### 2013 PAPER P3 SAMPLE ANSWER 1

This script is an example of an answer to the above examination question paper. The answer received a pass mark. It is a transcript of the handwritten answer provided by the candidate, with minimal re-formatting to improve readability.

We hope you will find it helpful when preparing for this examination, but please note it is not a model answer. You may also find the Examiners' Reports and the Final Examination Guidance Documents useful too. You will find these in the Examination Support area of the PEB website.

# <u>CLAIMS</u>

1. A shield for protecting an electrical back box comprising

a frame member, said frame member having walls for insertion into a back box; and

a detachable stabiliser,

wherein in use, part of the frame member protrudes from the back box so as to protect the opening of the back box, and the stabiliser, when fitted to the frame member, acts to push the walls of the frame member against the walls of the back box so as to hold the frame member in place. 2. A shield according to claim 1 wherein the frame member is hollow and the stabiliser fits into a cavity formed between the walls of the frame member.

3. A shield according to claim 1 or claim 2 wherein the stabiliser is a sheet material complementary in shape to the frame member.

- 4. A shield according to any of the preceding claims wherein the stabiliser comprises one or more peripheral flanges configures so as to engage with the walls of the frame member.
- 5. A shield according to claim 4 wherein the one or more peripheral flanges are resilient.

6. A shield according to any of the preceding claims wherein the stabiliser is provided with one or more holes for gripping the stabiliser during fitting to the frame member.

- 7. A shield according to any of the preceding claims wherein at least one of the walls of the frame member is deformable.
- 8. A shield according the claim 7 wherein diametrically opposed walls of the frame member are deformable.

9. A shield according to any of the preceding claims wherein the frame member comprises a plurality of legs extending from the walls, wherein the legs insert into the back box in use.

10. A shield according to claim 9 wherein the frame member has four legs positioned at the corners of the frame member.

11. A shield according to any one of the preceding claims wherein the portion of the frame member which protrudes from the back box in use is increased in thickness so as to overlap with the forward facing edges of the walls of the back box.

12. A shield according to any of the preceding claims wherein the frame member is provided with one or more screw locks.

- 13. A shield according to any of the preceding claims wherein at least the frame member is made of cardboard.
- 14. A shield according to any one of claims 1-12 wherein at least the frame member is made of plastic.
- 15. A shield for protecting an electrical back box substantially as described herein with reference to figures 2, 3 and 4.

# INTRODUCTION AND DESCRIPTION

#### A protective shield

The present invention relates to a protective shield. In particular, the invention relates to a shield for protecting electrical back boxes, which have been fitted into walls, from becoming clogged with building debris, particularly the debris created when the walls are newly plastered.

#### BACKGROUND

When electrical wiring is installed in new houses, the installation is carried out in two phases. First, the electrician will fit conduits for the wiring and back boxes for receiving the electrical sockets and light switches. This is the first fit. The plasterer is then brought in to plaster the walls and once this is done, the electrician can carry out the 'second fit' where the sockets and switches are connected to the back boxes.

The problem with this process of electrical installation is that the back boxes frequently become clogged with dried plaster left over from the plastering stage, and therefore the electrician has to scrape out the plaster and in doing so, risks damaging the wires.

This problem has been addressed by a device called the 'Protectabox' (Figure 1) which is a temporary shield that can be inserted into electrical back boxes to prevent the ingress of debris, such as plaster, during building work. The shield has a frame member which inserts into a back box and protects the opening, and resilient flanges around the outside of the frame member for retaining the frame member in the back box.

However, the Protectabox is a flimsy structure and easily falls out of the back box if it is knocked.

# SUMMARY OF THE INVENTION

It is an object of the present invention to provide a shield for protecting an electrical back box that is removable from the back box, but that is held firmly in place when inserted into the box.

In accordance with a first aspect of the invention, there is provided a shield for protecting an electrical back box according to claim 1.

The inclusion of a detachable stabiliser ensures that the walls of the frame member are pushed firmly up against the walls of the back box so that the frame member is not easily dislodged from its position when in use.

Preferably, the device is configured such that the frame member is hollow and the stabiliser fits into a cavity such that the walls of the frame member are pushed outwards.

Preferably, the stabiliser is (claim 3). The use of a simple stabiliser having a plane structure facilitates manufacture of the stabiliser, ensures a good fit between the stabiliser and the walls of the frame member and facilitates straightforward fitting or insertion of the stabiliser to/into the frame member.

Preferably, the stabiliser (claim 4), more preferably wherein (claim 5). The peripheral flanges ensure a tight fit between the frame member and the stabiliser.

Preferably, (claim 6). The holes make it easier for a user of the shield to grip the stabiliser either during fitting of the stabiliser to the frame member or during removal.

Preferably, (claim 7). If at least one of the walls of the frame member is deformable, this can assist with initial insertion of the frame member into the back box. Preferably, (claim 8). This allows the frame member to be squeezed from either side so as to deform the overall shape of the frame member and facilitate insertion into the back box.

Preferably, (claim 9). The addition of legs can be beneficial so as to increase the depth of the region of the frame member which inserts into the back box, so as to improve the overall stability of the shield in the back box. Preferably, (claim 10) for maximum stability of the shield in the back box. The length of the legs can be adjusted, for example the legs can be cut shorter, depending on the depth of the back box.

Preferably, (claim 11). This ensures that minimal amounts of building debris, particularly plaster, gain entry to the back box.

Preferably, (claim 12). One or more screws can be inserted via these holes so as to hold the shield even more firmly in place once it is inserted into the back box.

Preferably (claim 13 or 14). This can allow the shield to be manufactured relatively cheaply and at least the frame member can be folded flat when not in use.

The invention will now be understood, by way of example only, with reference to the following drawings:-

Fig. 2 is an exploded view of a shield according to an embodiment of the invention including an electrical back box.

Fig. 3 is a perspective view of a frame member being inserted into a back box (A) and a frame member positioned inside a back box with a stabiliser inserted (B).

Fig. 4 is a cross-sectional side view of a shield according to one embodiment of the invention, inserted into a back box located in a wall.

Figure 2 shows a shield for protecting an electrical back box having a frame member 10 having four walls 12 which are arranged so as to fit inside the walls of a back box 14. The back box to which the shield is to be fitted may be any standard electrical back box. The back box 14 as shown has knock-out blanks 16 to form entry holes for wiring and lugs 18 for screws to fit the electrical sockets. The rectangular frame member 10 is sized such that the walls 12 form a snug fit inside the walls of the back box 14. The frame member is provided with four legs 20, which extend from the walls 12 of the frame member 10 and also protrude into the back box 14. The length of the legs 20 is adapted to the depth of the back box 14. The frame member is provided with a screw hole so the shield can be screwed to the back box to prevent the shield from becoming dislodged. In addition to the frame member 10, the shield has a detachable stabiliser 24 which is shown as a rectangular sheet capable of fitting inside the space between the walls 12 of the frame member 10. The stabiliser is provided with a number of flanges 26 positioned around the outer edge and these flanges 26 serve to improve the fit between the stabiliser 24 and the frame member 10. The stabiliser 24 is also provided with two holes 28 which allow the stabiliser to be gripped so as to facilitate attachment and detachment.

As shown in Figure 3 in use, the frame member 10 is first inserted into the back box 14 by compression of the diametrically opposed walls 12 (see Fig 3A). A portion of the frame member 10 remains protruding from the back box 14 so as to protect the opening from any debris that may enter the box. Once the frame member 10 is in position in the back box 14, the stabiliser 24 can be inserted so as to push the walls 12 of the frame member 10 back outwards against the walls of the back box 14. This serves to hold the shield firmly in place.

As shown in Figure 4, the frame member 10 of the shield is configured such that the region of the walls 12 which protrudes beyond the walls of the back box 14 is thickened such that it overlaps the forward-facing edges of the back box (see in particular the enlarged portion of Fig. 4). This "shoulder" improves the seal between the walls of the back box 14 and the walls 12 of the frame member 10 and thereby minimises the chances of building debris, particularly plaster 30 from the surrounding wall, entering the back box.

The skilled person would understand that various modifications to the embodiment described are permissible and still within the scope of the invention. For example, the frame member and/or the stabiliser may be made of plastic or cardboard.

### ABSTRACT

### A Protective Shield

The present invention relates to a shield for protecting an electrical back box, the shield having a frame member 10 for protecting the opening of a back box 14 and a detachable stabiliser 24 for holding the frame member 10 has been inserted into the back box 14. The stabiliser sets by pushing the walls 12 of the frame member 10 outwards against eh walls of the back box 14.



Fig. 1

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