

INTELLECTUAL PROPERTY OFFICE OF SINGAPORE
PATENT AGENTS QUALIFYING EXAMINATION (QE) 2005

PAPER A: PREPARATION OF A PATENT SPECIFICATION
10 October 2005, Monday
1400 – 1730 hrs

Maximum Time: 3 Hours + 30 Minutes of reading time

Maximum Marks: 100



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INSTRUCTIONS TO CANDIDATES

1. This Paper consists of 14 pages, including this cover page.
2. 30 minutes of reading time is provided. Only notes made on loose sheets are allowed during that time.
3. Write your answers in English. Answers in any other language will not be marked. Answers in illegible handwriting will not be taken into consideration.
4. Two copies of the question paper are provided, one is for your reading and the other is for your use (optional) in the Answer Booklet(s).
5. Only your answers and/or drawings to the question(s) written or glued in the Answer Booklet(s) provided by the Examination Secretariat will be considered. You are to write on one side of each sheet in the Answer Booklet (s).
6. You should accept the facts given in the paper and not use any special knowledge you may have. Assume also that the prior art given is exhaustive.

To be continued

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7. The documents provided in the question are:
- (a) Question (1 page);
 - (b) Document A – Client’s write-up of his invention (3 pages of description and 3 pages of drawings);
 - (c) Document B – Extract of a lapsed patent application (1 page of description and 1 page of drawings); and
 - (d) Document C – Extract of a lapsed Singapore Patent (1 page of description and 1 page of drawing).

End

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Question (1/1)

5 Your client approaches you with an invention for you to draft a specification and to file a patent application in Singapore. His write-up of his invention is Document A.

10 Your client advises that the key to the invention is the screw operator and the drive system as they enable a smooth and easy cork extraction with minimal risk of cork fracture due to the vertical movement. The lever arm gives a good mechanical advantage so that a user does not need to be strong to operate the corkscrew. Similarly, but less importantly, the length and curvature of the handles allows a user to have a good grip on the corkscrew, and the corkscrew on the bottle neck, without requiring large, or strong, hands.

15 He also advises that other drive systems are possible (e.g. lever and ball joint). He also emphasizes that they are not as compact or efficient as this combination. Also, they would not be as effective in cork extraction, and would be more expensive to manufacture.

20 You conduct a search and find two prior-art documents. Document B is an extract from a lapsed patent application published in Australia in 1965. Document C is an extract of the specification of a lapsed Singapore patent published on 29 February 2000.

25 Your client advises that the problems of the prior art are:

- 30
1. Document B – there is little or no mechanical advantage, and strong hands are needed for the apparatus to grip the bottle, and to turn the corkscrew.
 2. Document C – it is difficult to use. The arm tends to slip off the bottle, the mechanical advantage is limited due to the short length of the body, and the movement is arcuate thus placing lateral or shear stresses on the cork. This can lead to the cork fracturing.

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Document A – Client's write-up of his invention (1/6)

Figure 1 is a side view of the corkscrew on a bottle;

5

Figure 2 is a front view corresponding to Figure 1;

Figure 3 is a partial cross sectional view corresponding to Figure 1;

10 Figure 4 is a front view of the corkscrew when separated from the bottle; and

Figure 5 is a full vertical cross sectional view along the lines and in the direction of arrows 5-5 on Figure 4.

15 The corkscrew 10 has a body 12. Two opposed, curved arms 14 are pivotally attached to body 12 and extend forwardly of the body 12. The arms 14 each have an inner portion 14a and outer portion 14b. The curvature of the inner portions 14a is matched to that of bottle necks. The arms 14 are biased sidewardly by compression springs 16 that are located between the body 12 and each arm 14. The arms 14 are
20 connected to the body 12 by pins 18, and locate in recesses 20 in the body 12.

Extending forwardly of the upper end of the body 12, and on each side of the body 12, are opposed front wings 22. Also extending forwardly of the upper end of the body 12, and located between the front wings 22, is a guide 24. The guide 24
25 extends further forward than the front wings 22.

Extending rearwardly and upwardly of the body 12, and on each side of the body 12, are opposed rear wings 26. Pivotaly attached to rear wings 26 by a pivot pin 28 is a lever arm 30 having an enlarged, cylindrical inner end 32 formed as a pinion gear.

30

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Document A (2/6)

5 The pinion gear 32 operatively engages a somewhat inverted L-shaped screw operator 34 that is moveably mounted relative to body 12. The screw operator 34 has a rack gear 36 that is located immediately behind body 12. The rack gear 36 is operatively connected to the pinion gear 32 so that rotational movement of pinion gear 32 causes vertical movement of rack gear 36, the pinion gear 32 and rack gear 36 combining to form a drive system for the screw operator 34.

10 Extending forwardly of and securely attached to the rack gear 36 is a screw holder 38 to which is securely but releasably and rotatably attached a screw 40. The screw 40 is able to rotate about its longitudinal axis relative to screw holder 38. A cap 41 is used to hold the screw 40 in position relative to screw holder 38. The screw 40 depends from screw holder 38 and passes through guide 24 so that the screw 40
15 remains generally vertically whilst in operation.

Extending downwardly from and securely attached to screw holder 38 between screw 40 and rack gear 36 is a guide rod 42 that passes through a correspondingly sized and shaped bore 44 in body 12.

20

For operation, the lever arm 30 is moved in the clockwise direction to raise the screw operator 34 until the tip 52 of screw 40 is within guide 24. This is the fully raised position. The arms 14 are left open and the corkscrew 10 placed on top of the neck 46 of bottle 48 with curved portion 14a on the neck 46.

25

The lever arm 30 is then moved arcuately about pivot pin 28 in the anti clockwise direction to cause pinion gear 32 to rotate in the anti clockwise direction thus forcing rack gear 36 to move vertically downwardly. The screw 40 therefore engages the cork 50. Further movement of lever arm 30 forces the screw 40 to rotate in the
30 clockwise direction relative to screw holder 38 to thus enter into, and possibly even pass through, cork 50.

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Document A (3/6)

When the screw 40 is fully engaged in cork 50, the lever arm 30 is then moved relatively slowly in the opposite direction – the clockwise direction - so that the pinion
5 gear 32 rotates in the clockwise direction thus forcing the rack gear 36 to move vertically upwardly. The screw holder 38 therefore moves vertically upwardly thus lifting screw 40 to extract cork 50. The screw 40 does not rotate relative to screw holder 38 as the tension applied to the screw 40 by the cork 50 jams the screw 40 in screw holder 38. This, combined with the relatively slow movement, enables the cork
10 50 to retain its grip on screw 40 for the extraction to take place.

By the time the cork 50 contacts the guide 24, the cork 50 has been removed from the neck 46 and thus releases the tension on screw 40. More rapid movement of the lever arm 30 is then possible to remove screw 40 from the cork 50 as the screw 40 is
15 then able to rotate relative to the screw holder 38 in the anticlockwise direction for complete removal.

The corkscrew 10 works with all stoppers including natural corks, composite corks, and those of synthetic material but not screw tops.

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Document A (4/6)

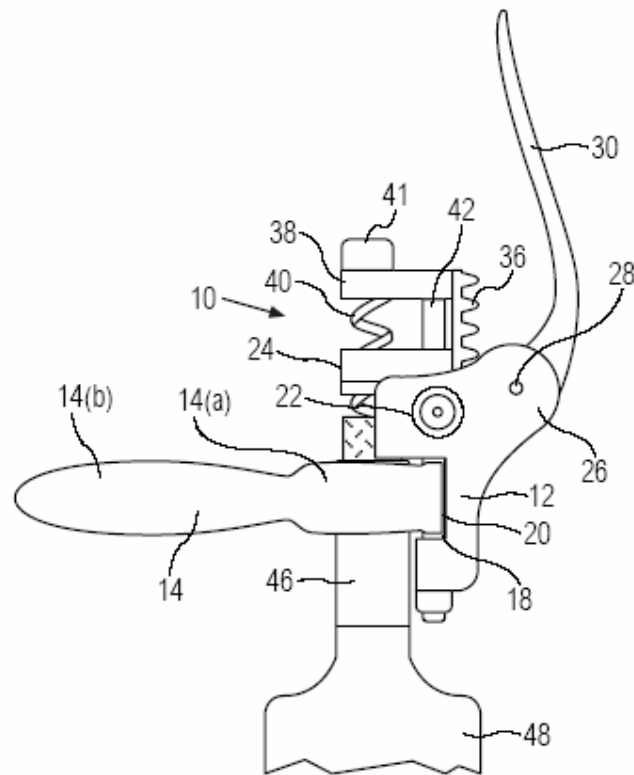


FIG. 1

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Document A (5/6)

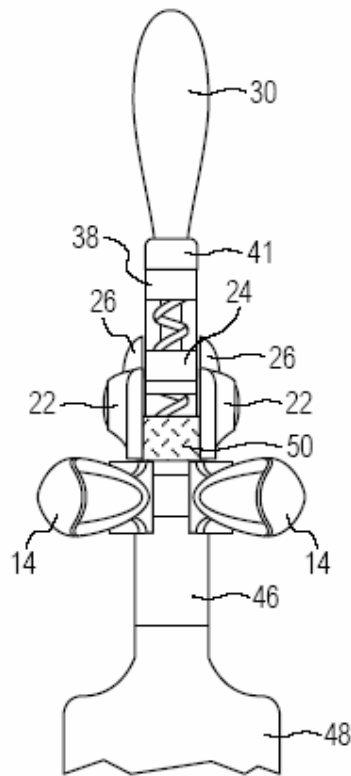


FIG. 2

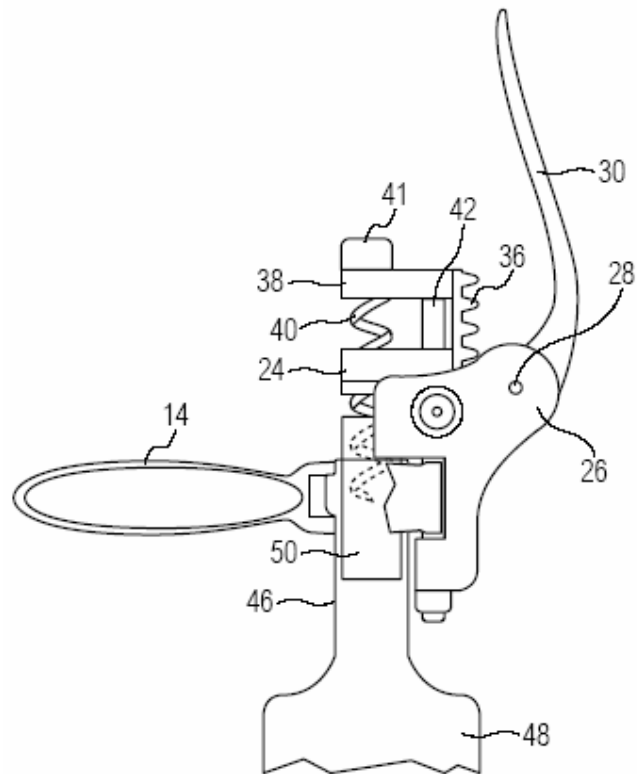


FIG. 3

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Document A (6/6)

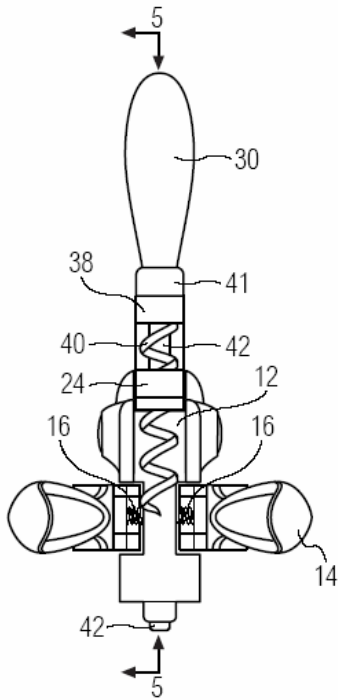


FIG. 4

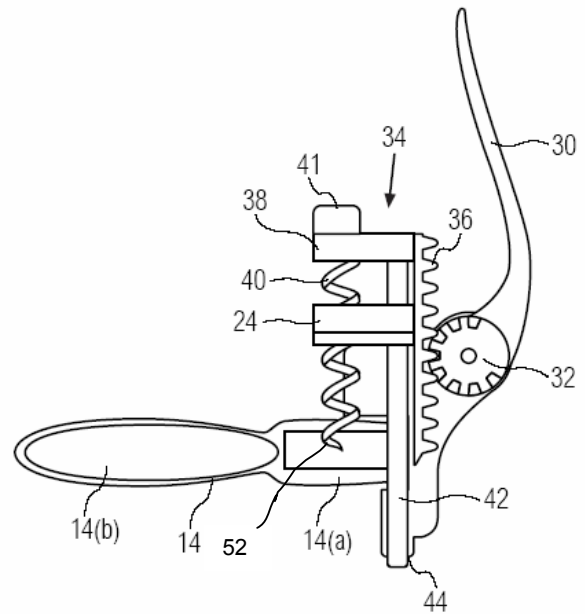


FIG. 5

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Document B – Extract of a lapsed patent application (1/2)

5 The apparatus has a body 10 and a corkscrew 12 co-axial with the body 10. The body 10 has two equal and opposed halves 14, 16 with gaps 18 between them. The two halves 14, 16 join at the top 20. The corkscrew 12 passes through the top 20 and is rotatable relative to body 10. Projecting inwardly from each half 14, 16 is a lug 22 for engaging the top of a bottle 8.

10 The halves 14, 16 can be separated slightly to allow the body 10 to pass over the top of the bottle 8 until lugs 22 engage the top 6 of the bottle 8. The halves 14, 16 are held relatively tightly on the bottle 8 to prevent the body 10 moving relative to the bottle 8. Corkscrew 12 then engages the cork 4 and is rotated using handle 24. The corkscrew 12 continues through and engages the cork 4 until handle 24 contacts top
15 20. Further rotation causes the cork 4 to be vertically extracted from the bottle 8 until the cork 4 contacts projections 26. The distance from lugs 22 to projections 26 is the same as or slightly less than the longitudinal axial length of the cork 4.

The apparatus with cork 4 is removed from the bottle 8. If required, the corkscrew 12
20 is moved axially upwardly until projections 26 engage the cork. Pressure is applied to the halves 14, 16 for the projections 26 to relatively tightly engage the cork 4. Further rotation of the corkscrew 12 using handle 24 removes the corkscrew 12 from the cork 4.

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Document B (2/2)

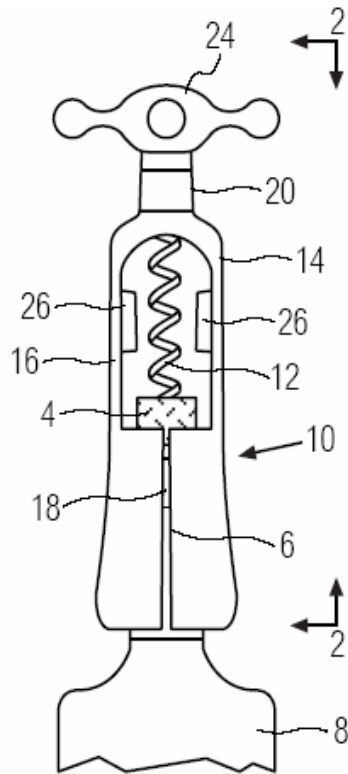


FIG. 1

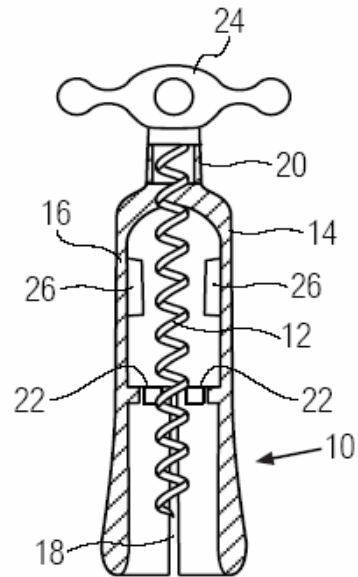


FIG. 2

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Document C – Extract of a lapsed Singapore Patent (1/2)

5 This is a corkscrew known as the waiters' friend. It has a main body 10 to which is
pivotaly attached a corkscrew 12 for pivotal movement between an operating
position (as shown) and a non-use position where it locates in a recess 14 of the
body 10. The pivot point 16 of the corkscrew 12 is intermediate the ends 18, 20 of
the body 10 and adjacent the recess 14. At the end 20 there is provided an arm 22
10 pivotaly attached the body 10 by a pivot 24. The arm 22 has a notch 26 at its outer
end for engaging the neck 28 of a bottle 30.

The corkscrew 12 fully engages a cork 32 of bottle 30 and notch 26 engages neck
28. By lifting the other end 18, the body pivots about pivot 24. Pivot 24 acts as a
fulcrum and thus mechanical advantage is obtained to remove the cork 32 from the
15 bottle 30.

The problem is that the movement is somewhat arcuate so there is a tendency for
cork 32 to fracture.

20 The cork 32 is removed from corkscrew 12 by hand.

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Document C (2/2)

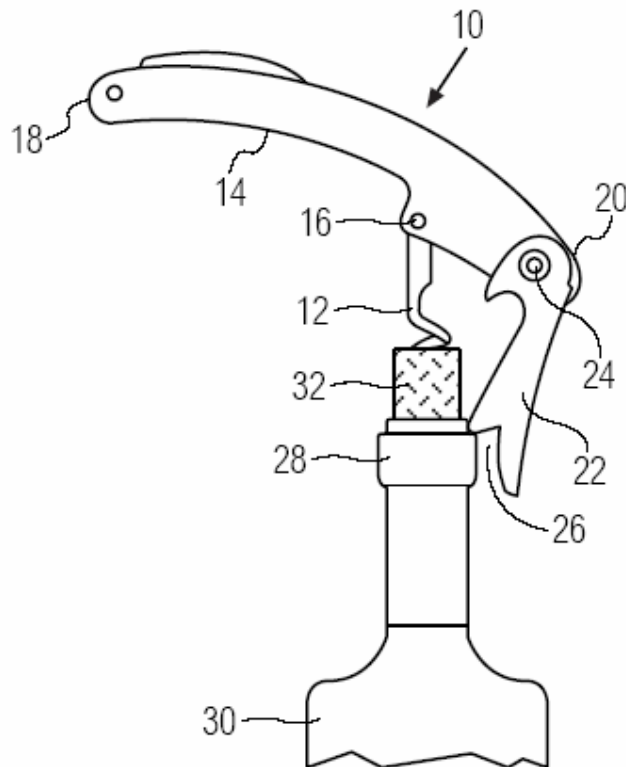


FIG. 1

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