(No Model.) 7 Sheets—Sheet 1.

A. WIDER.

NOTE INDICATOR.

No. 498,922. Patented June 6, 1893.

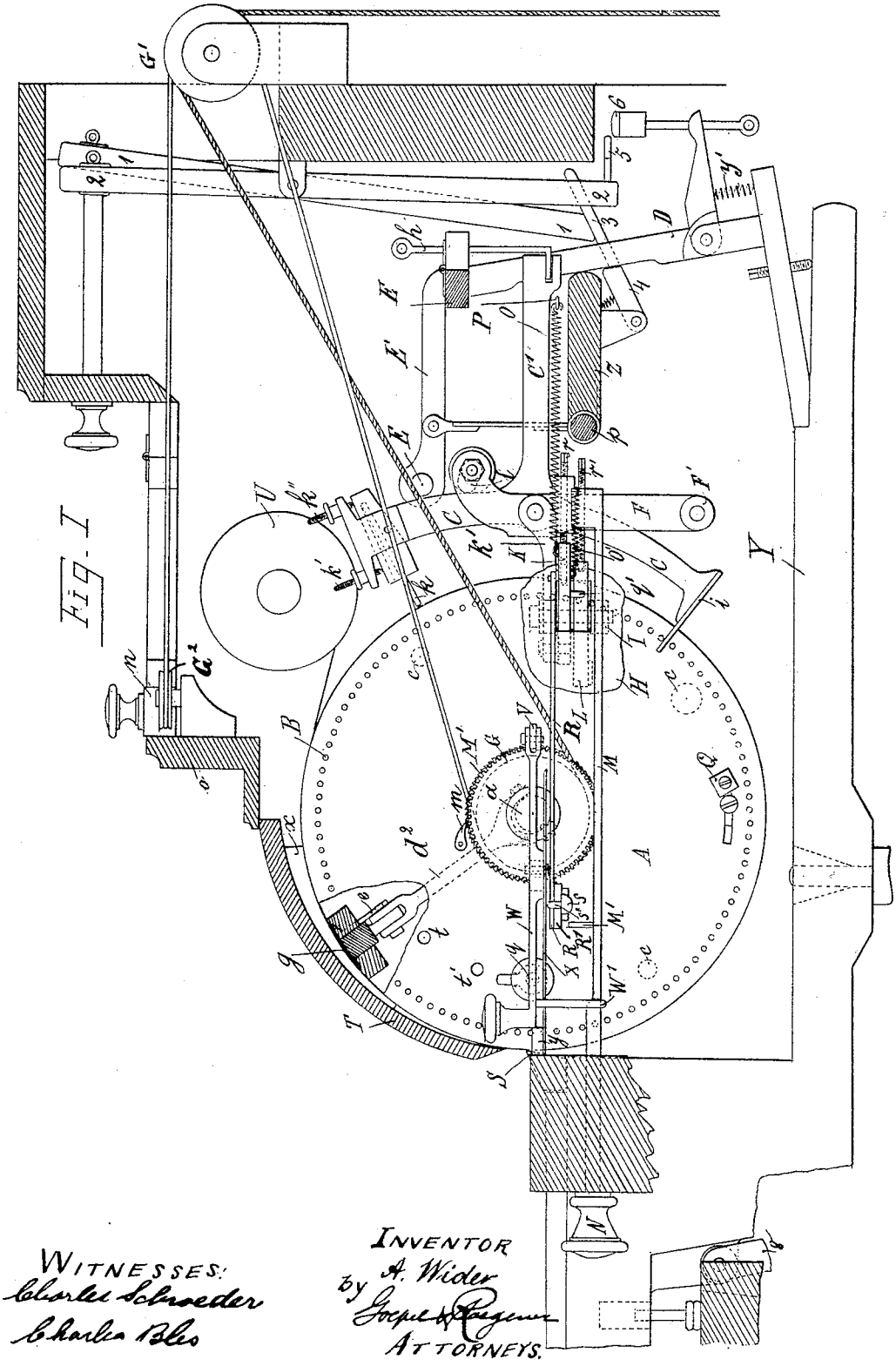

Fig. 1

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(No Model.) 7 Sheets—Sheet 2.

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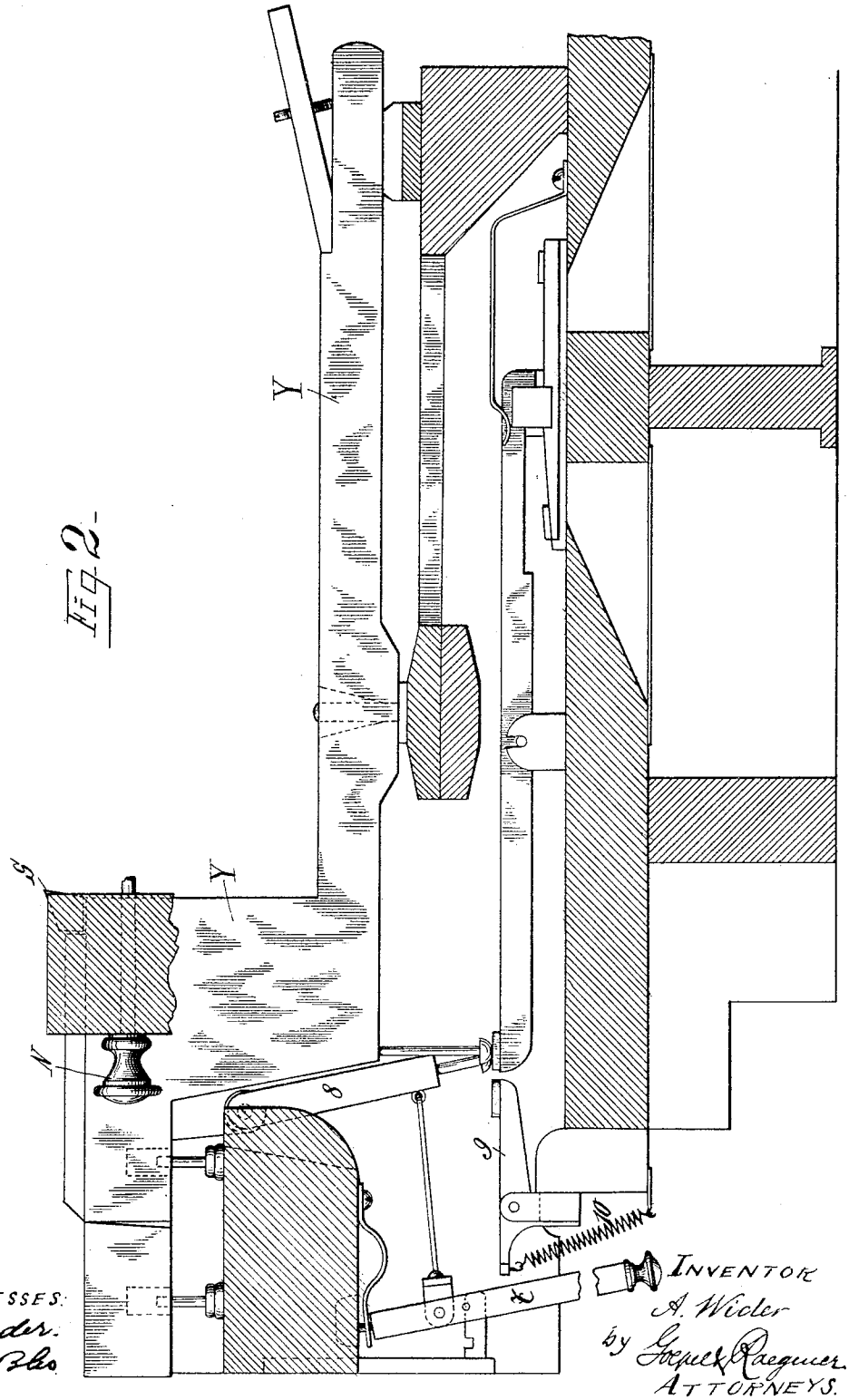
No. 498,922. Patented June 6, 1893.

FIG 2.



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NOTE INDICATOR.

No. 498,922. Patented June 6, 1893.

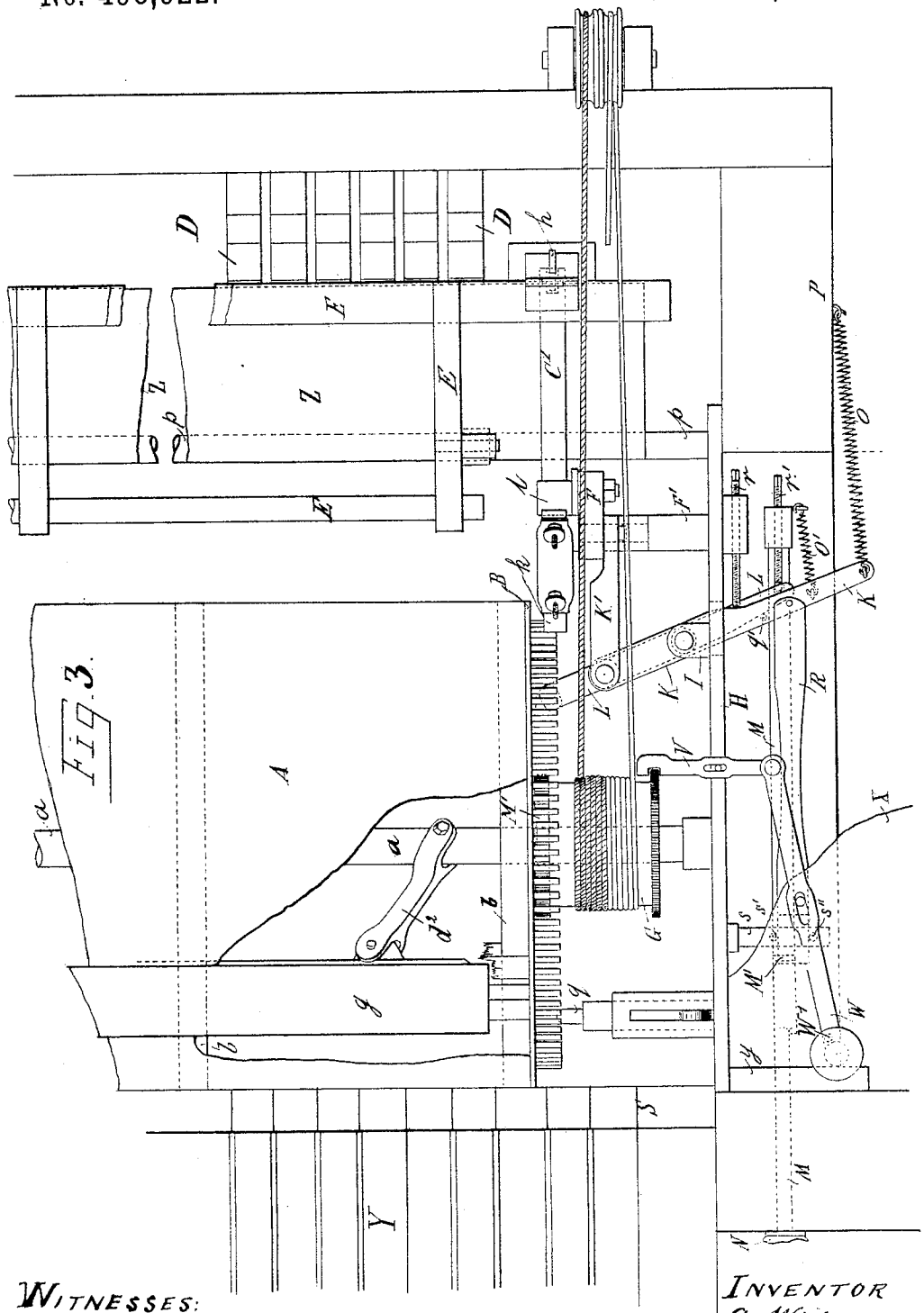

Fig. 3.

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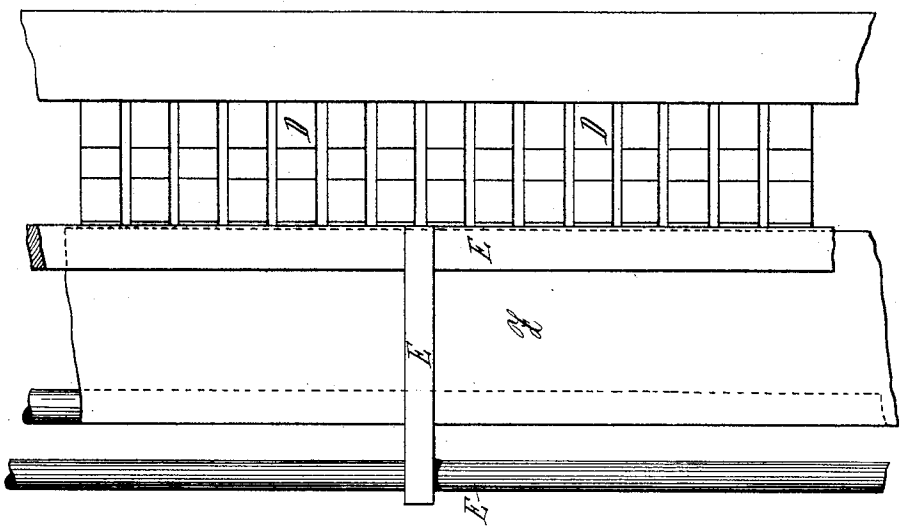
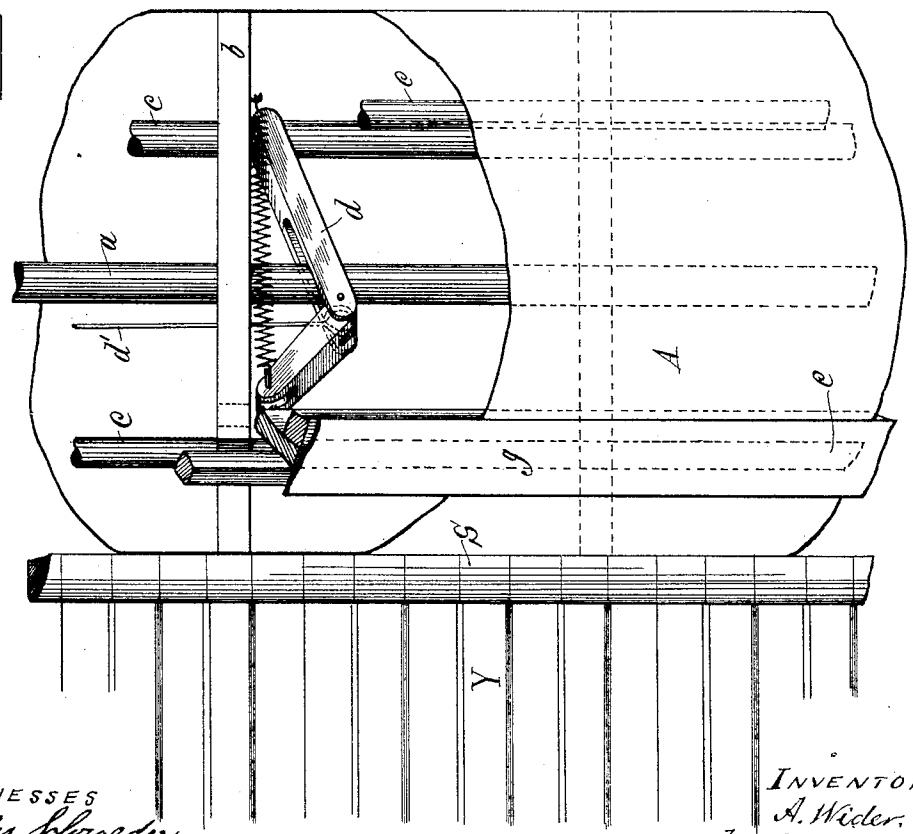


FIG. 4.



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(No Model.) 7 Sheets—Sheet 5.

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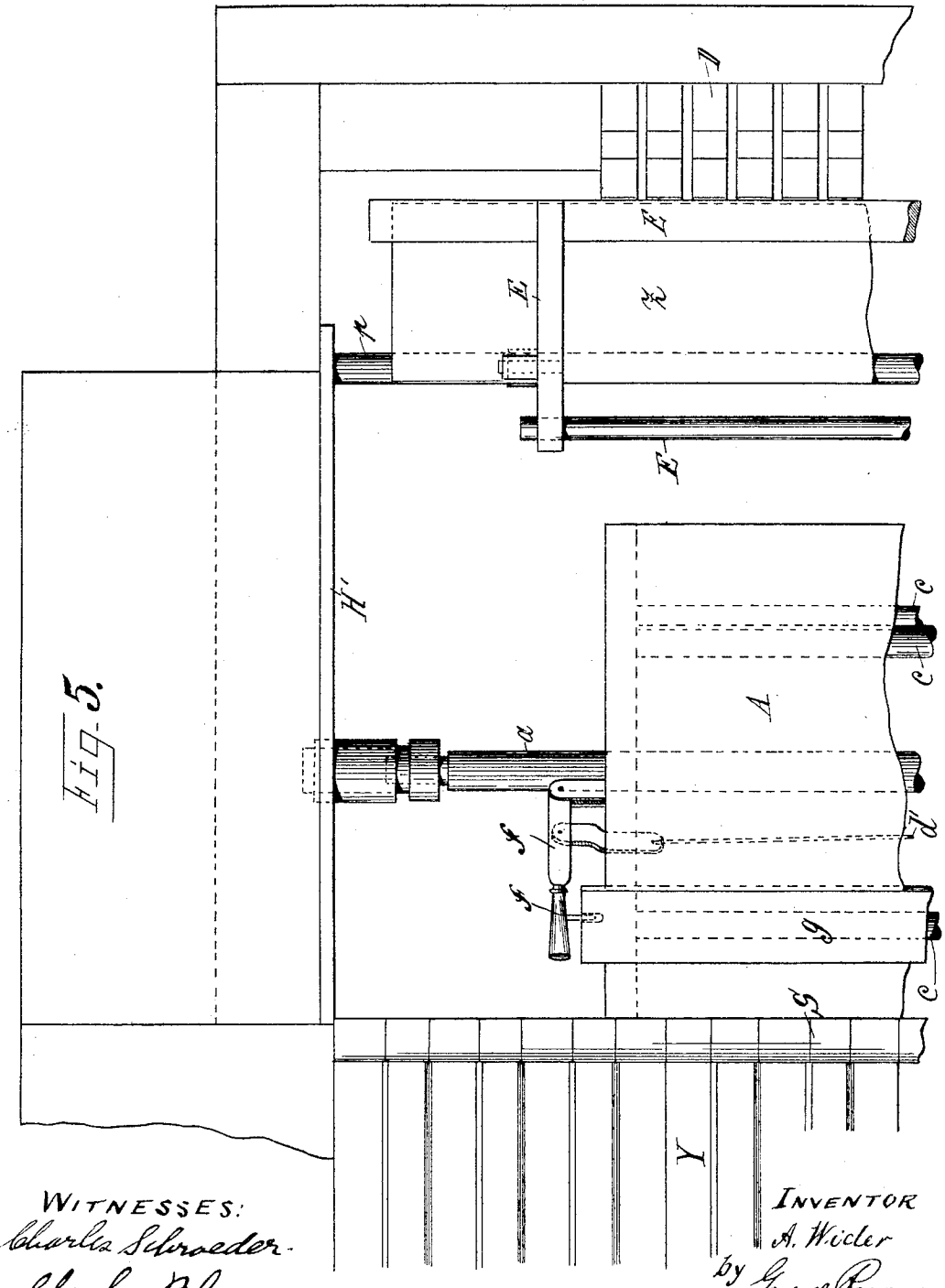

Fig. 5.

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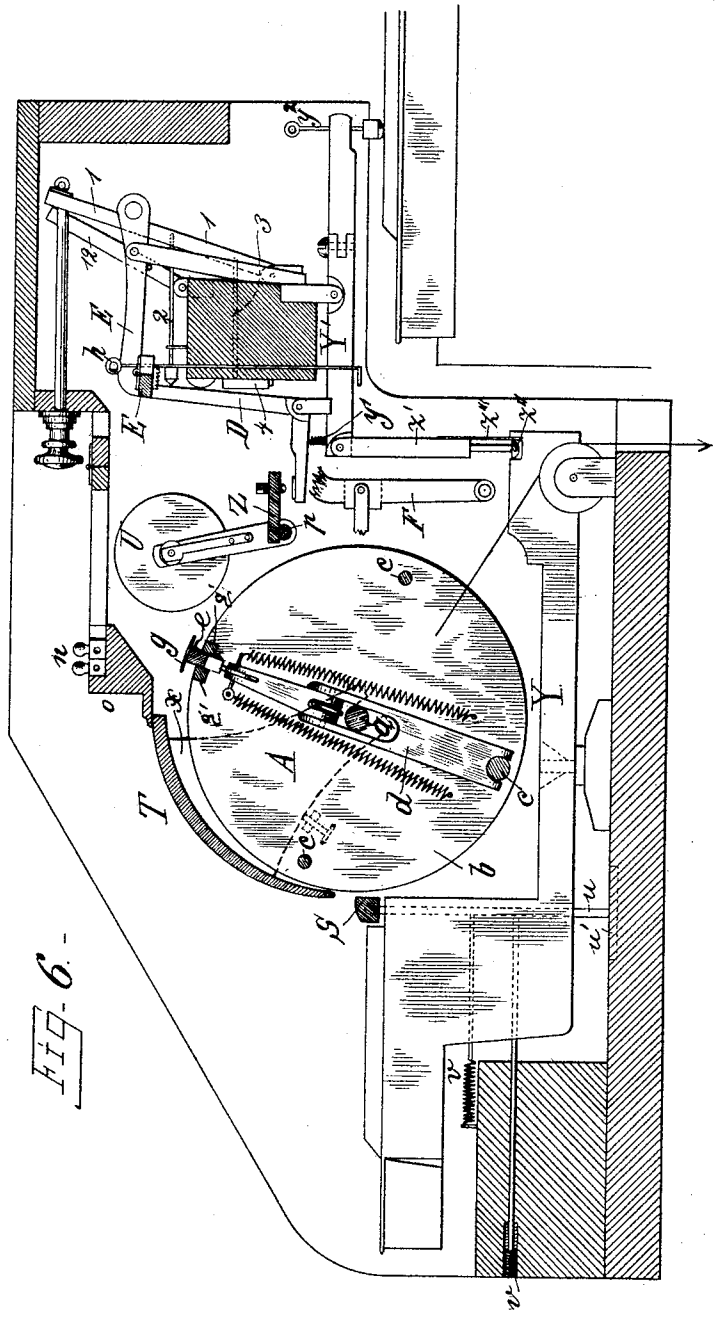

FIG. 6.

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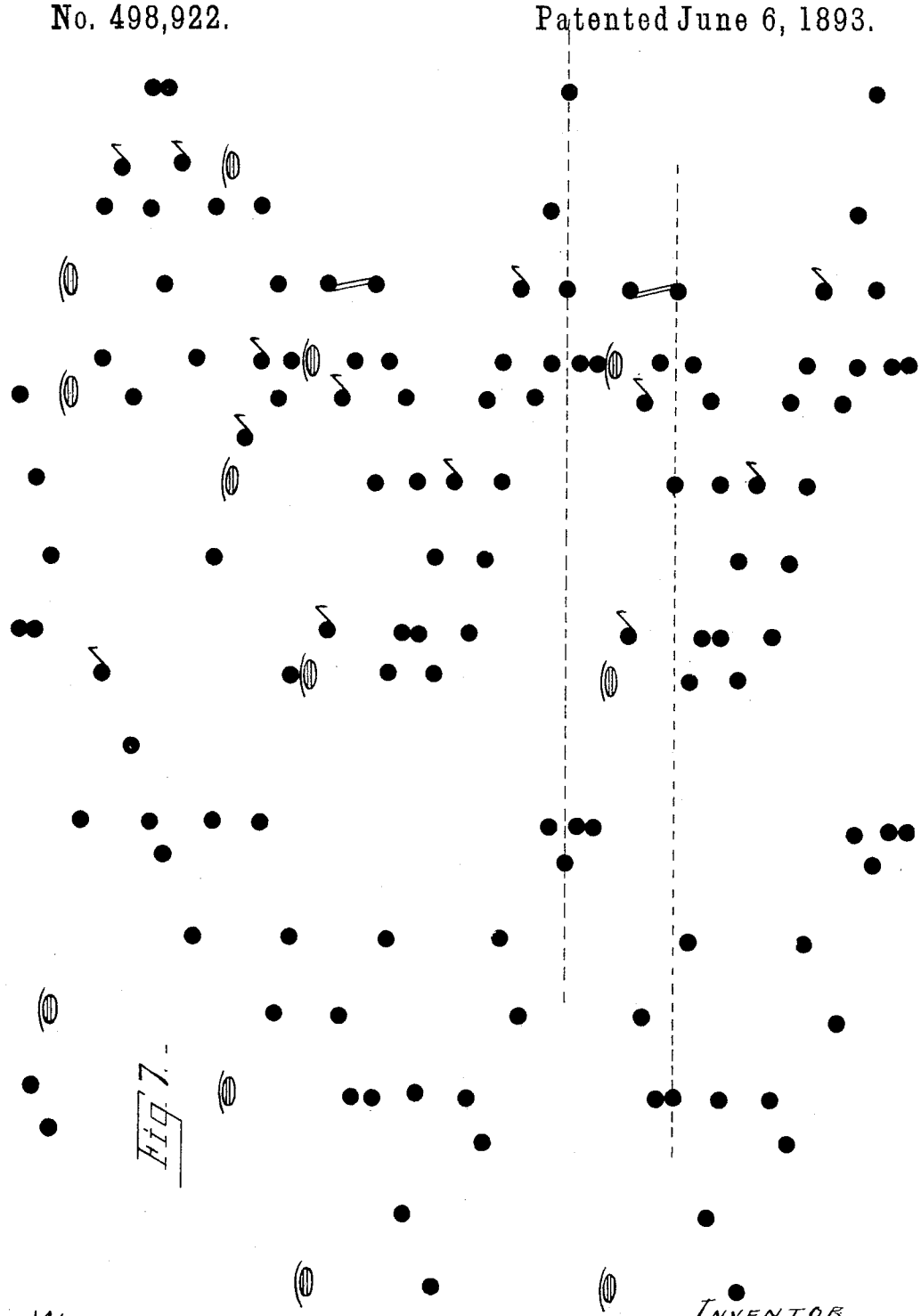

Fig 7.

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UNITED STATES PATENT OFFICE.

ANDREAS WIDER, OF STUTTGART, GERMANY.

NOTE-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 498,922, dated June 6, 1893.

Application filed October 30, 1889. Serial No. 328,646. (No model.) Patented in Germany September 24, 1888, No. 48,500.

To all whom it may concern:

Be it known that I, ANDREAS WIDER, of Stuttgart, in the Kingdom of Würtemberg and German Empire, have invented a new and useful Note-Indicator, a device adapted to pianos and harmoniums, of which the following is a specification, reference being had therein to the accompanying drawings, no patents being obtained by me anywhere for this invention except in Germany, No. 48,500, dated September 24, 1888.

This invention relates to improvements in an apparatus for facilitating the practice of playing of music upon pianofortes, harmoniums and like key-instruments, and has for its object to so present the piece to be played that the notes of the music shall appear in front of the player immediately above the key to be struck on the instrument.

In the accompanying drawings forming part of my specification, Figure 1 is an end-view of the driving-end of the music-roller and shows the mechanism which causes the same to revolve, parts being broken out and others in section, and the casing being shown in transverse section parts. Fig. 2 is an enlarged transverse sectional view showing the arrangement of the keys of the apparatus and their connection with the reed-valves of a harmonium. Fig. 3 is a plan-view of the right-hand driving end of the music-roller, parts being broken out and others in section. Fig. 4 shows the middle part of the same roller with the spring-toggle-lever *d*, which serves to open and close the clip-bar. Fig. 5 is a plan-view of the left-hand end of the music-roller with the hand-lever *f*, which acts upon the spring-toggle-lever. Fig. 6 gives in a smaller scale a section of the music-roller A and the mechanism of the keys of an apparatus adapted for being placed in front of pianos. Fig. 7 illustrates the manner in which the music is printed upon sheets, the dotted lines indicating the notes that become visible at the same time.

Similar letters and numerals of reference indicate corresponding parts in all the figures.

The keys of the apparatus can be arranged so as to act directly upon the reeds of a harmonium, as shown in Figs. 1 and 2, or they may be arranged so as to transmit the touch on its keyboard to the corresponding key of a piano, before which the whole apparatus is placed. The music-sheet is held fast upon a roller A, Figs. 1, 4, 5, 6 consisting of several wooden disks *b*, fixed upon a shaft *a* and connected with each other by means of three round bars *c*.

A clip-bar *g*, Fig. 3 is carried by several forked levers d^2 upon the shaft *a* and can be raised or lowered by means of a toggle-lever *d*, Fig. 4, which is carried upon the opposite bar *c* and connected by a draw-bar *d'* with the handlever *f* on the left-hand side of the music-roller A, Fig. 5. This clip-bar *g* is guided between two wooden rails *g'* extending over the whole length of the music-roller. It is also provided with small projecting clip-hooks *e*, Figs. 1 and 6. This clip-bar *g* serves to fasten the folded edge of a music-sheet, so that the same may be wound upon the roller A.

The showing of the notes is caused by means of the sprocket-wheel B fixed to the end of roller A, Figs. 1 and 3, into which an anchor C enters with its point *i*.

The keys Y have their fulcrums in the center and carry upon their back ends an adjustable pivoted thrust-lever or hammer D, by means of which the light wooden frame E is lifted high enough to permit the momentary stopping or motion of the roller A by means of the anchor C. The connection between the latter and the frame E is established through the wire-hook *h*. The anchor C has at its lower end a hard leather tongue *i* and at the upper end an adjustable steel tongue *k* and it is movable upon the standard F which carries on its upper end a leather-covered eccentric screw *l* for the purpose of adjusting the movement of anchor C. By this means the leather-tongue *i* can be set so that it cannot enter farther into sprocket-wheel B than is necessary for the momentary stopping of the roller. As soon as a movement of the roller A is caused by raising the back-arm C' of the anchor C and thereby withdrawing its leather tongue *i*, the steel tongue *k* enters between the sprockets of the wheel B and holds it until the leather tongue *i* has caught a new tooth.

The steel tongue *k* can be adjusted by

means of two screws k' k'' and allows to the anchor just sufficient swinging room to permit a rotation of roller A from tooth to tooth. The driving force is derived from a falling weight of about one pound.

On the shaft a, on the right-hand side of the roller A, there is a small loose cordroll G, Fig. 3, with two toothed wheels into one of which a pawl m, fixed to the end of the roller A, Fig. 1 enters. This roll G is connected by means of a cord of suitable length with a weight and thus the latter causes the roller A to turn as soon as the point i of the anchor is withdrawn from the sprocket-wheel. For winding up the weight, a silken cord, wound up in the opposite direction, is fixed to the same roll G and is led by means of two guide-rolls G' G^2 to a small slide n with a button which runs in a small slit in the molding o, Figs. 1 and 6. When the weight has run down, the slide n will have arrived at the right-hand end of the slit and when it is pulled back with the finger to the left-hand end of the same it will have wound the weight to its highest point.

The bearing of the roller A consists of two iron plates H H', which are connected by an iron bar p corresponding to the length of the keyboard. On the right-hand bearing-plate there are several supports. Behind and below there is the arm F' for the anchor-standard F, and above, in the middle of the plate, there is the bearing for the roller A, and more in front there is a bearing for the locking-pin q, by means of which the roller A can be locked when renewing a piece of music. Also the forked stud I is fixed to this plate, in which the levers K L have their fulcrums, and further, on the outside of the plate there is a small projection r^2 for the adjusting-screw r and an arm s with the guide-pins s' s''. The two levers K and L are pivoted on the pin of the forked stud I and the upper lever K is connected with the anchor-standard F by means of a link K'; the other lever L is a little longer and is provided on its under side, at its inner end with a piece of leather. On the outer end of the same there is a pull-bar M hung on to the same by means of an adjusting-screw r'. The outer end of the lever K carries a spiral spring O, which is attached to the outer wooden case P, Fig. 3. This pull-bar or draw-bar M, the head N of which projects outside the apparatus, serves as an easy means for stopping the apparatus or setting it in motion. When the button N is pulled, the two inner ends of the levers K and L move backward, and the anchor-standard F with the anchor C becomes free of the sprocket-wheel, so that it is no longer locked, and the weight causes the roller to revolve. The adjustable stop Q, Fig. 1, however, which is screwed on the end-disk of the roller A, soon stops this motion, because the lower lever L with its leather cushion stands in its line of rotation. At the same time the flat spring R moves with the upper lever K to which it is fixed. On its other end a small plate R' is so riveted that it hooks behind the arm s when the button N is pulled *i. e.* when the anchor C is disengaged. This catch-plate holds the anchor back until it is released by a slight upward pressure on the button N, as a small pin M' is fixed upon pull-bar M which serves to lift the catch-plate R' over the arm s when the button N receives an upward pressure. The roller A is now brought into a position in which the music-sheet can be easily fixed or removed. For this purpose it is turned backward a little and the stopping-pin q, Figs. 1 and 3, is pushed into a small hole t in the wheel-end of the roller. This serves to hold the roller fast. Then the clip-bar g is raised by pulling out the hand-lever f to the left, which is pressed down until it lies parallel with the shaft a. Thereby also the small clip-springs e which are fixed in various places to the clip-bar, become free, and the music-sheet which is folded at the edge, is placed between the clips and the clip-bar. In this position the lever f is raised and the clip-bar in moving into its slit presses the clips firmly against the bar and they thus take a firm grip upon the music-sheet. Now the pin q is withdrawn and the roller can turn around again so far as the pin Q and lever L permit. In order to permit the pin Q to pass by the lever L it is necessary to push back the pull-bar M for a moment, without, however pressing it upward. Thereby the lever L moves out of the way of pin Q but is brought back soon afterward to its old position by means of the small spring O', Fig. 1. As soon as the pin Q is free the weight causes the roller A to revolve once, and thereby the music-sheet is laid around the same. The roller is held back again by means of pin Q and is locked by the pin q in a higher position in hole t'. Then the clip-bar is raised again and the edge of the music-sheet is placed smoothly under the same. Now the clip-bar can be closed by raising the lever f, and the latter can be fixed to the clip-bar g by means of a small locking-pin f'. If the locking-pin q be now withdrawn, the weight will turn the roller A a little until the pin Q rests against lever L in such a position that the first line of notes is visible exactly above the keys to be touched. The button N of pull-bar M is still projecting outside; it is now pressed upward a little and thus the flat spring-bar R is unhung and is pulled back by spiral spring O. Thereby the two left-hand lever-ends move forward and with the upper lever K and the link K', the anchor C is brought again into contact with the sprocket-wheel B, whereas the lower lever L is moved out of the way of pin Q in such a manner that it does not leave the latter until the leather-tongue i of the anchor C has caught that sprocket of wheel B which corresponds to the first line of notes on the music-sheet. This action can be regu-

lated by means of set-screw r', whereas the set-screw r regulates the distance of the steel tongue k from the sprockets of wheel B. The music-sheet having been fixed in the described manner, the player sees before him the first note, or the first line of notes exactly above the keys that he should touch.

For better oversight an indicator-bar S, Fig. 6 has been provided, which is carried on its ends on swing-standards u, and in the middle can be adjusted by means of an adjustable screw-pin w acting upon a vertical pin u, Fig 6. The latter is screwed into the indicator-bar and is held under the key-board by a slotted bearing-plate u'. A small spiral spring v pulls the vertical pin u against the horizontal screw-pin w, and thus the bar may be set as closely as possible with its edge against the roller A.

Above the indicator-bar there is a curved lid T, which is carried in two forked bearing-plates x centered upon the bearing-bushes of the roller A. A small set-screw is fixed to these bearing-plates to regulate the distance of the cover from the roller and other set-screws are fixed to the bearing-plates of the roller A to prevent the lid T from being pulled down lower than is necessary to show one line of notes in the slit between the lid T and indicator bar S. When changing a music-sheet, this lid is pushed back, and a quarter of the surface of the roller becomes visible. For such pieces of music which contain more lines than can be printed upon a single sheet of music, special music-rollers are provided. These latter are simple pasteboard-tubes fixed upon turned wooden disk-frames of the same length as that of roller A. On both ends of such pasteboard-rollers U there are fixed brass-plates with central bearing-holes and these are supported to the right upon a fixed pin, whereas the left-hand pin is held into its place by a spring, and can be withdrawn. This spring also acts as a brake upon roller U, so that no more paper will roll off the same than is required by the large roller. The music-sheet is about two meters long and made of strong thin paper, the back end of which is pasted fast upon the roller U, and is rolled up before placing the roller U upon its bearing pins. The front end is drawn from the back under the curved lid T, so that it may be fixed under the clip-bar of the large roller. The showing of the single note or lines of notes (chords) is effected in the same manner as above described. When such a sheet of music has been fully played off it may be wound up again upon the small roller by a cord-apparatus, similar to that used for the large roller. Of course this latter must first be made free to revolve backward. This can be done in the following manner: On the right-hand side of the roller A, on its bearing-plate, there is a small slotted lock-bar V, Fig. 3, which may be moved backward by means of a small hand-lever or shifter W, carried on a sheet-iron cover X above the pullbar M. Thus, when the bar V is pulled outward, it will not only enter between the teeth of the front-wheel of the small roll G, and keep the weight from running down, but will also withdraw the cord-roll G far enough from the end-disk of roller A to bring the pawl m out of contact with the back ratchet-wheel of the same, and will thus leave the roller A free to run backward for the purpose of unwinding a sheet of music from the same. Before this manipulation can take place the anchor C must be withdrawn, as above described by pulling button N outward and then, when spring R has hooked behind the arm s, the pushing-button N is pushed inward again, to bring the lever L out of the way of stopping-pin Q. To more exactly guide the pullbar M during this operation a pin W' has been fixed underneath the lever W, which enters behind a projection of the bar M, while the button of lever W is in contact with a small wooden guide-bar y and thus, when this button is above the pullbar M, the roller A is free to run backward. Then the small roller U is turned by means of a cord in such direction that the music-sheet is rolled off the large roller, back again upon the small roller. A few seconds suffice for this work. Then a slight pressure to the right upon the lever W brings the roller G and the weight acting thereon again under the action of pawl m on the roller A and a slight pull toward the front of the apparatus allows it again to move freely under the influence of the weight and anchor C. Then the button N is pressed upward and the spring R is unhooked and thus the anchor C is brought into contact with the sprockets of wheel B. The iron rod p serves as a support for the small roller U, Fig. 6 as well as for the frame E, Fig. 1, and for the guiding-bar Z, which causes the hammers D to slip away from under the frame E, as soon as one or more keys have been struck simultaneously. In Fig. 1 the hammers D are fixed directly upon the keys and this arrangement is suitable for harmoniums, whereas in the arrangement shown in Fig. 6, which serves for playing a piano, the keys are first connected to rocking-levers Y' and upon these are fixed the hammers D in such a manner, that the guiding-bar Z causes them to slip away from frame E, as soon as the respective note or notes have been touched. For this purpose the hammers D are made in the form of bell-crank-levers, and while their upright ends lift the frame E sufficiently high, they are pulled away sidewise because their horizontal arms encounter a resistance and thus the frame E can fall back immediately. The small spring y' under the angle D pulls or pushes the same again under the frame E after each note. This enables any note to be sustained as long as necessary, or to be played again immediately. The frame E transmits the thrust of any of the keys upon the anchor C by means of the adjustable wire-

hook h, and thus causes its forward movement to the extent of one tooth. As the ordinary piano does not allow sufficient room for placing the apparatus in the interior of the same, it is generally fixed upon an ordinary table of suitable height and placed in front of the keyboard of a piano. Thus the touch on the keyboard of the apparatus is transmitted to the keyboard of the piano by means of rocking-levers Y', Fig. 6. These have an outer movable end, so that they may be applied to any keyboard and the adjustable leather-heads y^2 can be set so that the two keyboards are properly connected. The joint-piece z' with its set-screw stands loosely in the channel z'' on the back end of the keys. They cannot leave this channel however, because the leather-band z''' connects the key Y with the piece z'. The center of gravity of the keys and of the rocking-lever is regulated in such a manner that after each touch their depressed ends rise again. When playing duets, it is necessary to disconnect the left half of the hammers D, which is done by means of levers 1 and 2, Fig. 6. The lever 1 pushes by means of pin 3 and flap 4 all the hammers except the first away from the frame E and the levers 2 provide a separate means of disengaging certain notes up to C sharp in the middle, by placing a ring screw 5 directly over the leather-head 6, Fig. 1 of the hammer, so that this latter cannot touch the frame E. The purpose of this arrangement is the following: As two players are not able to touch their notes simultaneously, which would be necessary for the regular motion of the roller A, the arrangement is made that the first player only causes the notes to appear over the whole length of the roller, so that the second player, who accompanies the first, does not exert any influence upon the turning of the roller. In case, however, a note or a series of notes has to be played by the second player, whereas the first player has to sustain notes in the treble, there is a key provided in the base which does not act during the accompaniment, but which causes the motion to continue by not disengaging its hammer. This key has to be touched by the second player, along with the other notes, when it is necessary to play further, while some notes of the first player are sustained. The places in which this action is necessary are marked on the music-sheet my means of a circle crossed by lines, Fig. 7. By means of a slight upward and forward pressure on the lever 7 which is placed underneath the keys, Fig. 2, the hammer 8 under the respective key is drawn away from the reed-valve of the harmonium and is placed upon the movable bar 9 with its spring 10. The key then only acts upon the motion of the roller but not upon the reed-valves. By means of lever 12 the whole arrangement, as shown in Fig. 6 can be disengaged by lifting up the frame E out of reach of the hammers.

In an apparatus intended for use for the harmonium as well as for the piano there are movable hammers, 8, provided for every key. For this purpose, the above mentioned table is provided with reeds and a windcase, whose reed-valves are opened by means of hammers 8.

The necessary wind is produced by means of bellows, acted upon by a treadle under the table, and connected with the wind-case by an india-rubber pipe. Now if the melody of a piece of music is to be played on the harmonium and its accompaniment on the piano it is only necessary to remove the hammers, 8, of those keys which are intended to work on the piano. This can be done by means of a shifting-bar which places one-half of the hammers 8 upon the corresponding rests 9, whereas their keys, in the treble, remain in contact with the keyboard of the piano.

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

1. In a notes-indicator, the mechanism for withdrawing the anchor C from wheel B, consisting of the pullbar M, catch-bar R, levers K and L, link K', set-screws $r\,r'$, spiral springs O and O', and the arm s, with guiding-pins s' and s'', arranged and combined, substantially as described.

2. In a notes-indicator, a mechanism for locking the small cord-roll G, and withdrawing the same from pawl m by means of a forked shifting-lever V, and a slotted hand-lever W in combination with the pin W', wooden guide-bar y, pin M' and catch-plate R', substantially as described.

3. In a notes-indicator, the combination of roller A, clip-bar g and clip-springs e, with the hand-lever f, draw-bar d' and spring-toggle-lever d, for the purpose of fastening the music-sheets upon the roller A, substantially as described.

4. In a notes-indicator, the combination of the anchor-standard F and the lever L for disengaging the anchor C, and on the latter a leather-tongue i and a movable steel tongue k, adjustable by means of two set-screws k' k'', substantially as described.

5. In a notes-indicator, the combination, with the bar p connecting the two main bearing-plates H H', on which are supported the frame E, the small roller U and the guiding bars Z, substantially as set forth.

6. In a notes-indicator, the combination, with the keys Y and the hammers D, of the frame E, the anchor C, of the hook h and the roller A, substantially as set forth.

7. In a notes-indicator, the combination, with the levers 2, of the lever 1, the shifting board 4, the pin 3, the lifting frame E and the lever 12, substantially as set forth.

8. In a notes-indicator, the combination, with the lever 7, of the hammer 8, the rest 9 and the roller A, substantially as set forth.

9. In a notes-indicator, the combination,

with the upright bar S, of the swinging pin u, a spiral spring v and a screw pin w, substantially as set forth.

10. In a notes-indicator, the combination, with a winding apparatus, of a cord passed over the guide-rollers and a slide n in the molding o, substantially as set forth.

11. In a notes-indicator, the combination with the bar y', of a movable end-piece, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ANDREAS WIDER.

Witnesses:

JULIUS BAUER STRUPANNICHTER,

CHRISTIAN SCHULER SCHREINER.