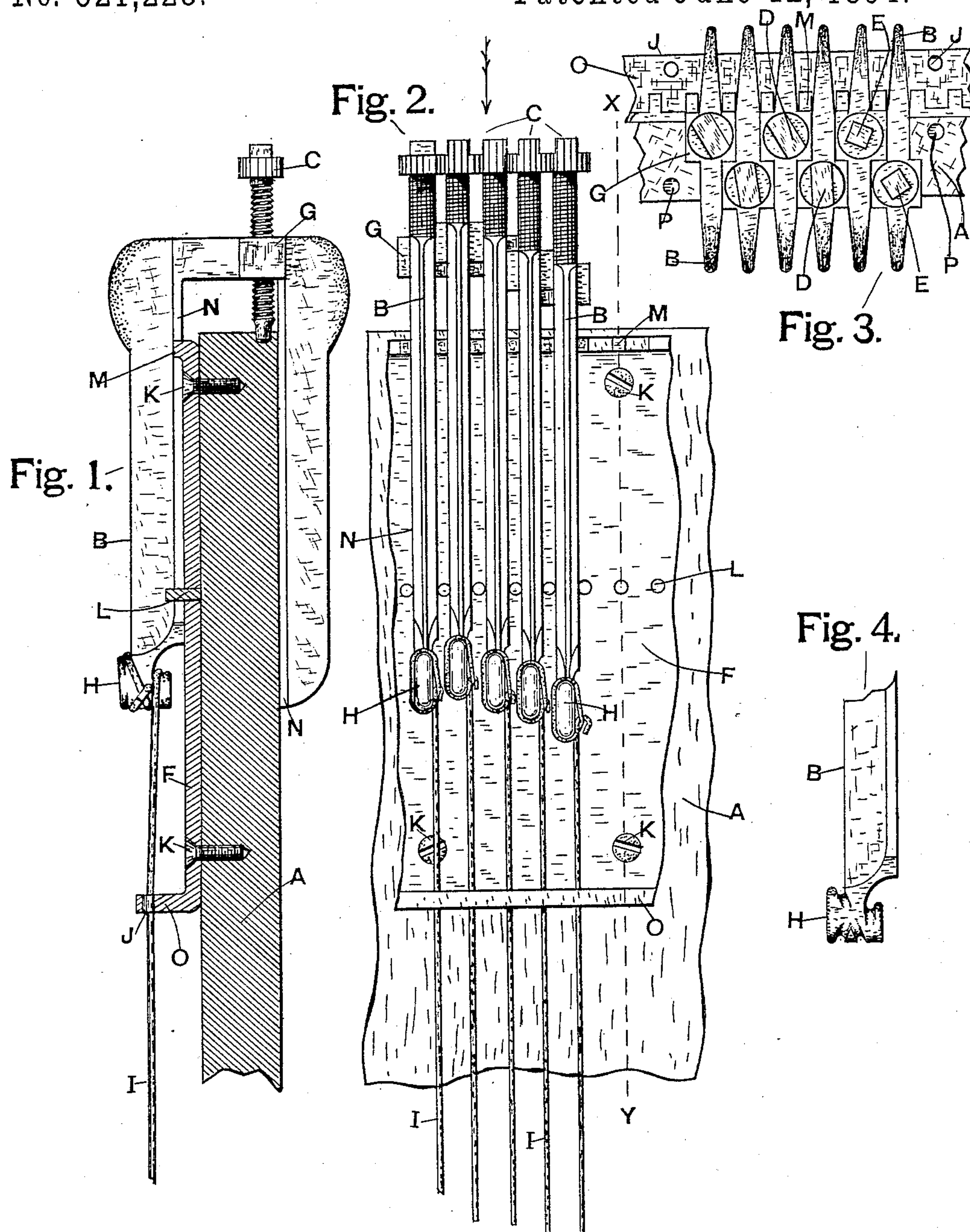


C. L. G. BECH.
STRINGED MUSICAL INSTRUMENT.

No. 521,228.

Patented June 12, 1894.



WITNESSES:

Frank B. Lewis
Winfield R. Smith.

INVENTOR:

Christian Ludwig George Bech

(No Model.)

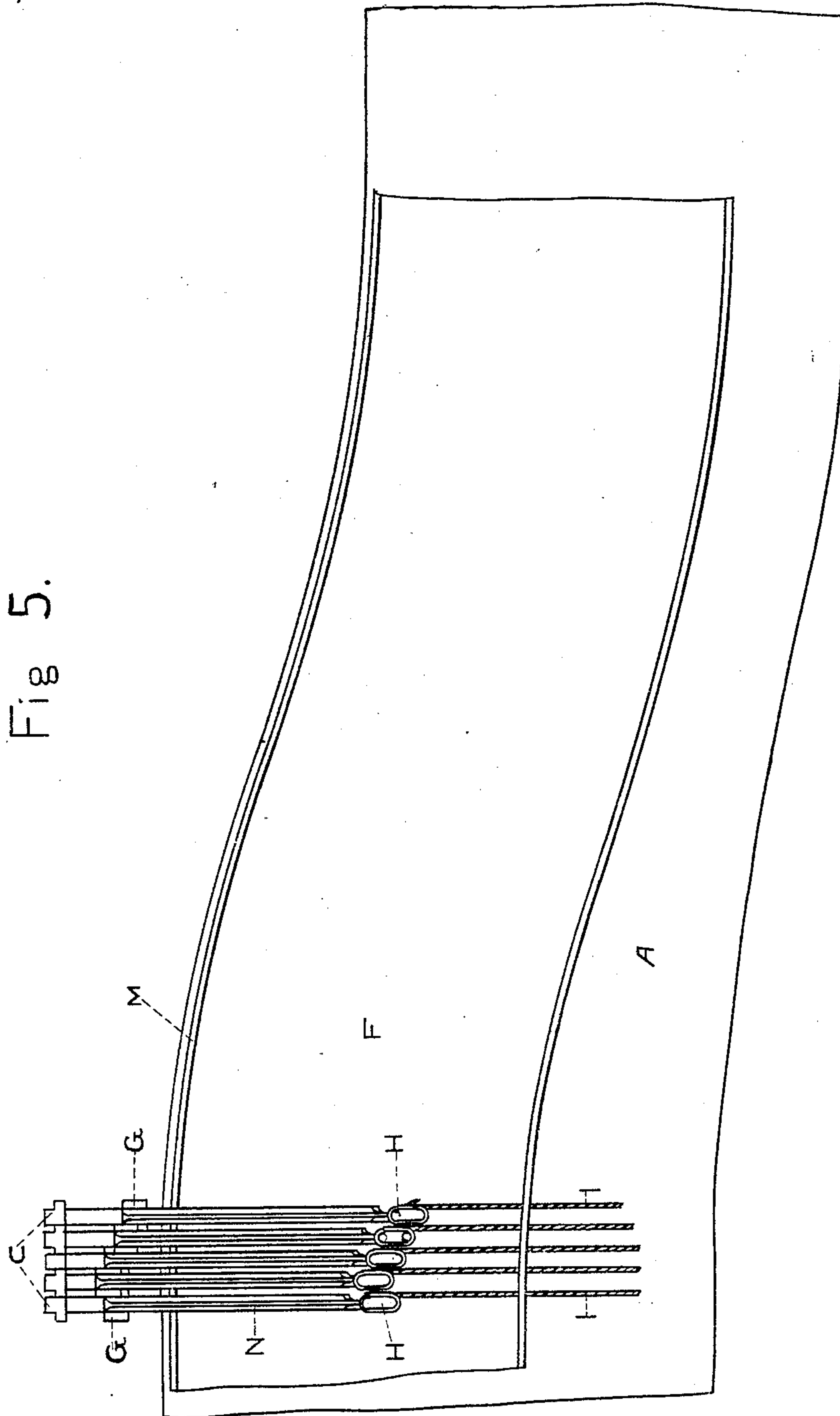
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Fig 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHRISTIAN LUDVIG GEORGE BECH, OF BELLEVUE, WASHINGTON.

STRINGED MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 521,228, dated June 12, 1894.

Application filed January 25, 1893. Serial No. 459,673. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN LUDVIG GEORGE BECH, a citizen of the United States, residing at Bellevue, in the county of King and State of Washington, have invented new and useful Improvements in Stringed Musical Instruments, of which the following is a specification.

The object of my invention is to provide a means for accurately adjusting the strings of all stringed musical instruments, in such manner that there will be no slip, while at the same time infinitesimal variations in tension may be easily and quickly accomplished. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the adjustable frame sliding in ways upon the fixed plate or head stock of a musical instrument, shown in section through the line X, Y. of Fig. 2. Fig. 2 is a top view of the mechanism as applied to an upright or grand piano, or other many stringed instrument. Fig. 3 is an end view of a portion of Fig. 2. Fig. 4 is a detail view of one end of the sliding fork. Fig. 5 is a view of the upper part of the broad face of the fixed plate in an upright or grand piano, showing the curved contour of the free upper edge of the plate, and three of the series of forks illustrating their arrangement upon this free edge.

Similar letters refer to similar parts throughout the several drawings.

A. represents a part of that fixed portion of a musical instrument ordinarily carrying the keys or pins upon which the strings are wound. It may be of cast iron as in the piano, or of wood, as in the violin, its particular form or material constituting no part of my invention except as it forms a base of operation for the other parts of the invention.

B. is a frame or elevishaped fork of metal, preferably of cast steel, polished and plated if desired, and of such general form as to secure the greatest strength and rigidity with the least material, although its precise form in this respect is not important. As exhibited in the drawings it has an enlarged portion G, with lateral ribs N. from which the metal gradually tapers as shown to the outer

edges of the fork. The inner faces of the fork are made true and parallel to each other in such manner that the fork may slide longitudinally upon the bed A., and bed plate F. The bed plate F., may be of cast or wrought metal fastened immovably to the bed A. by screws K. K., or cast in one piece with the bed A., if preferred,—where A. is of cast metal as in the case of a piano. Plate F. carries a rib or bridge O. at its lower edge running the entire width of the plate, and pierced at the proper intervals with holes J., for the passage of the string I.

It is obvious that without departing from the general features of the invention the bridge O. might be a separate strip of metal, screwed or otherwise fastened to plate F., and that the holes J. could be replaced by notches in the outer edge of the bridge O. The upper edge of plate F. is turned up as shown in Fig. 1, and of such shape as to form a series of serrations or teeth, so spaced as to admit between them the bearing faces of fork B. without lost motion. As a further means of guiding the fork B. in its longitudinal motion upon plate F., the latter may be pierced by pins L. In lieu of these pins may be substituted rectangular teeth, cast integrally with plate F., the same as at M. or the teeth M. may be replaced by pins, as at L., without departing from the spirit of my invention; although I prefer the construction shown in the drawings.

The enlarged portion G. of fork B. is pierced and screw threaded for the admission of screw bolts C., bearing upon the end of bed A., and resting in depressions P. (Fig. 3), to further increase the rigidly longitudinal motion of the fork B. These bolts may be square as shown at E., to fit an ordinary tuning wrench, or may be of the form shown at D. One of the ends of fork B. is raised free from the surface of plate F., and terminates in a grooved knob H., shown in detail in Fig. 4, about which the string I. is wound two or three times as shown in Figs. 1 and 2, and fastened by passing the knob or bend at the end under and through one of the coils thus formed. Where a large number of these forks are used, in the case of a piano or other many stringed instrument, they are arranged

in alternate series of pairs as shown in Fig. 3, the enlarged portion G. of each fork being opposite the corresponding portion of the adjoining fork in such manner as to permit them to move freely by each other. In the piano, as a further means of accommodating all the forks, I would give to the upper free edge of bed A. a double curved contour like that of the top of the harp, as illustrated in Fig. 5. Each fork is also so arranged that the notch or hole J. is enough higher than the point where the string quits the knob H. to insure a constant bearing of the string upon the lowest point in the notch or hole.

It is evident that in operating this device, the fork B. under the tension of the string, may be caused to occupy any position with reference to plate A. by turning the screw C. in or out, and in this manner the pitch of the string may be easily and accurately adjusted to any required degree. It is also evident that much slighter alterations in pitch may be attained by fractional turns of screw C. than would result from turning the pin or key of an ordinary instrument through an equal arc, thus greatly facilitating accuracy and quickness in securing the desired tone. Furthermore it is clear that fork B. will remain firmly in any given position without slip, the tension of the string increasing the friction between the screw threads on C. and G., instead of tending continually to overcome it, as in the case of the smooth surfaced key or pin ordinarily employed. When the fork is to be applied to a violin, the plate A. would be replaced by the head stock of the instrument, altered for that purpose to a flat block with opposite parallel faces, and retaining, if desired, the same angle with reference to the neck and finger board of the instrument as in those now made. In that form the notched bridge O. would be replaced by the raised rim at the base of the finger board, the same as at present.

One of the results of this construction is the entire abolition of the heavy and bulky and very costly pin block in the piano, enabling piano makers to utilize the space thus saved in the upright piano, for enlarging the sounding board, (and in this manner increasing the resonance of the instrument,) and at the same time leaving more room for the sounding board to swell in damp climates or in wet weather than is possible where a pin block is used.

While I consider the general form of knob H. particularly suitable to the purpose, I do not altogether confine myself to this shape nor to this precise method of fastening the string, as it is obvious that the string might be passed through a hole in the free end of fork B. or about a raised pin over and around a pin passing laterally through fork B. and then twisted or knotted fast, without affecting the utility or general features of the device.

I am aware that the combination of a longitudinally sliding carriage, to which the free

end of the string is fastened, with a screw by which the carriage is caused to move to and from the fixed end of the string, is not new, nor do I broadly claim such invention.

The special features of my device are its adaptability to the ordinary upright piano or other stringed instrument without material change in their present forms (this being especially important since I am enabled to use the bed plate of an upright piano without any expensive alterations), and also the rigidly longitudinal motion of the sliding carriage, without the possibility of vertical displacement owing to the fork shape of the carriage securing a bearing on both the under and upper surfaces of the bed plate.

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

1. The combination in a stringed musical instrument of a sliding fork or clevis, of such form and dimensions relative to the fixed part of the instrument that it shall bear upon both the upper and lower surfaces of the bed plate, and carrying the free end of the string and adjustable longitudinally by means of screws, with a fixed bed plate.

2. The combination of bed A. and bed plate F., a sliding fork or clevis B. of such form and dimensions that it shall bear upon both the upper and lower surfaces of the bed plate, and adjustable longitudinally between suitable guides over bed plate F., with screw C., the notched or perforated bridge O., and string I., substantially as described.

3. In a stringed musical instrument, the combination of a series of sliding forks B., each fork being of such form and dimensions that it shall bear upon both the upper and lower surfaces of the bed plate, and arranged to move freely by each other, with enlarged portions G., forming suitable bearings for screws C., substantially as described.

4. In an upright or grand piano, the combination of a series of sliding forks B., each fork being of such form and dimensions that it shall bear upon both the upper and lower surfaces of the bed plate, and as described, arranged upon the free upper edge of the iron plate A., this edge having a double curved contour like the top of a harp, substantially as described.

5. As an article of manufacture, the clevis shaped metal fork B., of such form and dimensions that it shall bear upon both the upper and lower surfaces of the bed plate, and with enlarged screw threaded portion G., longitudinal ribs N. N., and a knob or other device at one of the free ends to which a string may be fastened, substantially as described.

6. As an article of manufacture, the screw threaded fork B., of such form and dimensions that it shall bear upon both the upper and lower surfaces of the bed plate, and screw C., and bed plate F., with raised longitudinal guides and bridge O., provided with suitable

notches or perforations, and extending over the entire width of plate F., substantially as described.

7. As an article of manufacture, for use in
5 upright or grand pianos, a bed piece A. with a double curved upper free edge, having suitable depressions P., metal plate F. provided with raised longitudinal guides and notched or perforated bridge O., and the sliding forks
10 B. each fork being of such form and dimensions that it shall bear upon both the upper and lower surfaces of the bed plate, and in al-

ternating pairs with means at one of the free ends of each fork for retaining the strings, and threaded nuts or collars at G. for the reception 15 of screws C., substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand, this 18th day of January, 1893, in the presence of witnesses.

CHRISTIAN LUDVIG GEORGE BECH.

Witnesses:

WINFIELD R. SMITH,
FRANK P. LEWIS.