This is a disk made of two layers which can rotate with respect to each other. On the edge there are 4 groups of 4 coloured pieces. Each group is arranged in a circle with two pieces in the top layer, two in the bottom. When the top layer is rotated, the top two pieces of each group are carried along with it to the next group. Each group can be twisted, cyclically permuting its pieces.

The pieces come in 8 colours, so there are two pieces of each. The pieces are also marked with either a little triangle or a circle, so that all of the 16 are unique. The puzzle can be solved completely, with all 16 pieces in their correct positions, or you could solve the colours only and ignore the triangle and circle markings.
The puzzle was patented by Universal Connections Steckverbindungen Vertriebs GmbH, 28 December 1989, DE 3,821,297. The name of the inventor is not listed. The Tricky Disky has also been sold under several other names (such as Mind Trapper, and Tricky Disk), due to a trademark dispute.

The original version of the puzzle was Hungarian, and called the Ufo or Varia-Disk. That had a slightly different colour scheme, and pieces marked with one or two dots. It turns much more smoothly than the Tricky Disky. I was invented by Imre Peredy, patented 31 March 1983, WO 83/01009.

There is also a version which has only 3 groups of 4 coloured pieces, all without markings. This seems to be a cheap imitation of the Tricky Disky puzzle, made by some manufacturer in the far East. Its official name is the generic sounding "Magic Ufo Puzzle", but I tend to call it "Triple Disky".

The number of positions:
The puzzle has 16 pieces, giving a maximum of 16! positions. All these positions are attainable, so there are 16! = 20,922,789,888,000 positions, assuming that the relative position of the two layers is not considered important. If the markings are ignored, then there are 16!/2^8 = 81,729,648,000 positions.

The Triple Disky, which has 12 pieces and no markings, has 12!/2^6 = 7,484,400 positions. I have done a computer analysis of the Triple Disky in order to find God's Algorithm. The results are in the tables below. Analogous to the Rubik's cube, there are two ways to count the moves. The Face Turn Metric means that a turn of any group of 4 pieces by any amount is a single move. The "Quarter" Turn Metric means that only 90 degree turns are single moves. In either case, a turn of the top layer is also a single move. The table shows that the puzzle can always be solved in no more than 13 moves, or 15 quarter turns.

<table>
<thead>
<tr>
<th>Face turn metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8 9 10 11 12 13 Total</td>
</tr>
<tr>
<td>Q 1 6</td>
</tr>
<tr>
<td>u a r t 2 3 24</td>
</tr>
<tr>
<td>e r t u m 3 18 104</td>
</tr>
<tr>
<td>n e t t 4 3 108 412</td>
</tr>
<tr>
<td>t u r n 5 30 562 1596</td>
</tr>
<tr>
<td>n t u r 6 1 255 2634 6167</td>
</tr>
<tr>
<td>e t m e t 7 38 1499 11998 22795 36330</td>
</tr>
<tr>
<td>r i c c 8 342 7851 51128 80438 139759</td>
</tr>
<tr>
<td>r i c c 9 30 2118 36908 201130 250357 490543</td>
</tr>
<tr>
<td>r i c c 10 230 10756 148423 686502 579125 1425036</td>
</tr>
<tr>
<td>r i c c 11 10 1110 36237 469160 1598487 629520 2734524</td>
</tr>
<tr>
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<td>r i c c 13 2 8 1560 46368 259276 103473 329 411016</td>
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<tr>
<td>r i c c 14 135 3171 5343 159 8808</td>
</tr>
<tr>
<td>r i c c 15 25 13 38</td>
</tr>
<tr>
<td>Total 1 9 45 243 1267 6101 28374 122719 468687 1482179 2988366 2173153 212755 501 7484400</td>
</tr>
</tbody>
</table>

Links to other pages:
Tricky Disky official homepage A silly intro, but not much real content.

Notation:

http://www.geocities.com/jaapsch/puzzles/tricky.htm
F : Clockwise quarter twist of the group at the front.
F' : Anti-clockwise quarter twist of the front group.
F2 : Half twist of the front group.
B B' B2 : As above, but pertaining to the back group, the group opposite the front.
T T' T2 : Turns of the top layer.

Solution to the Tricky Disky (and Varia-Disk):

Phase 1: Solve 3 pairs of pieces in the top half.

a. Find the piece that is to go the front group at the top right.
b. If it is in the bottom layer, then turn the bottom to get it to the front group.
c. If it is in the top layer, then turn the top to get it to the front group, do F2 and turn the top layer back again to where it was before.
d. Twist the front to put the piece at the top LEFT of the front group.
e. Find the piece that is to go the front group at the top left.
f. If it is at the front, top right, then swap the two pieces with the sequence FTF'T' F TFT'F2.
g. If it is elsewhere in the top layer, then turn the top to get it to the front group, twist the front to put the piece at the bottom left, turn the top back and then finally do F to put the pieces correct.
h. If it is in the bottom layer, then turn the bottom to get it to the front group. If it is now at the bottom right of the front group then do TFT', but if it is at the bottom left then simply do F.
i. The top front pair is now correct. Do T, and then repeat all the above twice more.

Phase 2: Solve 3 pairs in the bottom half.

a. Turn over the disk so that the solved pairs are at the bottom, on the left, right and back.
b. Use the same method as phase 1 to solve 3 pairs from the top half. When finished, everything but the front group is solved.

Phase 3: Solve the final group.

a. Rotate the front group, so that at most only two pieces need to be swapped.
b. If you need to swap the top two pieces, then do the following moves: F T2 F B' T2 F T2 F' T2 B T2 F' T2
c. If you need to swap the bottom two pieces, just turn the disk over and do the above sequence.
d. If you need to swap two other adjacent pieces, then turn the front to bring them to the top layer, do the sequence above, and turn the front back again to put the group into its correct position.
e. If you need to swap two pieces diagonally, do a quarter turn of the front pieces such that you get a position where both the top pair and bottom pair should be swapped. Then do this sequence: T2 F B T2 B T2 F B T2 T2 F B T2. Then turn the front so as to put the pieces correct.

Solution to the Triple Disky:
The same notation can be used (but without the letter B).

Phase 1: Solve 2 pairs of pieces in the top half.
Use the same method as phase 1 for the normal disky.

Phase 2: Solve 2 pairs in the bottom half.
Use the same method as phase 2 for the normal disky.

Phase 3: Solve the final group of pieces.
a. Hold the puzzle so that the final unsolved group is at the front.
b. Rotate the front group, so that at most only two pieces need to be swapped.
c. If you need to swap the top two pieces, then do the following moves: T F T F2 T' F' T F T F T' F'
d. If you need to swap the bottom two pieces, just turn the disk over and do the above sequence c.
e. If you need to swap the two pieces on the right side of the front group then do T' F T F2 T' F'. Note that this is a shorter way than with the normal tricky disky, since it takes advantage of the fact that there are identical pieces.
f. If you need to swap the left two pieces, just turn the disk over and do the above sequence e.
g. If you need to swap two pieces diagonally, do a quarter turn such that you get a position where both the top pair and bottom pair should be swapped. Then do this sequence: T F' T F' T F T F