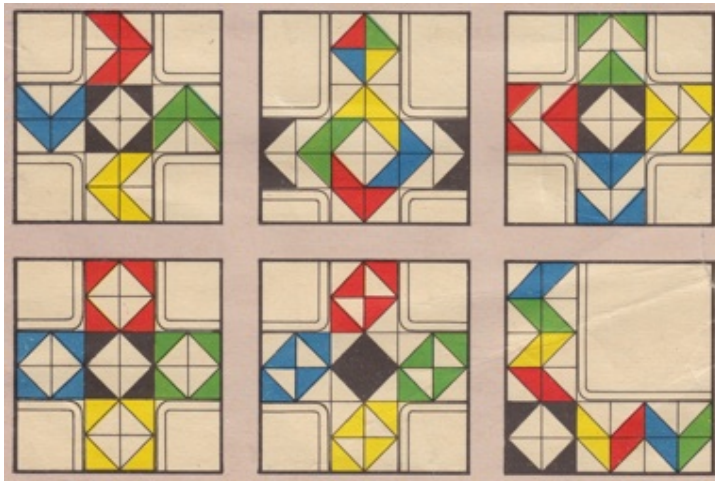# Magic Cross

a.k.a. Zauberkreuz
Patented by A. Margaritis 1988.
(plastic, 5.75 inches by 3/4 inches thick, made in red and black bodies)

The cross, where each direction is 2 units wide by 10 units long, contains 20 plastic tiles One diagonal half of each tile has a raised colored triangle (five each of *red*, *blue*, *green*, *yellow*, and *black* tiles). The two horizontal rows of six tiles each can slide together left or right one or two units, and similarly the two vertical columns of two tiles each can slide together up or down one or two units. Two clear plastic plates that are hooked into the openings in the bottom of the tracks (where one passes over the other) slide with the tiles to make them move together and prevent them from falling out. The goal is to mix up the puzzle and then restore it to a pattern of five diamonds (or one of the other patterns shown on the back of the package). *Jaap's Page* presents move sequences to solve the puzzle that exchange pairs of tiles without disturbing the others (and he notes that this puzzle was sold on the 125th anniversary of the Red Cross). The solution is not unique; any color diamond can go in any position. In fact, once solved, it is easy to permute the diamonds by using only moves that slide two units at a time. For example, *down two*, *right two*, *up two*, *left two* cycles the upper left three diamonds (combine symmetric versions of this transformation to achieve different permutations of the diamonds).

Further Reading
Jaap's Page, from: http://www.geocities.com/jaapsch/puzzles
Margaritis DE Patent, from: www.epo.org - patent no. DE3711368