

## Extract

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On the staff placed blocks are scanned by a detection beam from a remote sensors whose distance from the sensor to the block determines the height of a tone and the time of scanning the block, the duration of the tone.

## New gear for the songs builder

The invention is a modification to the previously described by me and obtained patent NL 1031996 in which children playfully learn to deal with the musical notes system or music in general. Unlike the current system is nuts, children visual insight into the duration of a musical note, the beat and rhythm.

With the new invention expires the circuitry described in patent NL 1031996 and is replaced by a completely new system and the various blocks represent a note value to be adjusted.

With this new invention, the top of the home builder of the songs where the speakers are so high that there is room for a rail over the full length of the staff placed above the staff. About the rail is a carriage with a remote sensor over the full length of the staff back and forth freely. The increase in the home builder of the songs is an open trench so that the detection radius of the distance sensor, and can freely move across the five lines of the staff and the full length of the staff.

Placed blocks on the staff, who rectangular in shape and each represent a value of one, two, three or four beats, and accordingly also have different lengths, are detected by the detection beam of the remote sensor on the slide over the rail runs. Data have to be calculated and converted into a microprocessor and software pitches and duration of the tone and through the tone generator and speaker. In the example we assume that the blocks are all of equal width which is one centimeter. The thumb of a count is two inches long. The block count of two is four inches long. The block count of three is six inches long and four counts of the block is eight inches long. A cube of one inch to one eighth note can be represented but is omitted because it is too difficult for small children.

The bar lines are printed on the staff and made with a different color such as four-quarter black and three-quarter size stripes of green. The duration of the tone is determined by moving the remote sensor on a sled on the rail. The first contact of the detection beam of the remote sensor to the block that is placed on the staff and the end of contact, determine the duration of contact and thus the duration of a tone. The longer the contact, for example, the block of eight inches, the longer the tone.

When a block of two inches is the contact and the short duration of the tone too short.

The height of a tone is determined by the length of the detection beam in contact with the block. In repose at the forefront of the key, the remote sensor detection radius of no contact and therefore no tone. When starting with a predetermined rate, visible through a colored LED next to the remote sensor is the distance sensor detection radius around the staff from the beginning to the end. All blocks placed on the staff are scanned at length and position on the staff. With the thumb of the lower middle C positioned in contact with the staff and the detection radius is eighteen inches in length for example. Upon contact with the sensing radius of a block placed on the staff a note higher D is the length of the detection beam seventeen inches. In a tone higher the E, this sixteen inches. This continues until the high A, then the length of the detection beam six inches.

These lengths are passed through the software and microprocessor calculated and translated into the level of tone to the tone generator and speaker. For placing blocks on the staff of the same height and same or different lengths and with multiple linear form are portato-cubes. These blocks are at the end with a recess from above in the form of a corner five millimeters long and five millimeters high and the full width of the blocks of an inch. This is done to the contact with the detection beam at the end of the block arrived to take a break so the next block is detected again. There would be no portato-blocks are used then the blocks together to give a long beep.

The invention will be further detailed to put the basis of the embodiments shown in the figures of the construction of the invention.

Fig. 1 Overview machine builder with rail tracks, sled and remote sensor and new blocks.

Fig. The two blocks with different length and duration.

Fig. 3 A section CC songs builder as shown in Fig. A

Fig. 4 A top view of detecting blocks placed on a staff by the remote unit.

Description and operation of the figures.

Fig. 1 The house of the songs builder 1 is placed on high 2 to make way for a rail 3 that a carriage 4 can move in which a remote sensor 5 and a detection beam 6 by an open slot 13 reflects the increase in February across the staff can walk for blocks 7, 8, 7a, 8a and 9 to be scanned at height and duration of the tone. Along the remote sensor is a 5 color LED 5a in the sled making it the speed of movement, also known as the tempo, may follow. The four-bar lines 19, the fourth black stripes and three-quarter size 20, the color green and have been distributed among the staff made.

Fig. July 2 brick in my example a length of two inches and represents a quarter note beat and the color red. Block 8 has a length of four inches and represents a half note two beats and the color blue. 9 is a block length of six inches and represents a half-note and three counts of the color green. The block 10 has a length of eight inches and represents a whole note for four beats and the color yellow.

The blocks 7a, 8a, 9a, and 10a are portato blocks used in the placement of the blocks at the same height and side by side on the staff. These have a hole at the top end of the block in the form of a corner of five millimeters long and five millimeters high. The block 7b represents the value of one quarter note and a staccato note with a larger hole at the end of the block. 11 is a front and rear view of a block including 7, 8, etc. and back view, the recess 12 in the width of blocks 7a, 8a, etc.

Fig. 3 is a cross section CC of the songs builder as shown in Fig. One whose house 2 increased relative to the housing 1 of the songs builder. 3 is the track where the carriage 4 showing the distance sensor 5 is attached and the detection beam 6 by an open slot 13 a 7 block scanning, which is placed on a staff, the length and height of a tone.

Fig. On April 14 the staff are 7 blocks placed a note of shapes from low C to high A square blocks 7 7a. The pitch is determined by the detection beam 6 of the distance sensor 5 mounted on a carriage 4 which has a rail 3 runs, and when pressing a button will start 15 runs from A to B. In re pushing off 15, the slide First back to the initial situation in the four-quarter time signature and start scanning the blocks back from A to B. The detection beam 6 in the rest position in the beginning with the signature does not show.

When starting the carriage 4 with a certain speed on the rail 3 from A to B detects the beam 6, the first block 7 and the detection beam 6a, the distance from block 7 to distance sensor 5 in my example, eighteen inches and displays it on to a microprocessor 16 programmed and requires eighteen inches to the low tone is C, then it is passed to a tone generator 17 to the tone that sounds through the speakers 18.

The seven blocks in my example have a width of one inch.

Because the block 7 represents a duration of one beat, the detection beam 6a after a count of 7 to block a step higher on the staff, and D is the distance from the detection beam 6b seventeen inches.

In block E, sixteen inches high, and so on until the A block 7a whose detection radius than six centimeters. Here are a series portato-notes of the same height with a recess at the end of the blocks. At the end of portato 7a-block with the notch at the end of June, the detection radius of the recess 7a portato-block and there is no tone. A. The tone starts again at the forefront of the

detection beam block 9a 6c. etc.

## Conclusions

1. The switching system as described by me in the resulting patent NL 1031996 is replaced by the top of the house of the songs builder where the speakers are so increase, that place is a bar with an open slot for a distance sensor and a LED is placed which slide along the full length of the staff of the songs builder can move and the detection radius of the distance sensor and the light from the LED through an open cut, made to the increase of the songs builder, can detect and shine across the staff. On the staff placed blocks, a note value represented by the start of the slide with the superimposed distance sensor and from the rest position, which is not one show at the time signature and key of the staff, to the end of the staff to sensed by the sensing beam, the top side of the cubes, at length and height of a tone. The duration of a tone is determined by signaling the beginning of the block by the forward detection radius of the distance sensor and signaling the end of the block where the length of the block determines the details of identifying them passed on to a microprocessor.

A block of two inches which is equivalent to one quarter note gives a tone of a phone a block of four centimeters is equivalent to a half note gives a note of two beats. A block of six inches which is equivalent to a half-note tone gives a count of three and a block of eight inches, which is equivalent to a whole note gives a note of four beats. The height of the tone is determined by the distance between the identified block and the remote sensor. The distance is greatest in the lowest ranked piece on the staff middle C.

If the length of the detection beam to the remote sensor to eighteen inches is programmed microprocessor determines that eighteen inches the tone middle C, and distributes it to a tone generator that allows the sound through the speakers in the songs builder. If the pieces an inch thick and a block a tone higher on the staff placed and detected by the detection radius is the distance between the pad and the remote sensor seventeen inches and determines the programmed microprocessor that this is a tone higher than the middle C, the D. Each placed block a tone higher on the staff, the length of the detection beam still an inch shorter and knows the programmed microprocessor that the tone always with a tone goes up from middle C eighteen inches to the highest A six inches.

2. Device according to claim 1 wherein blocks, placed at the same height on the staff and past each other again identifying possible by an anticipatory detection radius of the distance sensor, the blocks at the end and top of a block a cut to the shape of a corner of five millimeters long and five millimeters high and the full width of the bricks. These blocks are portato-called blocks. In these blocks, for example, the length of detecting a half inch cut and enters the detection beam by the portion of the half inch around and there is no tone is an interval of half a centimeter and the following block again detected.

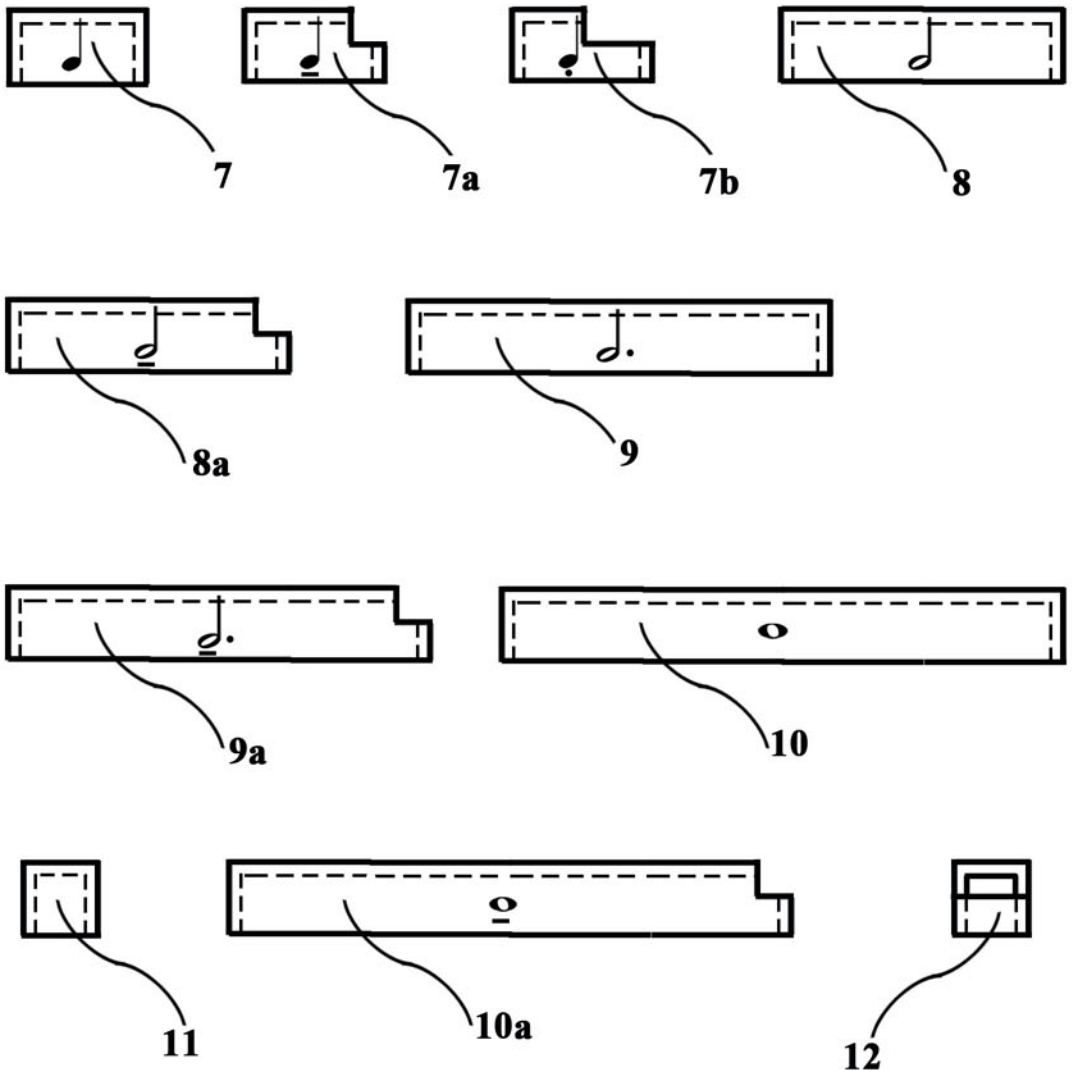
There is also a cube of two inches long that the value of a quarter note with the duration of a count which is mounted a corner of an inch long and five millimeters high sometimes staccato-called block. The current detection radius of the remote sensor signals over the duration of an inch and a half beat not detect a break of half a phone

3 Device according to claim 1 and 2 that the bar lines of a four-quarter size on the staff visible in eg the color black while the barlines of a three-quarter size, for example the color green.

4. Device according to claim 1, 2, and 3 that the songs builder can be expanded with eighth notes and quarter notes to point the eighth note has a length of one inch and the length of half a beat and the quarter note to point a length and a half inches half the length of these phone are also portato-top boxes by the end of a cut to the shape of a corner of five millimeters long and five millimeters high.



**Fig. 2**



**Fig. 3**

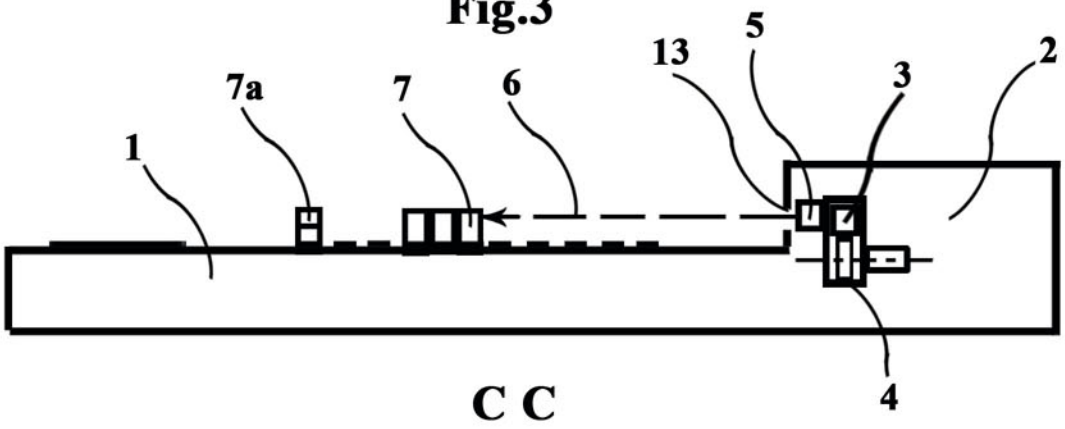


Fig.4

