No. 860,616. PATENTED JULY 16, 1907.

F. W. WOOD.

NOTE SHEET GUIDE MECHANISM.

APPLICATION FILED AUG. 25, 1906.

Fig. 1

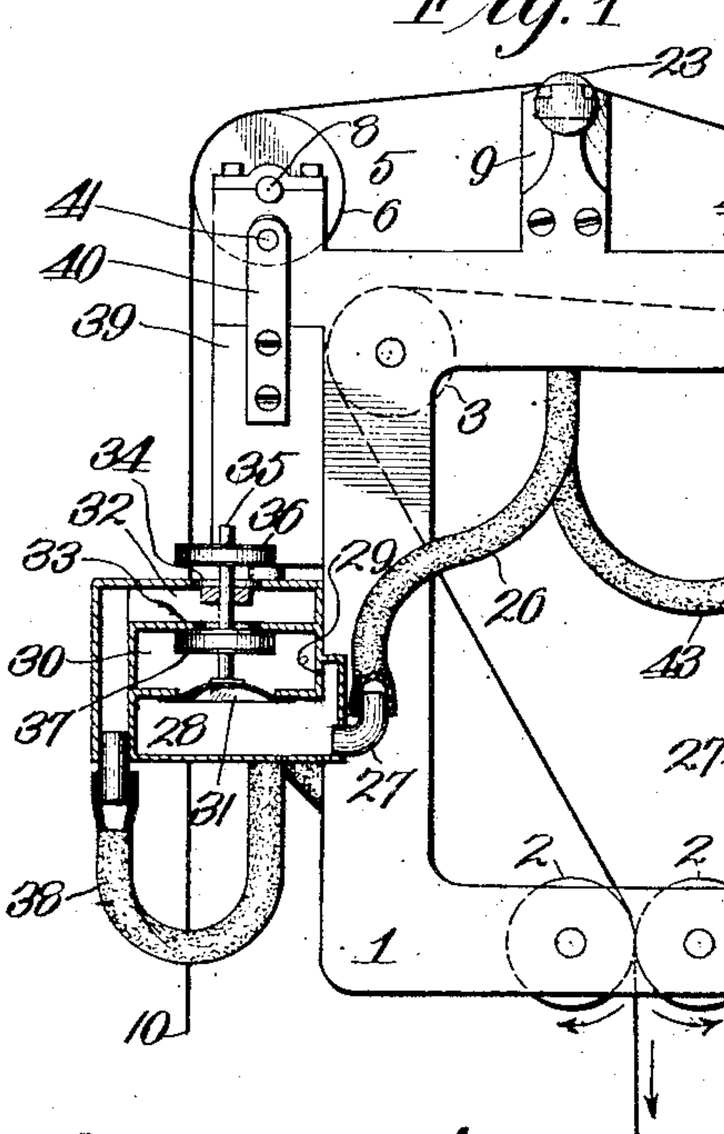


Fig. 5.

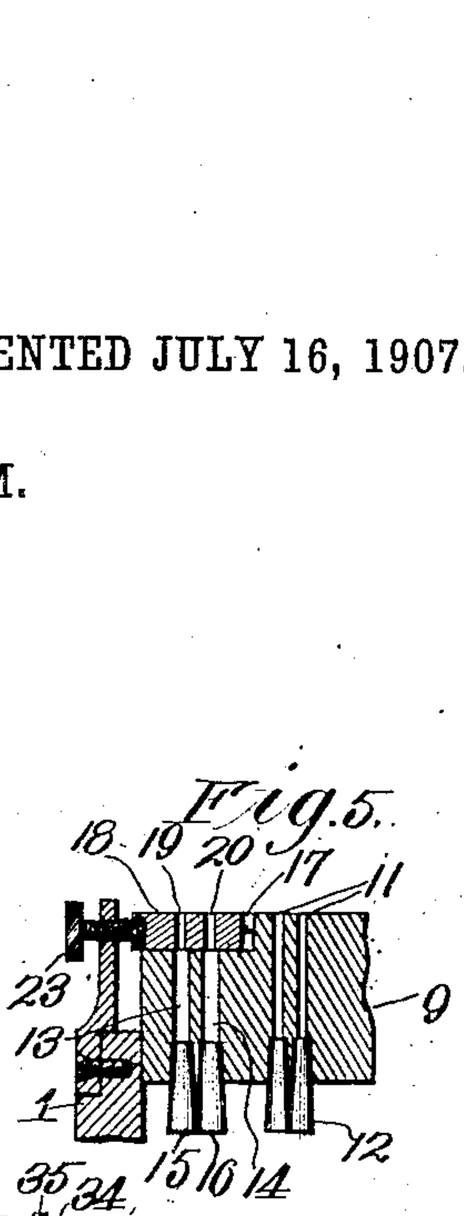


Fig. 7.

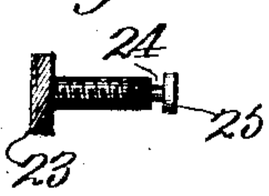


Fig. 4.

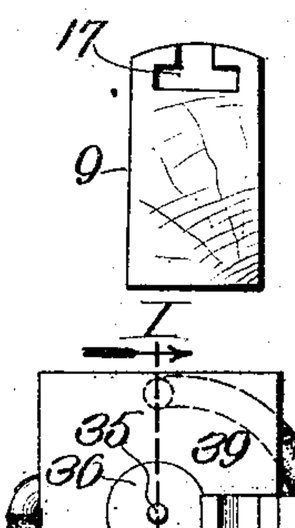


Fig. 6.

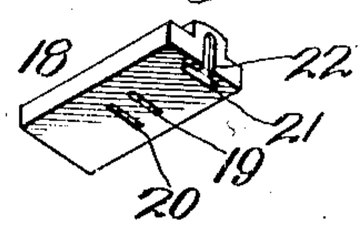


Fig. 2

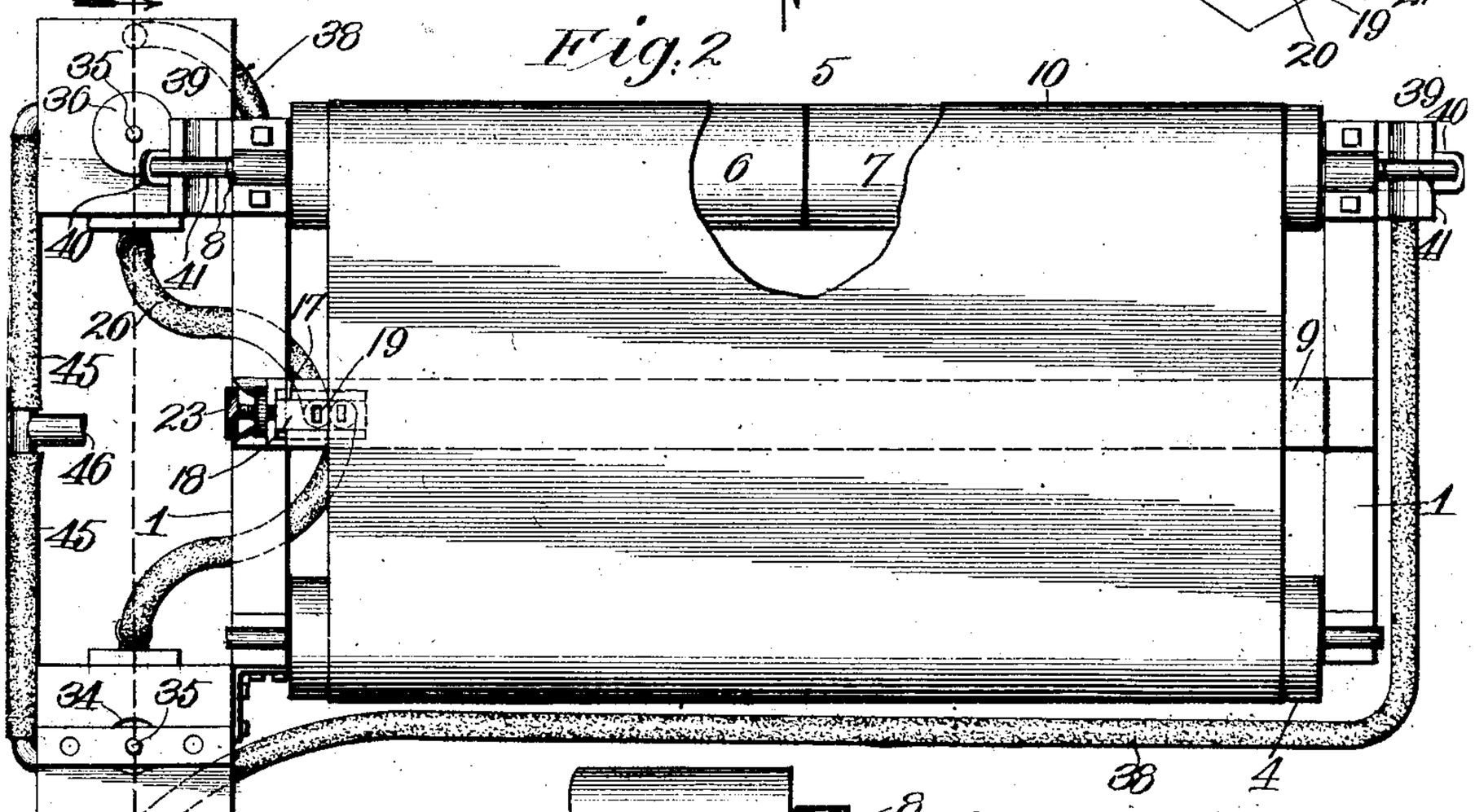
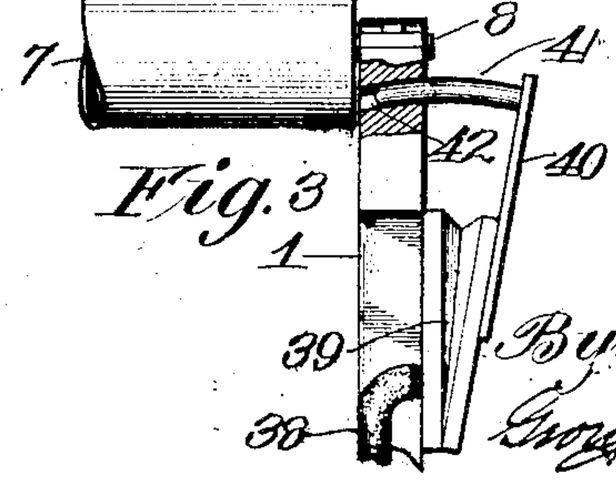


Fig. 3



Witnesses

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UNITED STATES PATENT OFFICE.

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NOTE-SHEET-GUIDE MECHANISM.

No. 860,616. Specification of Letters Patent. Patented July 16, 1907.

Application filed August 25, 1906. Serial No. 331,967.

To all whom it may concern:

Be it known that I, FREDERICH W. WOOD, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Note-Sheet-Guide Mechanism, of which the following is a specification.

This invention relates to automatic piano playing mechanism and more especially to that type embodying a perforated note sheet adapted to travel over a tracker bar and a guide roller, and my object is to produce mechanism of this character embodying a roller consisting of two sections arranged end to end and adapted to rotate independently or together around a common axis under the frictional engagement of the note sheet, together with means whereby lateral movement of the note sheet in one direction or the other shall result in retarding or arresting the movement of one section or the other to increase the friction between such retarded or arrested section and the note sheet and thereby compel the latter to reverse its creeping or lateral movement until it is again tracking perfectly with the passages of the tracker bar.

With this general object in view the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which—

Figure 1, is a vertical section taken on the line I—I of Fig. 2, of apparatus embodying my invention. Fig. 2, is a top plan view of the same with the note sheet broken away and the perforations thereof omitted. Fig. 3, is a view partly broken away showing one section of the roller and the means for retarding or arresting it. Fig. 4, is an end view of the tracker bar. Fig. 5, is an enlarged vertical longitudinal section of the tracker bar and contiguous parts hereinafter described. Fig. 6, is a detail perspective view of a slide forming a part of the tracker bar. Fig. 7, is a detail view of the screw for adjusting the slide.

In the said drawings 1 indicates a frame of the type shown or of any other suitable or preferred type, 2, 2, represent feed rollers one or both of which are driven by any suitable means in the direction indicated by the contiguous arrows, 3, 4, and 5 are guide rollers suitably journaled in the frame, guide roller 5 consisting of two sections 6 and 7 arranged end to end and adapted to be rotated independently or together as hereinafter explained, and said roller 5 is mounted on a shaft 8 journaled in the frame.

9 indicates a tracker bar of the usual construction except as hereinafter explained, carried by the frame, and 10 the note sheet which extends between the feed rollers and over the other rollers named and the tracker bar as shown and is adapted to travel in the direction indicated by the contiguous arrow Fig. 1.

11 indicates the usual type of tracker bar openings, and 12 tubes communicating therein with and adapted to be connected by flexible tubes not shown, to the player mechanism also not shown.

13, 14, indicate supplemental openings in the tracker bar communicating at their lower end with tubes 15 and 16. 17 indicates an inverted-**T** shaped groove in one end of the tracker bar and 18 a correspondingly shaped slide longitudinally adjustable in said groove and provided with openings 19 and 20 communicating respectively with the upper ends of openings 13 and 14, the innermost opening 20 being normally overlapped and closed by the note sheet as shown clearly in Fig. 2. 21 indicates a vertical groove in the outer end of the slide and 22 a slot opening into said groove and narrower than the latter (see Fig. 6).

23 indicates a screw mounted in the contiguous portion of frame 1, and provided with a reduced neck portion 24, to occupy slot 22 and a head 25 to occupy groove 21. It will thus be seen that a swiveled relation is established between the screw and the slide whereby the turning of the former will effect longitudinal adjustment of the latter so as to accommodate note sheets of slightly varying width, or contraction or expansion in the width of the same from any cause.

26 indicates a flexible tube adapted to be connected at its upper end to tube 15 and at its lower end to a tube 27 communicating with the valve and diaphragm casing. Said tube communicates with the chamber 28 of said casing and through a vent hole 29 with the suction or vacuum chamber 30 of the casing, a flexible diaphragm 31 being adapted to be depressed into chamber 28 or expanded into chamber 30, the latter being its normal position because of the fact that air may pass to chamber 28 because the note sheet normally does not cover said opening 19.

32 indicates a chamber connected by valve opening 33 to chamber 30 and by opening 34 to the atmosphere. 35 is a valve stem suitably guided and extending through openings 33 and 34 and adapted to be raised under the expansion of diaphragm 31 and to drop when said diaphragm is depressed.

36 indicates a valve secured to stem 35 above opening 34, and 37 a valve secured to the stem below opening 33, the last-named valve normally closing opening 33 because of the expansion of the diaphragm. Valve 36 is normally raised above opening 34 for the same reason so that air may pass through said opening into chamber 32 and thence pass by way of tube 38 into a pneumatic or bellows 39 and thus maintain the latter normally expanded as shown in Fig. 3. Said pneu-

matic is provided with an arm 40 provided with a brake shoe 41 guided in an opening 42 in the frame and adapted when said pneumatic or bellows is collapsed as hereinafter explained, to engage the end of the contiguous section of roller 5 and retard or arrest the motion of said section.

43 indicates a tube corresponding to tube 26 and adapted to be connected to tube 16 and at its opposite end to the tube 27 communicating with chamber 28 of the second valve and diaphragm casing, which casing corresponds in all essential particulars to the casing described and is equipped with a similar diaphragm. The valve rod 35 of the second casing is equipped with only a single valve 44 located in chamber 32 and adapted to alternately close openings 33, 34; said valve in its normal position closing opening 33 because the normal position of diaphragm 31 of the second casing is depressed, as the note sheet normally overlaps and covers opening 20 of the slide as hereinbefore explained. It will also be seen that with said valve 44 in the position described opening 34 is normally covered by the valve and that consequently air is free to pass into chamber 32 and thence through tube 38 to the second pneumatic 39 at the opposite end of roller 5, which pneumatic is likewise equipped with an arm 40 and brake shoe 41 to engage the other section of roller 5, said brake shoe like the one first described being normally withdrawn from the roller so that as the note sheet travels in the direction indicated, both sections of the roller revolve together and at the same speed under the friction of the note sheet.

The suction chambers 30 of the valve casings are connected by suitable tubes 45 to the tube 46 connected with the main suction chamber or the bellows not shown, of the player mechanism, these parts being omitted because of common and well known construction.

Should the note sheet swerve or creep to the right with reference to Fig. 2, so as to uncover opening 20 of the slide, air will enter said opening and pass through opening 14 and tubes 16 and 43 to chamber 28 and raise diaphragm 31 (of the second casing). This expansion of the diaphragm causes valve 44 to move upward and open communication between the suction chamber and the second pneumatic and effect a collapse of the latter and the consequent application of the brake shoe on the end of the contiguous section of the roller. This action causes said roller to act as a drag on the note sheet and the latter therefore to reverse its swerving or creeping motion until it again covers opening 20 and by cutting off the passage of air to chamber 28 of the second valve casing result in the redepression of the diaphragm 31 and the reclosure of opening 33 by valve 44. At the same time passage 34 is reopened by the withdrawal of the valve and air passes through said opening to said pneumatic and instantly reëxpands the same and withdraws the brake shoe from the roller.

If the note sheet swerves in the opposite direction to that described so as to cover the normally exposed opening 19, the passage of air to chamber 28 is cut off and the exhaust through the suction chamber 30 withdraws the air from chamber 28 into the suction chamber. As a result the atmospheric pressure on the valve of the first named casing forces it downward and depresses the diaphragm and thereby closes the passage of air through opening 34 and the connected pneumatic or bellows and opens communication between the latter and said suction chamber, the result being said pneumatic or bellows causes its brake shoe to engage the contiguous section of roller 5, and retard or arrest the same and cause it to act as a drag and reverse the swerving or creeping movement of the note sheet until the latter again uncovers opening 19, when the last-named valve and diaphragm reverse their positions from an obvious cause and said connected pneumatic or bellows is reëxpanded.

It will thus be seen that through the connections and mechanism described, the lateral swerving or creeping movement of the note sheet itself results in its tracking accurately with the tracker bar openings 11 so that the keys of the musical instrument, not shown, shall be properly played.

From the above description it will be apparent that I have produced a mechanism possessing the features of advantage enumerated as desirable and which may be modified in some particulars without departing from the spirit and scope of the appended claims.

Having thus described the invention what I claim as new and desire to secure by Letters Patent, is:—

1. In a mechanism of the character described, a note-sheet, a tracker bar provided with a pair of openings, of which one is normally closed by the note sheet, and the other normally left uncovered by said note sheet, a sectional roller over which the note sheet travels, and means whereby the exposure by the note sheet of the normally covered opening of the tracker bar shall result in applying a braking pressure on one section of said sectional roller.

2. In a mechanism of the character described, a note-sheet, a tracker bar provided with a pair of openings, of which one is normally covered by the note sheet and the other left uncovered by said sheet, a sectional roller over which the note sheet travels, and means whereby the covering by the note sheet of the normally exposed opening shall result in applying a braking pressure on one section of the roller.

3. In a mechanism of the character described, a note-sheet, a tracker bar provided with a pair of openings of which one is normally covered and the other uncovered by the note sheet, a sectional roller over which the note sheet travels, brake shoes for engagement with the sections of said roller, means for holding said brake shoes normally withdrawn from their respective sections of the roller, and means whereby the uncovering by the note sheet of the normally covered opening of the tracker bar or the covering by the note sheet of the normally uncovered opening of the tracker bar shall result in causing an application of one of the brake shoes or the other to its respective section of the roller.

4. In a mechanism of the character described, a note-sheet, a tracker bar provided with a pair of openings of which one is normally covered and the other uncovered by the note sheet, a sectional roller over which the note sheet travels, brake shoes for engagement with the sections of the roller, pneumatics connected to said brake shoes and normally expanded to withdraw them from engagement with their respective sections of the roller, and means whereby the uncovering of the normally covered opening of the tracker bar shall result in the collapse of its respective pneumatic and the application of the corresponding brake to its respective section of the roller.

5. In a mechanism of the character described, a note-sheet, a tracker bar provided with a pair of openings of which one is normally covered and the other uncovered by the note sheet, a sectional roller over which the note sheet travels, brake shoes for engagement with the sections of the roller, pneumatics connected to said brake shoes and normally expanded to withdraw them from engagement with their respective sections of the roller, and means whereby the covering of the normally uncovered opening

of the tracker bar shall result in effecting the collapse of its respective pneumatic and consequently in the application of the corresponding brake shoe to its respective section of the roller.

6. In a mechanism of the character described, a note-sheet, a tracker bar provided with a pair of openings of which one is normally covered and the other uncovered by the note sheet, a sectional roller over which the note sheet travels, brake shoes for engagement with the sections of the roller, pneumatics connected to said brake shoes and normally expanded to withdraw them from engagement with their respective sections of the roller, means whereby the uncovering of the normally covered opening of the tracker bar shall result in the collapse of its respective pneumatic and the application of the corresponding brake to its respective section of the roller, and means whereby the covering of the normally uncovered opening of the tracker bar shall result in effecting the collapse of its respective pneumatic and consequently in the application of the corresponding brake shoe to its respective section of the roller.

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

FREDERICH W. WOOD.

Witnesses:
WM. T. BERRY,
G. Y. THORPE.