# Honey Pump with Automatic Control

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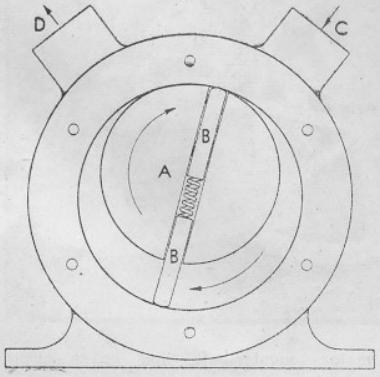
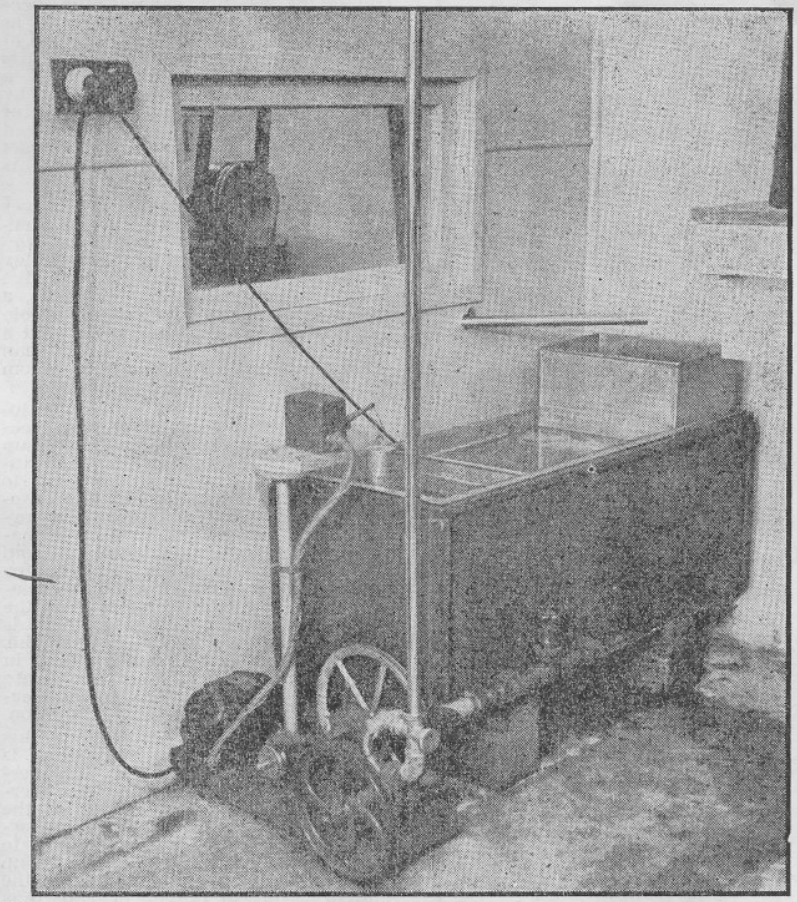
**THE honey pump plays an important part during extracting time in relieving the beekeeper of much heavy lifting, and automatically controlled units are now meeting with favour because of their efficient operation. This article deals with a controlled pumping unit, used in conjunction with the honey heater and clarifier described in the March issue of the "Journal."**

THE most exacting time for the beekeeper is when the honey crop has to be collected from the various apiaries and extracted in the honey house. This period generally coincides with a time when the weather is fine and temperatures are high. The lifting of supers of honey in the field under these conditions cannot very well be avoided, but with intelligent planning in the honey house much heavy lifting can be eliminated. Why lift tons of honey up into the honey tanks as it comes from the extractor when a honey pump will do it? There is no doubt that lifting about 50lb. of honey high above the head to reach the top of the honey tank creates a greater strain on the beekeeper than any other form of lifting he meets with in his work. The two-level or gravity type of honey house was designed years ago to overcome all this lifting, but the trend today is for a single-floor honey house with mechanical means of lifting the honey from the extractor through a straining unit to the honey tanks.

## Construction of Honey Pumps

Honey pumps are specially designed to deal with a viscous fluid, and pumps that are constructed to move water or oil are not considered suitable for handling honey. Honey pumps are simple in construction, with very few working parts, and give very little trouble if the pump is kept as close as possible to the source of supply and all connections are made absolutely tight.



Automatic pumping unit fitted to a heater and clarifier. All extracting work is done in the next room.

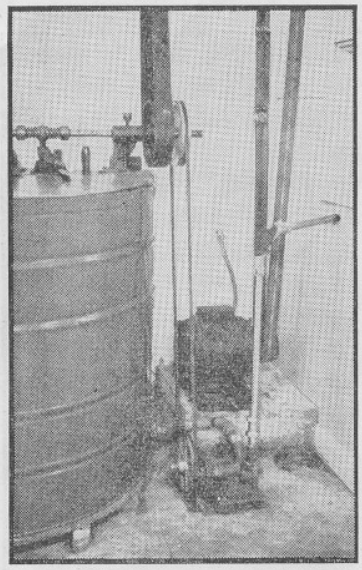
The diagram below, which shows the working parts of a honey pump, indicates that the rotor A is off centre to the inside bore of the pump. The slides BB are pressed against the sides of the pump by means of two small but fairly strong springs. No matter what position the rotor is in, the slides keep their pressure against the wall of the pump. It is by this means that the pump is able to handle sticky liquids. If honey flows into the pump at C the rotor should move in a clockwise direction. This will allow the slide B, as the spring presses it against the side, to force the honey round the pump until it comes out at D. By this time more honey has flowed in and is moved by the second slide. Should the rotor move in an anti-clockwise direction, the honey inlet will be D and the outlet C.

As the slides BB can only move honey that has flowed into the pump, it is necessary when installing a pump to see that the intake is as short as possible, because honey does not flow readily through a pipe unless pressure is applied.

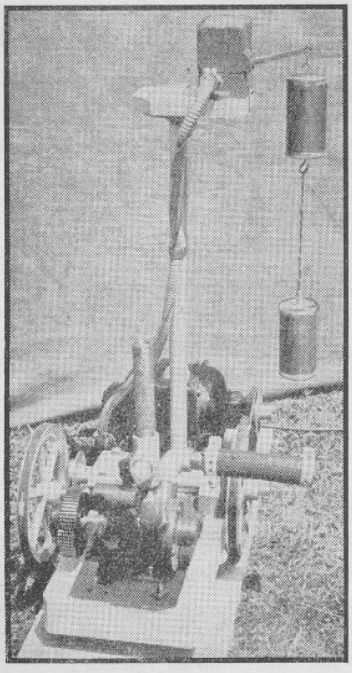
The speed of the pump influences its efficiency, because if a pump is rotating too quickly not sufficient time is allowed for honey to flow into and completely fill the pump, whereas by reducing the speed it will be found that the slides have a full compartment of honey to deal with on each revolution. A pump speed of approximately 40 to 50 r.p.m. appears to give best results. A greater speed, if necessary, can be used with warmed honey.

## Methods of Installing Honey Pump

One method of installing a honey pump is to have the pump closely connected to the honey extractor and drive it off the countershaft. The belt is slipped on and off according to how much the pump is required. This is not a desirable set-up, because the belt very soon gets slack and there is a constant need for re-adjustment. Also the practice of handling a belt on a moving pulley creates a definite hazard which should be avoided.



Honey pump fitted direct to extractor and delivering honey to heater and clarifier in next room. The belt has to be slipped off the driving pulley if it is necessary to stop the pump while the extractor is running.



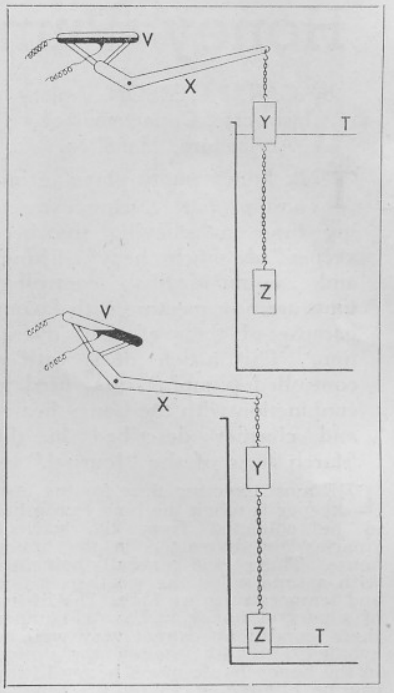
Pumping unit with automatic control fitted. The arm carrying the weight and float reaches over into the honey tank.

An improved method is to have the pump coupled to an independent electric motor, as this enables the beekeeper to switch the unit on or off as required. Because of the low speed at which a pump requires to be run, it is not possible to run it direct off a motor, but this can be attained by means of a countershaft, the use of which is necessary to get the required speed. An illustration of a compact unit using a ¼ h.p. electric motor is shown on this page.

A motor with a 2in. V pulley drives on to a 12in. pulley on the countershaft, while a 2½in. pulley on the countershaft drives on to a 10in. pulley on the pump. V pulleys and belts give a very silent and efficient drive, a shield can be placed over the whole unit to cover the moving parts, and a unit of this type is mobile and can often be used for pumping honey from one tank to another, if required.

The unit when fitted with an automatic motor control gives the beekeeper a greater range in the set-up of his honey house; it allows a straining unit to be used and the outfit to be completely controlled by the automatic pump. This control can be purchased from merchants dealing in machinery and pumping equipment and is generally set to switch in the motor when the lever is down. The beekeeper requires the motor to start the pump when the tank compartment is full or when the lever is up. This means reversing the mercury tube in the control. As this is a delicate operation, it should be left to the electrician who is doing the installation.

The diagram above shows how this control works. Attached to arm X is a glass tube V partly filled with mercury. When this tube is level the mercury stretches the full length of the tube, thus connecting the two terminals and allowing current to flow to the motor. When the tube is tilted up at one end by means of the lever the mercury runs to the lower end, thus breaking the circuit and stopping the motor. The movement of the tube is governed by the two containers, Y and Z, which are connected to arm X, as shown, by adjustable chains. Z is weighted so that when the honey reaches a low level the weight causes

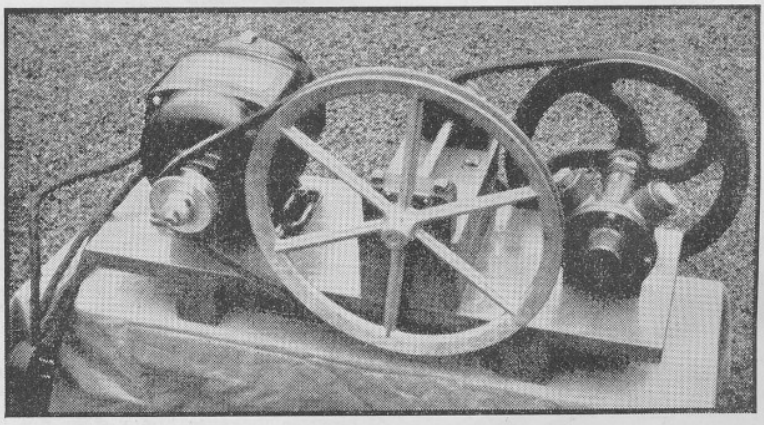



the lever to fall, tilting the mercury tube and stopping the motor. T indicates the level of honey.

As the honey starts to rise again the weight of Z is sufficient to keep the lever down until the honey comes into contact with the float Y. The buoyancy of Y soon overcomes the weight of Z and the lever moves up, bringing the mercury tube into a horizontal position, allowing a flow of current to the motor, thus starting up the honey pump.

With a control of this type the beekeeper is assured of a reliable pumping unit, and one that will allow plenty of latitude in re-designing the layout of equipment in the honey house.

Thanks are expressed to Mr. J. D. Lorimer, Hoopers Road, Hamilton, for allowing photographs of his equipment to be taken.



An independent pumping unit, showing motor, countershaft, and honey pump.