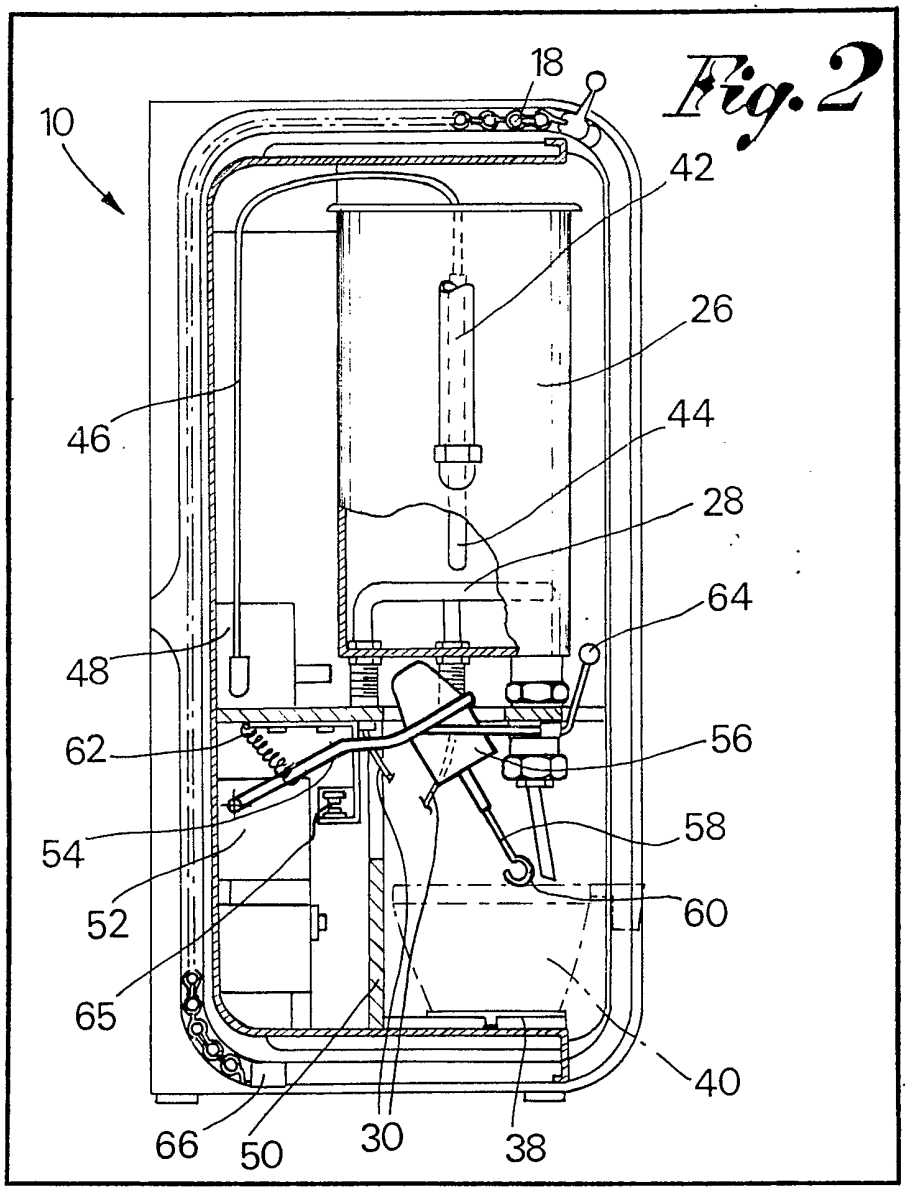
(12) UK Patent Application (19) GB (11) 2 041 881 A

(21) Application No 8003704
(22) Date of filing 4 Feb 1980
(30) Priority data
(31) 67252
(32) 6 Feb 1979
(33) Italy (IT)
(43) Application published 17 Sep 1980
(51) INT CL³ B67D 5/56 B01F 7/16
(52) Domestic classification B8N 24B1B 24E5 JE B1C 18G5F 8
(56) Documents cited GB 1380317 GB 1057957 GB 1046998
(58) Field of search B1C B8N
(71) Applicant Luigi Milani, Via Spano 6/16, Torino, Italy
(72) Inventor Luigi Milani
(74) Agent Potts, Kerr & Co.

(54) Drink Dispenser

(57) A drink dispenser for dispensing drinks prepared from water soluble extracts, comprising a support member (10) in the interior of which is mounted a source of at least one extract and a water reservoir (26) incorporating a thermostatically controlled electrical heater (28), valve means for permitting and preventing the supply of extract and water to a drinking receptacle (40), at least the valve means for the water being connected to a water distribution spout for directing the water into the receptacle, an arm member (54) pivotally mounted on the frame, said arm member carrying, at its free end, an electrically actuated rotatable stirrer rod (58) such that the arm may be lowered to cause said stirrer rod to be located in the interior of a receptacle located on a receptacle support means, and spring biasing means (62) for maintaining said arm member in a raised position so as to permit removal of the receptacle from its support means.



GB 2 041 881 A

2041881

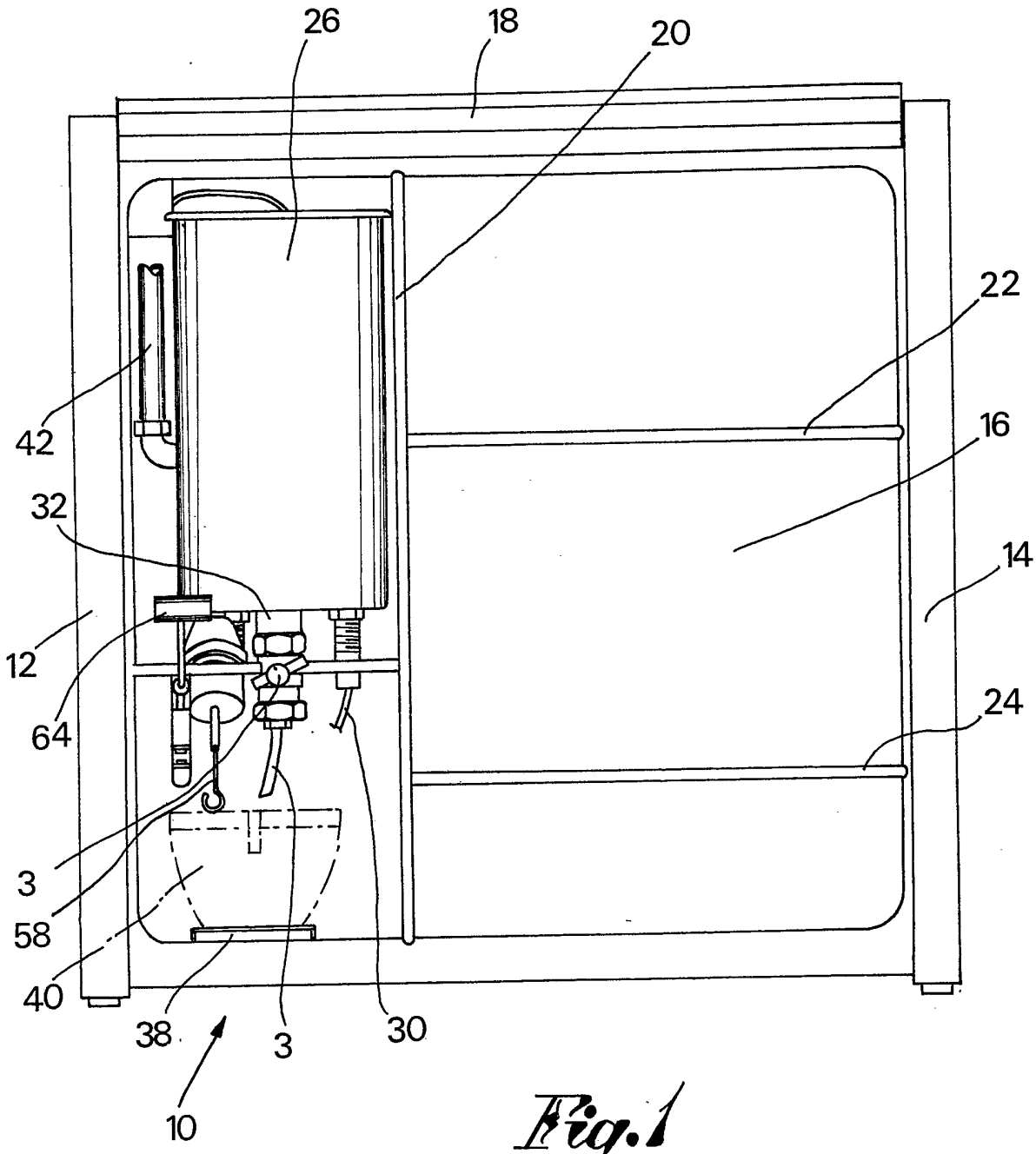
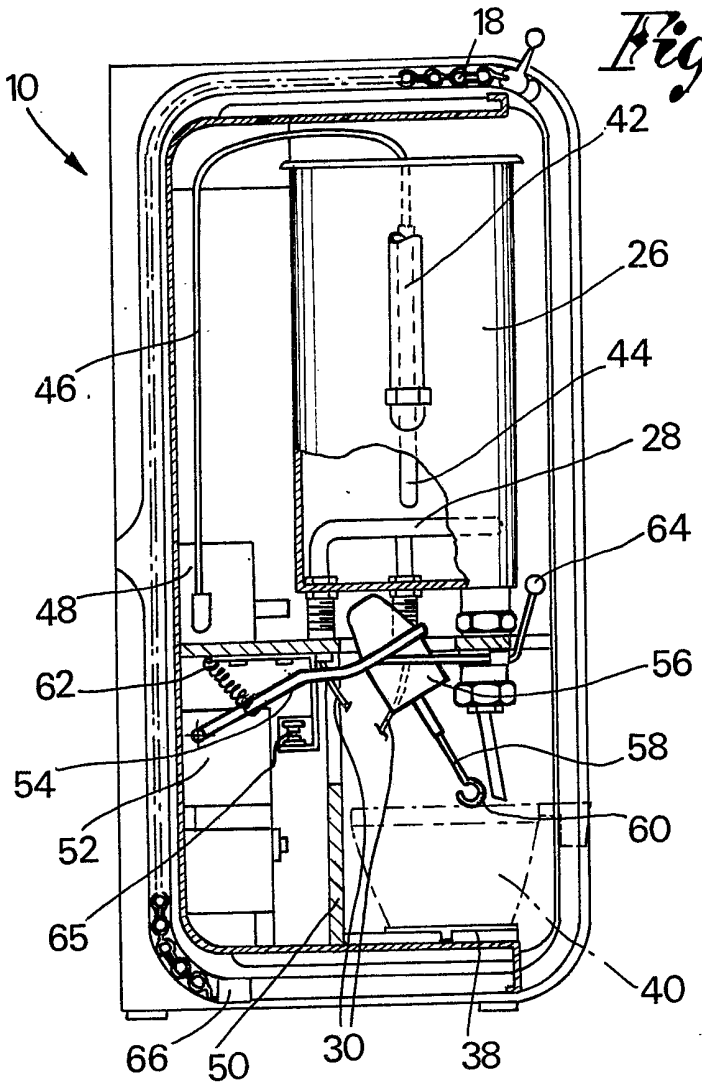


Fig.1

2041881

Fig. 2



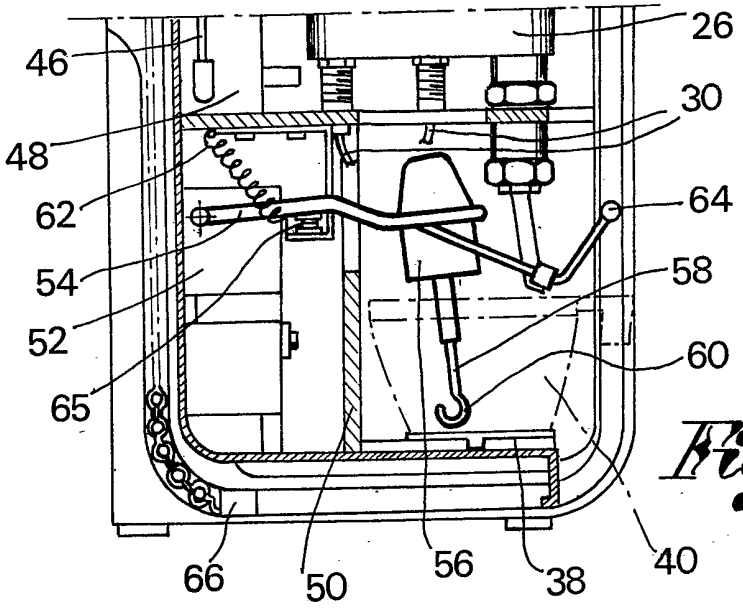


Fig. 3

SPECIFICATION
Drink Dispenser

The present invention relates to a dispenser for dispensing hot drinks, which drinks are prepared by mixing hot water with a water-soluble extract, such as a lyophilised extract. Hot drinks which can be prepared in this manner include coffee, tea, chocolate and soup.

Various types of such dispensers are already known which permit the desired drink to be obtained rapidly from the appropriate extracts. The dispensers are generally coin-or token-operated and are, in general very bulky structures which are expensive. They automatically carry out the operations of supplying a pre-determined amount of extract and hot water, mixing the extract and the water and charging the mixture into a beaker or cup retained in a chute in the dispenser itself. The majority of such dispensers only permit the obtaining of drinks which comprise predetermined doses both of the extract and of the water. More sophisticated dispensers offer the user a certain degree of selection in the amount of the or each component. For example, a user may be able to select strong or weak coffee with or without sugar. However, the cost and bulkiness of such dispensers is greater than the dispensers in which such selection is not possible.

In general, therefore, such known hot drink dispensers are only practicable when they are intended for use by a large number of users so as to justify the appreciable capital investment involved.

If the number of potential users is limited such dispensers are obviously not viable.

The present invention seeks to provide a dispenser of hot drinks prepared from water soluble extracts, which dispenser is semi-automatically operated but which is of reduced bulk and costs less to manufacture than most prior art automatic drink dispensers.

According to the present invention there is provided a drink dispenser for dispensing drinks prepared from water soluble extracts, comprising a support member in the interior of which is mounted a source of at least one extract and water reservoir incorporating a thermostatically controlled electrical heater valve means for permitting and preventing the supply of extract and water to a drinking receptable, at least the valve means for the water being connected to a water distribution spout for directing the water into the receptacle, means for supporting the cup whilst it is being filled with the drink, an arm member pivotally mounted on the frame, said arm member carrying, at it free end, an electrically actuated rotatable stirrer rod carrying a stirrer member such that the arm may be lowered to cause said stirrer member and at least a portion of said stirrer rod to be located in the interior of a receptacle located on said receptacle support means, and spring biassing means for maintaining said arm member in a raised position so as to permit removal of the receptacle from its support means.

Preferably, a source of direct current electrical energy is provided for rotating the stirrer rod.

Alternatively, a source of alternating current electrical energy is provided for rotating the stirrer rod.

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

Fig. 1 shows a front view of a preferred embodiment of a dispenser in accordance with the present invention; and

Figs. 2 and 3 show side views of a whisk forming part of the dispenser shown in Fig. 1, the whisk being shown in a raised and a lowered position respectively.

As shown in the drawings, a dispenser in accordance with the present invention comprises a housing 10 forming a frame structure, the housing 10 comprising side walls 12, 14 interconnected by a transverse structure 16 which forms the rear wall, the upper wall and the base of the housing. A roller blind-type closure member 18 is provided which may, as shown be maintained in its open position or may be lowered to form a front closure for the housing. The housing may be provided with conventional fixing means to permit it to be mounted on a wall of a room or in the cabin of a vehicle.

The interior of the housing 10 is sub-divided into compartments by vertical dividing walls 20 and horizontal walls 22, 24. The compartments thus defined receive the containers of lyophilisated extracts and water (not shown). However, if desired, these walls need not be present so that the dispenser may have even smaller dimensions.

In the left-hand portion, as shown, of the housing 10, a water tank 26 is located in which an electrical heater 28, of a conventional type, having suitable electrical connections 30 is provided. The tank 26 has an outlet 32 in its lower region, the flow of fluid through the outlet being controlled by a tap 34. Below the spout 36, a space exists in which a shelf 38 capable of supporting a cup or beaker 40 is located.

The tank 26 is preferably made of stainless steel and has a transparent conduit 42 projecting outwardly therefrom. The conduit 42 has a generally vertically extending portion, the level of the liquid in the conduit 42 indicating the level of the liquid in the tank. Alternatively, the tank itself may be formed of a transparent material, such as glass, so that the water level in the tank can be directly observed.

A probe 44 connected by electrical connectors 46 to a thermo-static device 48 for controlling the heater 28 is also immersed in the tank 26. In practice, the thermostatic device is used for maintaining the water in the tank at a constant temperature closely below its boiling point.

The rear wall of the space in which the cup is retained is constituted by a partition 50. Beyond the partition 50, remote from the space, an

electrical system, generally referenced 52, comprising a transformer and a rectifier bridge of a conventional type is provided. This system 52 supplies the operating voltage for the entire apparatus.

Also beyond the partition, an arm 54 is pivotally mounted on the housing 10. This arm 54 has one end which projects through a slot in the partition 50. On this end, a stirrer or whisk comprising an electric motor 56 and a whisking or stirrer rod 58 bent so as to provide an eyelet 60 at its free end is provided.

The arm 54 is normally maintained in its raised position (as in Fig. 2) by means of a return spring indicated schematically by 62. The arm is rotated downwardly into the position shown in Fig. 3 by means of a handle member 64 mounted on the arm 54.

When the arm 54 is in its raised position the eyelet end portion 60 of the rod 58 of the whisk or stirrer permits a cup or beaker to be located in or extracted from the shelf 38. When the handle member 64 is operated so as tc cause the arm to move into its position shown in Fig.3, the whisk or stirrer is lowered so that, if a cup 40 is located on the shelf 38, the rod 58 and eyelet portion 60 are immersed in the liquid in the cup.

To cause the whisk or stirrer to operate automatically when in this position, a resilient contact switch 65 is provided. This switch has a normal, inoperative position, and is caused to operate by the pressure applied thereto by the arm 54 when this latter is in its fully lowered position.

In this manner, the whisk or stirrer rod 58 and its associated eyelet portion 60 are immersed in the liquid in the cup before the rod is rotated to effect stirring. This prevents spillage of the liquid which would otherwise occur as the eyelet portion strikes against the surface of the liquid.

Conversely, as the whisk or stirrer is raised at the end of the mixing operation, the arm 54 lifts off the switch 65, thereby breaking the electrical circuit whilst the stirrer or whisking rod is still immersed in the liquid. Nevertheless, the rod continues to rotate due to its moment of inertia, even after it has risen above the level of the liquid. Despite the fact that the speed of rotation gradually lessens, the rod and the eyelet portion are dried by the centrifugal force of the rod. This permits the stirrer to be used immediately for mixing a second liquid different from the first liquid without risk of contaminating the second liquid with the first liquid.

The dispenser shown in the drawings also comprises a microswitch 66 which is mounted on the housing 10 in such a manner as to complete an electrical circuit when the roller blind 18 is raised, which circuit is powered by the electrical system 52. In this manner the dispenser is automatically switched on when the roller blind is raised and switched off when the blind is lowered. For the sake of simplicity, the electrical connection between the switch 66 and the source 52 of electrical energy is not shown.

The operation of such a dispenser will now be described. Assuming the dispenser is connected to the source of electrical energy and the tank 26 has been filled with water, the opening of the shutter 18 causes a current to be supplied to the thermo-stat and the water is thus rapidly heated to a temperature close to its boiling point. The device is then operated, by means not shown, to supply a dose of lyophilised extract and, if desired, an additive such as sugar, to a cup 40, the cup then being located on the shelf 38. The tap 34 is then opened to cause a desired quantity of hot water to flow into the cup. Thereafter, the tap 34 is closed. The handle portion 64 is actuated so that the rod 58 and eyelet 60 are located in the position shown in Fig. 3 and the contents of the cup stirred for time sufficient to cause the extract to be completely dissolved in the water. This time will obviously vary in dependence upon the type of extract being employed. At this point, the cup is withdrawn from its niche and its contents may be consumed.

The shutter 18 may then be lowered to switch off the apparatus, or may be maintained in a raised position so that the apparatus is ready to supply a further drink which may be the same or different, immediately. In this latter case, the water is kept continuously at the optimum temperature.

The shape of the rod 58 and the eyelet portion 60 have been selected so that a stirring movement is imparted to the liquid which is sufficient to cause the extract to dissolve but which does not subject the liquid to such excessively voilent movements that the liquid is caused to overflow from the cup. For this purpose, the diameter of the whisk head or eyelet portion 60 may be of the order of a few millimetres. Whilst limiting the diameter of the head to such a size, the head may have any one of a number of different shapes. For example, it may be in the form of a bar mounted on the end of the rod 58 and extending transversely with respect thereto or it may be a disc of small diameter mounted on the end of the rod.

The above-described preferred embodiment has been designed so as to permit the dispenser to be used both in a domestic situation where conventional electric mains supply may be used, or in other environments such as in the cabin of a lorry. In such a latter case, the source of electrical energy may be a conventional 12 volt car battery. Obviously, if this is the case, the transformer incorporated in the feeder will be omitted and the battery voltage will be applied directly to the circuits of the dispenser.

However, if the dispenser is to be used in a fixed location, the dispenser may be made more automated. Thus the tank 26, instead of being filled manually, as necessary may be connected directly to the mains water supply by way of an electrically actuated valve controlled by a float device. In this way the tank is maintained full of water, without the necessity of intervention on the part of the user. Furthermore, the manually operated tap 34

may, in such a case, be replaced by an electrically actuated valve controlled by a pulse switch to provide greater convenience in use.

Claims

1. A drink dispenser for dispensing drinks prepared from water soluble extracts, comprising a support member in the interior of which is mounted a source of at least one extract and a water reservoir incorporating a thermostatically controlled electrical heater, valve means for permitting and preventing the supply of extract and water to a drinking receptacle, at least the valve means for the water being connected to a water distribution spout for directing the water into the receptacle, means for supporting the cup whilst it is being filled with the drink, an arm member pivotally mounted on the frame, said arm member carrying, at its free end, an electrically actuated rotatable stirrer rod carrying a stirrer member such that the arm may be lowered to cause said stirrer member and at least a portion of said stirrer rod to be located in the interior of a receptacle located on said receptacle support means, and spring biassing means for maintaining said arm member in a raised position so as to permit removal of the receptacle from its support means.

2. A dispenser as claimed in claim 1, wherein a source of direct current electrical energy is provided for rotating the stirrer rod.

3. A dispenser as claimed in claim 1 wherein a source of alternating current electrical energy is provided for rotating the stirrer rod.

4. A dispenser as claimed in any one of claims 1 to 3 wherein the rotation of the stirrer rod is controlled by a contact switch having a normally open, inoperative position, said switch being closed by the pivotal movement of said arm member to cause said stirrer member to be located in the interior of the receptacle.

5. A dispenser as claimed in any preceding claim additionally comprising means for indicating the level of water in the reservoir, said indicating means being located externally of the tank.

6. A dispenser as claimed in any preceding claim wherein the stirrer member has a diameter which is sufficiently small to prevent spillage of the contents of the receptacle whilst stirring is being effected.

7. A drink dispenser constructed and arranged to operate substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1980. Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.