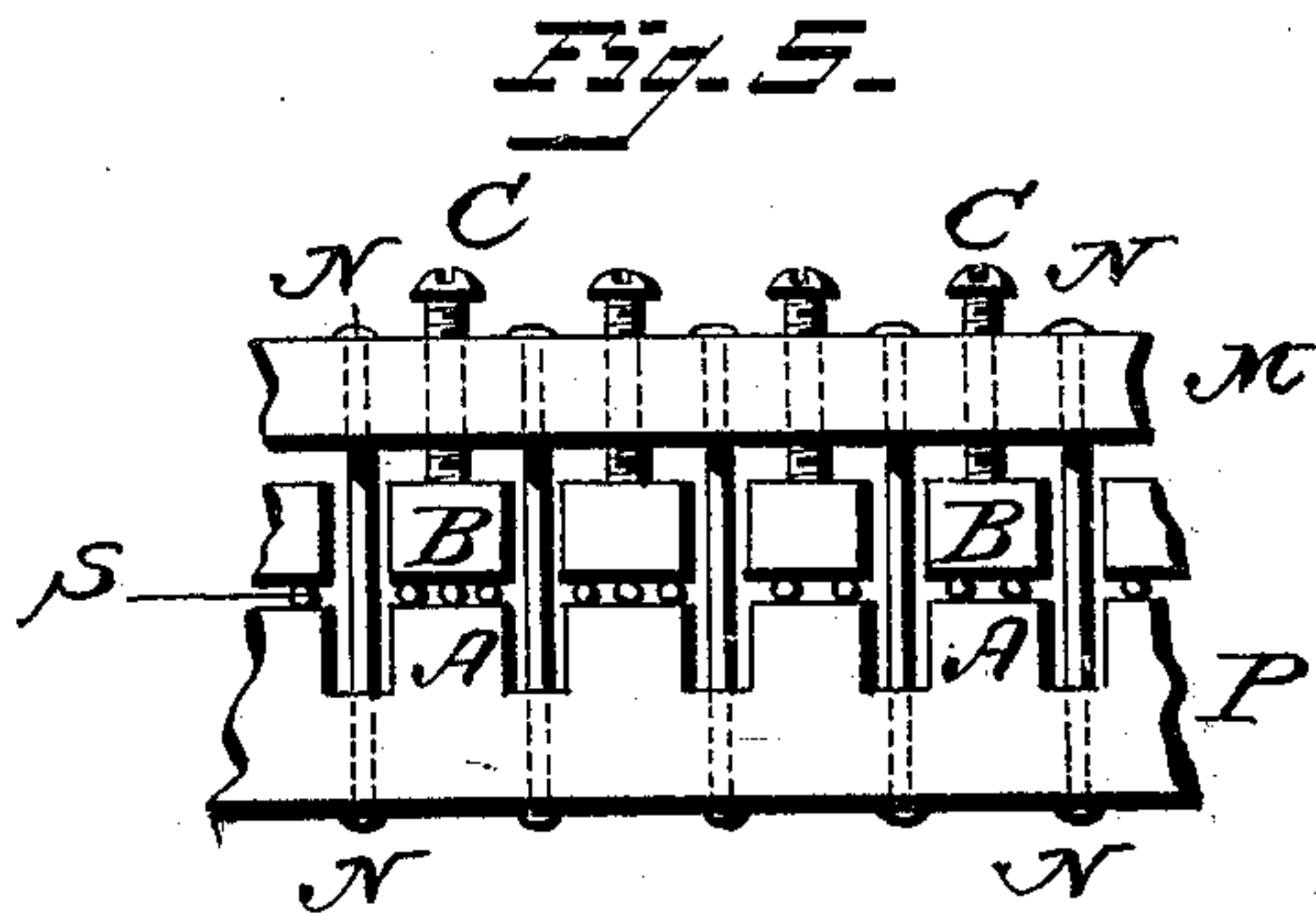
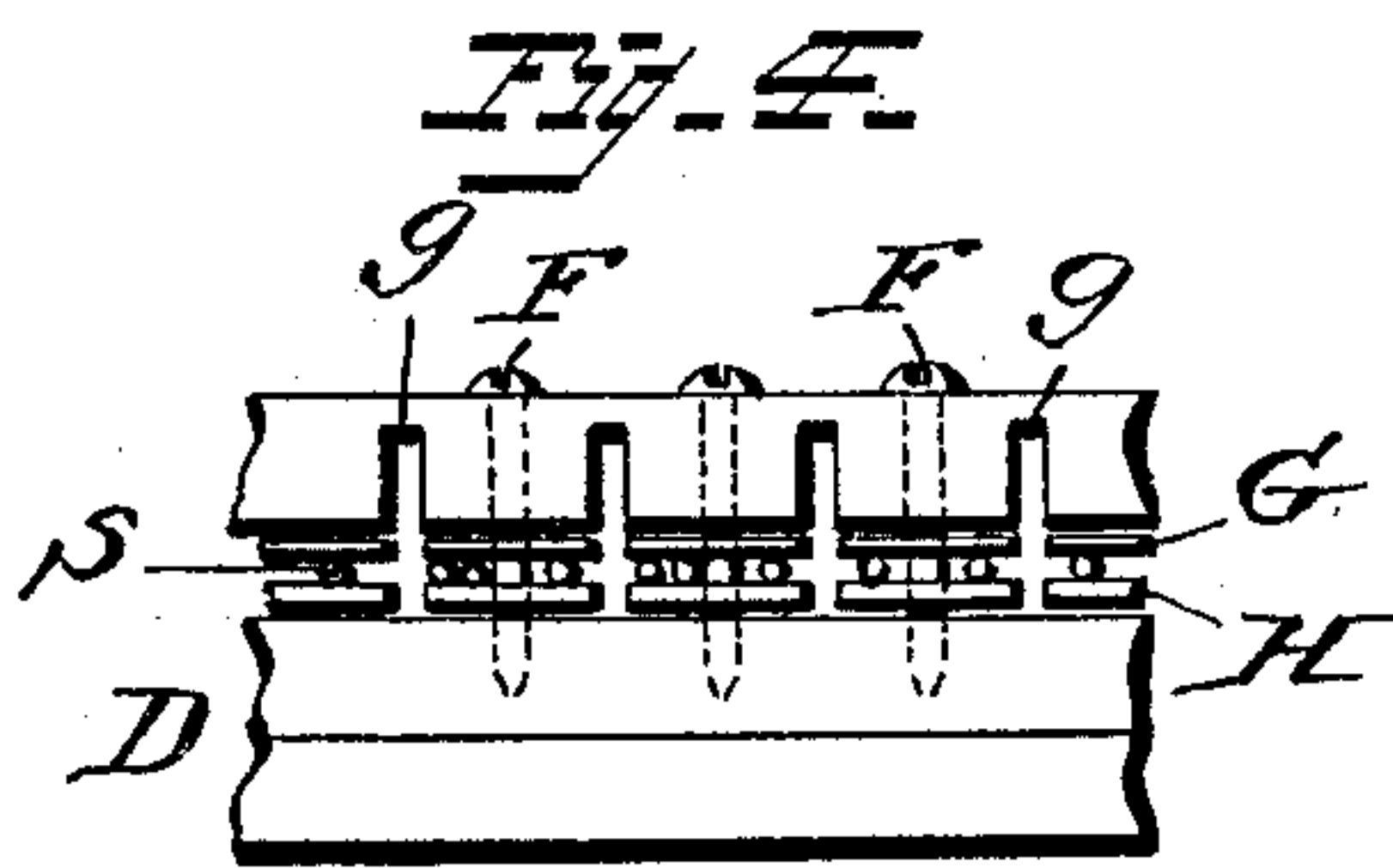
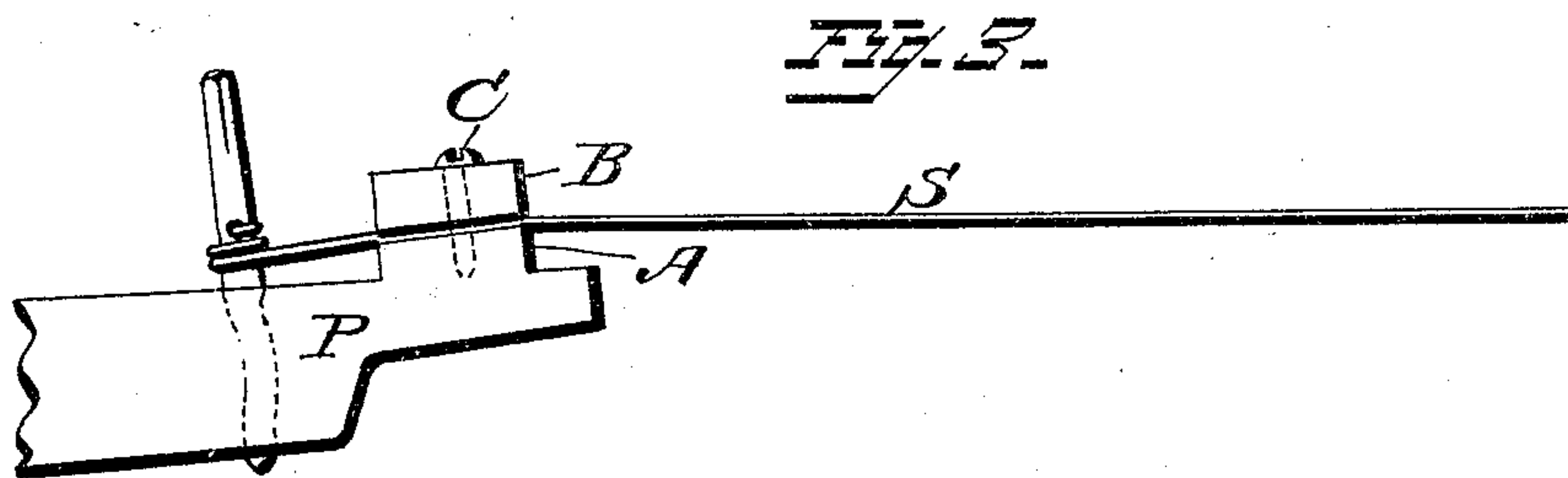
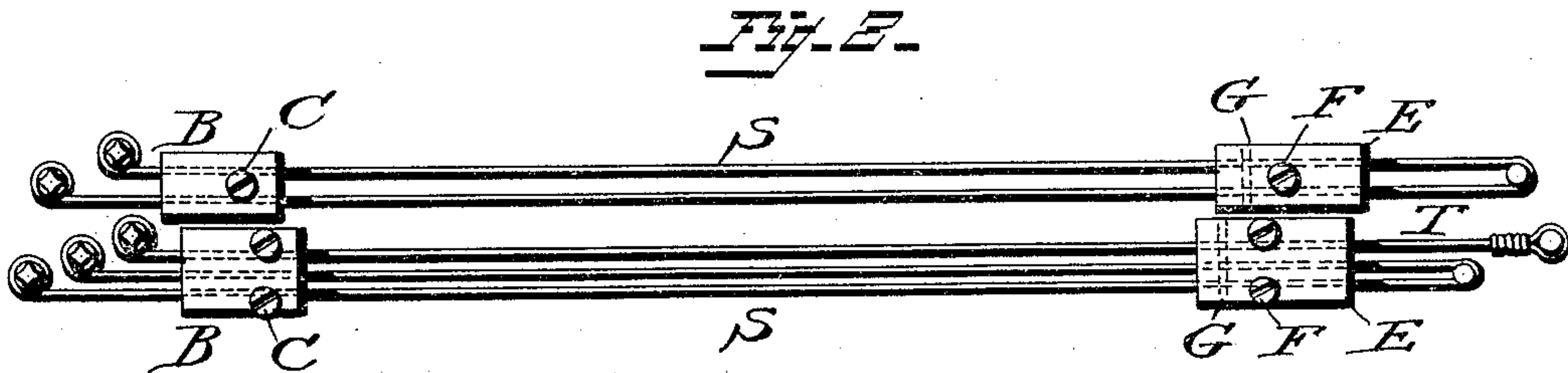
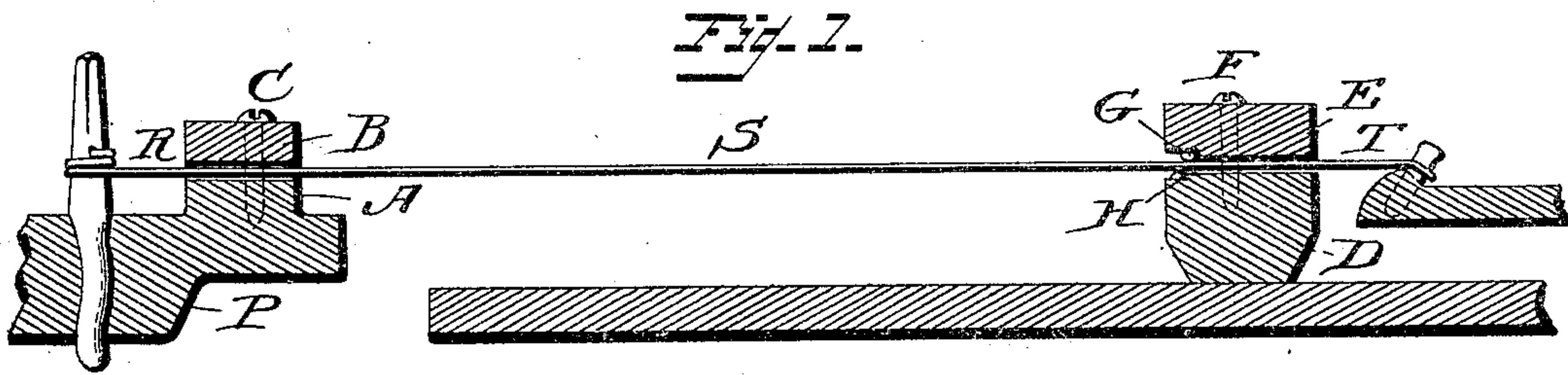


(No Model.)

C. S. WEBER.  
STRINGING MUSICAL INSTRUMENTS.

No. 509,414.

Patented Nov. 28, 1893.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## STRINGING MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 509,414, dated November 28, 1893.

Application filed December 21, 1892. Serial No. 455,939. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES S. WEBER, a citizen of the United States, residing at San José, in the county of Santa Clara, State of California, have invented certain new and useful Improvements in Stringing Musical Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains, to make and use the same.

This invention relates to stringing musical instruments. It is an improved method of attaching the ends of vibrating portions in a string to proper points in the instrument. In all constructions hitherto used the musical string between its two end points of fastening passes at least two deflecting points, which serve to define the length of the sounding section, and at the same time to produce the lateral pressure and thereby a firm contact between string and proper parts of the instrument, apparently resulting in the simplest method of stringing. In deviating from the simplicity of that primitive method, this improved construction does not rely on any deflection in the string for establishing said firm contact, but uses an additional device, which in the manner of a vise or of a clamp holds the end of the sounding section without causing any appreciable deflection therein. The form, size and constitution of said clamp-like devices vary not only according to the different classes of stringed instruments, but differ even in the same instrument according to the end of a sounding section which these devices are destined for. Thus in a pianoforte on the wrest plank end of said section the string is clamped down on the bridge by means of a movable piece of metal, as shown in Figure 1; wherein—

A represents a projection in the wrest-plank serving as a bridge.

B represents the movable piece, and C a screw which in combination with A and B forms a clamp by means of which one end of the sounding section S is held immovable. The other end is fastened to the bridge of the soundboard by means of a similar device, in which however the movable piece is preferably of wood.

D in Fig. 1 shows the bridge of the sound-

board, E the movable piece of wood, and F the screw which by the combination of D and E forms the clamp for the soundboard end of the section S.

G and A show two small (semicylindrical) metal pins laid crosswise to the strings, above and below them, to better define the end point of the sounding section, while in Fig. 1 only the crosscut of these pins is shown. In Fig. 2 the whole length of the upper one (G) is indicated by dotted lines. This figure gives the top plan view of the strings and fastenings in two notes of a piano,—one note having two the other three unisons.

As a good tone only appears when the ends of the sounding section have been firmly clamped down, this improvement renders the tuning of an instrument much more laborious than what it is in the old construction. To remedy this defect in a piano a slight deflection may be combined with the clamping device on the wrestplank end of the sounding section, as shown in Fig. 3. While the deflection required for the production of a good tone in the ordinary construction of pianos amounts to about ten degrees, two or three degrees of it will amply suffice in said combination. Still as the clamping device must be loosened before and closed again after the tuning of every note; an inconvenience results which would prevent the practical application of this invention were it not for the fact that the inconvenience in tuning is offset by a gain in the quality of tone. This new method also presents in the clamping device a convenient means for avoiding any difference in the tension of two sections (lying on opposite sides of a bridge) regardless of any inequality in the diameter of the string, and also regardless of the proportional length of said sections, provided one forms a direct continuation of the other as for instance in Fig. 1 S to R or T to S. This is an important advantage, as it relieves the bridge of the soundboard from those impediments to vibration which in the old construction arise from the necessity of guarding against the displacement of said bridge by the pressure resulting from an unequal tension of said sections. Thus the metal screws and the buttons, used in the old construction for fastening the bridge to the soundboard, are ren-



dered superfluous in this improvement; gluing alone being sufficient to held both together. It is even rendered unnecessary to give a wide base to the bridge, as by narrowing the same in the way shown in the cross-cut of the bridge D in Fig. 1, an appreciable amount of vibrating surface is gained in the soundboard.

Where somewhat heavy steel strings are used, as in pianofortes it is best not to set both crosspins in exact opposition, in order to prevent possible injury to the bridge by the accidental breaking of a string, which, unable to slip between the crosspins when exactly opposed, throws all its pull on the clamping device, a necessarily slender structure at this end of the sounding section. By setting one pin somewhat back of the other the string can slip sufficiently to reduce its great tension, as the wooden part alone of the clamp is unable to prevent that. Injury will also be avoided by leaving one crosspin entirely off, in which case a soft tone is produced. Leaving off both pins diminishes the brilliancy of the tone too much, even if bone be substituted for the wood of the movable piece. Fig. 1 shows the upper cross-pin G set back of the lower one H. Unless this setting back exceeds two or three diameters of the string clamped down, the rigidity of the material will prevent any perceptible deflection being caused in a steel string by the firm closing of the clamps.

Above the bridge of the soundboard the movable piece for a number of notes may be made from a single piece of wood in which incisions of a sufficient depth are cut to allow the portion corresponding to any note being firmly drawn on or loosened independently of its neighbor. By this arrangement three or more strings can be held down perfectly well with one screw, as shown in Fig. 4 which gives the view of a section of bridge when looked at in the direction of the strings.

By means of the incisions I the strip E is divided into several connecting pieces. Between the upper and the lower crosspins G and H the crosscut of the strings is shown. The unisons of every note irrespective of their number are secured by means of but one con-

necting screw F. A device resulting in a similar advantage when applied to the other end of the sounding section is shown in Fig. 5, in which the bar M is firmly secured to the metal plate P by means of the rivets N; the movable pieces B are pressed against the bridge like projections A by means of the screws C, forming a set of vises, one for each note.

This new method of stringing has been described with special reference to pianos, but it is evident that similar devices as here shown can be attached to the end of the sounding section in other stringed instruments.

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

1. In a stringed musical instrument, the combination with the musical strings, of a clamp having cross pins on the meeting faces, one being set a little in advance of the other, substantially as described.

2. In a stringed musical instrument, the combination with the musical strings, and a soundboard, of a clamp on the soundboard forming a bridge, and cross pins on the meeting faces of the parts of the clamp, one cross pin set a little in advance of the other, substantially as specified for the purpose described.

3. In a stringed musical instrument, the combination with the musical strings of a clamp having one of the parts provided with incisions of proper depth, and independent means for clamping the parts together between the said incisions, substantially as and for the purpose set forth.

4. A device for clamping musical strings consisting of two parts held together by fastenings, movable pieces between the said parts, and means for obtaining a purchase in one of the said parts to force the movable piece against the other part to clamp the strings, substantially as described.

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

CHARLES S. WEBER.

Witnesses:

A. O. MATTHEW,  
H. L. WILLEY.