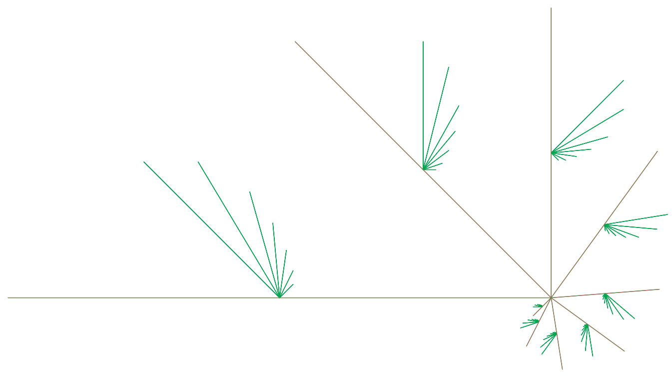

Figure 1.3.6: (A) Ważewski universal dendrite D_ω

$X_1^{(\omega)} \subset X_2^{(\omega)} \subset \cdots \subset X_n^{(\omega)} \subset X_{n+1}^{(\omega)} \subset \ldots$. The construction can be done in the plane in such a way that the limit continuum D_ω defined by

$$D_\omega = \mathrm{cl}\,(\bigcup\{X_n^{(\omega)} : n \in \mathbb{N}\})$$

is again a dendrite. See Figure A.

For another construction of D_ω (using inverse limits) see [Nadler 1992, 10.37, p. 181-185].

The following properties of D_ω are known.

1. D_ω is universal in the class of all dendrites (see e.g. [Nadler 1992, 10.37, p. 181-185]).

2. D_ω is embeddable in the plane (in fact, it is constructed in the plane).

3. Each open image of D_ω is homeomorphic to D_ω (see [Chaaratonik 1980, Theorem 1, p. 490]).

4. D_ω is homogeneous with respect to monotone mappings, [Charatonik 1991, Theorem 7.1, p. 186].

For other mapping properties of D_ω, in particular ones related to the action of the group of autohomeomorphisms on D_ω, see [Charatonik 1995].

1.3.7 Universal dendrites of order m

Let $m \in \{3, 4, \ldots, \omega\}$. By the *standard universal dendrite of order* m we mean a *dendrite* D_m such that each ramification point of D_m is of order m and for each arc $A \subset D_m$ the set of ramification points of D_m which belong to A is dense in A. Their constructions, known again from [Ważewski 1923, Chapter K, p. 137] (see also [Charatonik 1991, (4), p. 168]; for the inverse limit construction see [Chaaratonik 1980, p. 491]), mimic that of the Ważewski universal dendrite