COMMISSIONER'S DECISION

OBVIOUSNESS: Underground Irrigation System

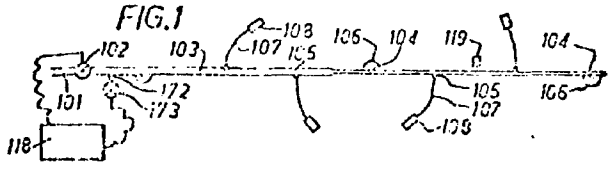
An underground pipe having discharge outlets along its length is supplied with water under pressure for the irrigation cycle and air pressure for the purge cycle.

Final Action: Modified.

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated February 20, 1975, on application 140,475 (Class 299-4). The application was filed on April 25, 1972, in the name of Robert Geffroy, and the invention is for "Equipment For The Irrigation, Treatment And Feeding Of Soils And Plants By Underground Diffusion Of Fluids." The Patent Appeal Board conducted a Hearing on February 25, 1976, at which Mr. P. Herbert represented the applicant. At the hearing the applicant indicated that he would submit further evidence at a later date. On May 31, 1976 we received a model of the invention, as well as an affidavit from the inventor.

This application relates to an underground irrigation system which provides seepage of water beneath the surface of the ground. A pipe buried under the soil surface supplies water under pressure to discharge outlets located along the length of pipe. These outlets are attached to the pipe by coupling nipples which allow the fluid to diffuse into the ground. Figure 1 below illustrates the invention.

FIG.1



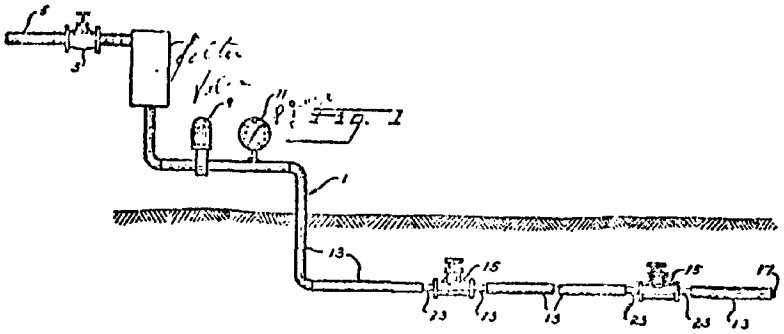
Claim 1 of the application reads as follows:

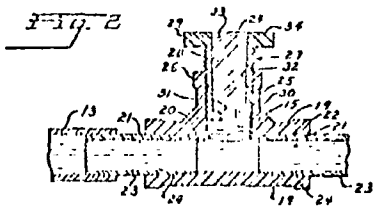
> Underground equipment for the underground irrigation, treatment and feeding of soils and plants by underground diffusion of fluids, on ground which may have different levels, having at least one cock controlling an underground piping system for underground distribution of fluids in the vicinity of the roots of the plants and being intermittently operational for about 2 to 10% of the time, said fluid being free from any suspended elements, comprising a plurality of underground fluid diffusion points located along the piping system each having controlling and regulating means, extraction means, and underground porous means providing underground access for the fluid into the ground, said controlling and regulating means determining the flow rate at each point, said porous means prevents the re-entry of contaminants into said system.

In the Final Action the examiner refused the application as failing to disclose any patentable subject matter over the following references:

United States		
3,518,831	July 7, 1970	Tibbals
3,046,747	July 31, 1962	Timpe

The Timpe patent describes an underground irrigation system comprising an underground pipe having a plurality of discharge cartridges along the pipe. These cartridges have a semi-rigid foam plastic area which allows the water to seep through and be discharged into the surrounding soil. Figures 1 and 2 of Timpe are shown below.





The Tibbals reference shows a subterranean irrigation system in which a fluid supply conduit terminates in a header located below ground level. This header has a number of fluid distributing conduits connected to it and each conduit has a number of spaced fluid dispensing units along its length. Figures 1 and 2 below are illustrative of this reference.

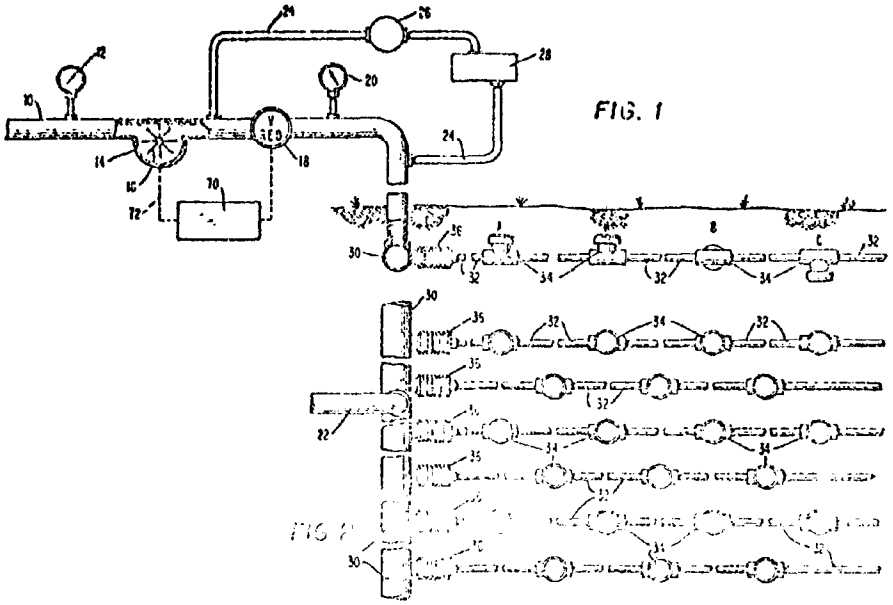


FIG. 1

FIG. 2

Claim 10 of Tibbals reads as follows:

> An irrigation system for subterranean installation comprising an irrigating fluid header, a plurality of fluid dispensing units for conveying irrigating fluid from said header thereto, at least one of said fluid dispensing units having valve means incorporating a moveable member positionally responsive to the pressure of the irrigating fluid in said conduit means for controlling the rate of fluid transfer from said conduit means into the surrounding soil.

In the Final Action the examiner stated (in part):

> Claims 6, 7, 8, 11, 12, 13, 15 and 17 stand rejected for failing to define a patentable advance from the above cited references. Said claims merely add various elements to the rejected claims such as a coupling, a clapper valve, a source

of pressurized gas for purging the system (the cited Tibbals et al patent discloses a source of pressures liquid for purging) and a pressure regulation. Such elements are commonly known in fluid systems and an artisan is but expected to utilize such elements when desirable or required. The addition of such elements does therefore not require any inventive ingenuity.

Claims 1 and 6 stand further rejected for not being supported by the disclosure. The disclosure does not describe the system as "being intermittently operational for about 2 to 10% of the time" nor that "the orifice internal wall surface includes a water repellant silicone".

The present porous outlet is not considered patentably different from the porous outlets disclosed by the references. Timpe discloses that the porous material 33 precludes foreign material, such as roots and particles of soil from entering (column 3 lines 60-63). Tibbals et al utilizes the same material which will protect against "any entry of impurities coming from the ground and against the penetration of roots". The present porous material does therefore not have any disclosed properties which are different from the properties of the porous material disclosed by the references. In fact on page 6 of the present disclosure it is stated that "the porous tube 348 can be made of any rot-proof porous material having a sufficient level of filtration and which does not allow roots to pass through". The foregoing specifications certainly apply to the porous material of the references and the presently disclosed porous material is therefore not patentably different from the reference materials.

...

The cited references relate to underground equipment for irrigation, treatment and feeding of soil and plants and the present disclosure does not disclose intermittent operation for 2 to 10% of the time. Furthermore the Tibbals et al patent disclose a dispensing of liquids "at selection uniform and controlled rates over extended periods of time in accordance with the needs of the soil being irrigated in conjunction with means for controlling the rate of liquid emission therefrom". It is clear from the foregoing quotation that Tibbals et al does have fluid flow control mechanisms as well as time control mechanism.

The present porous element cannot be considered different from the porous elements of the above cited patents. As stated above the present disclosure states that the porous tube 348 (the porous material) "can be made of any rot-proof porous materials having a sufficient level of filtration and which does not allow parts to pass through". Such material has exactly the same properties as the porous material disclosed by the cited references; which allow the passage of liquid but prevent the penetration of roots. The present disclosure does not describe any particular porous material which would constitute an improvement over the material used in the reference devices.

In his response dated May 20, 1975 to the Final Action the applicant stated (in part):

> In claim 1 of the present invention, the underground porous means "prevents the re-entry of contaminants into said system". This essential feature is NOT disclosed in Tibbals et al. The attention of the Commissioner is directed to column 4, lines 60 to 75 of Tibbals et al and the beginning of column 5 wherein the "semi-rigid porous disc" must be "of sufficient porosity to permit the passage of small silt and clay particles therethrough under such increased flow rates". It is submitted that this "semi-rigid porous means" which permits the passage of a large flow and volume of liquids and sediment will also allow a similar return flow into the system. Thus, the device of Tibbals et al will allow sediment to re-enter the system. The device of the present application will NOT allow any re-entry of contaminants into the system.
>
> ...
>
> Tibbals et al does not anticipate the purging system of the present device, Tibbals et al uses a violent flow of liquid which is several times the normal flow of the liquid in the system, to evacuate the accumulating sediment. This system is of a different structure, a different mode of operation and is based on an entirely different philosophy than that of the present device.
>
> The device of the present application utilizes a gas-blow device. Instead of removing the sediment directly, it removes the water which is contained in the pipes and distributor elements after each injection. This prevents the device from being emptied by gravity, that is, by water flowing to the low points in the system and by the air sucking through the soil at the high points. The method of evacuation taught in the present application prevents the external clogging of the outlet pores. One can clearly see that the purging system of Tibbals et al is based on different principles that the system of the present application and that the former does not disclose the latter process.
>
> ...
>
> Claim 1 of the present application further requires a controlling and a regulating means at each fluid division point. In contradistinction, reference is made to Figures 2 and 3 of Timpe which discloses "a foam plastic insert 33" as a diffusion point which produces a drop-by-drop flow of water. Water seeps through this insert through the myriad of tiny interconnected cells to disperse into the ground.
>
> It is submitted that it is impossible to obtain any regulation and control of the water flow when utilizing the device of Timpe, and it is especially impossible to control the flow in a predetermined ratio. The myriad of microscopic cells used in Timpe

> provides drop-by-drop seepage with no real flow control. Further, the small apertures hold the smallest impurities in suspension in the water or in the soil in the event of an inversion. They therefore may become clogged very easily.
>
> The positive control system of Sealfire is not anticipated by the use of a myriad of microscopic cells of Timpe. It is seen that the use of a single orifice as a stable and reliable control is not the same as a system of small cells allowing a drop-by-drop seepage therethrough.
>
> ...
>
> The porous elements of Tibbals et al as referred to by the Examiner will allow sediment to pass through. The requirements of the porous element of the Sealfire device dictate that sediment does not pass through the adequate level of filtration. The porous element of Timpe only allows water to seep through while the elements of Sealfire allow water to pass through freely and are controlled by orifices 239, 439, 739 or 207d.
>
> Tibbals et al has arranged its distribution of the water to allow sediment therethrough. The prefiltration occurs for large particles only and it does not provide an essential part of Sealfire's device which prevents re-entry of contaminants into the system.
>
> This essential feature of the porous means of Sealfire has been clearly set forth in the claims and is not present in Tibbals et al. If water, from which only the larger particles have been removed, were passed through the porous elements of Sealfire, the device would be clogged after a few hours of operation. The Sealfire device overcomes this problem and drawback of Tibbals et al by providing an improved porous means as set forth in claim 9.

The claims were rejected on the ground that they were "substantially anticipated" by the cited references. Prior to the hearing the agent was informed that the reason for rejection was in effect obviousness, and he agreed to argue his case on that ground.

The question to be decided is whether the applicant has made a patentable advance in the art.

At the hearing the applicant emphasized that flow in his system is controlled by "extraction means", "connection means" and "porous diffusion means". Looking at the "extraction means" as defined by the applicant, we find that this relates to the size of opening in the supply conduit where the nipple

is inserted. Both Tibbals and Tempe disclose an opening in the "T" connection which is smaller than the supply conduit, and is in effect an "extraction means" in the same manner as used by the applicant.

Considering the applicant's "connection means," we find that it is merely a length of tube which connects the "extractor means" to the diffuser head. Use of a tube to control fluid flow between the conduit opening and the diffuser head by the applicant is no different than the flow control notches (Figure 4, #64) of Tibbals, which is also located between the conduit opening and diffuser head.

Use of a porous diffusion means is shown in both Tempe and Tibbals. The applicant states on page 6 of the disclosure that "porous tube 348 can be made of any rotproof porous material having a sufficient level of filtration, and which does not allow roots to pass through, for example of filtration ceramics or sintered stainless metals." Timpe states in column 3 line 57 that "the porous nature of plastic 33 enables this previously described desired seepage of fluid therethrough and yet the plastic 33 is firm and somewhat semirigid and of such consistency as to preclude foreign material, such as roots and particles of soil from entering and clogging up the plastic. The term "semi-rigid" is intended to mean that the plastic foam materials are made from the same polymers as rigid foams but are usually lower in density...."

We consequently conclude that the manner in which the fluid is transmitted from the supply source to the soil, regardless of whether it is termed "flow" or "seepage" is similar in the applicant's arrangement to that shown in both Tempe and Tibbals.

The applicant argues that his arrangement permits regulation and control, something which is not found in the citations. We note that Tibbals was also concerned with the maintenance of uniform flow, and discloses the use of a spring loaded valve at each outlet head or diaphragm metering arrangement. These are intended to give uniform flow regulation over a large area.

It is also the applicant's contention that since the prior art uses available water, which requires prefiltering, that there is a possibility of those systems becoming clogged after a few hours operation. On the other hand since he uses fluid "free from suspended elements," his own device will not clog. Tibbals states the "porous disc 56 ... is constituted of sufficient porosity as to readily permit the passage of multiples of normal flow rate of water therethrough as well as to permit the ready passage of small silt clay particles therethrough under such increased flow rates." Any user of Tibbals system would pre-filter the water to ensure the removal of particle sizes that would not move through the diffuser head under pressure. Similarly if the prior art devices used fluid "free from suspended particles," then there would be no problem with internal clogging. It must be remembered that the diffusing head of the prior art arrangements do not allow root hairs or particles of soil to enter and clog up the plastic.

We do agree with the applicant that his purging system using a gas-flow device provides an advantage over the fluid purge arrangement of Tibbals. This is particularly true in an area where different elevations are encountered and the applicant's purging system overcomes the problem of "inversion."

On considering the difference between claim 1 and the prior art we find that Tibbals discloses the basic elements of the claim as well as their relationship to each other. The examiner questioned whether there was any support for the statement that the system was "intermittently operational for about 2 to 10% of the time." In our view the operational time of any

system will be governed by many factors, such as soil conditions, type of plants, weather etc, all of which require adjustment by the user. Therefore the intermittent operation proposed by the applicant does not add any patentable feature, and claim 1 is not patentable over the prior art.

Similarly the features added in dependent claims 2 to 11 and 14 to 17 are not patentably significant in the light of the Tibbals reference. There is no doubt that these claims show some modification to the prior art, but we do not believe such modifications display the necessary exercise of the creative faculties of the human mind such as to merit the distinction of invention. In Niagara Wire Weaving Co. v Johnson Wire Works Ltd. (1939) Ex. C.R. at 273 Maclean J. stated: "Small variations from or slight modifications of, the current standards of construction, in an old art, rarely are indicative of invention; they are obvious improvements resulting from experiences, and the changing requirements of users." The modifications in question are too insignificant to rise to the lever of invention.

However claims 12 and 13 which specify using pressurized gas in the piping system do relate to a useful subject matter which does define a patentable advance in the art. By using pressurized gas for purging the system the applicant overcomes the problem of "inversion" which may occur when using pressurized liquid as is done by the prior art. In our view these claims are allowable if they are drafted in independent form (present claim 12 depends on claim 1).

We recommend that claims 1 to 11 and 14 to 17 be refused. We also recommend that claims 12 and 13 be accepted if amended as indicated above.

G.A. Asher
Chairman
Patent Appeal Board

I have reviewed the recommendations of the Patent Appeal Board, and concur in them. The applicant has six months from the date of this decision to take an appeal under Section 44 of the Act, or to amend as suggested by the Board.

J.A. Brown
Acting Commissioner of Patents

Dated at Hull, Quebec
this 7th day of July, 1976

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