office for years at the end. Last spring he suddenly stopped. As it turned out, the small engine obviously did not survive the constant abuse by our recently increased mains voltage (now 230V, previously it was 220V). I sent Mattel to the spare part (ok, I had to try but they never bothered to answer. So, now Stopped. Unfortunately I added Motor, AC, 220V, 3W, synchronous to my WANTED list and put down the clock. Last fall fate smiled at me: I found the engine for a surplus trader and could not resist the price. But upon arrival the booty I got stuck again: Four wires on the engine, two on my cable ... As usual in such situations, my wonderful international cavalry - ahem, mailing list came to the rescue and provided the missing specification: The correct phase change capacitor was obtained and I went to the drawing board. Some gray haired richer design has been finalized featuring a lot of tools (didn't I mention my fondness for surplus traders?). I had to give up the idea to hide the mechanism in a small black box that housed the original drive - but on the other hand, why hide the gears at all? Two days spent happily in the workshop resulted in this: Well, now it works again - and this time I have a spare engine somewhere in my pile ... BTW, this engine - how does it work? Some digging into the long forgotten basics (AC, electromagnetism,...) and the scheme sent by DoN (mentioned mailing list) led to this simulation of PSpice (used student version of this simulator can be downloaded for free in www.orcad.com) : Note: Resistors are necessary to give the perfect coil some real touch, namely finite resistance (measured!). Of course, windings L1 and L2 are fed by current (I(L1) rsp I(L2)) alternately. As we all know (don't we?), sending current through the wire wounds around some plain soft iron will transform the aforementioned iron into a magnet, with polarization depending only on the direction of current (CW or CCW!). Now take a look at the animation below: L1 and L2 inductive coils are divided into several parts of equal size, wired in series, but switching makes sense in each part: If the left side of L1 is winded CW, the next part of L1 is winded CCW and so on. L2 parts are built and arranged in a similar way. Since the current through each catheter varies depending on the frequency of the network (50 Hz here, see simulation above), iron rods through inductors will change their magnetic polarity in synchronization. U-shaped blocks in an animation must represent permanent magnets. As you can see, constants are moved from left to right only by snapping different poles! Still with me? Just extend the animation to more parts L1 and L2 and create a ring of them. Then add a few permanent magnets and glue them to the shaft running in the middle of the coil ring - you're done! The shaft will change the known and fixed angle (360° / half the number of L1 parts) for each power period. How can we make the engine run backwards? All we have to do is reverse the L2 polarity sequence, for example by replacing the induction coil wires. Another trick with the same result would be to move the lower V1 connection (V1-) to the other (right) C1. Postscript: I barely dropped my tools some wastepaper (they call it ads) materialized in my mailbox: Am I ? No, mine is special! ODTS 2001 2001