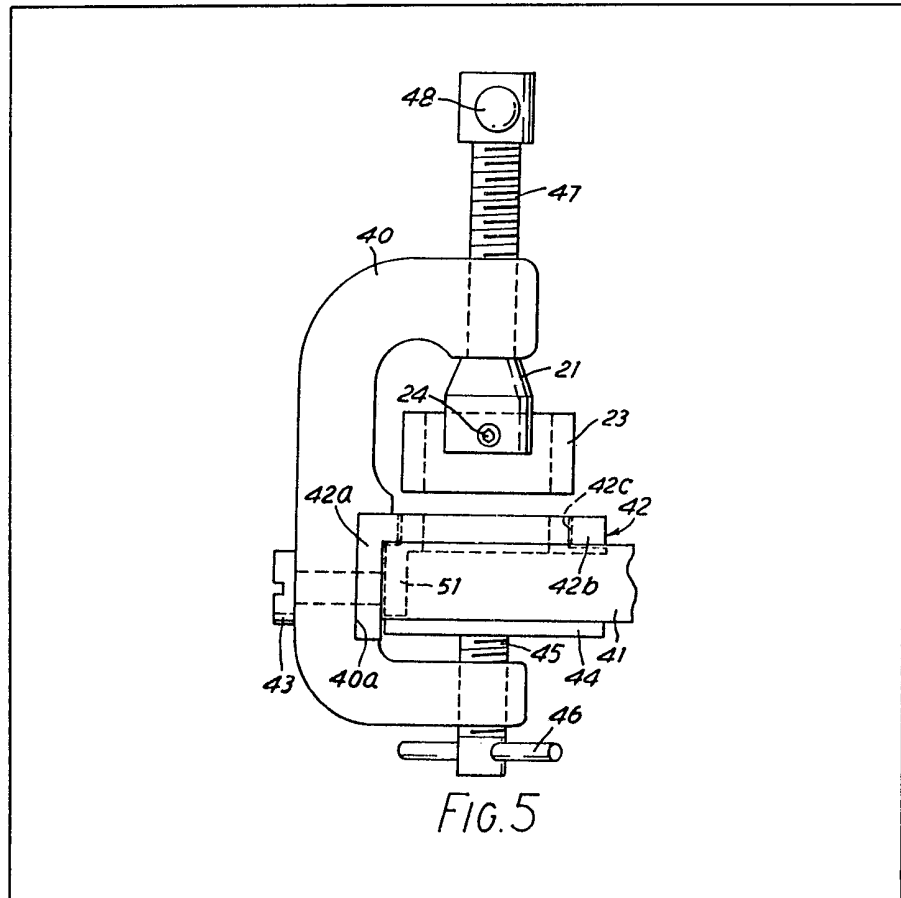


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- (71) Applicant  
Patrick Emmett Dalton, 8  
Eldon Avenue, Boreham  
Wood, Herts., England
- (72) Inventor  
Patrick Emmett Dalton
- (74) Agents  
J. F. Williams & Co., 34  
Tavistock Street, London  
WC2E 7PB

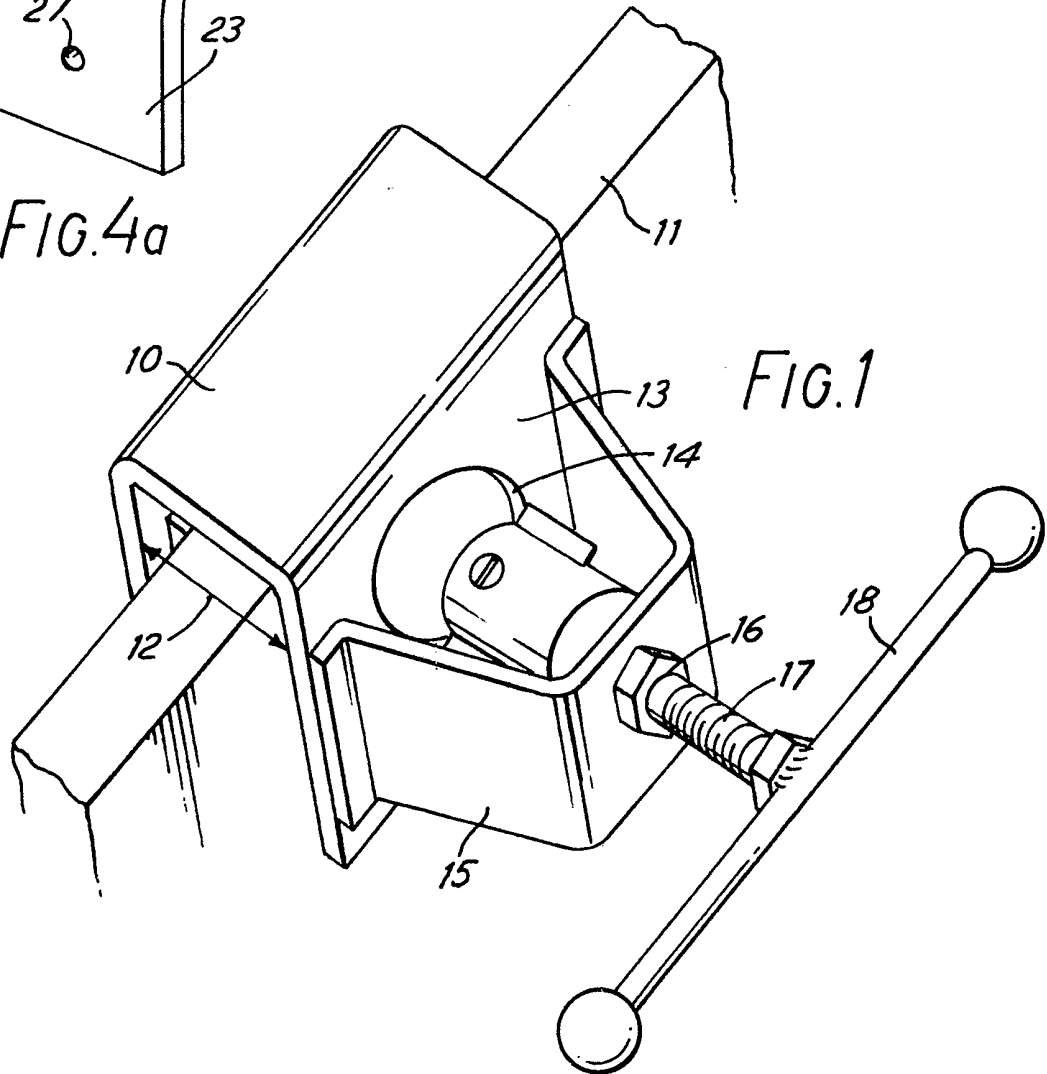
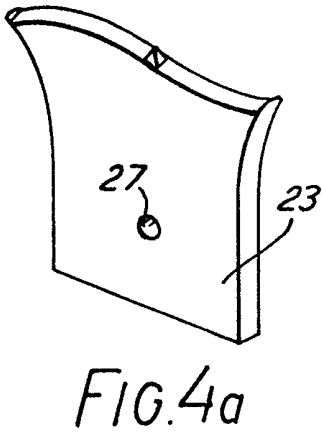
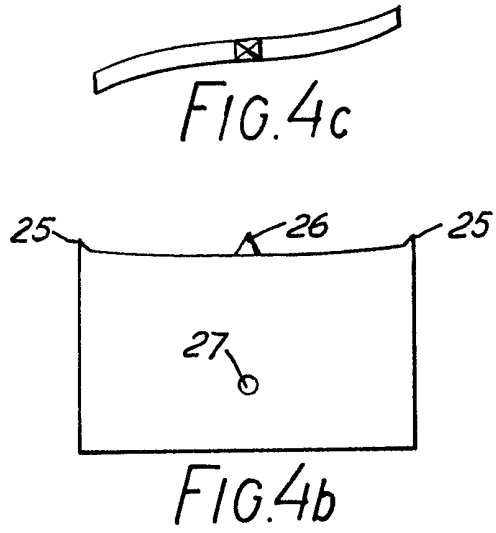
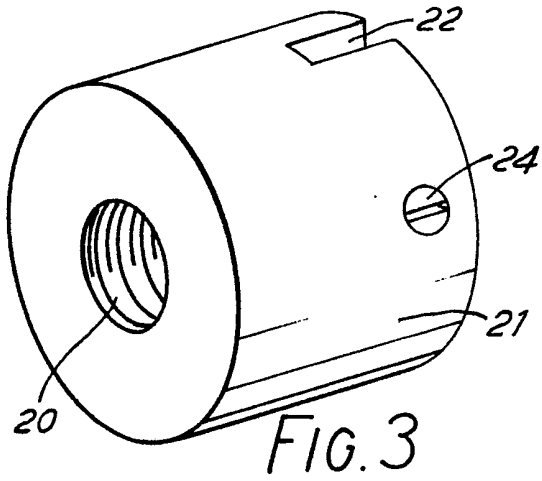
(54) Boring tool guide

(57) A boring tool comprises a substantially U-shaped frame (40) having a clamping plate (44) adjustably mounted in the frame and arranged to co-operate with a bracket (42) secured to the frame (40) or part of the frame to clamp a panel (41) in the frame between the bracket and the plate (44). A cutter blade (23) is secured by a grub screw (24) in a

chuck (21) which is mounted on one end of a screw-threaded rod (47). The rod is received in a tapped bore in the frame (4) and is provided at its other end with a handle (48). Turning the rod (47) by means of the handle (48) causes the cutter blade (23) to rotate and to pass through a circular aperture (42c) in the bracket (42) and to cut a bore in the panel (41) held in the frame. Adaptors are used within the bracket (42) to cut bores at panel corners.



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.



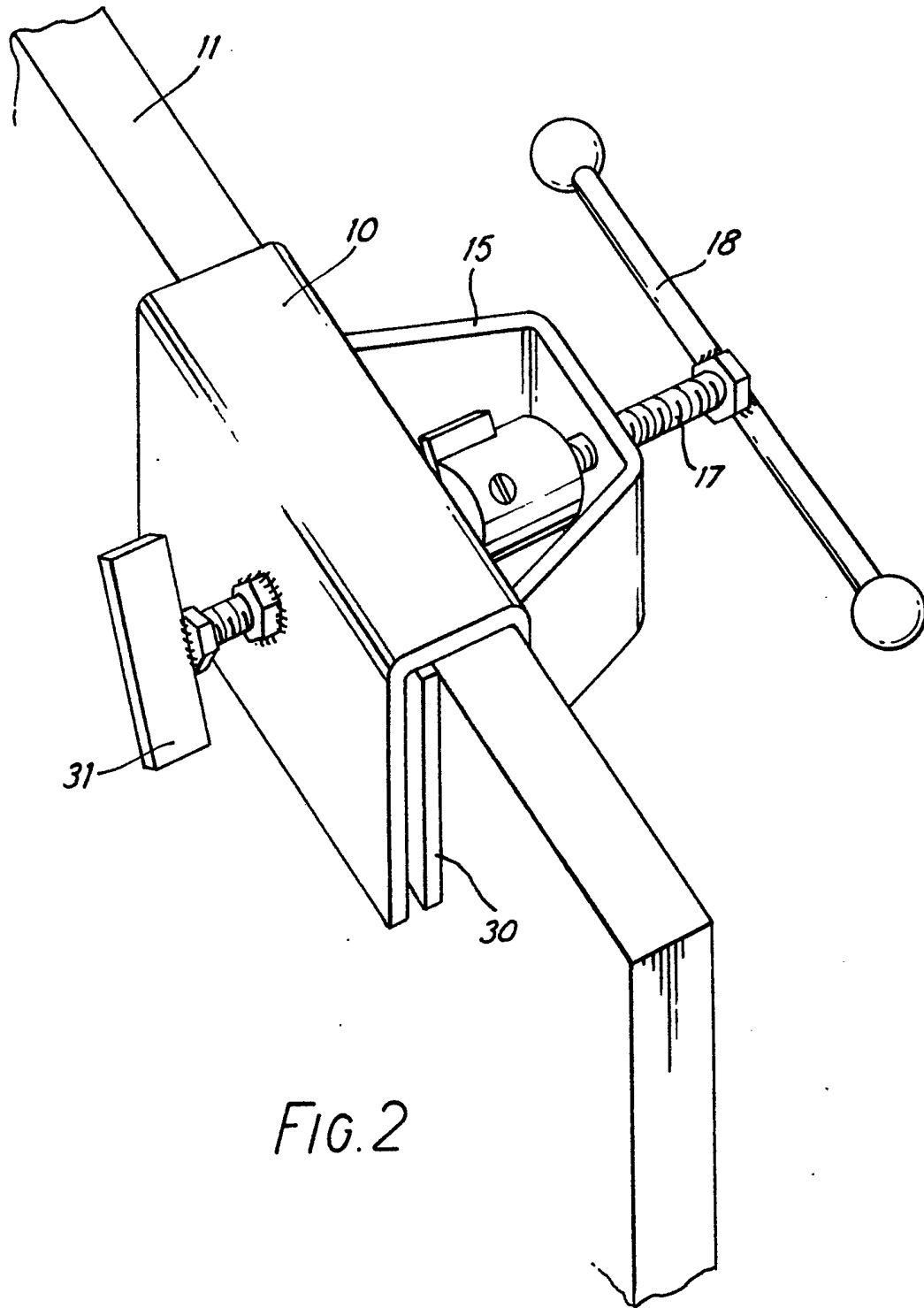


FIG. 2

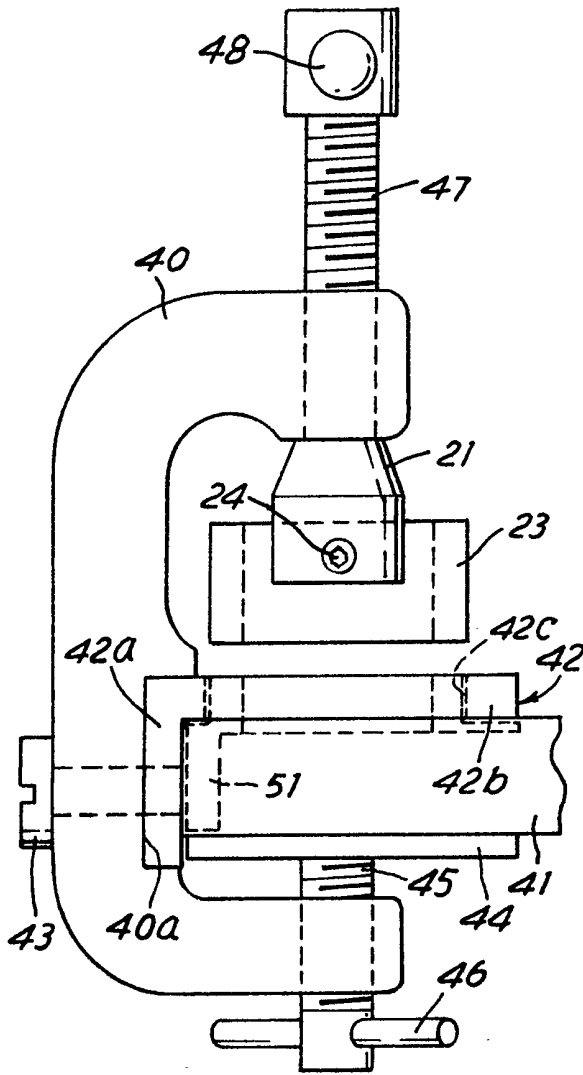


FIG. 5

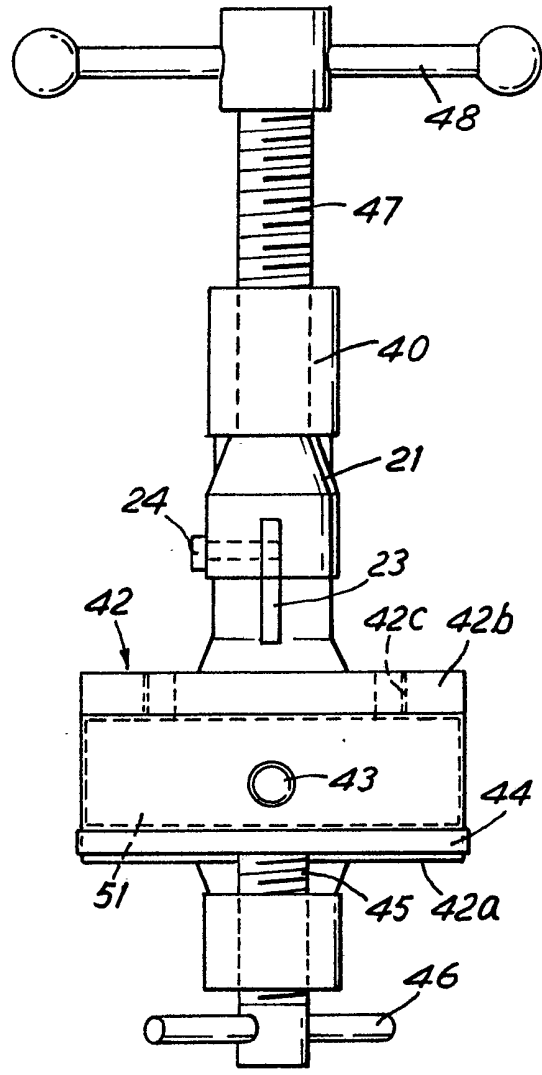


FIG. 6

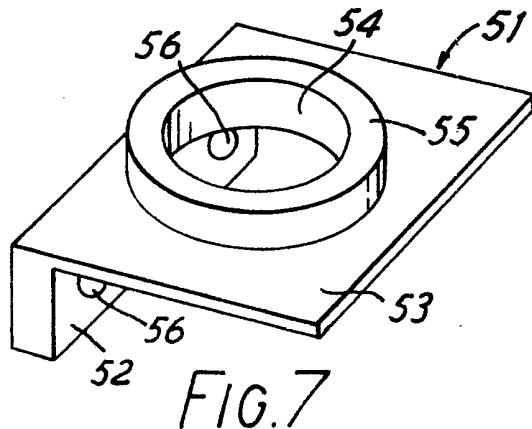


FIG. 7

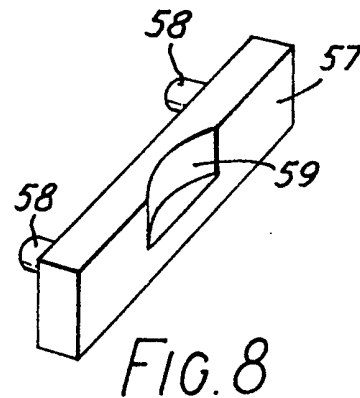


FIG. 8

## SPECIFICATION

### Boring tools

This invention relates to boring tools intended particularly for producing relatively shallow blind bores.

It is common practice now to use plastics hinges for doors or furniture, which hinges are attached to the door and/or the enclosure by engagement of a circular disc in a shallow blind bore. It is not easy with existing hand tools or drills to produce a circular recess or shallow blind bore in a piece of timber or a plastics-surfaced chipboard.

The present invention aims to provide a boring tool which is adapted to produce a circular recess or shallow blind bore in a piece of timber or a plastics-surfaced chipboard accurately and with the minimum of effort in positioning the workpiece for engagement by the boring tool.

According to the invention, there is provided a boring tool comprising a frame having means adapted to engage and hold in said frame the edge region of a panel to be bored, the frame further having a tapped bore arranged to extend transversely to the plane of a panel held in the frame and a centre-bit type cutter on a screw-threaded rod engaged in said bore.

The invention will now be further described, by way of example, with reference to the drawings in which:—

Fig. 1 is a perspective view of the front of one embodiment of a boring tool according to the invention positioned on the edge of a wooden panel;

Fig. 2 is a perspective view of the rear of the boring tool shown in Fig. 1;

Fig. 3 shows a chuck adapted to receive a cutter blade;

Figs. 4a, 4b and 4c are, respectively, a perspective view, a side view and an end view of a cutter blade;

Fig. 5 is a side elevation of a second embodiment of a boring tool according to the invention with a panel fitted therein;

Fig. 6 is a front elevation of the boring tool shown in Fig. 5 but with the panel removed; and

Figs. 7 and 8 are perspective views of adapters for use in conjunction with the boring tool shown in Figs. 5 and 6.

In the drawings, like parts are denoted by like reference numerals.

Reference will first be made to Figs. 1 and 2 of the drawings in which the boring-tool comprises a U-section yoke frame 10 of a size suitable to embrace a wooden panel 11. The internal gap 12 of the frame 10 is therefore of the order of 1 inch. One limb 13 of the frame 10 has a circular aperture 14 and a web-shaped support 15 is mounted on the outer surface of the limb 13. The support 15 has a tapped bore 16, in the form of a nut welded thereto, the axis of said bore being aligned with the axis of the aperture 14.

A threaded rod 17 is engaged in the bore 16 and is moved longitudinally, i.e. towards or away

from the panel 11, by turning a cross bar handle 18 attached to its outer end. At its inner end, the rod 17 is threaded into a bore 20 of a chuck 21 (Fig. 3). The chuck has a slot 22 at its opposite end to receive a cutter blade 23. The blade is held in the chuck by a grub screw 24.

As shown in Figs. 4a, 4b and 4c, the cutter blade 23 is curved and set as shown in Fig. 4c, with scribes 25 at its outer edges, and a centre lead spike 26. It has a bore 27 to receive the grub screw 24. Cutters for different diameter holes can be held by the same chuck, e.g. 25 and 35 mm diameter.

Since the thickness of panel may vary, a clamping mechanism is preferably provided, as shown in Fig. 2. A clamping plate 30 is adjustable by means of a thumb screw 31 to draw the limb 31 tight against the opposite surface of the panel 11 to be bored.

Once in position, rotation of the handle 18 causes the cutter blade 23 to move towards the panel 11, and once in contact to cut an exact hole. The depth of the hole is easily controlled, and the mechanical advantage given by the handle 18 allows easy boring of even hard wood. Since the movement of the blade is slow and controlled, a plastics e.g. 'melamine' surface on chipboard is not damaged.

Figs. 5 and 6 show a modified embodiment in which a frame comprises a U-shaped casting having a transverse tapped bore at the ends of each of the arms of the U. A separate right-angled bracket 42 is secured to the frame 40 by means of a screw 43, one limb 42a of the bracket being held in a recess 40a in the frame, said recess being adapted to engage with the upper and lower edges of the limb 42a in order to prevent the bracket 42 from turning when the screw 43 is rotated. Said screw co-operates with a tapped bore in the frame 40 whereby turning of the screw in one direction will advance the bracket 42 out of the recess 40a and turning the screw in the opposite direction will draw the bracket into the recess. In this manner, the position of the bracket 42 relative to the frame 40 can be adjusted.

A panel 41 can be held in the frame 40 by engaging the edge of the panel with the limb 42a of the bracket 42 so that the edge region of said panel lies under the limb 42a of said bracket. The panel 41 is clamped to the bracket by a clamping plate 44 which is secured to one end of a screw-threaded rod 45. Said rod is engaged in one of the tapped bores in the frame 40 and is provided at its other end with a handle 46 to facilitate turning of the rod 45 to move the plate 44 into clamping engagement with the panel 41. The limb 42b is provided with an aperture 42c to receive a cutter blade and the panel 41 is so positioned that the aperture 42c corresponds precisely with the location on the panel at which a recess or blind bore is to be made. Fine adjustment can be achieved by slackening the clamping plate 44 slightly by turning the rod 45 and then turning the screw 43. Once this fine adjustment has been made, the rod 45 is again turned by the handle 46

to again clamp the panel 41 firmly in position.

A second screw-threaded rod 47 is engaged in the tapped bore at the other end of the frame 40 and this rod is provided with a handle 48 at one  
5 end. A chuck 21 is fitted to the other end of the rod 47 and a cutter blade 23 is secured in the chuck by means of a grub screw 24 as in the embodiment above described with reference to  
10 Figs. 1 to 4 of the drawings to which reference should be made for a fuller description. Cutting of a blind bore in the panel 41 takes place in a similar manner to that of the previous embodiment by  
15 turning the rod 47 by means of the handle 48. The cutter blade 23 is moved through the aperture 42c in the limb 42b of the bracket 42 and in contact with the panel 41.

In some cases, it may be desirable to provide blind bores of only 24 to 30 mm in diameter which are required, in particular, for corner joints  
20 in panels for making furniture. This can be achieved with the boring tool shown in Figs. 5 and 6 by employing the adapters shown in Figs. 7 and 8 of the drawings. The adapter 51 shown in Fig. 7, and indicated by chain dotted lines in Figs. 5 and  
25 6, comprises a right-angled bracket having a short thick limb 52 and a longer thinner limb 53. The limb 53 is provided with a circular aperture 54 which is surrounded by a raised rim 55. The external diameter of the rim 55 corresponds  
30 substantially to the diameter of the circular aperture 42c in the bracket 42 and the rim 55 is so located on the limb 53 that the adapter can be fitted into the bracket 42 with the rim engaged in the aperture 42c as shown in Figs. 5 and 6 of the  
35 drawings. The aperture may be arranged to have a diameter of 24 mm or 30 mm or any other suitable diameter which is less than that of the aperture 42c. A range of adapters having apertures 54 of different diameters may be  
40 provided for use with the boring tool. The cutter blade 23 is of course replaced by a cutter blade for cutting a bore of smaller diameter as indicated by the chain-dotted lines in Fig. 5.

As indicated in Fig. 5, even with the adapter 51  
45 in position in the bracket 42, it is still not possible to cut a bore right at the edge of a panel 41. In order to do this, a further adapter 57 shown in Fig. 8 is required. The limb 52 of the adapter 51 is provided with two recesses 56 and the adapter 57  
50 is provided with a pair of corresponding pegs 58 which are adapted to be engaged in the recesses 56. The surface of the adapter 57 remote from the pegs 58 is provided with an arcuate recess 59 and the edge of this recess is arranged to be co-terminous  
55 with the edge of the aperture 54 when the adapter 57 is positioned in the adapter 51. If the two adapters are now fitted into the bracket 42 of the boring tool, the edge of the panel 41 will be located within the aperture 54 and therefore  
60 when the blind bore is cut by the cutter blade, this bore will extend through the very edge of the panel. Thus, by means of the adapters, the boring tool according to the invention can be used for making blind bores for the reception of corner  
65 joints for use in assembling furniture.

The adapters 51 and 57 are preferably made of plastics material although other materials may be employed if desired. The frame 40 is preferably made of cast iron or aluminium alloy although  
70 again other materials and methods of manufacture may be employed if desired.

#### CLAIMS

1. A boring tool comprising a frame having means adapted to engage and hold in said frame the edge region of a panel to be bored, the frame further having a tapped bore arranged to extend transversely to the plane of a panel held in the frame and a centre-bit type cutter on a screw-threaded rod engaged in said bore.  
75
2. A boring tool according to claim 1, wherein the frame is substantially U-shaped and wherein the panel engaging and holding means comprise a clamping plate adjustably mounted on one limb of the U-shaped frame.  
80
3. A boring tool according to claim 2, wherein the clamping plate is secured to one end of a screw-threaded rod, said rod being engaged in a screw-threaded bore in said one limb of the U-shaped frame and being provided at its other end with a handle for turning the rod.  
85
4. A boring tool according to claim 2 or claim 3, wherein the clamping plate is arranged to clamp a panel against the other limb of said U-shaped frame.  
90
5. A boring tool according to any one of claims 2 to 4, wherein the said other limb of the U-shaped frame is provided with a support web extending from its outer surface, said tapped bore for the cutter being provided in the support web.  
95
6. A boring tool according to claim 5, wherein the said other limb of the frame is provided with an aperture adapted to allow the cutter to pass through said other limb to engage a panel held in the frame.  
100
7. A boring tool according to claim 2 or claim 3, wherein the panel engaging and holding means include a bracket adapted to be mounted on the frame and arranged to engage one surface of a panel when the opposing surface of said panel is engaged by the clamping plate.  
105
8. A boring tool according to claim 7, wherein the bracket comprises a right-angled bracket one limb of which is arranged to engage the panel surface and the other limb of which is adapted to be secured to the U-shaped frame by a screw.  
110
9. A boring tool according to claim 8, wherein the tapped bore for the cutter is provided in the other limb of the U-shaped frame.  
115
10. A boring tool according to claim 9, wherein the said one limb of the bracket is provided with an aperture adapted to allow the cutter to pass through the bracket limb to engage a panel held in the frame.  
120
11. A boring tool according to claim 10, wherein one or more adapters is/are provided, said adapter(s) being adapted to co-operate with the bracket and the aperture in said bracket limb in order to accommodate cutters of different diameters.  
125

12. A boring tool according to claim 11, wherein an adapter is provided which enables the cutter to cut into the edge of a panel so that part of an imaginary bore cut by the cutter extends  
5 beyond the edge of the panel.

13. A boring tool according to claim 11 or claim 12, wherein the or each adapter is made of synthetic plastics material.

14. A boring tool according to any preceding claim, wherein the cutter is mounted at one end of the screw-threaded rod and wherein the other end of said rod is provided with a handle.  
10

15. A boring tool according to any preceding claim, wherein the cutter comprises a chuck adapted to be mounted at one end of the screw-threaded rod and further adapted to receive a cutting blade.  
15

16. A boring tool according to claim 15, wherein the blade is releasably held in the chuck by a grub screw.  
20

17. A boring tool substantially as described herein with reference to Figs. 1 to 4 of the drawings.

18. A boring tool substantially as described herein with reference to Figs. 5 to 8 of the drawings.  
25

New claims or amendments to claims filed on 22/10/80.

Superseded claims 1 to 18.

30 New of amended claims:—

#### CLAIMS

1. A tool for boring panels comprising a frame having first, second and third mutually spaced limbs, the first and second limbs being inter-connected at one end only of the limbs by a web portion so that the edge region of a panel to be bored may be inserted and held between the first and second limbs, the second limb having therethrough an aperture, the axis of which extends transversely to the plane of a panel in the frame, the third limb having a tapped bore, the axis of which extends transversely to the plane of a panel held in the frame, and a centre-bit type cutter on a screw-threaded rod engaged in the bore the bore and the aperture being in axial alignment so that the cutter may pass through the aperture.  
35  
40  
45

2. A tool according to claim 1, wherein a clamping plate is adjustably mounted on the first

50 limb to enable a panel to be held in position.

3. A tool according to claim 2, wherein the clamping plate is secured to one end of a second screw-threaded rod, said second rod being engaged in a screw-threaded bore in the first limb and being provided at its other end with a handle for turning the rod.  
55

4. A tool according to any preceding claim, wherein the third limb is part of a support web member extending from the third limb remote from the first limb.  
60

5. A tool according to any of claims 1 to 4, wherein said second limb is constituted by an apertured arm of a bracket member, which is releasably connected to the rest of the frame.  
65

6. A tool according to claim 5, wherein the bracket member is constituted by a right-angled bracket, said arm being arranged to engage the surface of an inserted panel and the other arm being arranged to be secured to the frame by a screw.  
70

7. A tool according to claim 5 or 6, wherein one or more adapters is/are provided, said adapters being arranged to co-operate with the bracket member and the aperture in order to accommodate cutters of different diameters.  
75

8. A tool according to claim 7, wherein an adapter is provided which enables the cutter to cut into the edge of a panel so that part of an imaginary bore cut by the cutter extends beyond the edge of the panel.  
80

9. A tool according to claim 7 or claim 8, wherein the or each adapter is made of synthetic plastics material.

10. A tool according to any preceding claim, wherein the cutter is mounted at one end of the screw-threaded rod and wherein the other end of said rod is provided with a handle.  
85

11. A tool according to any preceding claim, wherein the cutter comprises a chuck adapted to be mounted at one end of the screw-threaded rod and further adapted to receive a cutting blade.  
90

12. A tool according to claim 11 wherein the blade is releasably held in the chuck by a grub screw.

13. A boring tool substantially as described herein with reference to Figs. 1 to 4 of the drawings.  
95

14. A boring tool substantially as described herein with reference to Figs. 5 to 8 of the drawings.