**PATENT EXAMINATION BOARD**

**DRAFTING OF PATENT SPECIFICATIONS – GROUP 2(e)**

**Paper 2**

**June 2024**

Examiner: L Steyn / L Cilliers
Moderator: J Whittaker

Time: 6 Hours

Total marks: 100

This paper consists of 5 pages (including this cover page) and 4 sheets of figures

Instructions:

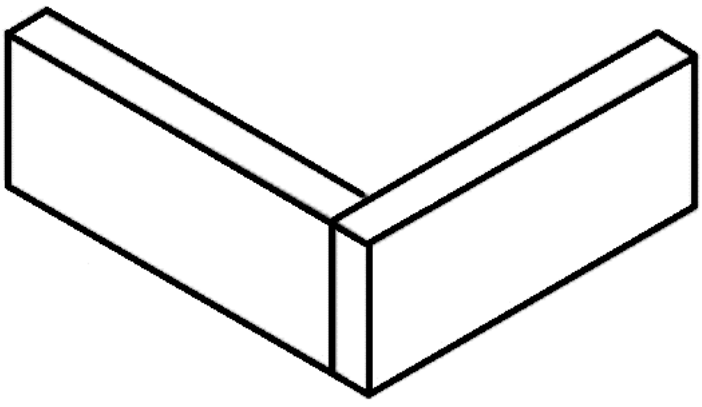
- Answer all questions
- Write legibly

You receive the below email and attached figures from your client:

*“As you know, I am a carpenter and I pride myself in creating furniture of the highest quality. I believe an aspect that sets carpenters apart is joinery (the physical manner in which workpieces are joined together). I believe joinery can, apart from serving a functional role, add to the intricacy and the aesthetic appeal and interest of an assembly. I particularly enjoy cutting relatively complex cooperating shapes, such as dovetails, mortises and tenons or the like, into workpieces, allowing them to fit together.*

*That said, I am often confronted with constructing wooden assemblies of which the joinery is not visible in the final product. For example, in some cases, I construct frame substructures which are externally clad with high quality wood or even fabrics. I also often quickly have to construct jigs, benches and other supporting structures by joining pieces of wood together without giving too much consideration to aesthetic appeal. Naturally, it would not make sense to spend copious amounts of time on intricate joinery in such cases. Instead, in these instances, ease of construction, the time required to construct the structures and the strength and sturdiness of the structures are the most important considerations.*

*When constructing simple structures of this nature, the most common form of joinery that is used comprises a simple butt joint, in which ends of two workpieces are placed against each other at a predetermined angle and fixed in place. An example of such a joint is shown below:*



*The strongest and most common method of fixing the workpieces together is by using glue. However, due to the time required for the glue to cure or become set, the workpieces need to be held in place temporarily (for a few hours), typically by way of clamps or straps. The clamping of the structure can be tedious and complex (especially when large numbers of joints are created) and may even sometimes result in the workpieces moving relative to each other before the glue has had time to become set resulting in crooked or compromised structures.*

*As a result, some carpenters use mechanical fasteners, such as screws, nails or staples to fix the workpieces together while the glue sets.*

*Current methods of using mechanical fasteners have some disadvantages. One big disadvantage is the fact that ends of the fasteners are exposed on the outside of the workpieces, which can sometimes be unsightly. It is also often difficult to drive a screw or nail straight into the workpiece, resulting in the tip of the screw or nail breaking through a side or front surface of one of the workpieces. Placing a screw at an angle relative to the workpiece, especially on an inside angle created by the two workpieces, is also challenging, because it is difficult to control the angle at which the screw is advanced into the workpiece (this angle is important since you would ideally want the screw to join the two workpieces through a centre of an interface of the two workpieces).*

*I set out to solve these issues and have now invented a jig which allows me to join two workpieces mechanically using a screw. More particularly, the jig allows me accurately to place the screw through a first workpiece and into a second workpiece, at a suitable angle, to ensure that the screw joins the two workpieces towards a centre of the interface of the two workpieces. The jig is shown in the figures attached hereto.*

*As can be seen in figure 1, the jig comprises a substantially U-shaped main body (1) relative to which a guide body (2) is supported. The guide body (2) comprises two guides (3) in the form of stainless-steel tubes or cylinders which extend at an angle through the guide body (2). The guides (3) are spaced apart by a predetermined*

*spacing distance to allow two guide holes to be drilled next to each other at an optimal spacing for a typical 50mmx100mm workpiece.*

*The guide body (2) includes adjustment screws (4) which extend through slots (5) in the main body (1). The guide body (2) can slide relative to the main body (1) and may be fixed in a predetermined position using the adjustment screws (4). Figures 2 and 3 show how adjustment of the position of the guide body (2) relative to the main body (1) ensures that the screw will penetrate through the centre of workpieces (6) of different widths. The jig also includes a clamp (7) with which the workpiece (6) is clamped relative to the guide body (2). The clamp (7) comprises a rubber contact shoe (8), a threaded rod (9) which extends through a tapped hole extending through one of the flanges of the U-shaped main body (1) and a handle (10) to tighten the clamp (7).*

*Although I believe the jig is new and inventive as a standalone device, I also envisage selling the jig as part of a kit, which will include a stepped drill bit (11) which includes an adjustable collet (12) with which a depth to which the drill bit will be able to drill is set, an elongate screwdriver fitting (13) with which screws may be fastened, screws and oval plugs (14) that may be used to cover holes after the screws have been installed.*

*In use, the guide body (2) is adjusted according to the thickness of the workpiece (6) and the jig is clamped to an end of the workpiece (see the setup shown in figure 2 compared to the setup shown in figure 3). Similarly, the collet (12) is adjusted based on the thickness of the workpiece (6). The stepped drill bit (11) is then inserted into one of the guides (3) and a suitable hole is drilled into the workpiece.*

*This is shown in figure 4. Here it can be seen that the hole comprises a first, larger portion (15), a shoulder (16) and a second, smaller portion (17). The hole is a blind hole in that it does not penetrate all the way through the workpiece (6). With reference now to figure 5, in use, two workpieces (6) and (18) are placed relative to each other, and a screw (19) is inserted into the hole such that the smaller portion (17) of the blind hole receives the tip of the screw (19). The screw is driven by a screwdriver (or typically, the screwdriver fitting (13) received by an electric drill) and*

*the tip is allowed to self-tap the screw (19) through the remainder of the first workpiece (6), and into the second workpiece (18). The screw (19) is properly installed once the head of the screw (19) seats on the shoulder (16) of the blind hole, as shown in figure 5.*

*By using my jig, I will be able to assemble structures very quickly without requiring clamps or straps to support workpieces after gluing.*

*I have an upcoming discussion with a manufacturer of woodworking equipment with whom I wish to collaborate to take my jig and kit to market. Before doing so, I would like to file a South African patent application to protect the invention."*

You are required to draft a patent specification including at least the following:

1. Title
2. Background to the invention
3. Brief description of the drawings
4. Description of the illustrated embodiments
5. Claims
6. Abstract

Note that no "Summary of the Invention" is required.

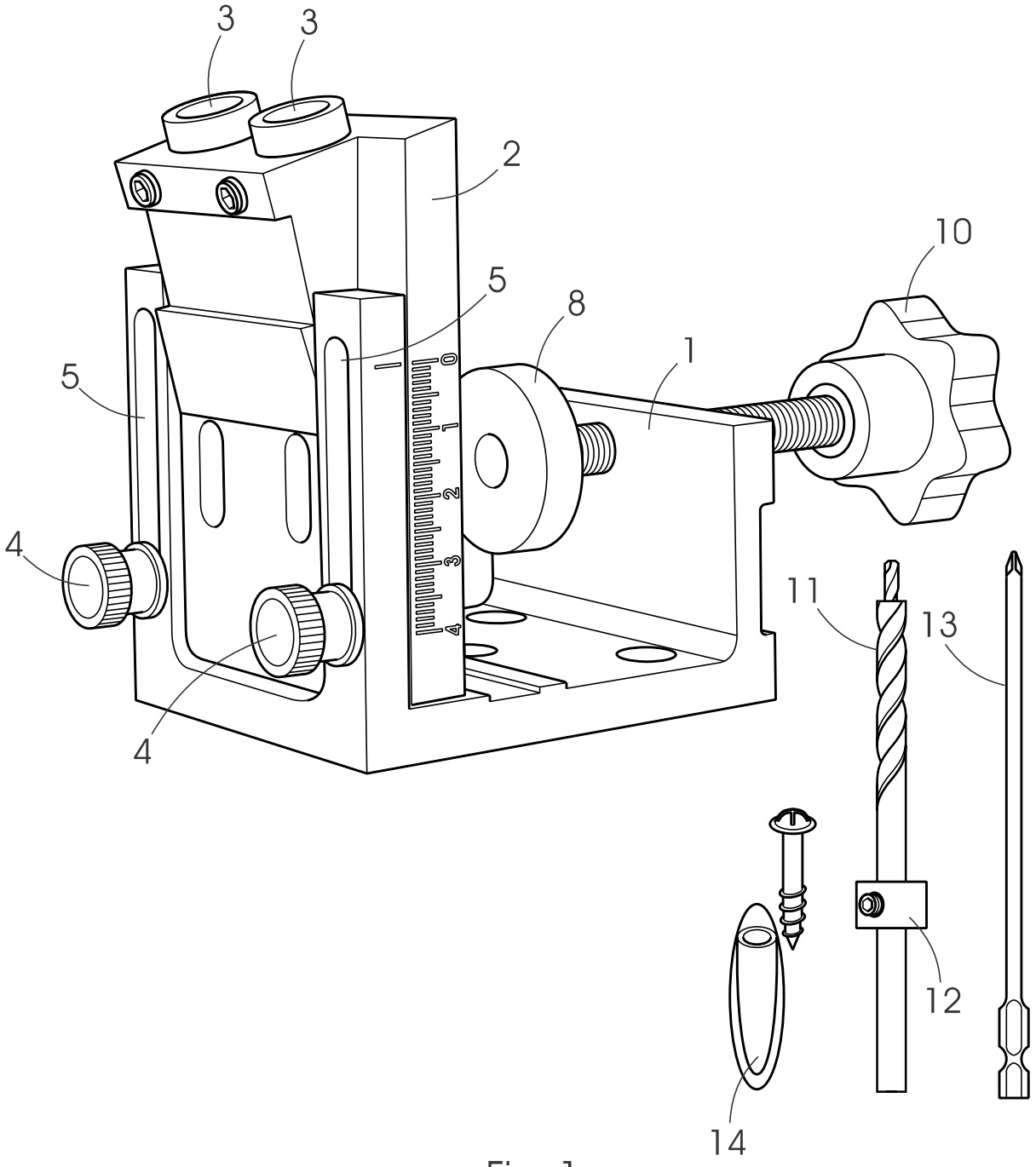



Fig. 1

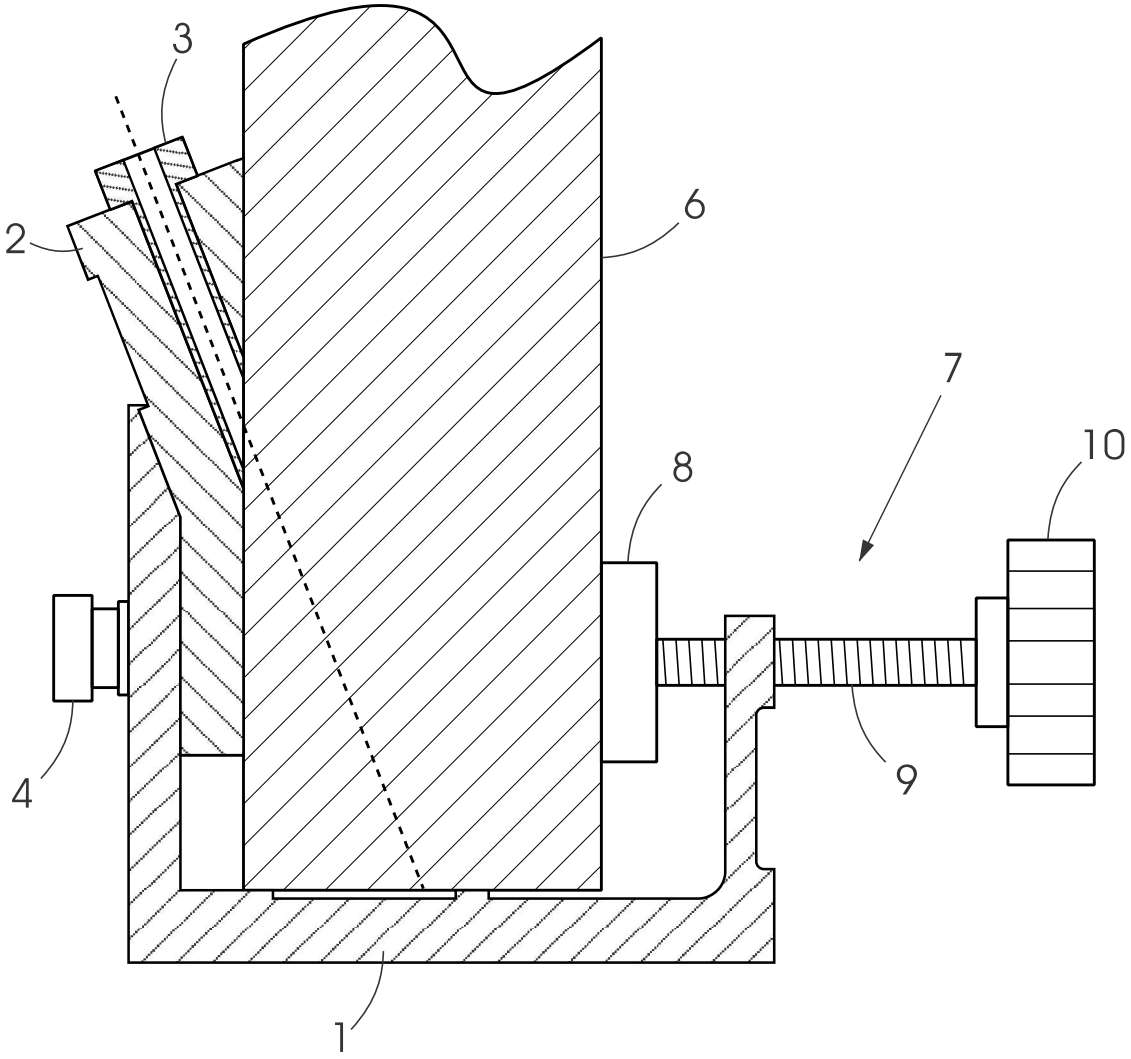



Fig. 2

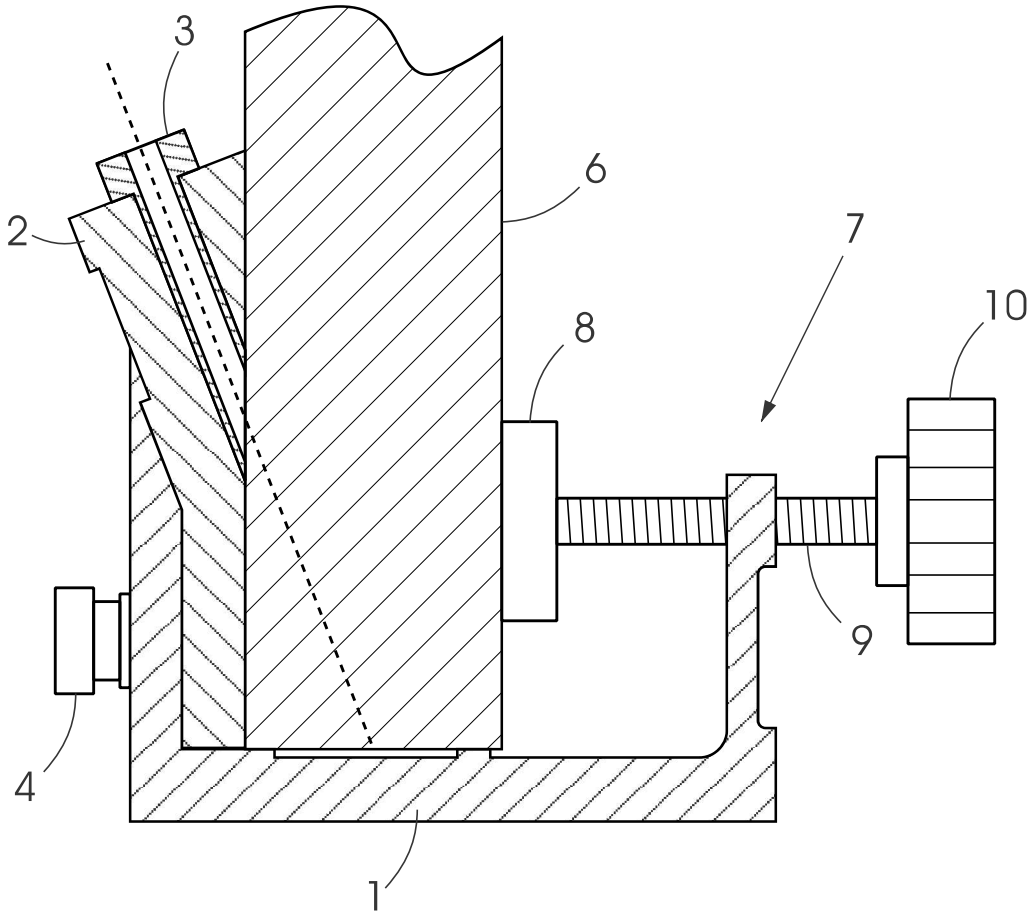



Fig. 3

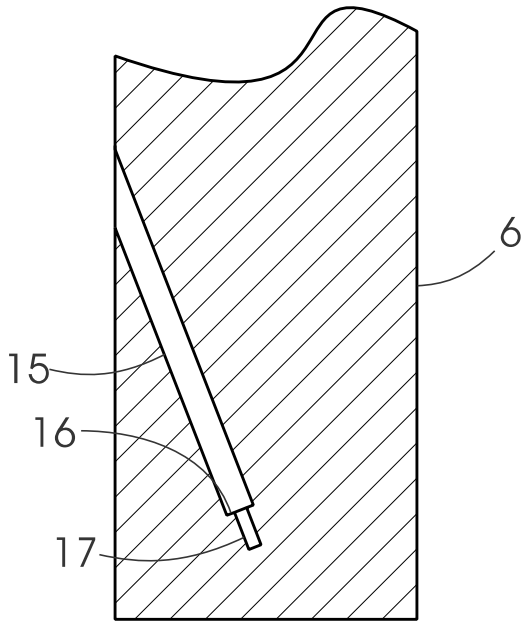



Fig. 4

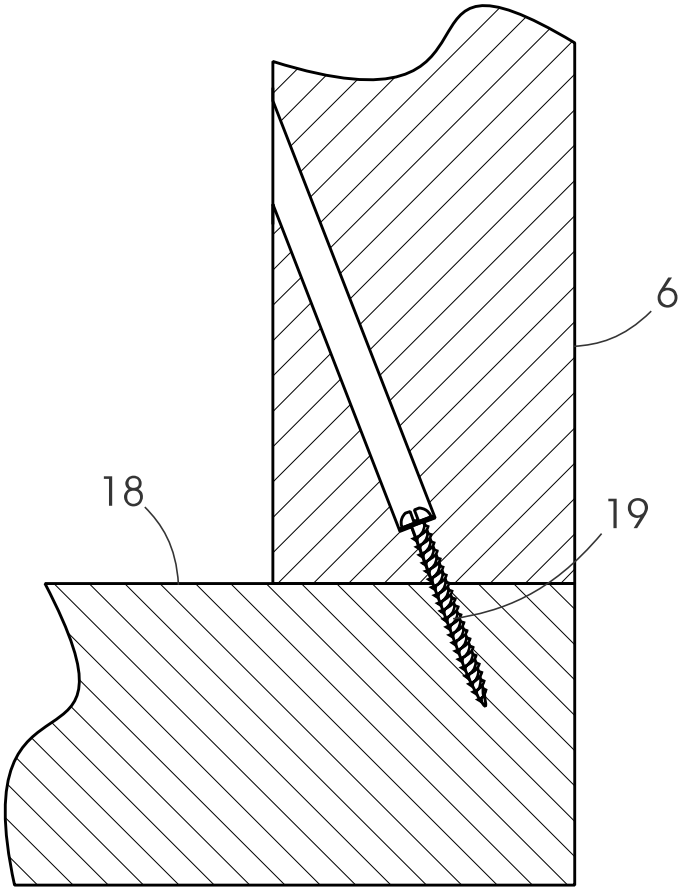



Fig. 5