

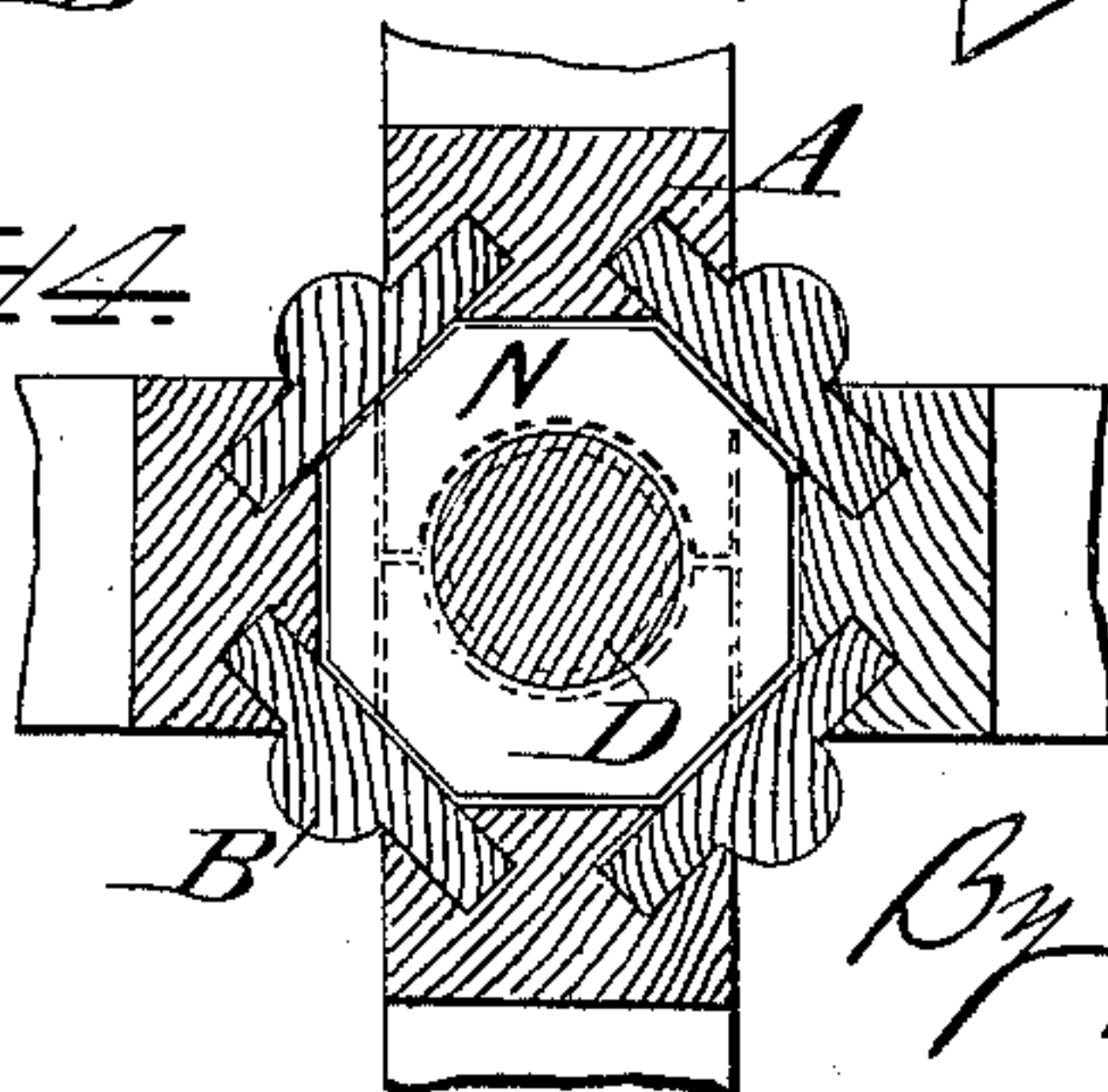
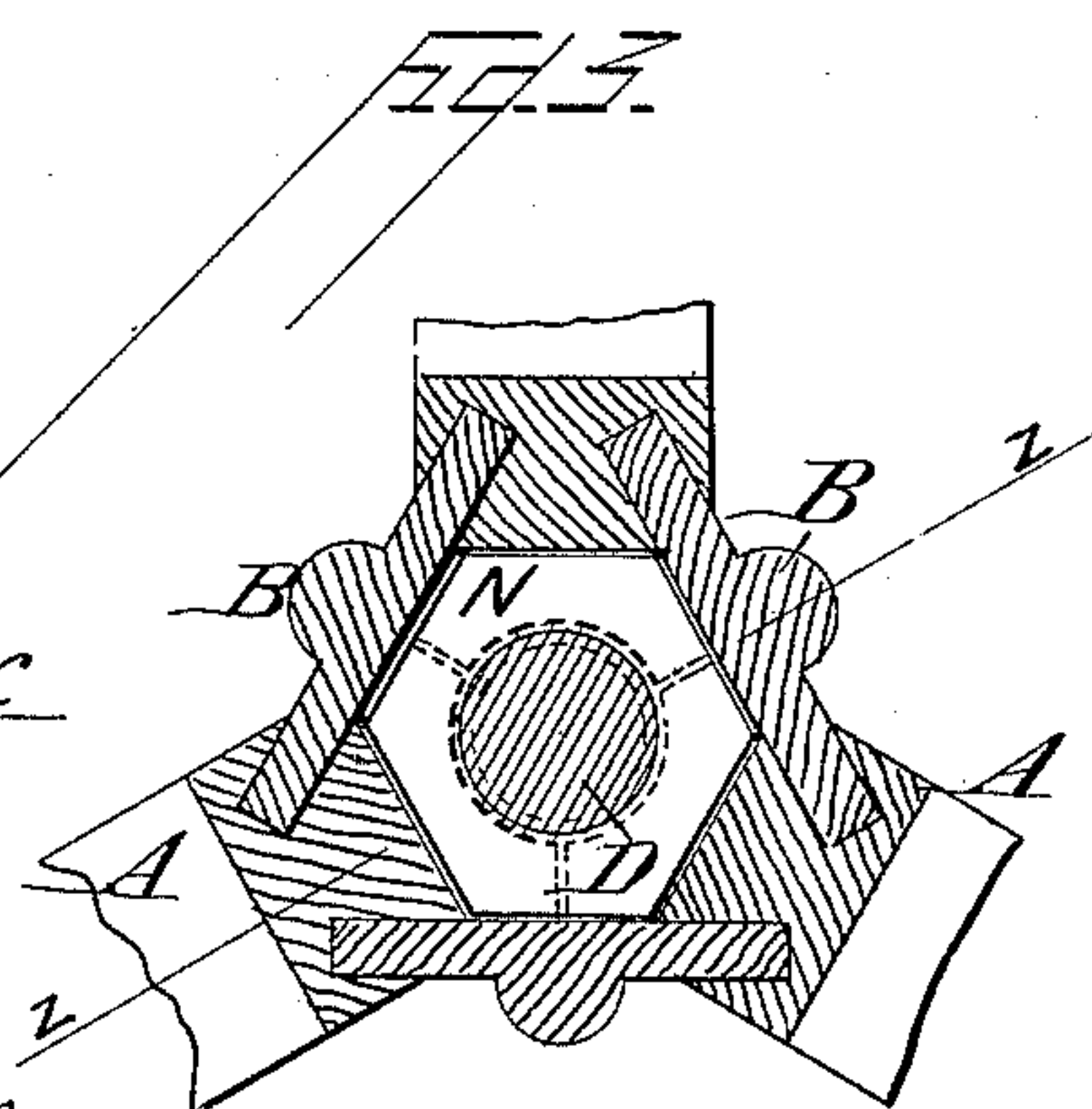
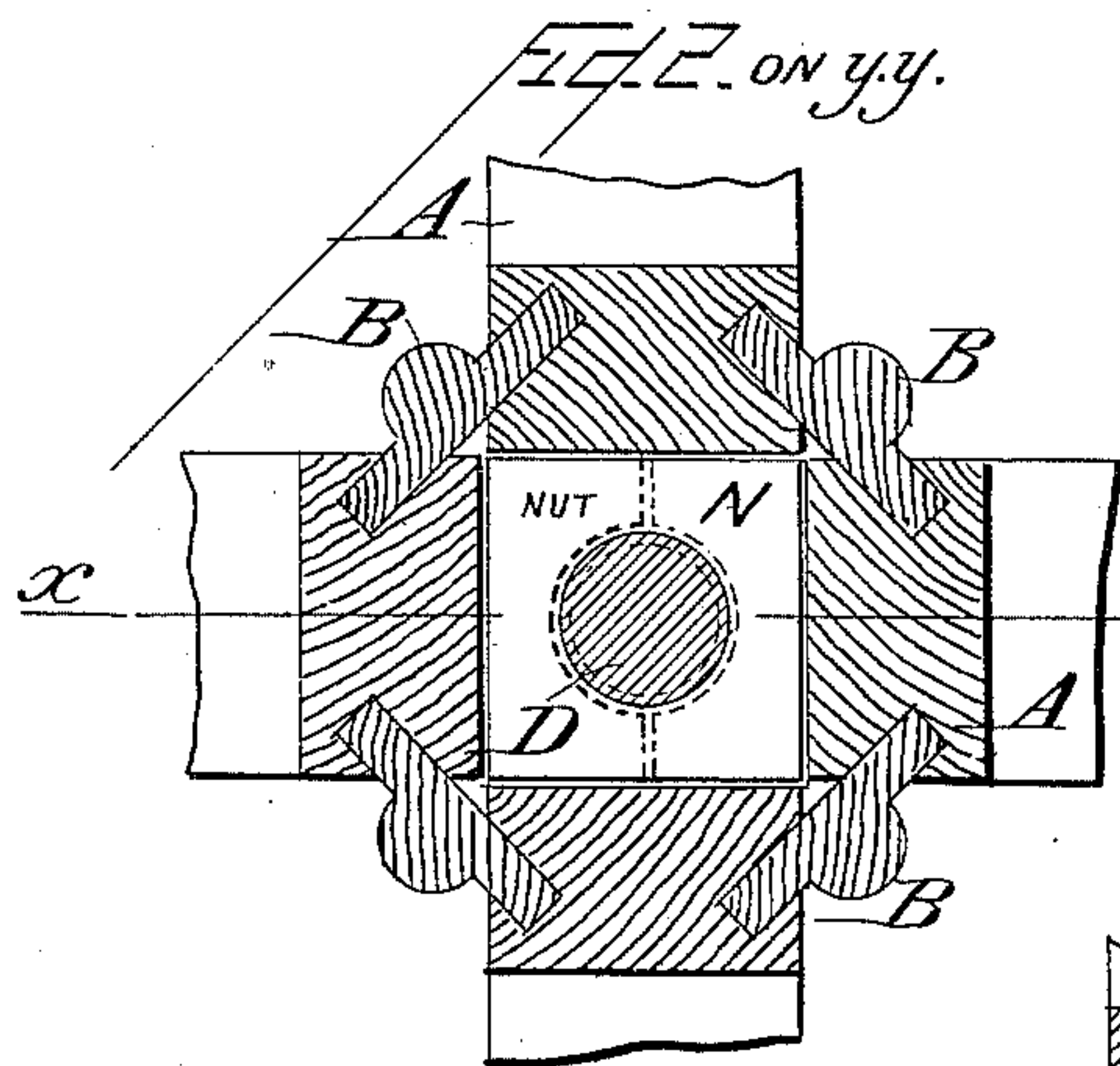
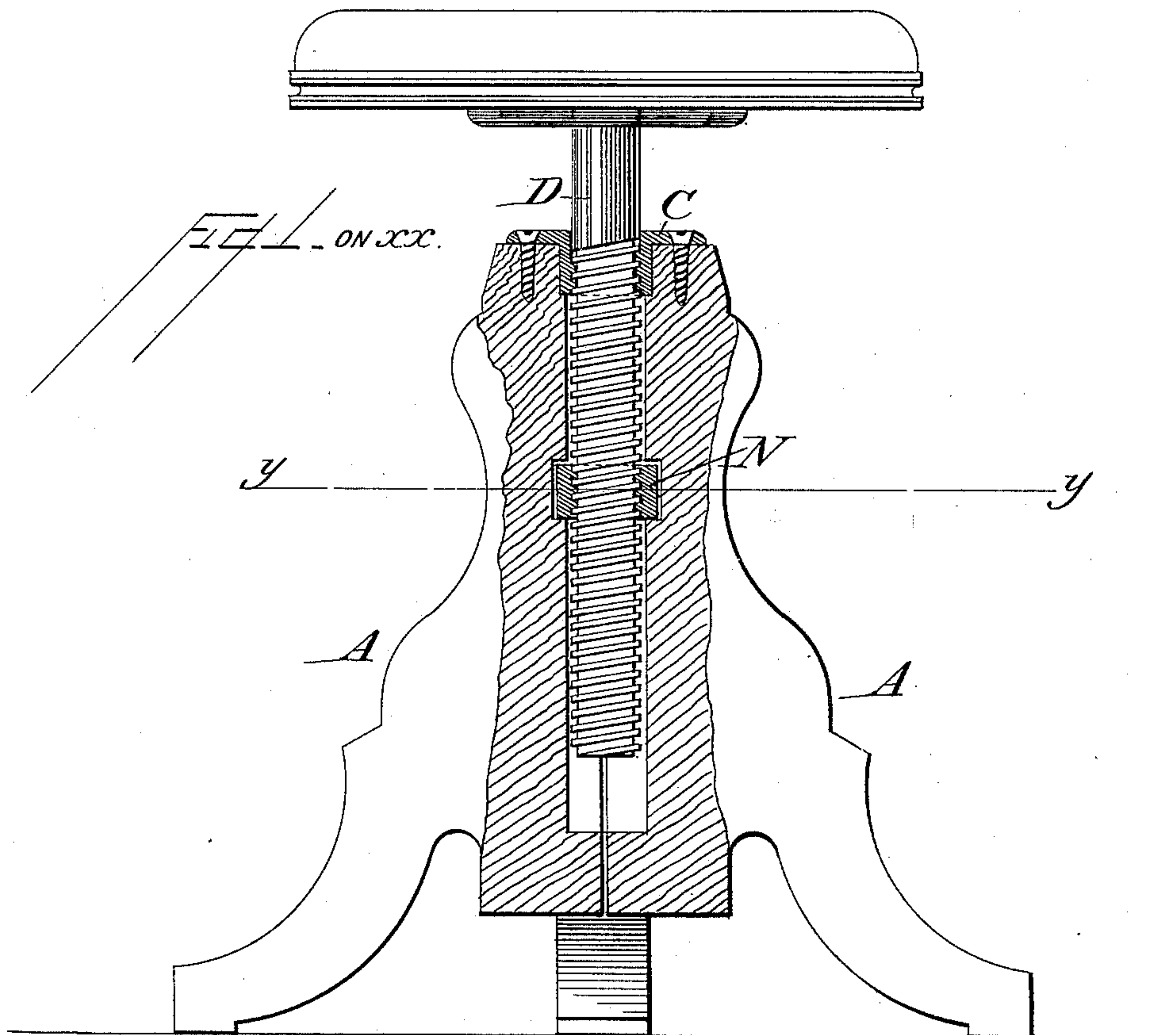
(No Model.)

2 Sheets—Sheet 1.

W. HEAP.
PIANO STOOL.

No. 409,585.

Patented Aug. 20, 1889.



Attest
J. H. Schott
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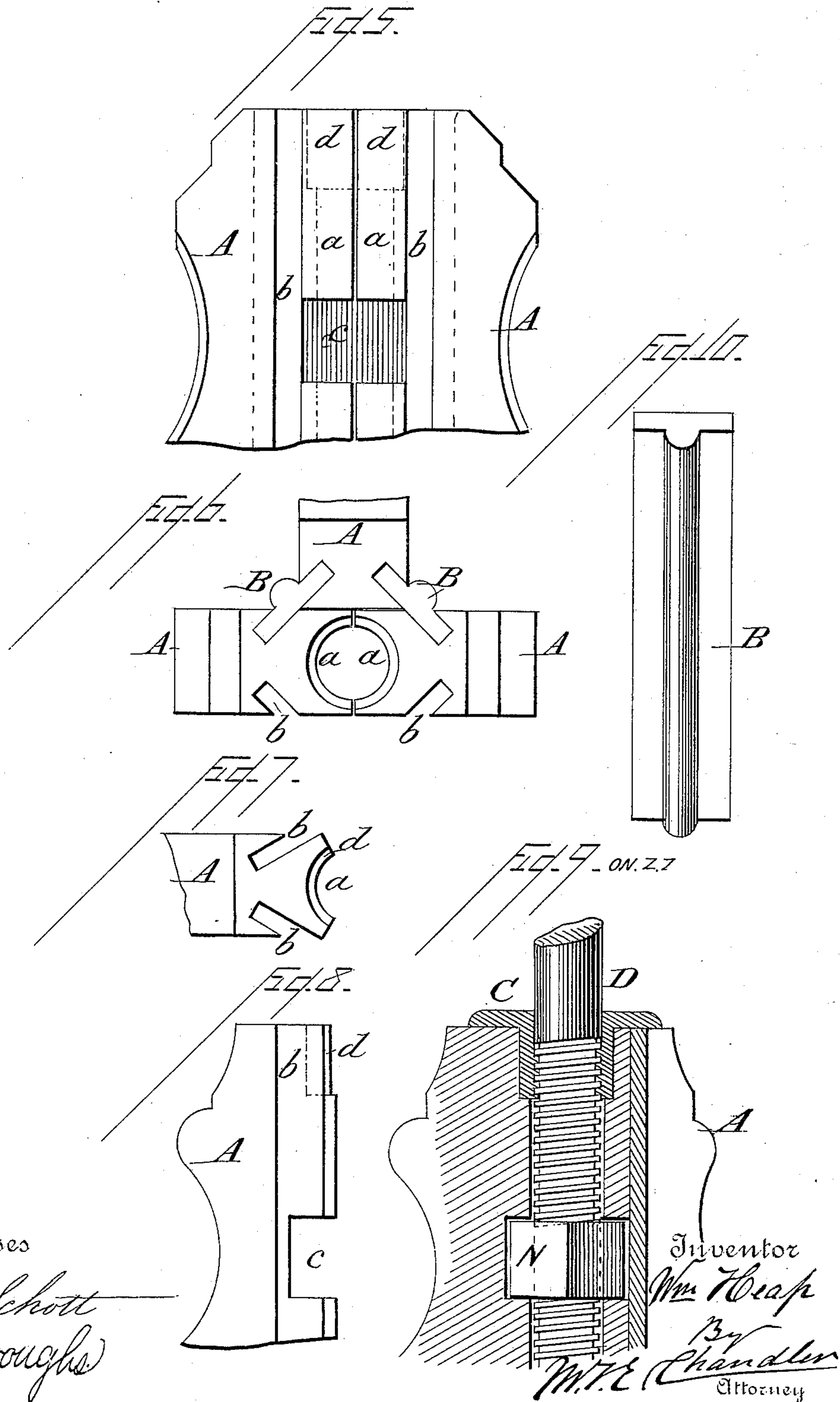
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UNITED STATES PATENT OFFICE.

WILLIAM HEAP, OF MUSKEGON, MICHIGAN.

PIANO-STOOL.

SPECIFICATION forming part of Letters Patent No. 409,585, dated August 20, 1889.

Application filed September 4, 1888. Serial No. 284,581. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HEAP, a citizen of Great Britain, who have declared my intention of becoming a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Piano-Stools; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in piano and other stools having a seat capable of elevation to different heights, the object being to improve the method of inserting and securing the nuts to receive the screws for adjusting the height of the seat, and also to improve the construction of the parts composing the standard in other details, as will be hereinafter described.

Heretofore much difficulty has been experienced in securing the nuts on the standards of such stools, as the hole for the screw was bored after the parts composing the said standard were united, and the nut forced down to its place in said hole and being prevented from turning therein (as it was circular in form) by fins or projections extending a short distance radially into the surrounding wood. These nuts were very liable to work loose, and there being no shoulder above the nut to keep it down it would be raised by the screw and soon get into such a condition as to be useless as a means for elevating the seat. To overcome these difficulties, I construct the standard of three or more separate pieces, each forming a portion of the standard, as well as one of the feet of the stool, and secure the nut therein in the following manner: As before stated, the standard of this stool is formed by three or more pieces of wood united, each of which pieces forms a leg and a section of the standard. These sections come to a common center and extend radially therefrom. Each piece before their union is passed over a suitable grooving-tool,

which removes a circular section the whole or greater part of its length, forming that portion of the piece approaching the center of the standard, so that when the sections are all united a circular opening of sufficient diameter to admit the screw is left in the center of the standard, thus avoiding the great labor and difficulty experienced in boring a hole for the screw in the hard and dry wood in a direction parallel with the grain. These sections of the standard, after the circular section of the center has been removed, have each two parallel grooves formed in their inner edges, which receive the keys by which they are to be united; but before this union is accomplished the sections are each passed over a suitable tool, which cuts a transverse recess at the proper point to receive the nut, which is inserted into this recess before the parts are secured together. It will be seen that the nut is held firmly by shoulders above and below it, so that it cannot be removed from its position vertically, and in order to prevent its rotation a nut of polygonal form is used, which, when the stool is composed of three pieces united by keys, is preferably hexagonal, said keys making three sides of the hexagon, and the other three sides being embraced by the bottom of the recesses cut in the section. Where a square nut is used in a stool having four legs, only two of which come together, two sides of the said nut would be embraced by the recesses, and the other two by the straight faces of the two legs which were not recessed. It is evident that the octagonal nuts may be used, in which case four of the sides would be embraced by the legs and the other four by the keys uniting said legs.

A further improvement consists in giving to the screw a second bearing, preferably near the top of the standard, by which the oscillations of the screw, when raised considerably, are avoided, as the two points of support must necessarily prevent such oscillations, thus rendering the seat much firmer, especially when elevated to a considerable distance above the standard.

In the accompanying drawings, which illustrate the invention, Figure 1 is a side eleva-

tion of a stool, the standard being in section to show the arrangement of the several parts and position of the nut with relation to the other parts. Fig. 2 is a transverse section 5 through the standard on line $y y$ of Fig. 1, and illustrates the position of a rectangular nut with relation to the legs of a four-legged stool and the keys uniting said legs. Fig. 3 10 is a similar transverse section of a standard having three legs with which a hexagonal nut is employed, and shows the manner in which the legs and their uniting-key embrace the sides of the said nut. Fig. 4 shows a sec- 15 tion of the standard formed with four legs and with an octagonal nut inserted, illustrating the manner in which the keys and legs embrace the sides of the nut. Fig. 5 is an elevation of a portion of a standard with one of the legs and its connecting-keys removed, 20 showing the recess formed in the remaining legs to receive the nut. Fig. 6 is a top plan showing three of the four legs forming a standard united and the counterbore or recess at the upper end of the hole in the stand- 25 ard which receives the cap that forms the second bearing for the screw. Fig. 7 is an end view of one section of a standard having three legs, showing the grooves for the keys, as well as the circular groove, which, when 30 the legs are united, form the hole in the standards to receive the screw. Fig. 8 is a side elevation of the upper part of one leg, showing the recess cut therein to receive the nut. Fig. 9 is a vertical section of a three-legged 35 stool on the line $z z$ of Fig. 3, and further illustrates the means employed for securing the nuts in place. Fig. 10 is a perspective view of one of the keys employed for the purpose of uniting the sections or legs to form 40 the standard.

In these drawings, A represents the legs, the union of the upper parts of which, when united by the keys B, forms the standard. The pieces of wood from which the legs A are 45 formed are first dressed upon their sides and brought to the requisite thickness by a planing-machine. They are then sawed out into the required shape to form a leg and portion of the standard, as shown in Fig. 1. 50 After having received the desired contour each piece is passed over a grooving-tool which forms in one edge a circular groove a , which, when four legs are used to form the stool, approaches a semicircle, as shown in Fig. 6, 55 two of the legs only being grooved, the other two being secured against the side of the first pair; but when three legs are used to form the stool the groove is less than a semicircle, as a part of it is formed in each 60 piece. After the formation of these circular grooves the grooves B, for the reception of the keys which unite the legs, are formed. The parts are then in condition to cut the recess which receives the nut N. This may 65 be done by passing the piece over a suitable

group of saws, which cut the recess c to the desired depth at one operation. The parts are then ready for assembling. If the stool be one with four legs and a square nut, the two legs which meet in the middle are first 70 brought together and one of the side legs attached thereto by the keys B. The nut is then inserted in the recess formed by the notches $c c$, after which the fourth leg is added and secured in place. If the legs are 75 made of thinner material, so that a square nut of proper size would project on the opposite sides of the two legs first united, an octagonal nut may be used, as shown in Fig. 4 of the drawings, the mode of insertion re- 80 maining the same as that just described. When the stool is formed of three legs, a hexagonal nut is employed, two of the legs being first united, the nut then placed in position, and the third leg added. After the 85 legs forming the standard are properly secured together the central orifice is enlarged at the top to form a recess d for the reception of the downwardly-projecting part of the cap C, which is placed upon top of the standards 90 and secured thereto by screws. This cap forms a second bearing for the screw D, preventing oscillation of the same, and may, if desired, have a female thread cut in the same to receive the male thread of the screw, thus 95 insuring perfect steadiness to the seat; or an additional thin nut may be inserted in recesses like those which receive the main nut N, and above the same to accomplish 100 the same purpose. It is also obvious that the recess for the cap may be formed before the legs are united, if desired, by the use of a suitable tool, which shall cut from each leg the necessary amount of material to form the 105 same.

Figs. 3 and 4 show the preferred construction, in which the keys B form parts of the seat or socket for the nut and bind against certain sides thereof, so that the nut is held 110 firmly and securely by the plates of which the keys consist.

I am aware that stools have been constructed in which an upward continuation of the legs formed the standard, said legs being connected by a nut provided with 115 wings, to which the upper part of said legs were secured, and also that a rectangular recess has been formed in a solid standard to receive a rectangular nut. I do not, therefore, claim either of these methods of construction; but 120

What I do claim as my invention, and desire to secure by Letters Patent, is as follows:

The herein-described piano-stool, comprising a suitable seat, the supporting-screw D 125 therefor, the sections forming the legs and standard and having an axial recess for the screw, the cap C, screwed to the top of the standard and having an internally-threaded boss to engage the screw D, the angular nut 130

N, seated in a recess of corresponding shape
in the facing edges of the legs, and the key-
plates B, that connect the standard-sections
in the manner described and form parts of
5 the wall of the recess that holds the nut N,
and thereby aids in the support of said nut,
as specified.

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

WILLIAM HEAP.

Witnesses:

G. BURROUGHS,
OCTAVIUS KNIGHT.