A Simple Construction of the Golden Section

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Three equal segments $A_1B_1$, $A_2B_2$, $A_3B_3$ are positioned in such a way that the endpoints $B_2$, $B_3$ are the midpoints of $A_1B_1$, $A_2B_2$ respectively, while the endpoints $A_1$, $A_2$, $A_3$ are on a line perpendicular to $A_1B_1$.

In this arrangement, $A_2$ divides $A_1A_3$ in the golden ratio, namely,

$$\frac{A_1A_3}{A_1A_2} = \frac{\sqrt{5} + 1}{2}.$$

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