No. 860,452. PATENTED JULY 16, 1907.

E. DORNER.

DEVICE FOR BINDING UP PLANTS PLACED IN ROWS OR SINGLE.

APPLICATION FILED APR. 15, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

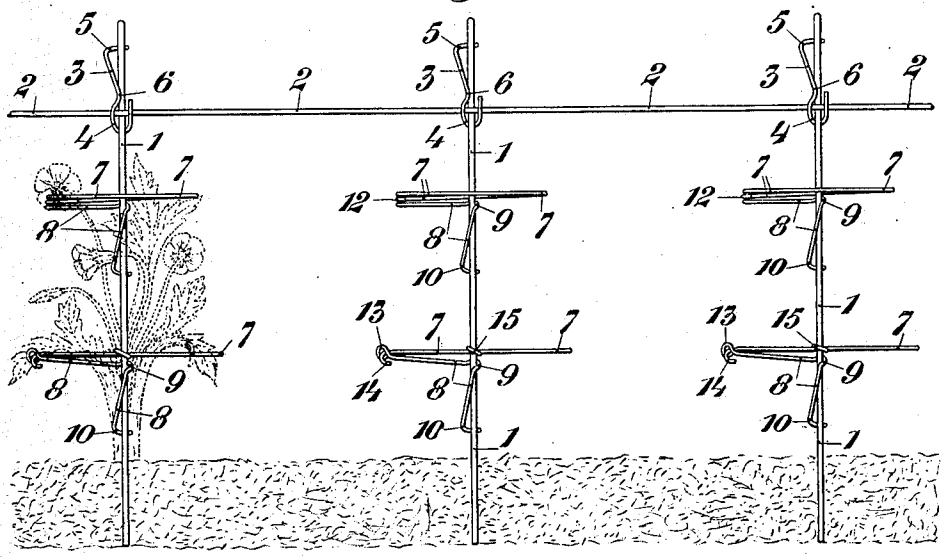


Fig. 2.

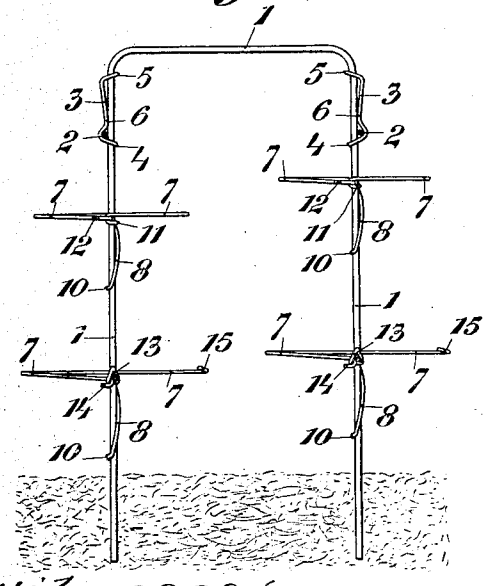


Fig. 3.

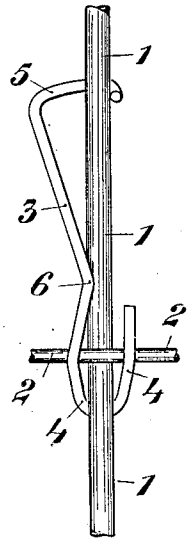
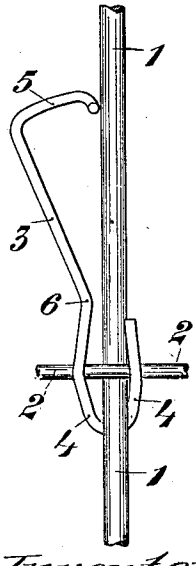


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5. Fig. 6. Fig. 7. Fig. 8.

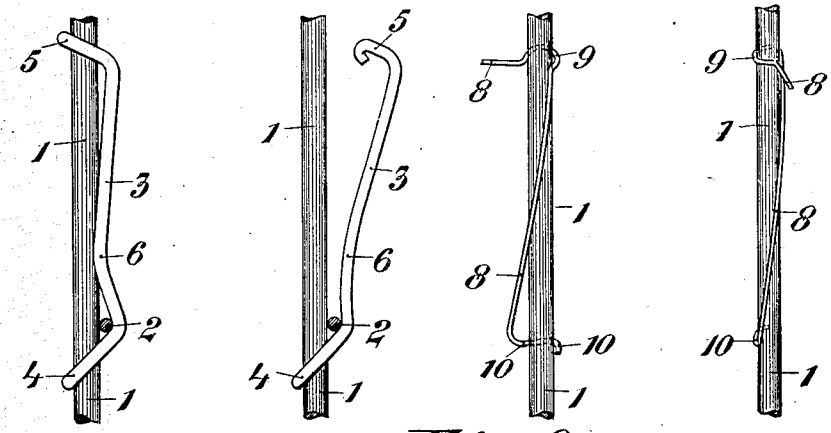


Fig. 9.

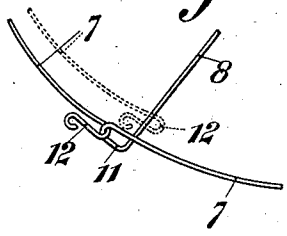


Fig. 10.

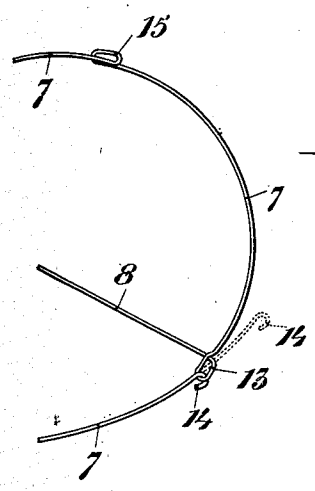


Fig. 11.

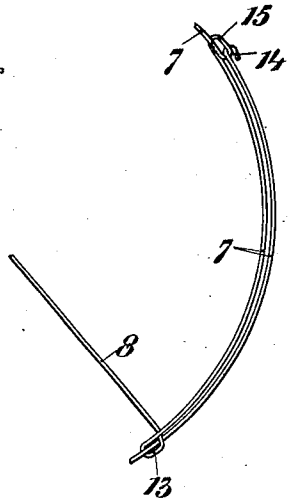
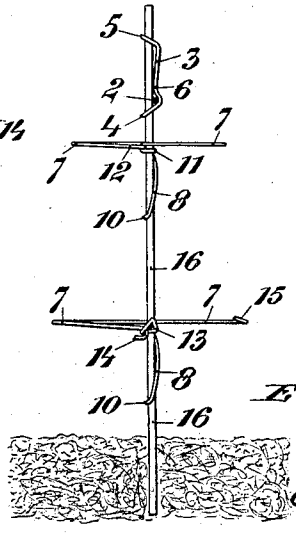


Fig. 12.



Witnesses:

Inventor

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Atty.

UNITED STATES PATENT OFFICE.

EUGEN DORNER, OF WEIMAR, GERMANY.

DEVICE FOR BINDING UP PLANTS PLACED IN ROWS OR SINGLE.

No. 860,452. Specification of Letters Patent. Patented July 16, 1907.

Application filed April 15, 1907. Serial No. 368,312.

To all whom it may concern:

Be it known that I, EUGEN DORNER, horticulturist, a subject of the King of Würtemberg, residing at Weimar, Grand Duchy of Saxe-Weimar-Eisenach, German Empire, have invented certain new and useful Improvements in Devices for Binding Up Plants Placed in Rows or Single, of which the following is a specification.

The subject-matter of this invention is a device for binding up plants planted in rows or singly.

A novel and characteristic feature of this device lies in the use of rods provided at suitable heights with adjustable or non-adjustable elastic wire-hoops for holding together, and supporting branches, flowers and fruit, the said rods being, in the case of rows and double-rows, interconnected by wires and elastic fasteners to form a continuous structure. In the case of double rows the rods are in the form of arches or yokes, the limbs of which form the plant-rods and are interconnected by wires extending along the rows. In the case of single rows yokes may be used, or single rods of wire or other suitable material, interconnected by wire extending along the row and joined thereto by the elastic fasteners already referred to, to form a single, continuous structure. To the plant-rods are connected the elastic wire-hoops already referred to, adjustable as to height and each carried by an arm extending towards its center, the said arm, which is substantially rectangular, being bent at the apex and at its free end to engage the plant-rod so as to retain its position by friction in conjunction with its elasticity.

Several forms of construction of the plant-binding device are shown by way of example in the annexed drawing.

Figures 1 and 2 are respectively a side-elevation and end-view or vertical cross-section illustrating an arrangement for a double row of plants. Figs. 3 to 11 are detail views. Fig. 12 is an end-view or vertical cross-section illustrating another form of construction, intended for single rows of plants.

In the construction shown in Figs. 1 and 2, for a double row of plants, 1 1 are yokes or arches of suitably thick iron or other wire, protected to prevent oxidation; the limbs or uprights of these arches form the plant rods. These arches are placed across the bed, with the ends of the limbs thrust into the soil, and each limb serves as a rod or stake for one plant; see Figs. 1 and 2. The distance between the two limbs depends on the distance between the two rows of plants. Wires 2 extend along the beds, above the latter, at both sides of the arches, and are attached to the limbs of the arches by elastic clips or fasteners 3, which hold them securely in position, but can at any time be detached. The row of arches thus forms a single temporary structure which is as it were closed in itself and extends along the entire length of the beds. The clips 3 consist of pieces of hardened, elastic wire, protected to prevent oxidation; these pieces of wire are bent into U-shape at 4 and form hooks 5 at their other ends; they are also bent at 6, at approximately the center of their length. Where the U-shaped ends 4 of the elastic clips engage the wires 2 and press the latter against the limbs of the arches 1, the parts 4 are bent outwards somewhat, as shown in Figs. 2, 5 and 6. For connecting a wire 2 to an arch 1 the U-shaped part of an elastic clip is first caused to embrace the respective upright or limb below the wire 2. Then the hooked end of the clip is pressed upwards, and inwards (Figs. 4 and 6) and caused to engage the limb (Figs. 3 and 5). For detaching the clip and disconnecting the wire 2 the operation is reversed. The clips 3 enable the wires 2 to be connected to the limbs 1 at any desired height. If necessary a plurality of wires 2 may be placed one above the other and connected to the arches by means of clips 3. To each limb of each arch 1 there are connected hoops 7 of elastic hardened, non-oxidizable wire adapted to hold together and support branches, flowers and fruit carried by the plant. Each of these hoops has an arm 8 extending towards its center rectangularly, bent at 9 and forming a hook 10 at its free end. The bent part 9 and hook 10 are adapted to engage the limb of an arch, the downwardly projecting member of the arm being twisted round the limb, as shown in Figs. 1, 2, 7 and 8. The elasticity of the arm, and the friction, serve to retain the arm and hoop at any height at which they are connected to the arch.

The size of the hoop 7 may be adjustable or not adjustable. If it is not adjustable the hoop forms, at the part from which the arm 8 projects, a kind of open loop 11 adapted to be engaged by a hook 12 formed at the free end of the hoop 7 (Fig. 9). For opening the hoop it is only necessary to disengage the hook 12 from the loop 11, as shown in Fig. 9 by dotted lines. In the case of a loop of adjustable size there is formed, at the part from which the arm 8 projects, an eye 13 through which extends the other end of the wire hoop 7, the latter being provided with a hook 14 adapted to engage another eye 15 formed in the hoop at a suitable distance from the eye 13 (Figs. 10 and 11). Hoops of adjustable size have the important advantage that they can be adjusted according to the growth of the plant. For the purpose of altering the size of the hoop the arm 8 is held close to the eye 13 and the hoop 7 a short distance from the said eye, at the side farthest removed from the eye 15; that part of the hoop which is held is then thrust towards the eye 13, and by this means the hook 14 is disengaged from the hook 15. When released, the elasticity of the wire causes the hook 14 to move back to the eye 13, which it engages (Fig. 10). By vertical adjustment and increase or reduction of diameter, and also by exchange of hoops 7 for smaller

or larger ones, the arrangement can always be adapted to suit the plant.

For binding up a plant the elastic arm 8 of the wire-hoop is first attached to the plant-rod or limb of the arch 1, and the branches flowers or fruits of the plant are then embraced by the open hoop, the latter being thereupon closed. If it is to be expected that the growth of the plant will be in the direction of girth, a hoop of adjustable size is first used adjusted to its smaller diameter, that is to say with the hook 14 engaging the eye 15. When the plant requires more room the hoop is enlarged in the manner already described.

Any hoop no longer required on a certain plant-rod or arch can be used again an indefinite number of times, and this also applies to the clips 3. For single rows of plants wire arches 1 can also be used. They are in that case not placed across the bed, but longitudinally, inserted into the soil at the side of, or between, the plants, and connected by wires to form a single structure. Single rods 16 of wire, wood or other suitable material, are also, as in the case of the double-row arrangement shown in Figs. 1 and 2 connected by wires 2 and elastic clips 3 to form a closed structure (Fig. 12). The arrangement of the elastic wire hoops 7 is exactly the same. The same applies to single plants, for example potted plants, with the exception that the wires 2 and clips 3 are dispensed with. The plant-rods 16 are in that case merely inserted into the soil beside the plant, and the wire-loops 7 attached in the manner already described.

What I claim is:—

1. A device of the class described, comprising an arch having limbs for engagement in the soil, a plurality of runner wires, an elastic wire having a U-shaped end for engagement with the runner wire and embracing the limb of the arch, and a hook terminal at the opposite end for engaging the said limb to lock the runner wire in position on the arch, and a hoop having an elastic arm for detachable engagement with the limb for holding the branches of a plant together.

2. In a device of the class described, a plurality of arch elements having limbs for engagement at opposite sides of a plant bed, runner wires running transversely of the arch elements, clips formed of an elastic wire bent at opposite ends to form U-shaped and hook extremities for detachably securing the runner wires to the arch, adjustable elastic wire hoops for a rectangularly bent arm extending toward its center and terminating in a hook portion for detachable engagement with the limb of the arch to support and hold the branches of a plant in proper relation to each other.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EUGEN DORNER.

Witnesses:
FRITZ SCHNELL,
ERNST LOMMALZSCH.