F. R. GOOLMAN.

TOY AUTOMATIC PLAYER PIANO.

APPLICATION FILED SEPT. 13, 1917.

1,314,189.

Patented Aug. 26, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

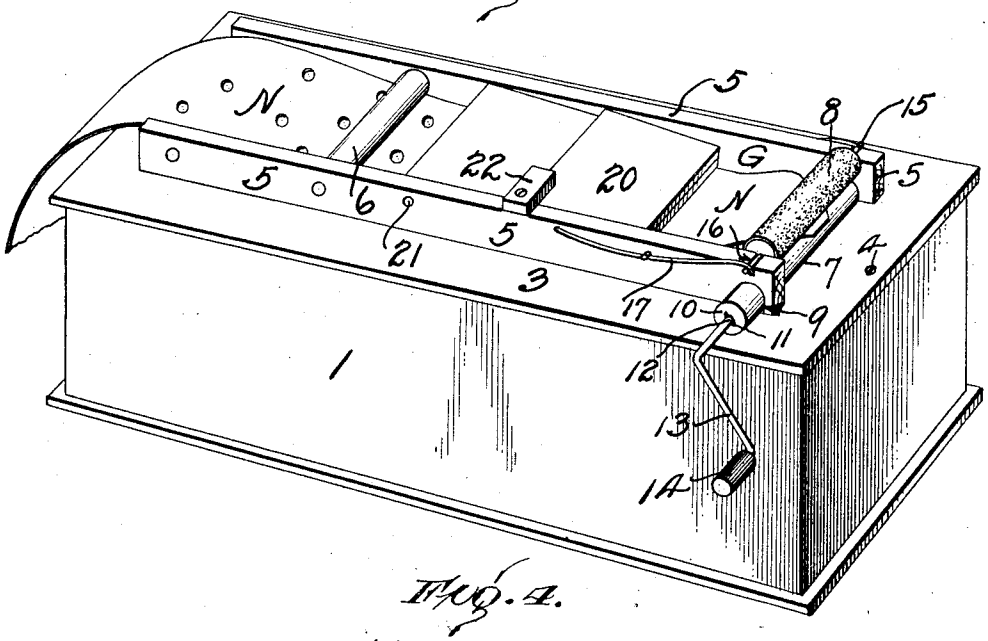
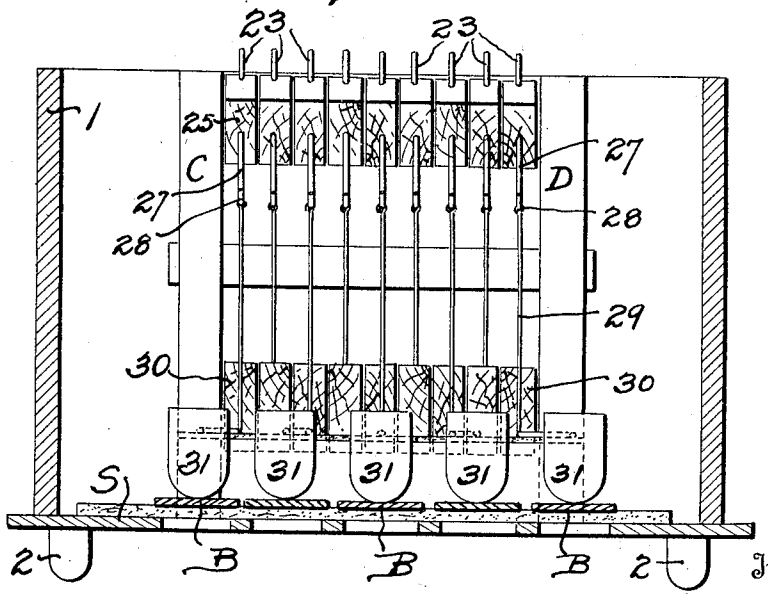


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 2.

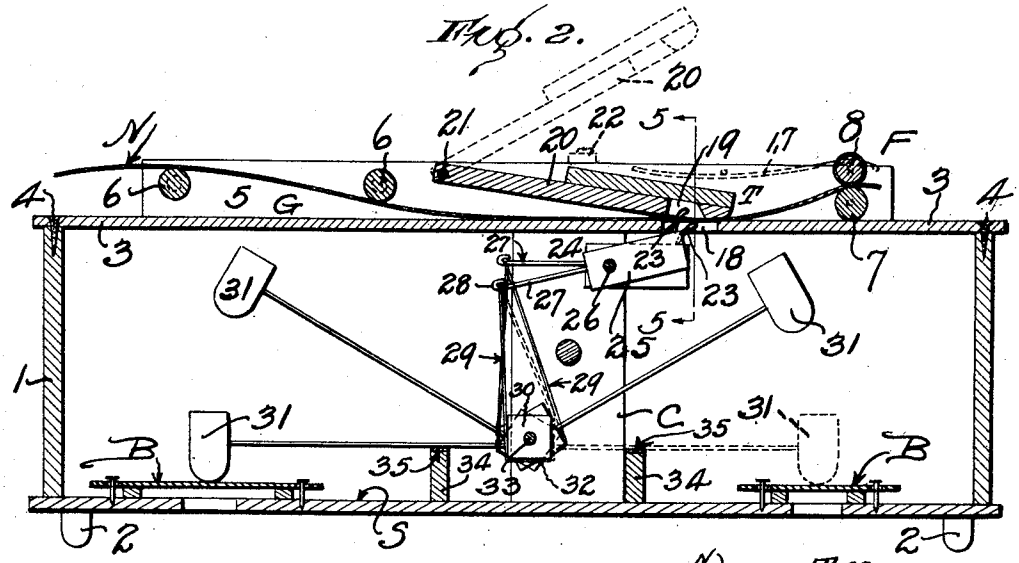


Fig. 3.

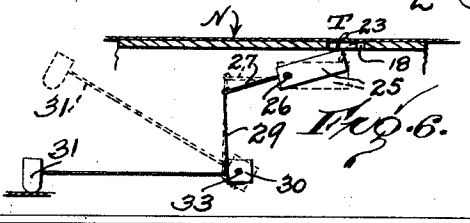


Fig. 6.

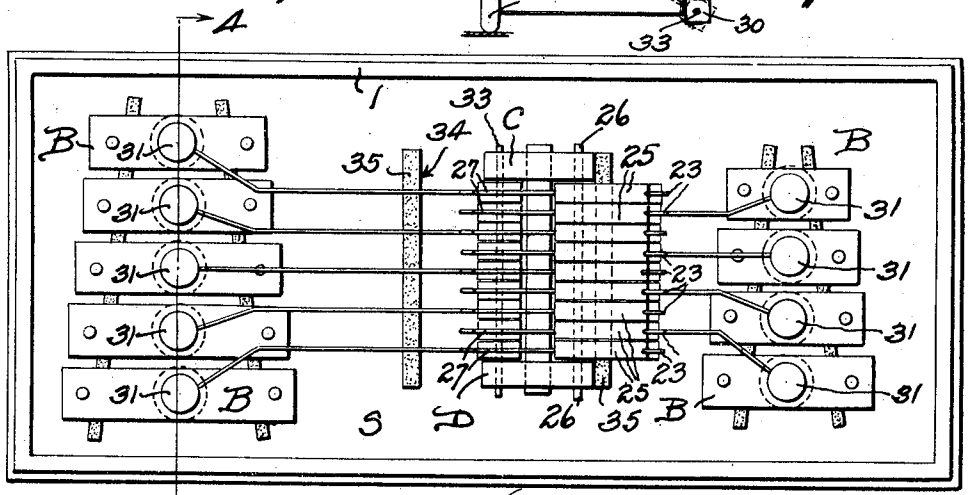
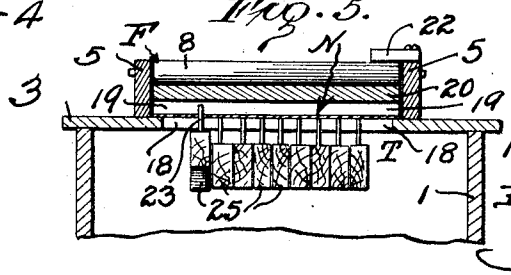


Fig. 5.



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UNITED STATES PATENT OFFICE.

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TOY AUTOMATIC PLAYER-PIANO.

1,314,189. Specification of Letters Patent. Patented Aug. 26, 1919.

Application filed September 13, 1917. Serial No. 191,228.

To all whom it may concern:

Be it known that I, FRED R. GOOLMAN, a citizen of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Toy Automatic Player-Pianos, of which the following is a specification.

This invention relates to the general subject of toys, and has special reference to a novel miniature automatic player piano especially adapted for reproducing various tunes and melodies from prepared note sheets in simulation of the well-known full sized player pianos.

Accordingly, a primary object of the invention is to provide a simple and practical toy which will closely simulate the manipulation and musical effect of the usual automatic player piano by reproducing musical tunes from separate note sheets or records, thereby affording much pleasure and amusement from a toy which has heretofore been regarded more or less in the nature of a piece of toy furniture rather than a source of melodious amusement so far as playing or reproducing actual tunes is concerned.

A further object of the invention is to provide a device of the character set forth which may be conveniently embodied in such form as will readily permit of its general use as a toy. That is to say, it is proposed to provide a simple and practical construction which will consist of relatively few and inexpensive parts, and may be consequently sold at a figure which will not prohibit its use for play and amusement purposes, while at the same time providing a toy which is substantial, reliable and easy to operate.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:

Figure 1 is a perspective view of the complete toy.

Fig. 2 is a longitudinal sectional view thereof showing a note sheet in operative relation to the device which causes the sounding of the musical elements of the device.

Fig. 3 is a top plan view with the cover or top removed showing the interior arrangement and position of parts.

Fig. 4 is a vertical cross sectional view on the line 4—4 of Fig. 3.

Fig. 5 is a detail cross sectional view on the line 5—5 of Fig. 2.

Fig. 6 is a more or less diagrammatic view showing the position assumed by the striking device when a perforation is passing over the tracker slot in full lines, and the position when an imperforate part of the sheet is passing thereover in dotted lines.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

In carrying the present invention into effect, any convenient and readily available materials suitable for the various parts of the device may be utilized, and therefore, various changes in minor details brought about by improved manufacturing conditions or the use of different materials may be fully employed without departing from the fundamental and essential features of the invention. Accordingly, as shown in the drawings, it will be observed that it is proposed to provide a wooden boxing or casing 1 which may be supported on suitable studs or feet 2 and fitted with a removable top or cover 3 held in position by the screws or equivalent fastenings 4, and carrying therewith the opposite parallel guide members 5 which coöperate to form a perforated note-sheet guideway G. The entrance end of the latter has located therein the transversely disposed spaced cross bars 6 which coöperate with the walls 5—5 to assist in the proper feeding of the note sheet into the device, while, at the opposite end thereof is located a note sheet feed or traction device F which may consist of the main traction roller 7 and the yieldably mounted presser roller 8.

Although any type of hand or power driven note sheet feeding device may be utilized, the construction shown is both cheap and efficient, and, as will be seen from the drawing, the traction roller 7 preferably has its surface coated with abrasive or friction material, and has its opposite end portions journaled in the bearing slots 9 of the guide walls 5. One of the said ends of this roller is preferably extended as indicated at 10 and may, as shown, be formed

with a suitable socket 11 for receiving the winged key end portion 12 of an operating crank 13 having a suitable handle 14. The upper roller 8 which is yieldably pressed into engagement with the roller 7 preferably has its surface provided with a felt or equivalent soft covering which will effectively coöperate with the roughened surface of the roller 7 to pull the perforated note sheet N through the guideway G when the latter is rotated. The opposite ends of the said roller 8 are provided with the gudgeons 15 held in the open notches 16 in the side walls 5 by the free ends of suitable springs 17 or the like carried by the latter.

Referring further to the top 3, it will be observed from Figs. 2 and 5 that the same has formed therein, a transversely disposed clearance or tracker slot 18 located at the intermediate portion of the guideway G, and adapted to coöperate with a groove 19 formed in the free end of a pivotally mounted note sheet clamping element designated generally as 20. This element may be of any convenient size, form, or construction, which will permit of its manipulation to properly place the note sheet in the machine, and therefore, as shown may be pivotally or swingingly mounted at its rear end as indicated at 21 in the opposite walls 5—5 of the guideway in such a manner that the said rear end thereof is elevated from the floor of the guideway to provide the necessary note sheet clearance, while the forward end thereof beyond the groove 19 is maintained in close proximity to the floor of the guideway to thereby cause the note sheet to be clamped or held as close as possible to the surface of the floor of the guideway in the zone adjacent the clearance opening 18. Any suitable and convenient means may be utilized for holding the element 20 locked in its lowered position, such, for instance, as the turn button device 22 or its equivalent.

The clearance slot 18 and the groove 19 above referred to are designed to coöperate with certain instrumentalities within the casing 1 to provide a tracker device T for the note sheet. That is to say, the slot 18 and groove 19 coöperate with a plurality of tracker pins 23 carried by the several devices which cause the striking of the sounding elements of the piano, and which project through the opening 18 into the groove 19 and are inclined in the direction of travel of the perforated note sheet whereby when the same is drawn thereover by means of the rollers 7 and 8 or their equivalent, the said several devices which operate to strike the sounding elements, will be actuated.

Referring now to the musical elements of the toy, it will be observed that the same essentially comprise a plurality of xylophone bars B, in the present case preferably embracing one complete octave and one note of the next, suitably supported on the bottom of the casing 1 which constitutes a sounding board S. To provide an economical and effective disposition of the xylophone bars, the same are preferably arranged in opposite sets respectively located at each end of the said sounding board, and the individual arrangement in each group is such that they contain alternate notes of the octave whereby alternate tracker pins 23 will represent the proper sequence of notes in the musical scale.

For each xylophone bar B, there is a separate note-sheet controlled operating device which includes one of the inclined tracker pins 23, and since all of these devices are similar, a description of the structure and action of one will suffice for all. Accordingly, by reference to Fig. 2 of the drawings, it will be observed that in each instance, the means for sounding the xylophone bars preferably consists of a main operating lever or tumbler element 24, which, as shown may consist of a body block 25 of rectangular form and carrying at one corner a tracker pin 23, while the opposite end portion thereof is provided with an opening for receiving a stationary supporting shaft 26 which is mounted in the upright standards C and D and disposed transversely of the boxing or casing and forms a common fulcrum support for all of the main operating levers of the devices which are arranged side by side thereon. The end of the said body block portion 25 adjacent its point of pivotal support on the shaft 26 has fitted thereto a rearwardly extending wire arm 27 having a hooked end 28 adapted to loosely receive one end of a flexible connecting element 29 whose opposite end is rigidly secured to a fulcrum element 30 carrying the hammer 31 which strikes a xylophone bar. This fulcrum element 30 may be of any desired shape or formation, but, as shown, is preferably in the form of a square block having a central opening for receiving a shaft 32 which is also mounted in the standards C and D and arranged transversely of the boxing or casing 1, and is common to all of the fulcrum elements or blocks 30 of the several xylophone bar striking devices.

Thus, it will be apparent that the main operating lever or tumbler 24 and the fulcrum element 30 which carries the striking hammer 31 are operatively connected, whereby any pressure exerted on the main operating lever 24 in a downward direction at the end carrying the tracker pin 23 will cause the hammer 31 to be lifted out of contact with its corresponding xylophone bar. Therefore, when the imperforate part of the note sheet lies over a tracker pin 23, the hammer 31 will be elevated as shown in Fig. 2, and when a perforation on the note sheet

registers with a pin 23, the hammer 31 belonging to that pin will drop by gravity to thus sound the proper note, as also shown in Fig. 2.

Owing to the relatively small degree of angular movement of the forward end of the main operating lever 24 made possible by the registering of a perforation in the note sheet with the tracker pin, it will be apparent that it is necessary to connect the free end of the flexible element 29 with the fulcrum element or block 30 in such a manner that the angular movement of the hammer 31 will be considerably greater than that of the tracker pin. Accordingly, the free end of the flexible element 29 is passed around the edge of the block 30 to which the shank of the hammer 31 is attached to the lower edge of the said block where it is secured thereto as indicated at 32. Since the notes of the octave represented by the several xylophone bars are arranged in alternate relation in separate spaced sets, it will, of course, be apparent that certain of the hammers must be disposed at one side of the standards which support the shafts for the levers of the operating devices, while the remaining ones are disposed on the other side thereof, thus causing alternate flexible elements to be respectively attached to relatively opposite points on alternate fulcrum elements, and producing a staggered relation thereof as shown in Fig. 2.

For the purpose of properly positioning the striking hammers and also preventing their dead weight resting on the xylophone bars after having struck same and before the note sheet again depresses the tracker pin, there is arranged between each set of bars and the transverse shaft 33, a suitable transversely disposed buffer bar 34 which is preferably provided with an impact absorbing facing 35 such as felt or the like to deaden the sound of the blow of the shanks or arms of the hammers 31 as they fall by gravity to strike the xylophone bars.

By reference to the manner of operation of the toy, it may be observed that the note sheet clamping element 20 is first elevated to the dotted line position shown in Fig. 2 and then the perforated note sheet N is fed into the guideway G, preferably between the guide bars 6 shown in Fig. 2, and thence across the slot 18 and row of tracker pins 23 to the rollers of the traction or feed device F. Then the said element 20 is lowered into the position shown in full lines in Fig. 2 and the turn button 22 rotated so as to hold or lock the same at the limit of its downward position. The note sheet N has the same general characteristics as the note sheets used on the full size player pianos, except that it is, of course, narrower and the perforations are also somewhat larger to accommodate the tracker pins 23. Thus, as usual, the front end of the note sheet N, is not perforated, and the mere act of clamping the presser element in its lowered position causes the imperforate portion of the note sheet to press downwardly on the extremities of all of the tracker pins 23, whereby all of the main operating levers 24 will be turned on their pivots to cause the hooked ends 28 thereof to be elevated, and thus cause the several hammers 31 to be lifted out of contact with the xylophone bars. This will be understood from the illustration of Fig. 2. Then, when the note sheet is slowly pulled through the guideway G by rotating the traction roller 7 with the hand crank 13 or its equivalent, to bring the perforated portion of the note sheet into the zone of the tracker device T, the tracker pins 23 will jump into the openings in the note sheet and thus permit the hammer to quickly fall and strike the bars to thus produce the desired musical notes. Obviously, the continuous rotation of the roller 7 and the consequent continuous feed of the note sheet between the slots 18 and groove 19 of the tracker device will cause the xylophone bars to be struck in the same order that the perforations pass the line of tracker pins 23, thus temporarily releasing the same from their depressed position to cause the lowering of the striking hammers 24 by gravity to reproduce the musical section cut into the note sheet N.

Without further description it is thought that the many features and advantages of the invention will be readily apparent, and it will of course be understood that minor changes in the form, proportion and other details of construction may be resorted to without departing from the spirit of the invention or scope of the appended claim.

I claim:

A hammer connection for toy automatic player pianos including a block having a central axis, a hammer carried thereby and disposed at right angles to said axis, a note sheet engaging lever including a block having the fulcrum of the lever therein and provided with note sheet engaging means at one end, and a flexible connection between the other end of said lever, and the block associated with the hammer, said flexible connection passing around two sides of the hammer block and being connected therewith.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

FRED R. GOOLMAN.

Witnesses:

HELEN A. SLOCUM,

MARTHA MEINERSMANN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."