

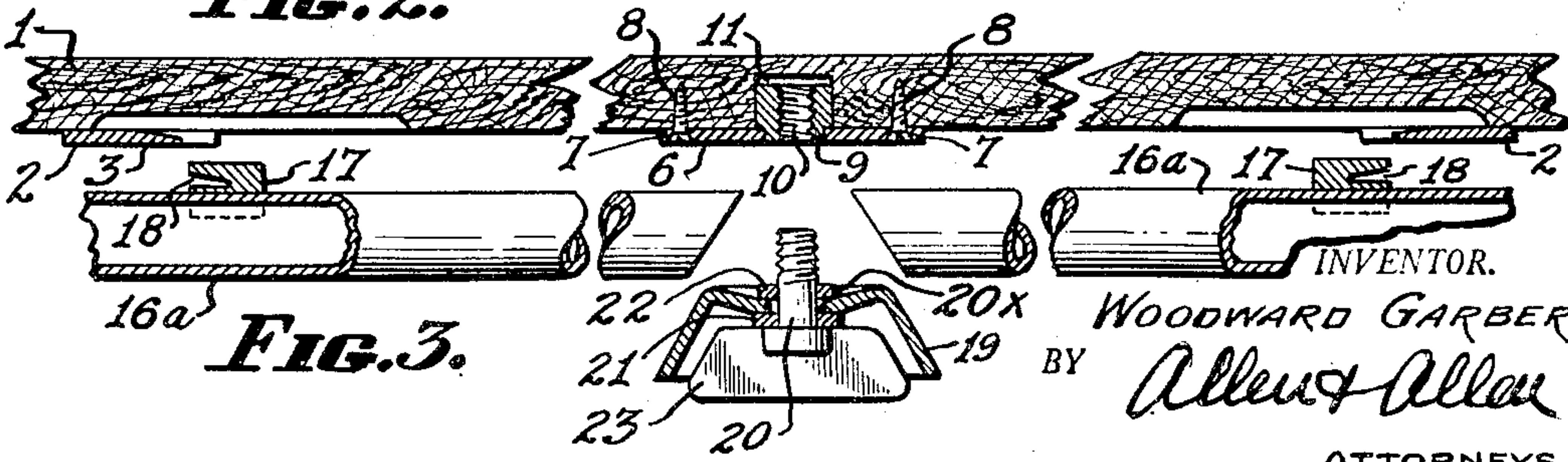
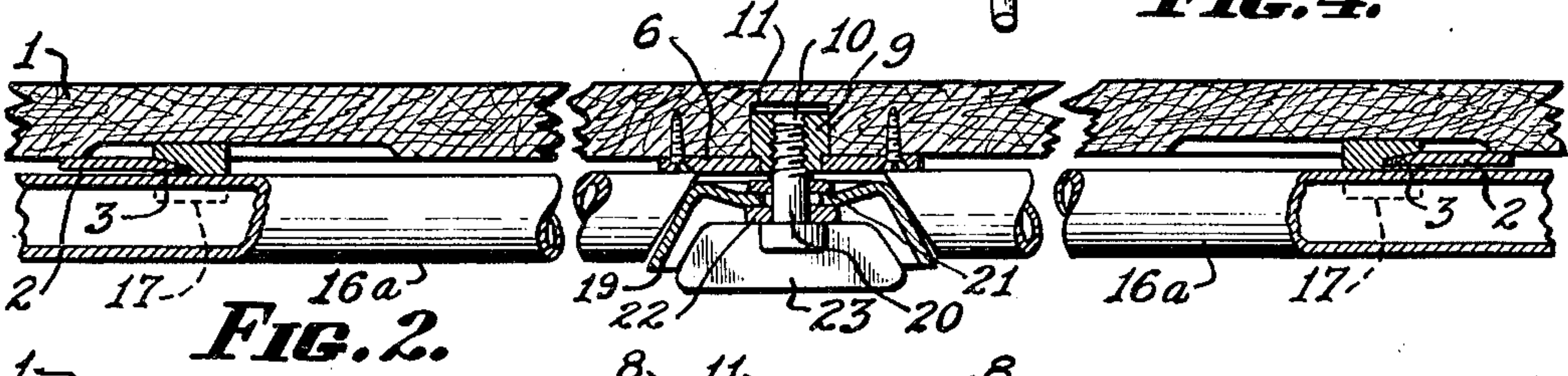
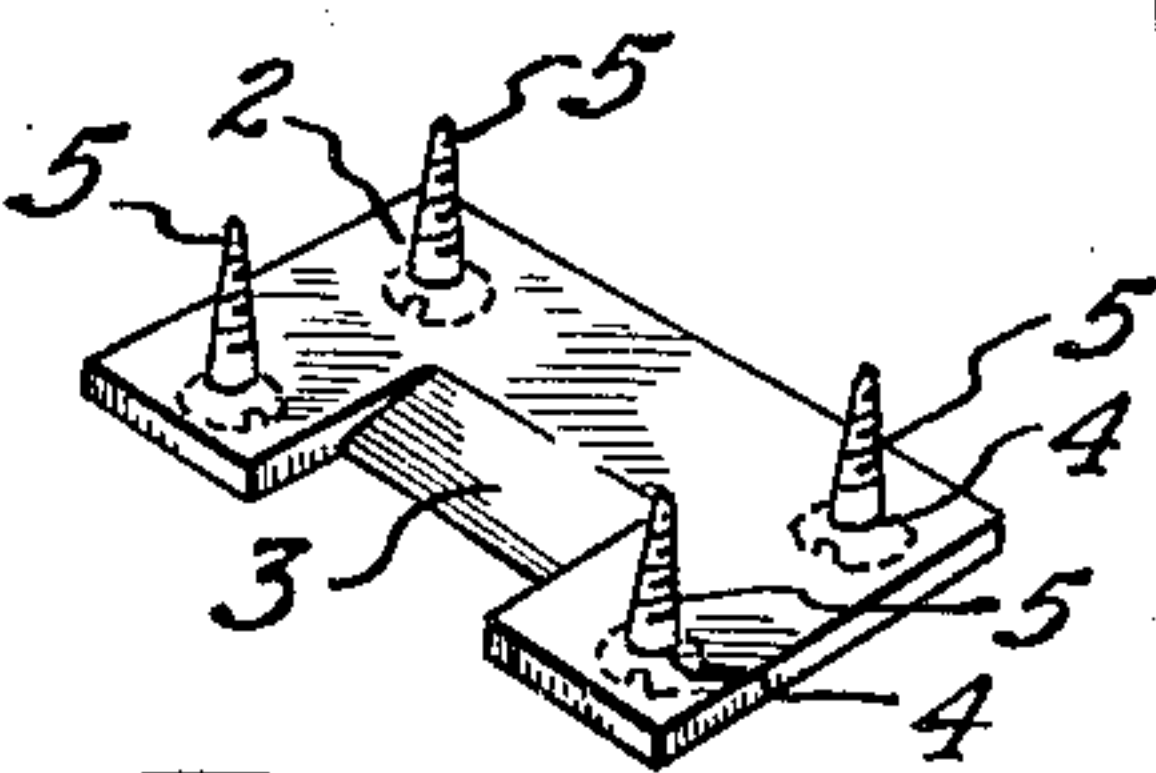
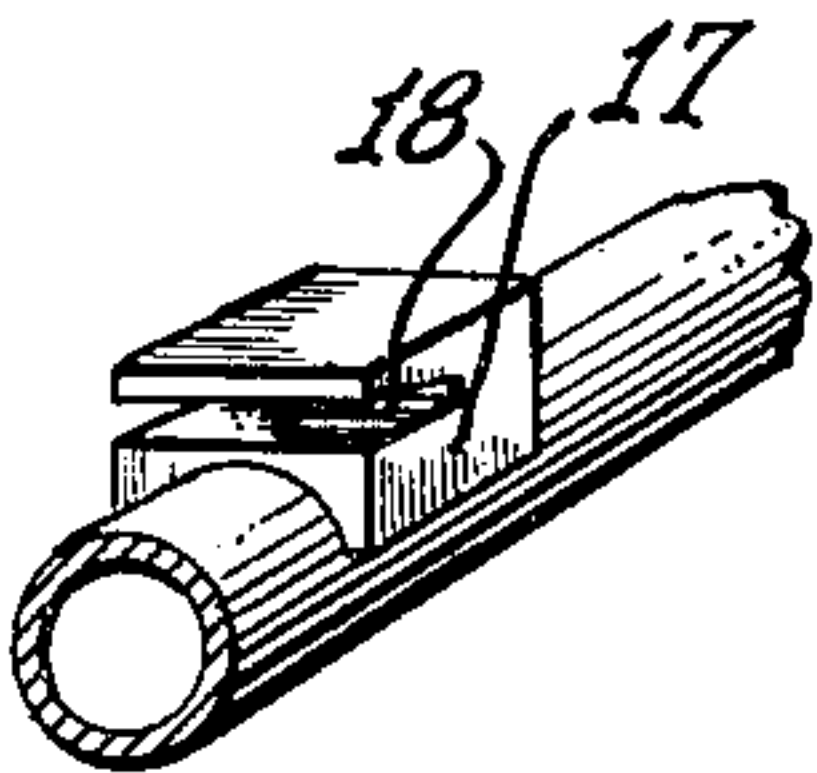
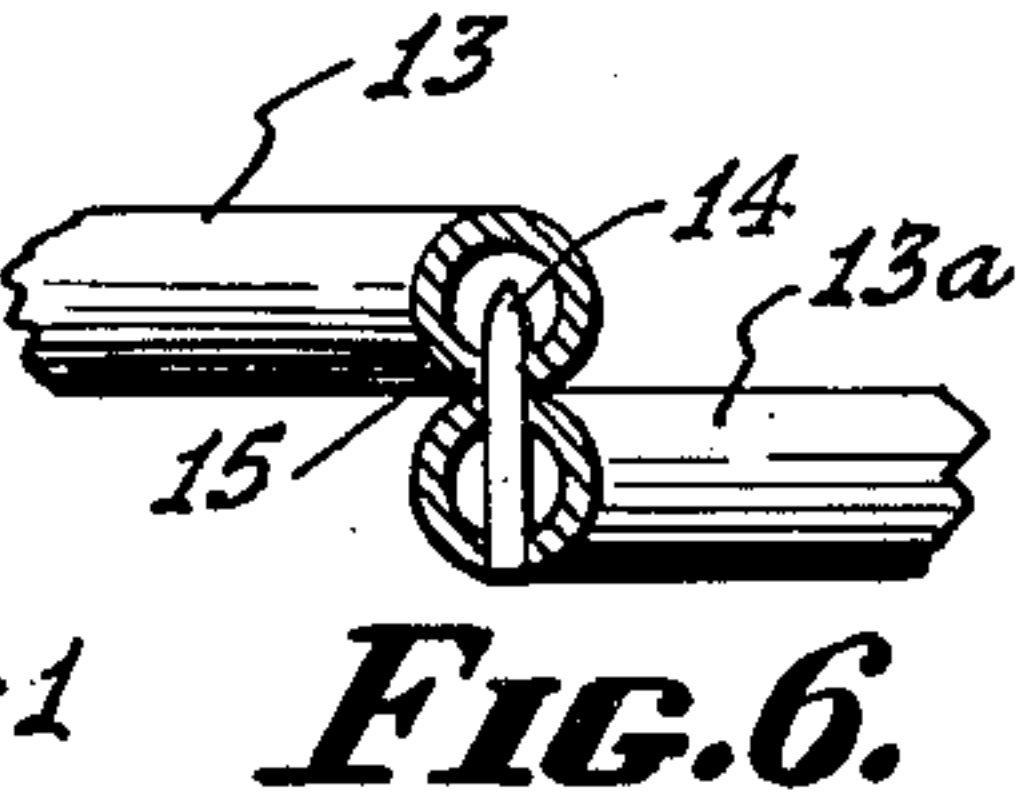
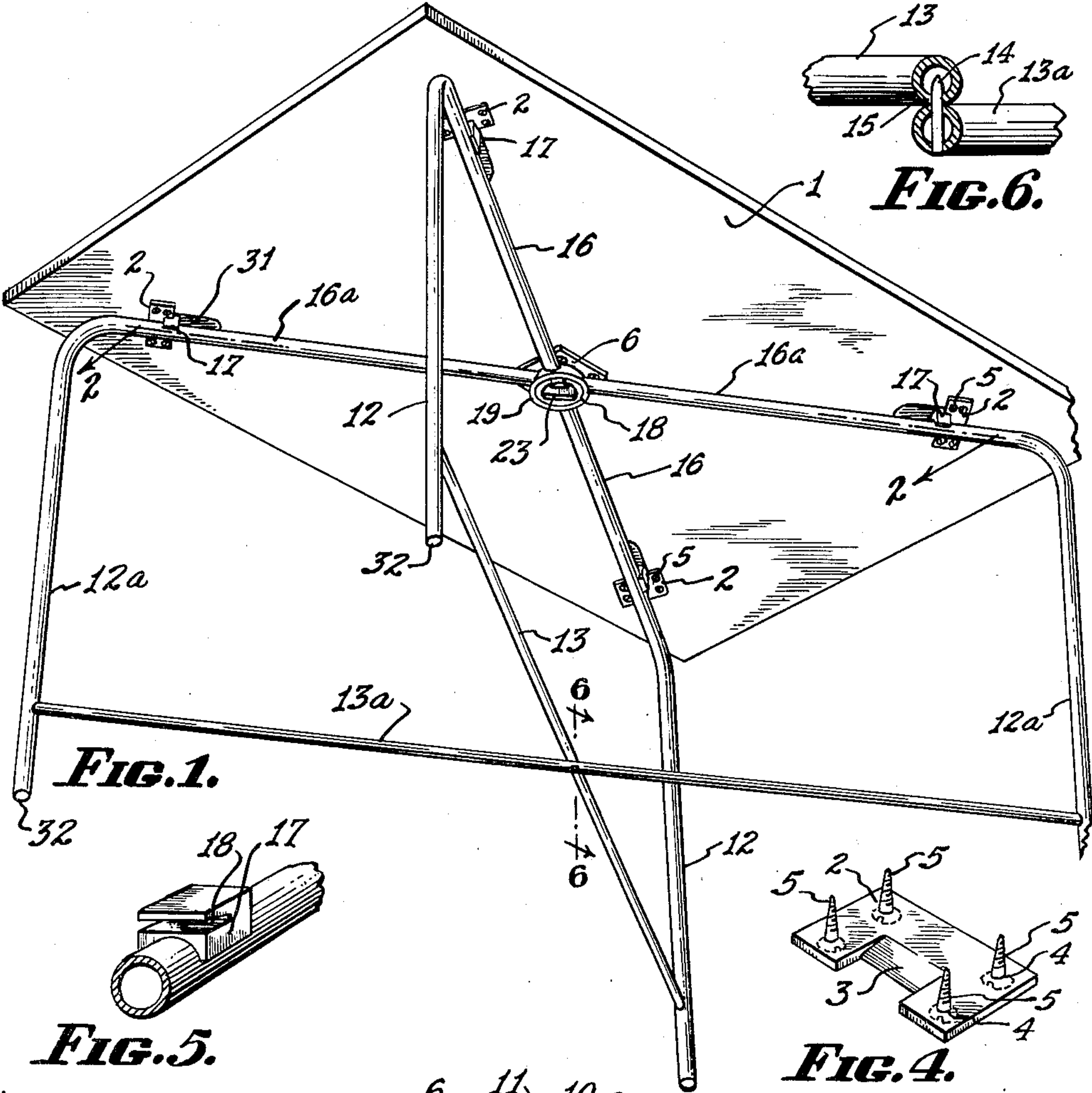
Feb. 6, 1951

W. GARBER
KNOCKDOWN FURNITURE

2,540,254

Filed Dec. 3, 1945

2 Sheets-Sheet 1



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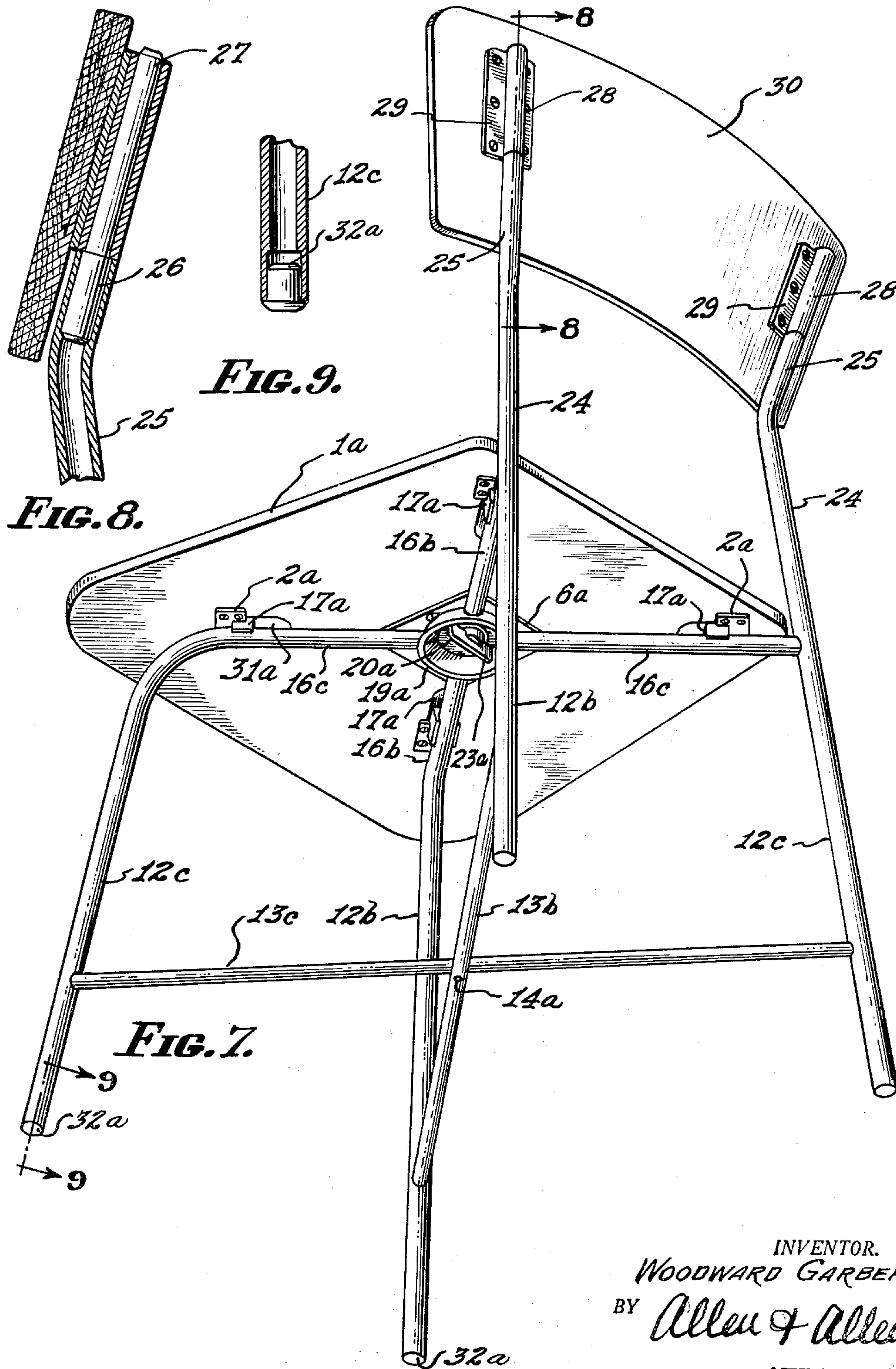
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UNITED STATES PATENT OFFICE

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KNOCKDOWN FURNITURE

Woodward Garber, Cincinnati, Ohio

Application December 3, 1945, Serial No. 632,378

8 Claims. (Cl. 311—79)

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My invention relates to knock down furniture such as tables, chairs and the like, wherein the supporting members or legs are demountable from the elevated platform for convenience in packing, shipping and the like.

It is an object of my invention to provide furniture having an elevated platform, like the table top of a table or the seat of a chair wherein the supporting members or legs are formed as frames which provide support along lines extending radially from a substantially centrally predetermined position underneath the elevated platform.

Preferably each frame has two spaced vertical supporting legs joined by a horizontal bar extending between them and with the vertical legs having horizontal extensions which end in such relative position adjacent the predetermined central position underneath the platform that a unitary clamping device may be employed to secure the supporting members in rigid supporting position.

Broadly it might be stated to be my object to provide a piece of furniture having demountable supports all of which may be mounted and secured in position by the operation of a single mechanically adjustable member.

The foregoing objects and various and sundry specific objectives in providing sturdy, easily assembled, inexpensive knock down furniture, and as will appear in the foregoing description, I accomplish by that certain combination and arrangement of parts of which I have illustrated preferred embodiments in the form of a table and chair.

In the drawings:

Figure 1 is a perspective view of a table as would appear when viewed from underneath and to one side of the table.

Figure 2 is a sectional view along the lines 2—2 in Figure 1.

Figure 3 is a sectional view of the elements shown in Figure 2 in disassembled position.

Figure 4 is a perspective view of one of the retaining lugs which is secured to the underneath surface of the table top.

Figure 5 is a sectional view of the dog or boss of a supporting member which interlocks with the retaining lug shown in Figure 4.

Figure 6 is a sectional view taken along the lines 6—6 in Figure 1.

Figure 7 is a perspective view from underneath and to one side of my invention as applied to a chair.

Figure 8 is a sectional view as indicated by the lines 8—8 in Figure 7, showing a preferred method of attachment of the chair back.

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Figure 9 is a sectional view as indicated by the lines 9—9 in Figure 7.

Referring first to Figures 1 to 6, the elevated platform or table top 1 may be made of wood, ply-wood, metal or composition. Underneath the surface of the top 1, there are secured adjacent the edges, retaining lugs 2, having inclined plane portions 3 (see Figure 4), and apertures 4, for receiving screws 5 with which the lugs are secured to the under surface of the top 1. I have shown only one type of lug, it being understood that if the elevated platform is made, for example, of metal, the lugs may be integrally formed in the metal on the under surface thereof.

Approximately at the center of the elevated platform and also preferably secured to the under surface thereof, there is a plate 6 having openings 7 for receiving screws 8 for attachment to the under surface of the table, and a cylindrical boss 9 which is internally threaded as shown at 10, which extends into a countersink 11 in the under surface of the table. As in connection with the lugs 2 if the material of the table top is sufficiently strong to withstand the strain, the internal threads may be formed in the actual material of the table top.

The legs of the table are formed with vertical members 12, 12a, opposed corner members being secured together by bars 13, 13a. These legs may be made in one piece also. It will be noted in the illustration of Figure 1, that the bar 13 connecting the opposed members 12, is in a slightly higher plane than the bar 13a connecting the opposed members 12a. It will be understood however, that by making a U-shaped bend in one bar to provide space for the other bar at its center, the bars may be in the same plane.

To secure the bars 13, 13a together at the position where one crosses the other, a pin 14 in bar 13a, seats within a hole 15 in the bar 13 (see Figure 6).

The vertical legs 12, 12a have at their tops horizontal extensions 16, 16a. These terminate adjacent the plate 6 and are cut off at substantially angles of 35 degrees to the vertical. This particular angle of cut-off is a refinement in the general constructive principle of my invention and in certain modifications may be dispensed with.

The horizontal extensions have dogs 17 with inclined plane extensions 18 which interlock and are wedged against the inclined plane portions 3 of the lugs 2.

The device for securing the legs together is a conically flanged annular member 19 loosely

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mounted on a threaded bolt 20 by means of the annular bearing member 21, which is permanently secured to the bolt 20. Member 22 is a washer which turns freely. The bolt 20 may, as illustrated, have a wing nut extension 23 to facilitate the manual adjustment of the bolt 20 in the threads 10 of the cylindrical boss 9, and so secure the demountable legs in rigid position supporting the table top.

To assemble the table, the two pairs of legs are placed substantially in position as shown in Figure 2. The pin 14 is first interlocked in the hole 15. Since the ends of the vertical bars 16, 16a are not secured to anything, they may be readily moved into such position as will cause interlocking of the dogs 17 with the lugs 2. When such engagement is effected, the cone member 19 is brought into position and the threads of the bolt 20 threaded into the threads 10 of the cylindrical boss 9, by the turning down of the wing nut 23.

The angle of inclination of the wall of the member 19 is about 30 degrees from the vertical. It is important to observe that the member 19 fits loosely on the bolt 20, an annular space being provided (as shown at 20X Figure 3). This loose fit permits correction for slight misadjustment and misalignment of the parts.

The members 16, 16a are ordinarily hollow bars and the 35 degree angle to the vertical at which they are cut off permits the annular conical wall of the member 19 to extend slightly within the hollows and make contact with the sides of the oval shaped bearing surface formed by cutting off the bars 16, 16a. This provides for a forceful outward wedging action of the members 16, 16a causing their dogs 17 to securely fit and bind within the lugs 2. This also causes the members 16, 16a to be forced into a certain position with relation to the member 19. Thus when the bolt 20 is turned down, the legs for the table form a self-centering, substantially rigid support which is very strong. By unscrewing the bolt 20, the supporting legs may be rapidly disassembled and packed flat so that the table and legs may be shipped in a flat container of a size not much larger than would be required for the table top itself.

Referring now to Figures 7, 8 and 9, I have illustrated my invention as applied to a chair. In this type of furniture, the elevated platform 1a is the chair seat. There are lugs 2a with inclined plane surface interlocks. The supporting legs 12b, 12c are joined by bars 13b, 13c, and there is a pin interlock at 14a. It will be obvious that the leg members may be formed from one piece with the rear horizontal members 16b, 16c added. The legs may be formed continuously with an added horizontal member. The horizontal extensions 16b, 16c, extend toward the plate 6a where a conical member 19a inclined at an angle of about 30 degrees from the vertical spreads the cut-off ends of the members 16b, 16c, outwardly, causing engagement of the dogs 17a with the lugs 2a. Thus by tightening down the bolt 20a by means of the wing nut 23a, the legs are secured together forming a rigid support.

There is one difference in the construction of the table and chair. In the chair construction the back vertical legs 12b, 12c are extended vertically as shown at 24 and then flared outwardly as shown at 25.

Observing Figures 7 and 8, it will be noted that the extensions 25 are hollow and receive the ends 26 of solid or tubular members 27, which

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extend within the tubular sockets 28 of brackets 29, secured to the chair back indicated at 30.

The members 27 are permanently pressed into the tubular extensions 25. In assembling the chair, it is first desirable to assemble the leg assemblies to the back before securing the conical member 19a in position. First the member 27 of the leg assembly containing part 13c (female) is inserted into the tubular socket 28 of the chair back. Then the other leg supporting frame assembly is brought into position at such angle as will permit insertion of member 27 into the other tubular socket 28 of the back.

With the back in position the legs are then moved so as to allow pin 14 to fall into the hole drilled in member 13c, and the whole placed in position on the seat 1a such that the dogs 17a engage the plates 2a, and the cut off ends of the members 16b, 16c, are substantially equally spaced about the tapped hole in the center plate 6a. By inserting the threaded end of the bolt 20a into the tapped hole of the center plate 6a, and tightening the thumb screw 23a, the member 19a forces the leg support and the back support simultaneously into a rigid assembly. The back will not pull off because of the angles at which the members 25 are bent. Other methods of securing the chair back may be employed.

To facilitate the engagement of the dogs 17, 17a, with the lugs 2, 2a, the under surfaces of the platforms 1, 1a are preferably cut out as indicated at 31, 31a. For the portions of the legs which bear against the floor, plugs 32, 32a may be press fitted into the bottom open ends of the legs 12, 12a, 12b, 12c.

Other modifications of the constructive principle involved will readily occur to those skilled in the art. By the constructive principle, I mean that the horizontal members 16, 16a, 16b, 16c when assembled in a horizontal plane and bound together with the conical adjustment have intersecting lines of stress which fall on or near the center line of intersection of the horizontal members.

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

1. In combination a platform member having lugs and a support for said platform member having hollow bars which extend horizontally toward a medial point under said platform member, said bars being bent downward at a point spaced from the medial point and extending downwardly to engage a supporting surface, said hollow bars being cut off at an angle to the vertical at their ends adjacent said medial point and having dogs thereon, and means for moving said bars outwardly from said medial point along lines parallel to their axes during which movement the dogs interlock with the lugs; said means comprising a conical member the side walls of which extend at a slightly lesser angle to the vertical than the angle at which the hollow bars are cut off.

2. An article of knock down furniture having an elevated platform and supporting legs consisting of at least four substantially vertically extending tubular members formed of flexible material, rods extending across between alternate opposed vertical members and attached at either end thereof to said members, said rods crossing at a point on the line of intersection of the planes of the opposed vertical members, tubular horizontal extensions of the vertically extending tubular members extending to positions adjacent a

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predetermined position of the platform, lugs on one surface of said platform, dogs secured to said horizontal extensions adapted to engage said lugs and means located at the predetermined position of said platform for engaging said horizontal extensions and forcing them radially outwardly to cause interlocking of said dogs and lugs.

3. An article of knock down furniture having an elevated platform and supporting legs consisting of at least four substantially vertically extending tubular members formed of flexible material, rods extending across between alternate opposed vertical members and attached at either end thereof to said members, said rods crossing at a point on the line of intersection of the planes of the opposed vertical members, tubular horizontal extensions of the vertically extending tubular members extending to positions adjacent a predetermined position of the platform, lugs on one surface of said platform, dogs secured to said horizontal extensions adapted to engage said lugs and means located at the predetermined position of said platform for engaging said horizontal extensions and forcing them radially outwardly to cause interlocking of said dogs and lugs, said means comprising a conical member with a ring nut for actuating said conical member.

4. An article of knock down furniture having an elevated platform and supporting legs consisting of at least four substantially vertically extending tubular members formed of flexible material, rods extending across between alternate opposed vertical members and attached at either end thereof to said members, said rods crossing at a point on the line of intersection of the planes of the opposed vertical members, tubular horizontal extensions of the vertically extending tubular members extending to positions adjacent a predetermined position of the platform, lugs on one surface of said platform, dogs secured to said horizontal extensions adapted to engage said lugs and means located at the predetermined position of said platform for engaging said horizontal extensions and forcing them radially outwardly to cause interlocking of said dogs and lugs, and two adjacent vertical members having vertical extensions forming supports for another member above said platform.

5. An article of knock down furniture having an elevated platform and supporting legs consisting of at least four substantially vertically extending tubular members formed of flexible material, rods extending across between alternate opposed vertical members and attached at either end thereof to said members, said rods crossing at a point on the line of intersection of the planes of the opposed vertical members, tubular horizontal extensions of the vertically extending tubular members extending to positions adjacent a predetermined position of the platform, lugs on one surface of said platform, dogs secured to said horizontal extensions adapted to engage said lugs and means located at the predetermined position of said platform for engaging said horizontal extensions and forcing them radially outwardly to cause interlocking of said dogs and lugs, and two adjacent vertical members having vertical extensions forming supports for another member above said platform, said vertical extensions having end portions extending at an angle to secure said member in a position of rigid assembly.

6. An adjustable mounting for a plurality of

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bar members on a flat base which comprises in combination a flat surfaced base having abutment means spaced in an axial arrangement equidistant from a predetermined point on said base, a plurality of bar members having terminal portions extending substantially parallel with said base and terminating adjacent said predetermined point, said bar members being bent downward at a point spaced from said predetermined point and extending downwardly to engage a supporting surface, dogs on the parallel portions of said bar members spaced from the ends thereof sufficiently to contact said abutment means, and a single conical member adjustably mounted on the predetermined point of said base and provided with adjustable means for moving said conical member toward said base so that the peripheral surface of said member will contact the ends of said bar members and cause a firm engagement of the dogs and abutment means.

7. An article of knockdown furniture having an elevated platform and at least two supporting members, each comprising opposed supporting elements the ends of which extend underneath said elevated platform in a diagonally opposed arrangement, said ends of the opposed supporting elements approaching a predetermined axial point on the under surface of said platform, said opposed supporting elements being bent downward at a point spaced from said axial point and extending downwardly to engage a supporting surface, each of said supporting elements being provided with separate means for interlocking each of said elements to the undersurface of the elevated platform, and means for engaging the ends of said elements for wedging them outwardly into interlocked position.

8. An article of knockdown furniture having an elevated platform and at least two supporting members, each comprising opposed supporting elements the ends of which extend underneath said elevated platform in a diagonally opposed arrangement, said ends of the opposed supporting elements approaching a predetermined axial point on the under surface of said platform, said opposed supporting elements being bent downward at a point spaced from said axial point and extending downwardly to engage a supporting surface, each of said supporting elements being provided with separate means for interlocking each of said elements to the undersurface of the elevated platform, and means for engaging the ends of said elements for wedging them outwardly into interlocked position, said means comprising a conical member.

WOODWARD GARBER.

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