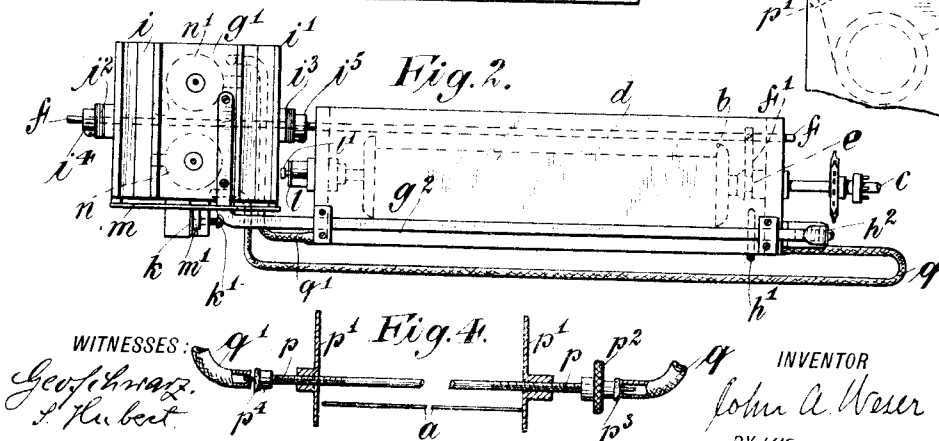
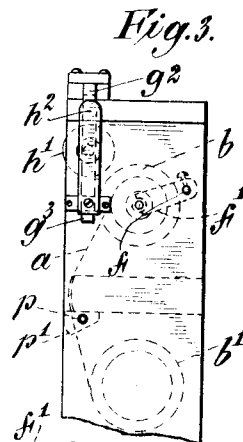
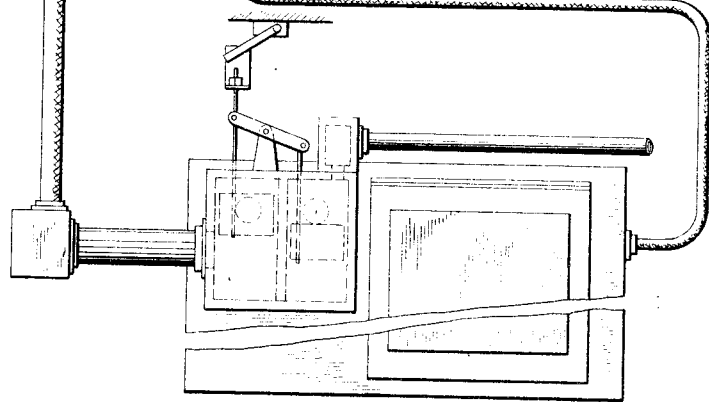
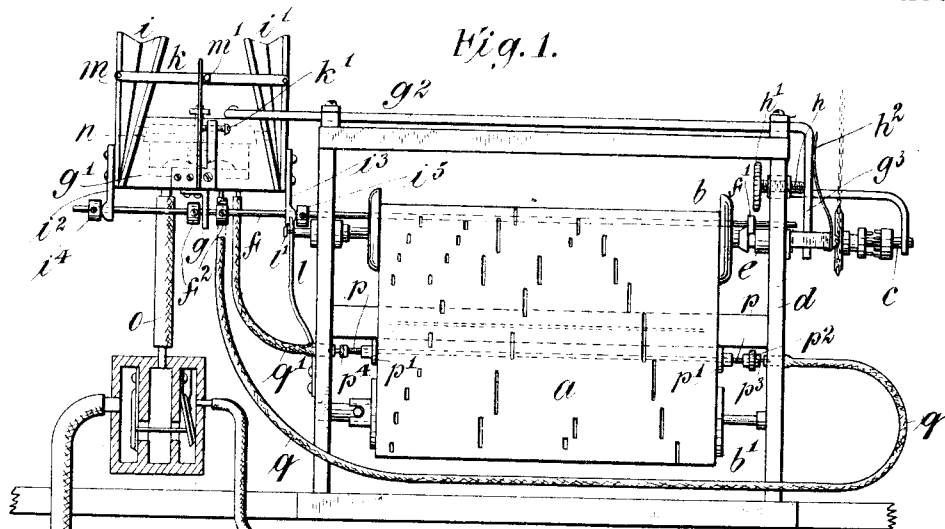


J. A. WESER.
 DEVICE FOR GUIDING TRAVELING WEBS.
 APPLICATION FILED SEPT. 23, 1909.

1,048,614.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 1.



WITNESSES:
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INVENTOR

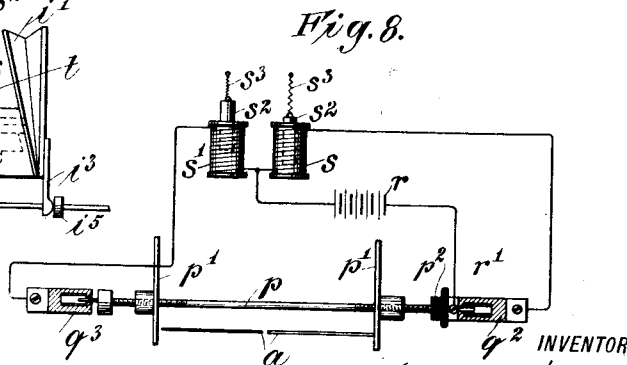
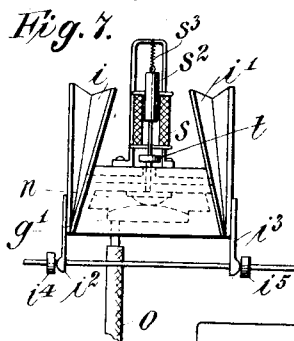
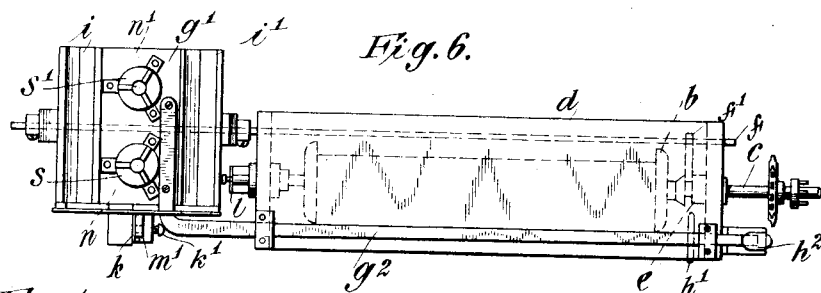
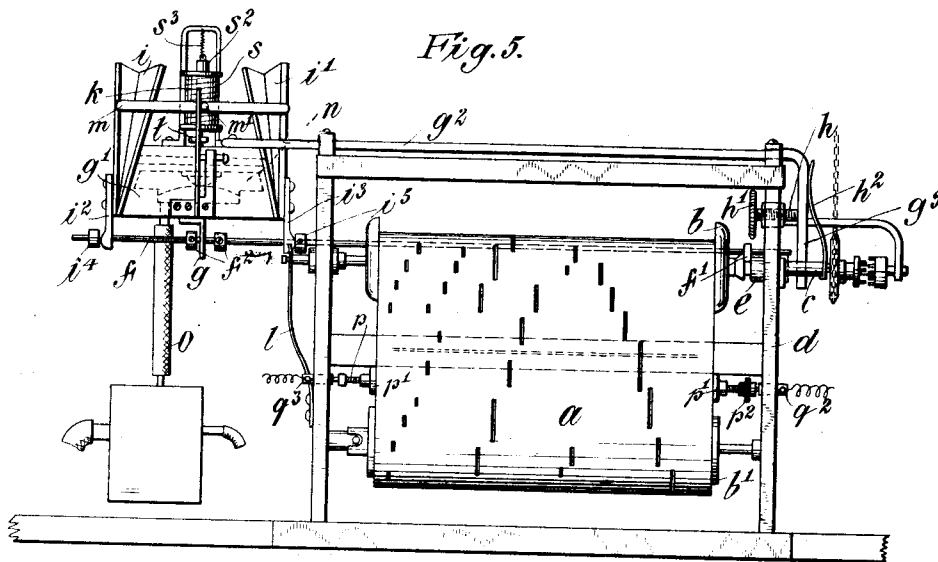
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1,048,614.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN A. WESER, OF NEW YORK, N. Y.

DEVICE FOR GUIDING TRAVELING WEBS.

1,048,614.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed September 28, 1909. Serial No. 519,996.

To all whom it may concern:

Be it known that I, JOHN A. WESER, a citizen of the United States, residing in the borough of Manhattan of the city of New York, in the State of New York, have invented certain new and useful Improvements in Devices for Guiding Traveling Webs, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention has for its object the provision of improved means for properly positioning traveling webs, such for example, as the music sheets employed in mechanical musical instruments, and for preventing the shifting of such webs out of normal position.

Various forms of apparatus intended to accomplish these results have been devised and this invention relates particularly to that form of apparatus in which the edges of the web are made to inaugurate the operation of the automatic centralizing devices through physical or forcible contact with some portion of the centralizing devices. The improved devices are so constructed and arranged that the edges of the web are not liable to be crumpled or otherwise injured.

In accordance with the invention there is provided a floating or bodily movable detector which is easily moved by contact with the edge of the web and offers practically no resistance, not being positively and mechanically connected with the centralizing devices, the movement of which is inaugurated through physical contact of the edge of the paper with the detector. Provisions are also made whereby the automatic sheet adjusting devices are readily adapted by hand for different conditions of use, such, for example, as are imposed by the use of music spools and sheets of different manufacturers, while the operations of the automatic devices are not interfered with.

The invention will be more fully explained hereinafter with reference to the accompanying drawings in which two different embodiments of the invention are illustrated and in which—

Figure 1 is a view, partly in front elevation and partly broken out, of so much of a mechanical piano player as is necessary to illustrate the application of the invention.

Fig. 2 is a top view of the parts shown in Fig. 1. Fig. 3 is a partial right hand elevation

of the parts shown in Fig. 1. Fig. 4 is a detail view of the detector. Fig. 5 is a partial view, similar to Fig. 1 but illustrating an embodiment of the invention in electrically actuated devices in place of some of the pneumatically actuated devices as in Fig. 1. Fig. 6 is a top view of the parts shown in Fig. 5. Fig. 7 is a detail view, partly in section and partly in elevation, of some of the parts shown in Fig. 5. Fig. 8 is a detail view, partly diagrammatic, of the detector mechanism shown in Fig. 5.

In the embodiment of the invention illustrated in Fig. 1, the music sheet *a* is carried by two spools *b*, *b'*, one of which is driven by any suitable means through a shaft *c*. The spool *b* has a limited capacity for longitudinal movement in the supporting frame work *d*, the other spool *b'* usually being formed without heads so that lateral movement of the web or sheet with respect thereto is not restrained. A circumferentially grooved hub *e*, connected to the spool *b* so that the two move longitudinally together, is engaged by an arm *f'* on a longitudinally movable rod *f* supported in the frame work *d* parallel with the axis of the spool *b*. Between somewhat widely spaced collars *f²* on the rod *f* is located a guide or bearing *g* for the rod, such guide or bearing being extended from a box or frame *g'* which supports the automatic adjusting devices, such box or frame, together with the automatic adjusting devices, being manually adjustable to accommodate different spools. For this purpose the box or frame is carried by a longitudinally movable bar *g²* which slides in guides on the frame work *d* and, in the construction shown, has its right hand end, as at *g³*, turned down to bear against an adjusting screw *h* which is mounted in the frame work *d* and is provided with a suitable milled head *h'*. A leaf spring *h²* bears against the bar *g²* to hold it against the adjusting screw *h*. By adjustment of the screw *h*, therefore, it is possible to shift the box or frame *g'* and the automatic adjusting or shifting devices in one direction or the other to accommodate possible differences in spools.

The automatic web adjusting devices, especially when the invention is applied to pneumatic piano players, are themselves preferably pneumatic, comprising two oppositely disposed bellows *i* and *i'*, the movable mem-

ber of each of which is provided with a corresponding finger i^2 , i^3 , each of which fingers coöperates with a corresponding collar i^4 , i^5 , on the rod f , so that the collapsing of one bellows or the other causes the movement of the rod, f in one direction or the other, and therefore through the arm f' and the grooved hub e a corresponding movement of the spool b and shifting of the web or sheet.

10 Springs k and l are provided to restore the spool to normal position, the spring l , in the construction shown, being arranged to bear against the left hand spindle of the spool b , while the spring k is arranged to coöperate

15 with a pin m' on a bar m which connects the two movable members of the two bellows i and i' . Suitable adjusting screws k' and l' are provided for regulating the tension of the springs so that the web or sheet may be

20 accurately positioned.

The bellows i and i' are controlled by pneumatics n and n' of ordinary construction which are connected to the vacuum system of the instrument or machine in usual

25 manner, as indicated at o .

Adjacent to the web or sheet is mounted a floating or bodily movable detector which is acted upon by the web or sheet and in turn controls or inaugurates the operation of one or the other of the bellows i , i' for the purpose of centralizing the web or sheet when it has shifted from normal position. This detector may take different forms. In the embodiment of the invention shown in Figs.

30 1-4, it comprises a light rod p mounted for free movement longitudinally on the frame work d and having fingers p' for coöperation with the edges of the web or sheet respectively, the rod p being right and left

40 threaded at its ends to engage the fingers and provided with a milled head p^2 so that by rotation of the rod the fingers p' may be spaced apart with accuracy to accommodate the web or sheet a without affecting the operation of the automatic adjusting devices.

45 The rod p is preferably arranged out of contact with the music sheet, as indicated in Fig. 3, so that the least possible resistance shall be offered to its longitudinal movement

50 by contact of the edge of the music sheet with one or the other of the fingers p' . The detector is therefore nonrotating in the sense that it is not rotated by contact with the music sheet and that its function is not dependent upon its rotation, although, for the purpose of adjustment of the fingers through its screw threaded engagement therewith, it is rotatable with respect to the fingers which are preferably polygonal in shape, as indicated by dotted lines in Fig. 3, so that they shall be held from rotation by contact with the tracker board when the rod is rotated for purposes of adjustment. Adjacent to the ends of the rod n are located the terminals of the tubes q , q' , into which the ends

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of the rod may be sprung, which tubes are connected respectively with the pneumatics n and n' by which the bellows i and i' are respectively controlled, and upon the ends of the rod p are carried valve plugs p^3 , p^4 , which coöperate with such terminals, so that if the web or sheet shifts slightly to the right, as indicated in Fig. 4, the valve plug p^3 closes the terminal of the duct or pipe q thereby, through the pneumatic n , causing the bellows i to be collapsed, and, through the finger i^2 and rod f , the spool b to be shifted to the left to correct the position of the web or sheet. Similarly, if the web or sheet should move to the left, the bellows i' will be collapsed to move the spool to the right. By such means the web or sheet is quickly and accurately centralized as soon as it begins to shift from normal position, the action of the detector being so delicate that the edge of the web or sheet is not in any manner injured. It will be seen, moreover, that through the action of the springs k and l the spool is always accurately centered after the action of one or the other of the bellows when the mechanism has once been adjusted through the operation of the adjusting screw h and that the operation of the automatic adjusting devices is not in any respect affected by such manual adjustment since such devices are moved bodily in such manual adjustment, shifting the spool to one side or the other through the fingers i^2 and i^3 without changing their relative adjustment. It will be observed that as the valve plugs p^3 and p^4 move bodily toward and away from the terminals q and q' , a very slight movement of the detector is sufficient to open or close one terminal or the other and the adjustment of the sheet is therefore effected with great accuracy.

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In the embodiment of the invention shown in Figs. 5-8, the bellows i and i' are carried by the box or frame g' which is adjusted, as before, by the screw h through the bar g^2 , and the bellows act through fingers i^2 and i^3 and collars i^4 and i^5 upon the rod f to shift the spool b . Springs k and l are also provided to center the spool. The pneumatics n and n' are also similarly connected to the vacuum system and control the bellows in the usual manner. The pneumatics, however, in this instance, are not controlled pneumatically, as before, but are controlled electrically. The detector p , p' , which is constructed substantially as before, is connected, as at n' , with a battery or other suitable source of electrical energy and, as it is shifted by the web or sheet in one direction or the other, makes contact with a corresponding terminal q^2 or q^3 , completing the circuit through one or the other of two magnets or electro-magnetic devices s and s' , which respectively control the pneumatics n and n' . As shown in Figs. 5, 7 and 8,

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the core or armature s^2 of each electro-magnetic device is spring suspended, as at s^3 , and is adapted to act upon the valve t which controls the corresponding pneumatic n or n' . Thus, if the web or sheet shifts to the right, as indicated in Fig. 8, the electro-magnetic device s is energized and its core or armature s^2 is moved to close the valve t , causing the bellows i to collapse and the spool b to be shifted to the left to centralize the web or sheet.

Various other modifications of the invention will readily suggest themselves, in view of the foregoing, to suit different conditions of use and it will be understood, therefore, that the invention is not restricted to the details of construction and arrangement shown and described herein.

I claim as my invention:

1. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet said detector comprising fingers coöperating with opposite edges of the sheet and connected to move together, means to support the same, and oppositely acting sheet adjusting devices the operation of one or the other of which is inaugurated by the movement of the detector.

2. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, said detector comprising fingers coöperating with opposite edges of the sheet and connected to move together, means to support the same, a spool movable longitudinally to shift the sheet and oppositely acting spool adjusting devices the operation of one or the other of which is inaugurated by the movement of the detector.

3. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, said detector comprising fingers coöperating with opposite edges of the sheet and connected to move together, means to support the same, oppositely acting bellows to shift the sheet in one direction or the other and means controlled by the detector for inaugurating the operation of one or the other of said bellows.

4. In a sheet adjusting mechanism, the combination of a normally nonrotating

floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, means to support the same, oppositely disposed sheet adjusting bellows, pneumatics to determine the operation of one or the other of said bellows, and devices actuated by the movement of the detector for controlling the operation of the pneumatics to effect the operation of one or the other of said bellows.

5. In a sheet adjusting mechanism, the combination of a nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, means to support the same, oppositely disposed sheet adjusting bellows, pneumatics to control the operation of said bellows respectively, and valve plugs carried by the detector one at each end and corresponding connections whereby one or the other of the pneumatics is actuated by the movement of the detector.

6. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, comprising a freely movable rod and fingers to coöperate with the edges of the sheet, means to support the same, oppositely acting sheet adjusting devices, and means whereby the operation of one or the other of the sheet adjusting devices is inaugurated through the movement of the detector.

7. In a sheet adjusting mechanism, the combination of a detector subject to variations in the lateral position of the sheet and comprising a normally nonrotating freely movable rod with fingers to coöperate with the two edges of the sheet, means to support said rod, devices for shifting the sheet laterally in either direction, and means whereby the action of said devices is determined by the movement of the detector.

8. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector subject to variations in the lateral position of the sheet, comprising a freely movable rod and fingers to coöperate with the edges of the sheet, oppositely disposed sheet shifting bellows, and means whereby the operation of the bellows is determined by the movement of the detector.

9. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector subject to variations in the lateral position of the sheet, comprising a freely movable rod and fingers to coöperate with the edges of the sheet, oppositely dis-

posed sheet shifting bellows, pneumatics to control the operation of the bellows and means actuated by the movement of the detector to determine the operation of the pneumatics.

10. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector subject to variations in the lateral position of the sheet, comprising a freely movable rod and fingers to cooperate with the edges of the sheet, oppositely disposed sheet shifting bellows, pneumatics to control the operation of the bellows, and valve plugs carried by the detector and connections to determine the operation of the pneumatics.

11. In a sheet adjusting mechanism, the combination of sheet adjusting bellows, pneumatics to determine the operation of the bellows, devices whereby the operation of the pneumatics is determined through the movement of the sheet, a frame upon which said bellows and pneumatics are mounted and with which they are bodily movable, and manually operated means to adjust the position of the frame.

12. In a sheet adjusting mechanism, the combination of a spool movable longitudinally, a longitudinally movable rod operatively connected with the spool, a floating detector freely supported but otherwise mechanically unconnected with the mechanism subject to variations in the lateral position of the sheet, and sheet adjusting devices operatively connected with said rod, the operation of said sheet adjusting devices being inaugurated through the movement of the detector.

13. In a sheet adjusting mechanism, the combination of a spool movable longitudinally, a longitudinally movable rod connected with the spool, a detector subject to variations in the lateral position of the sheet, sheet adjusting devices operatively connected with the rod the operation of which is inaugurated through the lateral movement of the detector, a movable frame upon which the sheet adjusting devices are mounted and with which they are bodily movable, and manually operated means to adjust the position of the frame.

14. In a sheet adjusting mechanism, the combination of a spool movable longitudinally, a longitudinally movable rod operatively connected with the spool, sheet adjusting bellows operatively connected with the rod, means to determine the operation of the bellows through the lateral movement of the sheet, a frame upon which said bellows are mounted and with which they are bodily movable and manually operated means to adjust the position of the frame.

15. In a sheet adjusting mechanism, the combination of a floating detector subject to variations in the lateral position of the

sheet, comprising a rod freely movable longitudinally and normally non-rotating but rotatable manually and right and left threaded and fingers engaging the threaded portions of the rod to cooperate with the edges of the sheet, sheet adjusting devices and relatively stationary controlling devices in line with the rod at opposite ends thereof by which the operation of the sheet adjusting devices is inaugurated through the movement of the detector, the fingers being adjusted to the width of the sheet without disturbing the controlling devices.

16. In a sheet adjusting mechanism, the combination of a floating detector subject to variations in the lateral position of the sheet, comprising a rod freely movable longitudinally and normally non-rotating but rotatable manually and right and left threaded at its end portions and fingers engaging the threaded portions to cooperate with the edges of the sheet, sheet adjusting devices and means whereby the operation of the sheet adjusting devices is inaugurated through the movement of the detector.

17. In a sheet adjusting mechanism, the combination of a floating detector subject to variations in the lateral position of the sheet, comprising a freely movable rod and fingers to cooperate with the edges of the sheet, valve plugs carried by the detector rod, oppositely disposed sheet shifting bellows, pneumatics to control the operation of the bellows, and tubes connected with the pneumatics and having their terminals in line with and entered by the ends of the rod and adapted to be opened and closed by the valve plugs on the rod.

18. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, said detector comprising fingers cooperating with opposite edges of the sheet and connected to move together, means to support the same, oppositely acting sheet adjusting devices the operation of one or the other of which is inaugurated by the movement of the detector, and a spring cooperating with the devices to centralize the sheet after the action of either of said devices.

19. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, means to support the same, oppositely acting bellows to shift the sheet in one direction or the other, means controlled by the detector to inaugurate the operation of one or the other

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of said bellows and a spring cooperating with the bellows to centralize the sheet after the action of either of the bellows.

20. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, said detector comprising fingers cooperating with opposite edges of the sheet and connected to move together, means to support the same, oppositely acting sheet adjusting devices, the operation of one or the other of which is inaugurated by the movement of the detector, and means to centralize the sheet after the action of either of the sheet adjusting devices.
21. In a sheet adjusting mechanism, the combination of a normally nonrotating floating detector freely supported but otherwise mechanically unconnected with the mechanism and movable freely in either direction longitudinally with variations in the lateral position of the sheet, means to support the same, oppositely acting sheet adjusting means, opposite controlling devices for determining the operation of one or the other of the sheet adjusting means, the action of which is inaugurated by the movement of the detector in one direction or the other, and means to centralize the sheet after the action of one or the other of the sheet adjusting means.

22. The combination of a tracker-bar, a sheet of perforated music, means for moving the music sheet across the tracker-bar, pneumatically-operated mechanism for shifting the music sheet on the tracker-bar without disturbing the latter, to maintain the music sheet in alinement with the tracker-bar, and movable devices non-rotatably connected together and engaged by the edges of the music sheet for mechanically controlling said mechanism.

23. In a player mechanism, a sheet of perforated music, means mechanically governed by one edge of the music sheet for automatically pushing it over in one direction, and means mechanically governed by the other edge for automatically pushing it over in the other direction, the governing means comprising a non-rotatable rod with two

fingers adjustably mounted thereon, said fingers engaging the opposite edges of the music.

24. In a player mechanism, a sheet of perforated music, means for shifting the said sheet laterally in opposite directions, mechanism governed only by engagement with and actuation by the opposite edges of said sheet, for mechanically controlling said means, a tracker-bar over which the said sheet travels, and means for moving the said sheet, said mechanism comprising two fingers that engage opposite edges of the sheet, and that are connected to move in unison.

25. In a player mechanism, a sheet of perforated music, a roll for each end portion of the sheet, means for shifting only one end of the sheet laterally in opposite directions, mechanism governed only by engagement with and actuation by the opposite edges of said sheet, for mechanically controlling said means, means for moving the sheet, and a tracker-bar over which the sheet travels, said mechanism including two fingers that are movable in unison but mounted for adjustment independently of each other.

26. In combination with a tracker-bar and music sheet therefor, a mechanism mechanically governed by non-rotatable means engaging the opposite edges of the music sheet to shift the latter sidewise and thereby preserve the alinement without disturbing the tracker-bar, said means being mounted for bodily adjustment to correct the travel of the music sheet.

27. In a player mechanism, a sheet of perforated music, means mechanically governed directly by non-rotatable means engaging one edge of the music sheet for automatically pushing it over in one direction, and means mechanically governed directly by non-rotatable means, engaging the other edge for automatically pushing it over in the other direction, both of said means being mounted for bodily movement to correct the travel of the music sheet.

This specification signed and witnessed this 24th day of September, A. D. 1909.

JOHN A. WESER.

Witnesses:

ELLA J. KRUGER,
A. L. REILLY.