

PATENT EXAMINATION BOARD

DRAFTING OF PATENT SPECIFICATIONS – GROUP 2(e)

[PAPER 1]

Supplementary Exam - October 2024

Examiner: V Williams

Moderator: J D Whittaker

Time: 6 Hours

Total marks: 100

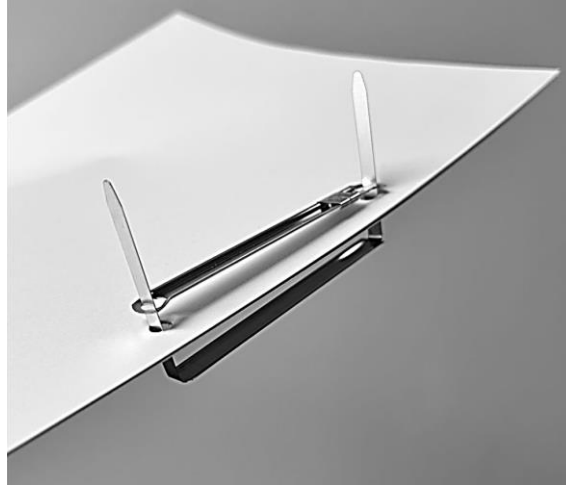
This paper consists of 10 pages (including this cover page), and includes two questions.

Instructions:

- Answer both questions; and
- Write legibly.

Question 1**[50 Marks]**

Your client hands you his new “dual hole” paper punch for creating holes in sheets of paper to facilitate the binding of numerous pieces of paper to form a booklet wherein the edges of the papers making up the booklet are retained neatly in alignment with each other on a two-pin file fastener as shown in the photo below.



As appears from the images of the Prior Art below, papers were previously held together using a split pin (i). Holes in the papers for allowing the split pin to pass through the papers were made by a traditional skewer (ii).

Prior Art



(i)



(ii)

Referring to figures 1 to 4 below, the punch device consists of a base 6 which is hollow and collects the small paper pieces (not shown) punched out during use. The base 6 is topped with an inclined table 7 where the paper is positioned before being punched. The base 6 has side walls 8 and 9 for structural support, a front wall 11, and a rear wall 12 to help reinforce the punch. Underneath the table 7 is an interior compartment 14 where the punched-out paper discs are stored until they are removed.

The bottom of the punch device is covered by a bottom plate 16 made of metal and fitted with elongated feet 17 that keep the punch stable and prevent it from scratching surfaces. This bottom plate 16 fits securely into a groove 18 on the base 6 and is held in place with screws 19 that attach to bosses 21 on the base 6. To easily clean out the punched paper discs, there is a removable plug 22 which can be pulled out to empty the compartment 14 without removing the entire bottom plate 16.

To ensure that papers (not shown) are properly aligned for punching, the device features a slide 26. This slide 26 can be adjusted to match the width of the paper. It passes through apertures 28 and 29 in the side walls 8 and 9 and is guided by a channel 31 under the table 7. The slide 26 has a stop 27 at the end to hold the paper in place, ensuring that the holes are punched in the correct position. The slide 26 locks into place using a spring-loaded detent mechanism 34 which includes a ball 37 that clicks into preset depressions 38 along the slide 26. These depressions 38 correspond to width marking numerals 39 visible through a window 41 in the table 7 for allowing the user to see the width setting and centre the paper for punching.

The punching mechanism itself consists of two plungers 58 which are the components that create the holes in the paper. These plungers 58 are housed inside sleeves 57 that guide their movement as they are pressed down. The plungers 58 have sharp, V-shaped cutting edges 61 that pierce the paper and enter into ferrules 63 which are sturdy metal cylinders mounted in the base 6. The ferrules 63 help ensure that the holes are cleanly cut by providing a solid surface for the plungers 58 to push against.

The plungers 58 are operated by a handle 64 which is connected to the plungers 58 using pins 68 that fit into channels 67 in the handle 64. The handle 64 is designed to move smoothly thanks to flexible metal straps 74 which are looped over fulcrum pins 71 and 72 on either side of the handle 64. These straps 74 pass through apertures 76 in the top of the base 6 and are

fastened securely underneath the ferrules 63. The flexibility of the straps 74 allows the handle 64 to move up and down smoothly without causing any sideways motion to ensure the plungers 58 stay aligned.

The handle 64 is designed to make punching easy. When it is pressed down, it forces the plungers 58 down into the paper and the ferrules 63, compressing the springs 59 around the plungers 58. Once the holes are made, the springs 59 lift the plungers 58 and handle 64 back to their starting positions, ready for the next use. To prevent the handle 64 from hitting the base 6 too hard when it is pressed down, a resilient bumper 78 cushions the handle's movement and ensures quiet, smooth operation.

The device has an upper frame 44 which sits on top of the base 6 and holds the key components of the punching mechanism. The upper frame 44 consists of a rear wall 46, side walls 48 and 49, a top wall 47, and a front wall 51. On the front wall 51 there is a central index 52 that helps the user line up the paper for accurate punching. The upper frame 44 is securely attached to the base 6 by die-cast projections 53 which are inserted through the base 6 and riveted in place. The upper frame 44 also houses the guide sleeves 57 for the plungers 58 and supports the handle 64.

[Examiner's Note: Some of the reference numerals in the drawings have not been referred to in the description above and may be ignored for the purpose of this question].

In practice, the user places a sheet of paper on the inclined table 7, adjusts the gauge slide 26 to centre the paper and then pushes the paper forward until it reaches the plunger slot 62. Once the paper is properly positioned, the user presses down on the handle 64 which pushes the plungers 58 through the paper, punching clean holes. The punched paper discs fall into the compartment 14 for later removal. After punching, the handle 64 springs back up, allowing the paper to be removed, and the punch device is ready for the next punch.

You are required to identify the inventive feature(s) of the invention, and to draft up to three claims to protect the invention.

FIG. 1.

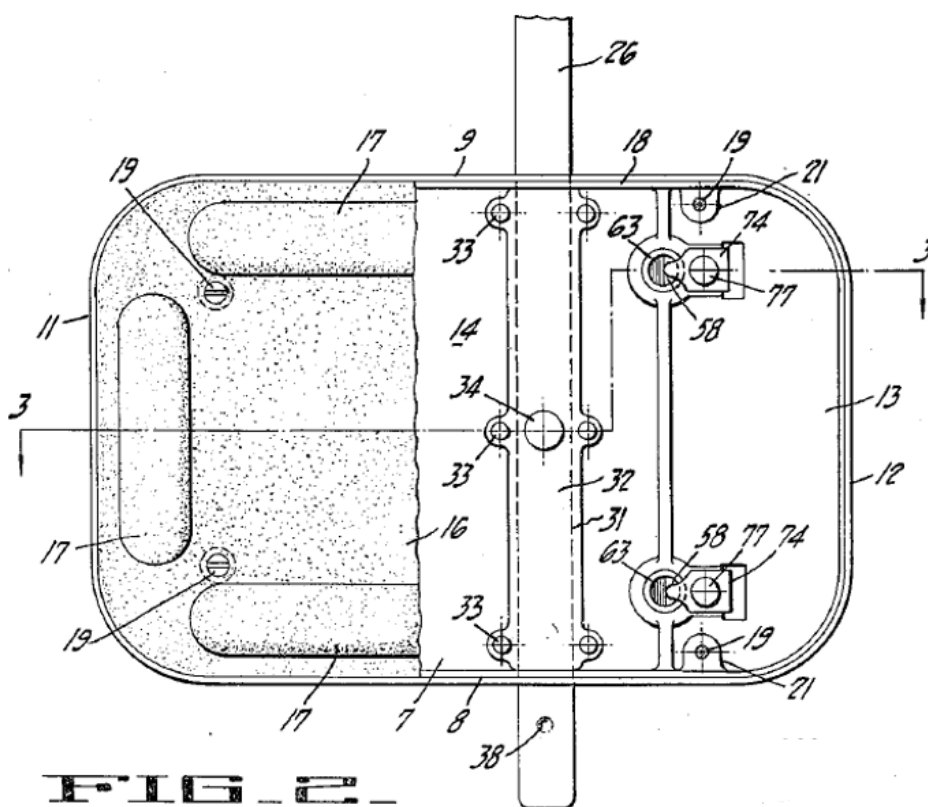
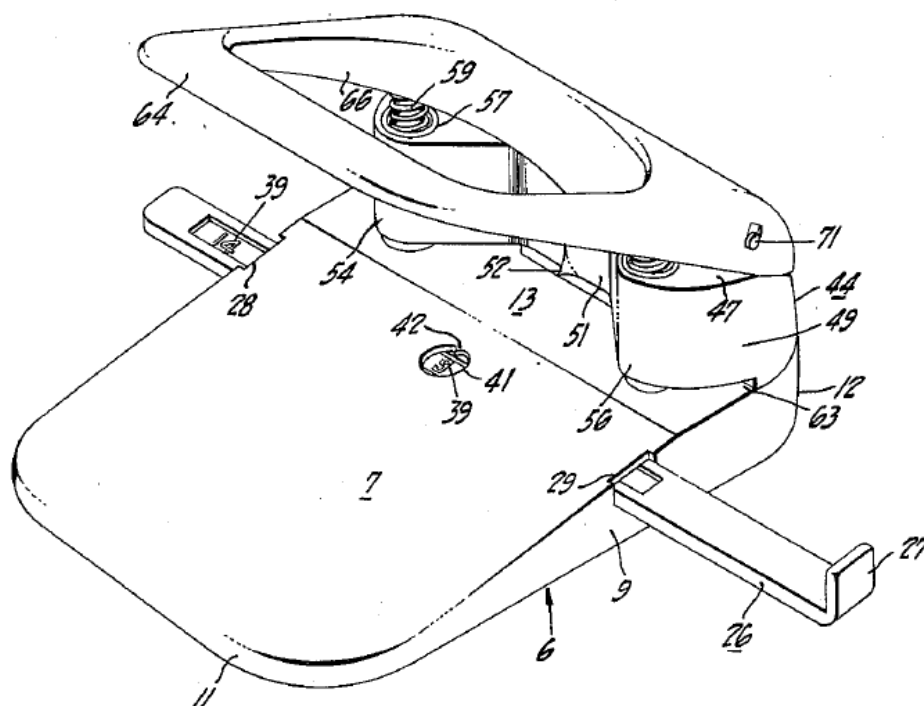
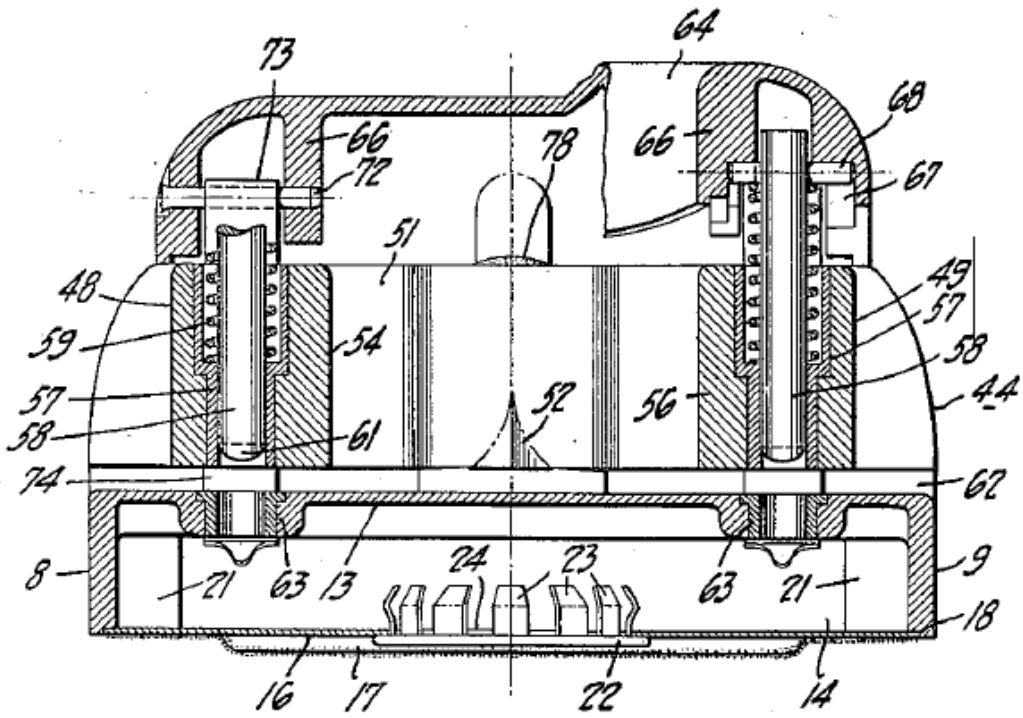
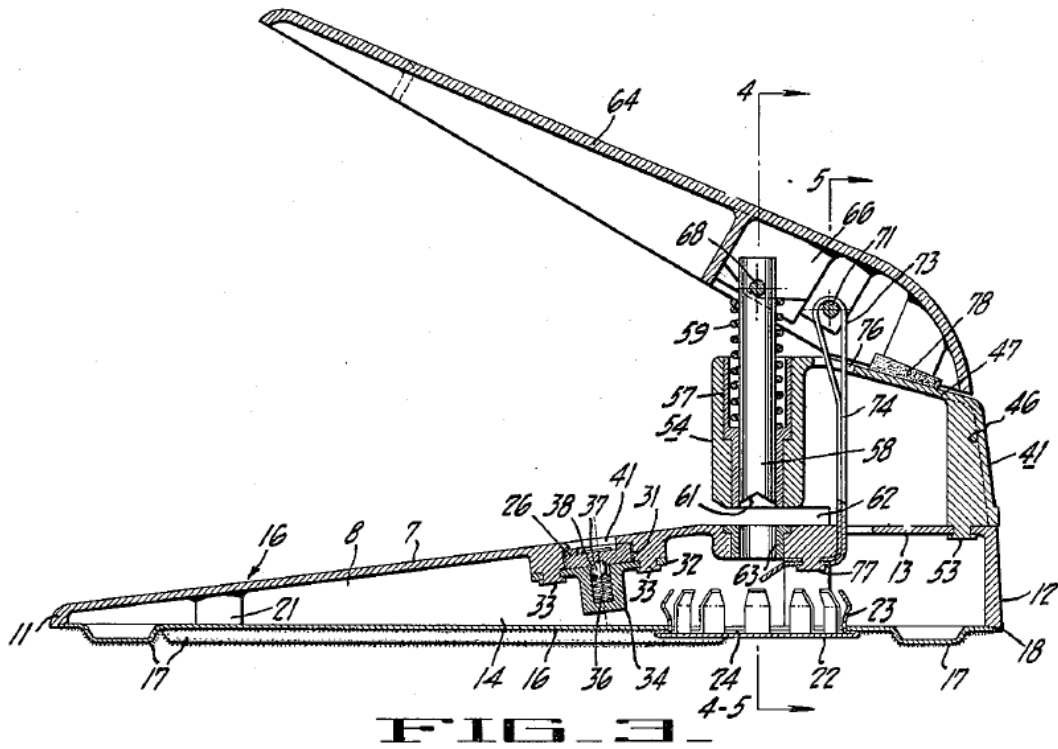


FIG. 2.



Question 2**[50 Marks]**

Your client hands you drawings of his new invention which he believes will put a stop to rampant cable theft in South Africa. Copies of these drawings (figures 1 to 5) appear below. As can be seen from the three-dimensional views shown in figures 1 to 3 of the drawings, your client's anti-theft assembly 10 comprises an impeding arrangement 12 which is connected via a hose clamp 14 to an electric cable 16 prior to it being buried underground. The diameter of the hose clamp 14 may be reduced by adjustment means 28 to ensure that the impeding arrangement 12 is securely connected to the electric cable 16. The arrangement 12 is in the form of an x-shaped body 18 which serves to increase a surface area against which the earth provides a resistive force to prevent the illegal removal of the underground cable 16. It is to be appreciated that the body 18 can take any suitable shape which extends away from a connection zone 20 between the body 18 and the cable 16.

The body 18 is formed by L-shaped cross section elements 22 having lateral edges 34. With reference also to figures 4 and 5 of the drawings, each element 22 includes a slot 26 for receiving the other element 22 therein to allow complementary engagement therebetween. Although not shown in the figures, the body 18 can have a generally arcuate, scalloped, shell, cone, or scoop shape for allowing collection of earth therein when pulled through the earth, thereby increasing effort required to pull the body 18 from the ground once buried.

The elements 22 extend substantially radially away from the connection zone 20 between the body 18 and the cable 16 a distance in the range of 200mm to 700mm, typically in the region of 320mm. It is to be appreciated that the further the elements 22 extend from the connection zone 20, the greater the surface area for resistive force to be exerted by the earth on the body 18. The elements 22 are spaced apart circumferentially relative to the cable 16 and have a cross-sectional shape which increases a resistance to bending. The elements 22 may be manufactured from any suitable synthetics, plastics or metallic material. Typically, they are formed from a metallic material such as steel. The elements 22 may be fastened together by a clamping arrangement (not shown) or they may be welded together.

A bar 30, which may be welded to the elements 22 at an intersection zone 24, serves as an attachment point for the hose clamp 14 which holds the impeding arrangement 12 and the cable 16 together. As best illustrated in figure 2 of the drawings, the bar 30 defines an opening 32 between it and the elements 22 through which the hose clamp 14 may pass.

You are required to identify the inventive feature(s) of the invention, and to draft up to three claims to protect the invention.

FIGURE 1

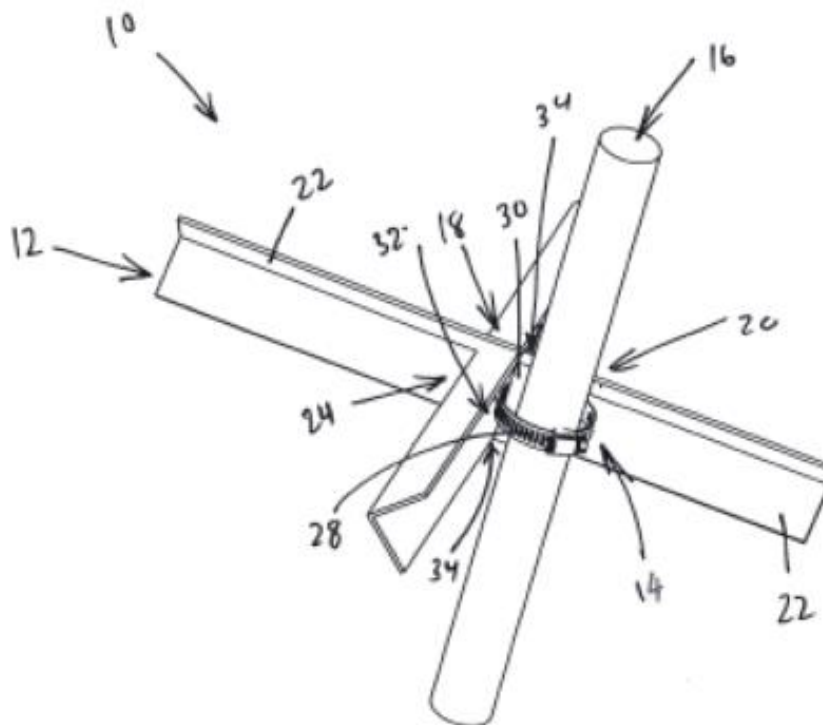
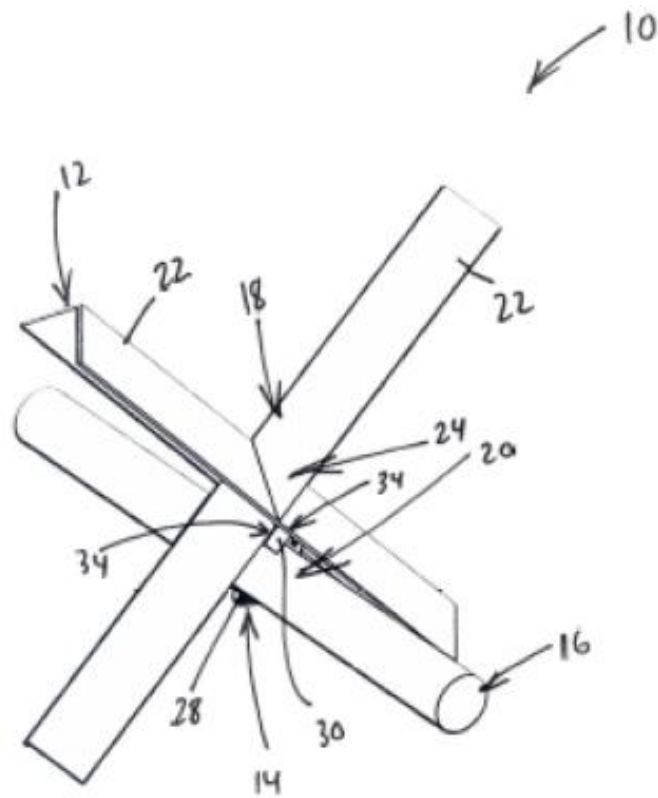


FIGURE 2

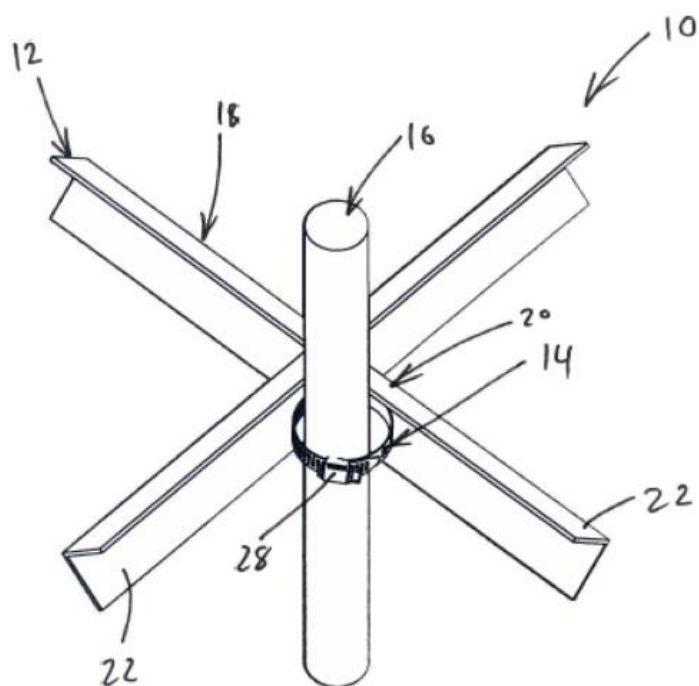


FIGURE 3

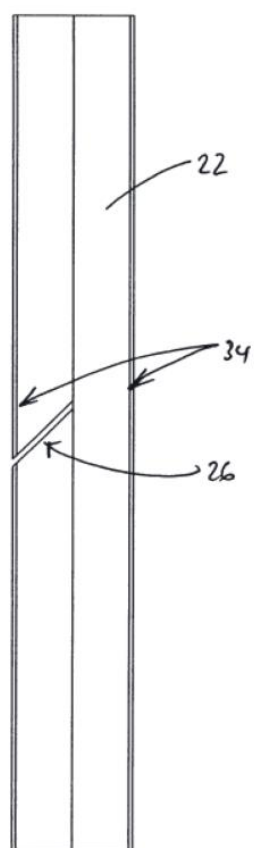


FIGURE 4

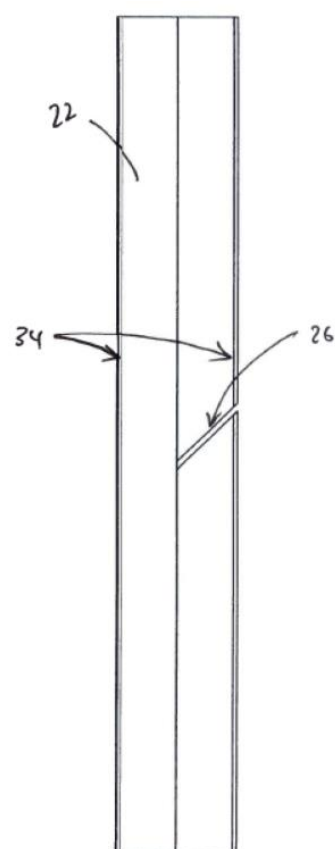


FIGURE 5