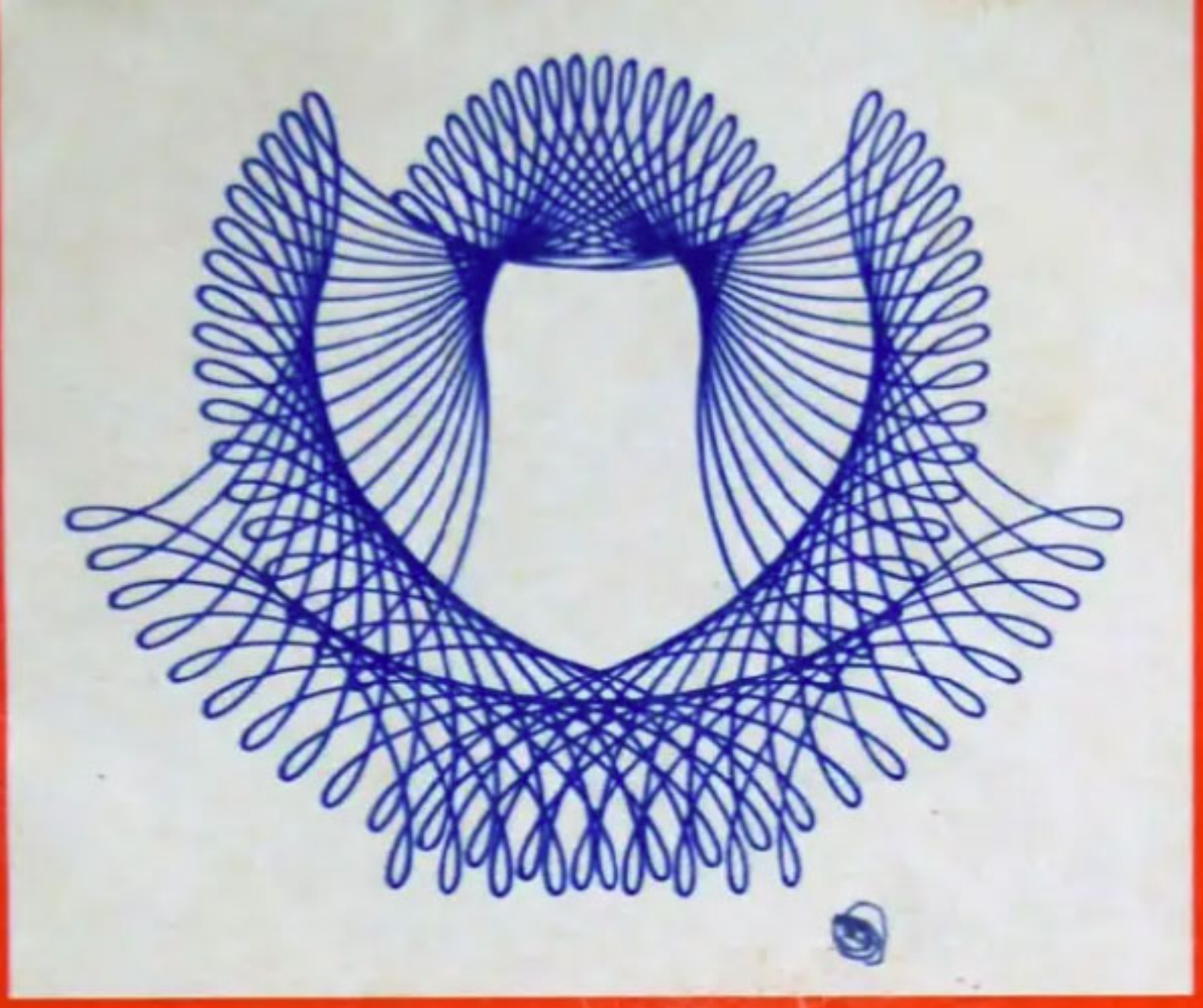
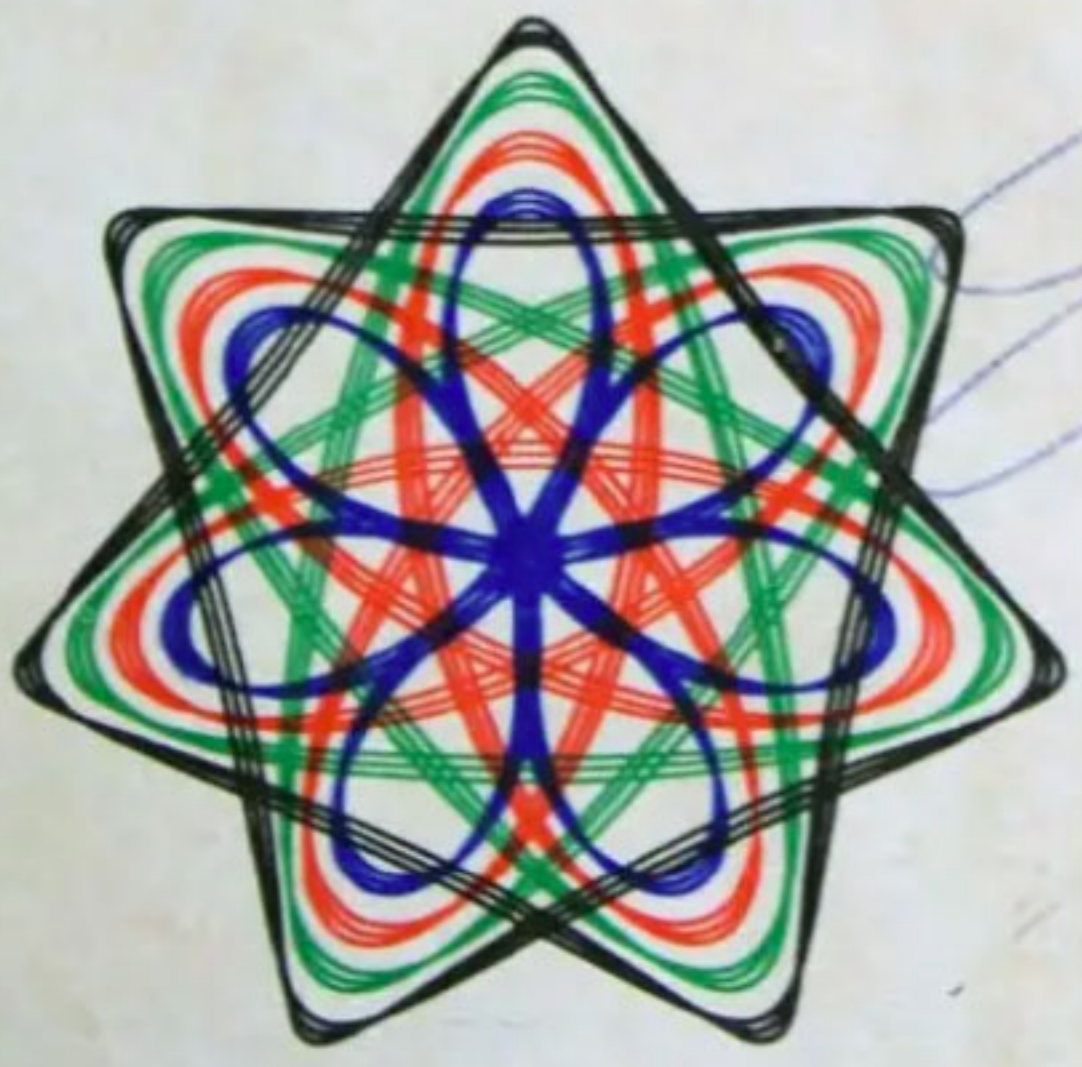


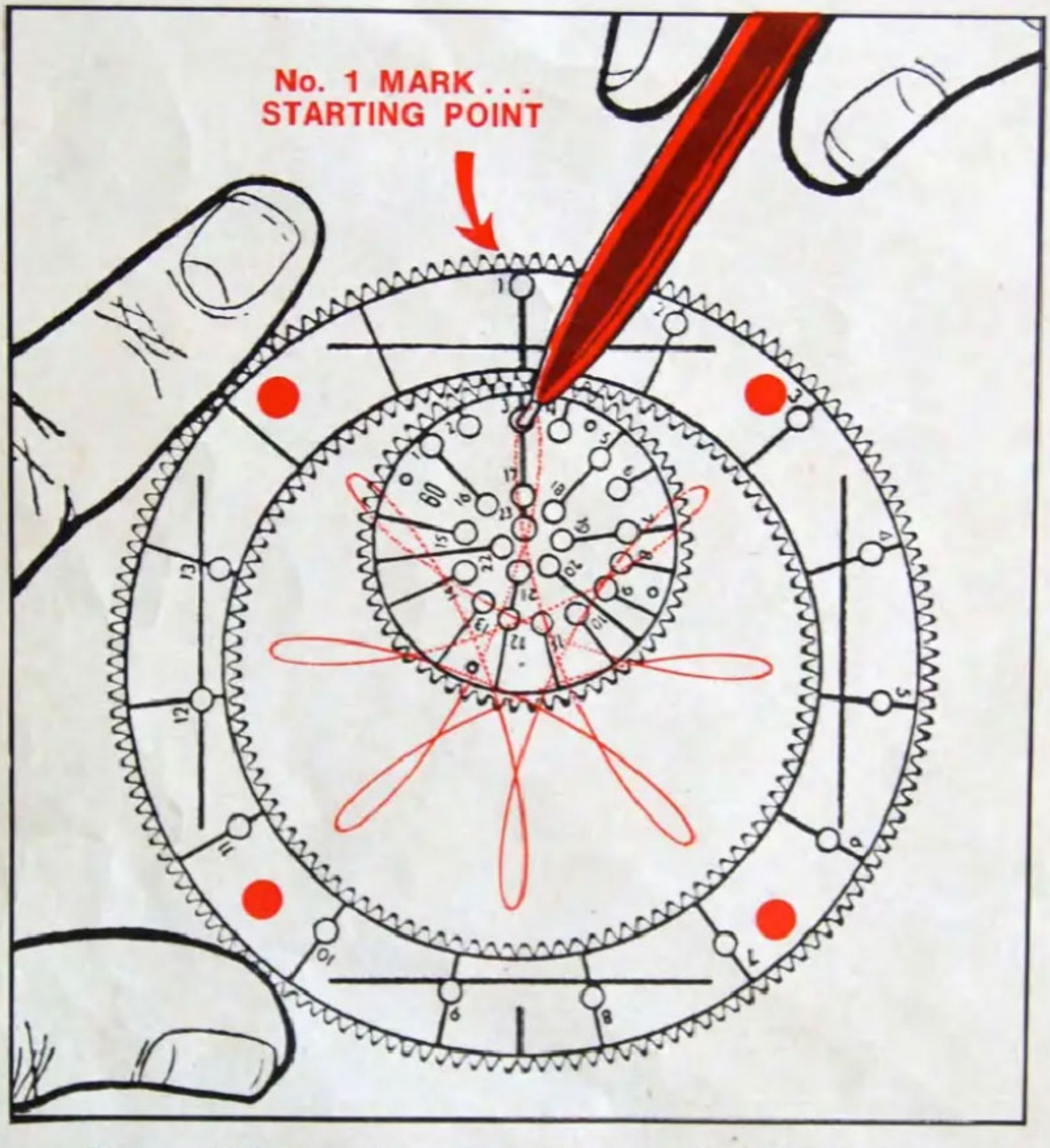
HOW TO DRAW WITH SPIROGRAPH®



YOU CAN DRAW PATTERNS IMMEDIATELY!

THIS IS HOW...

Put a sheet of Spirograph Paper, or any kind of paper, on the white side of the Baseboard and place a **RING** on it. Fasten it down with a pin through each of the four tiny pinholes.



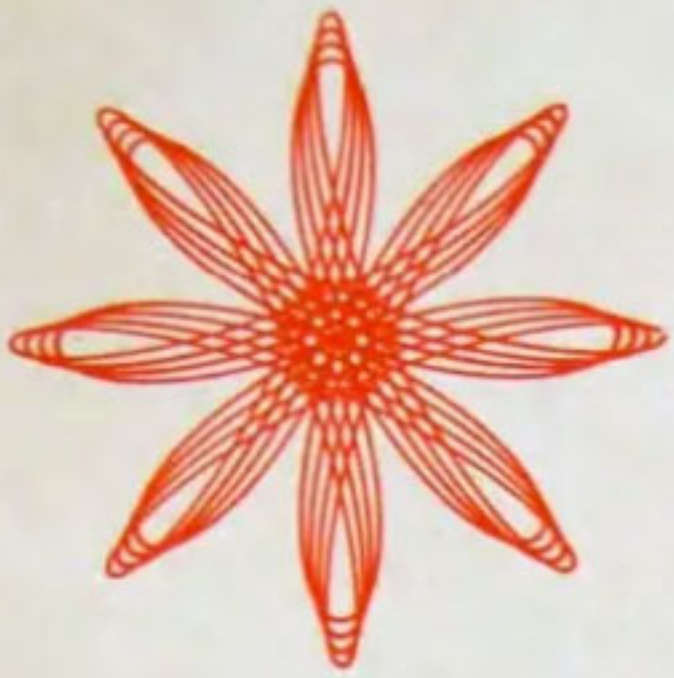
Place a **WHEEL** inside the **Ring**. With a pen in one of the larger holes, (for your first pattern, use one of the holes closer to the center of the wheel), move the **Wheel** carefully around the inside of the Ring, *always keeping the teeth in contact.* Hold the pen upright, and do not press hard on it. Continue until your line meets where it started.

Try this again using a different hole in the **Wheel**, then by starting at a different position in the **Ring**.

The inside of the box lid shows the basic patterns made with the Wheels inside the Rings. By drawing these, you will get to know the pattern each Wheel makes.

Patterns drawn with Wheels inside of Rings

Also see pages 6 through 11



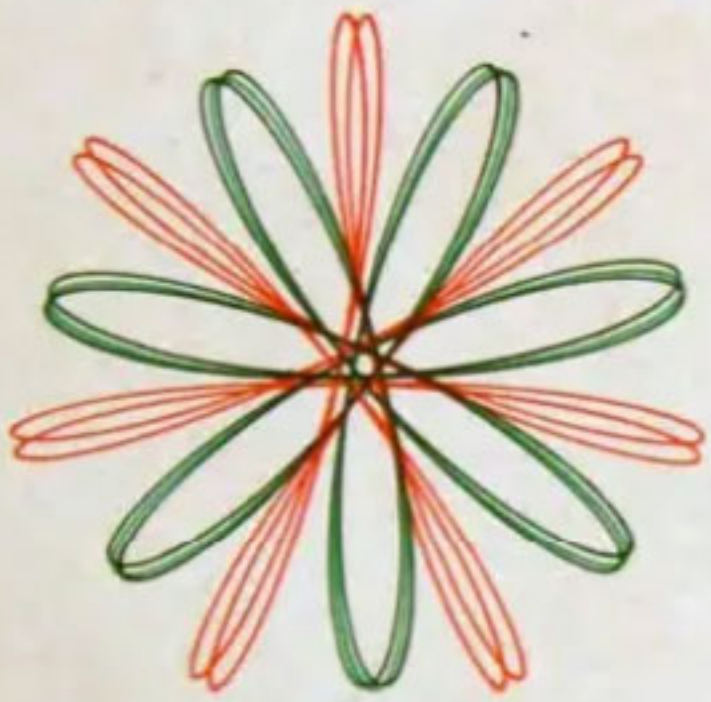
Pin **RING** No. $\frac{144}{96}$ to Paper and Baseboard, the No. 1 mark at the top.

Place **WHEEL** No. 60 so that Hole 1 lines up with the No. 1 mark on the **Ring**. With pen in Hole 1 draw the pattern.

Reposition the **Wheel** so that Hole 3 lines up with the No. 1 mark on the **Ring** and over the pattern you have drawn. With pen in Hole 3 draw another pattern.

Repeat, using Holes 5 and 7.

The numbers on the Wheels, Rings and Racks indicate the number of gear teeth. On the Rings, the upper number is for the number of teeth on the outside, the bottom number for the inside.



Pin **RING** No. $\frac{150}{105}$ to the Paper and Baseboard. Use **WHEEL** No. 60, Hole 1 at the No. 1 mark on the **Ring**. With Red Pen in Hole 1 draw the pattern.

Move the **Wheel** *one tooth to the right and* with Pen in Hole 1 draw the pattern.

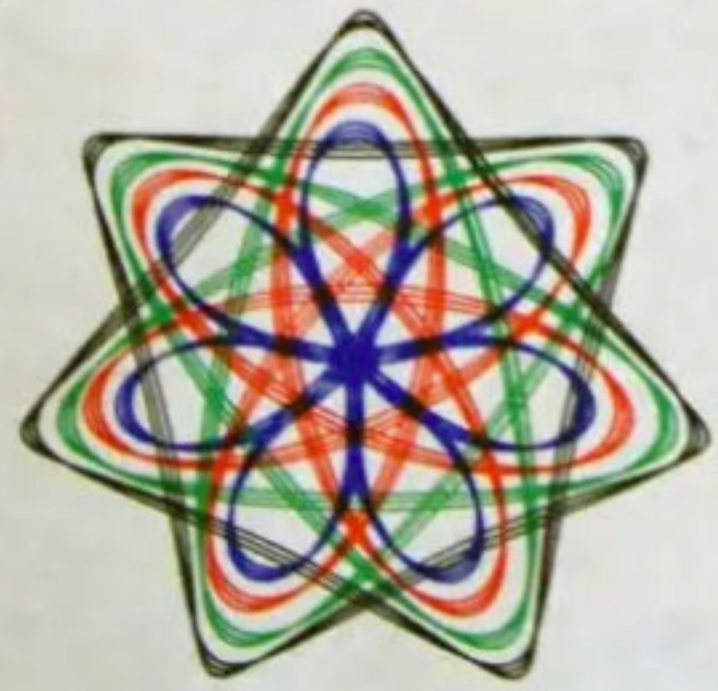
Line up Hole 5 in **Wheel** with the No. 2 mark on **Ring**. With black pen in Hole 5 draw the pattern. Again move **Wheel** one tooth to the right and draw, pen in Hole 5.

Turn **Wheel** over (numbers underneath) and position Hole 5 between the two patterns you have just drawn. Draw with green pen in Hole 5.

Pin **RING** No. $\frac{144}{96}$ to the Paper and Baseboard. Use **WHEEL** No. 56, Hole 1 at the No. 1 mark of the **Ring**. With pen in Hole 1 draw the pattern.

Reposition the **Wheel** so that *Hole 2* is one tooth to the right of the original pattern. Draw pattern with Pen in Hole 2.

Repeat, using Holes 3, 4, 5, 6, 7, 8 and 9, moving one tooth to the right with each hole.



Pin **RING** No. $\frac{150}{105}$ to the Paper Baseboard. Use **WHEEL** No. 30, Hole 1 at the No. 1 mark of the **Ring.** With the black pen in Hole 1 draw the pattern.

Reposition the **Wheel** so that Hole 2 is at top. Draw pattern, black pen in Hole 2. Repeat with Hole 3.

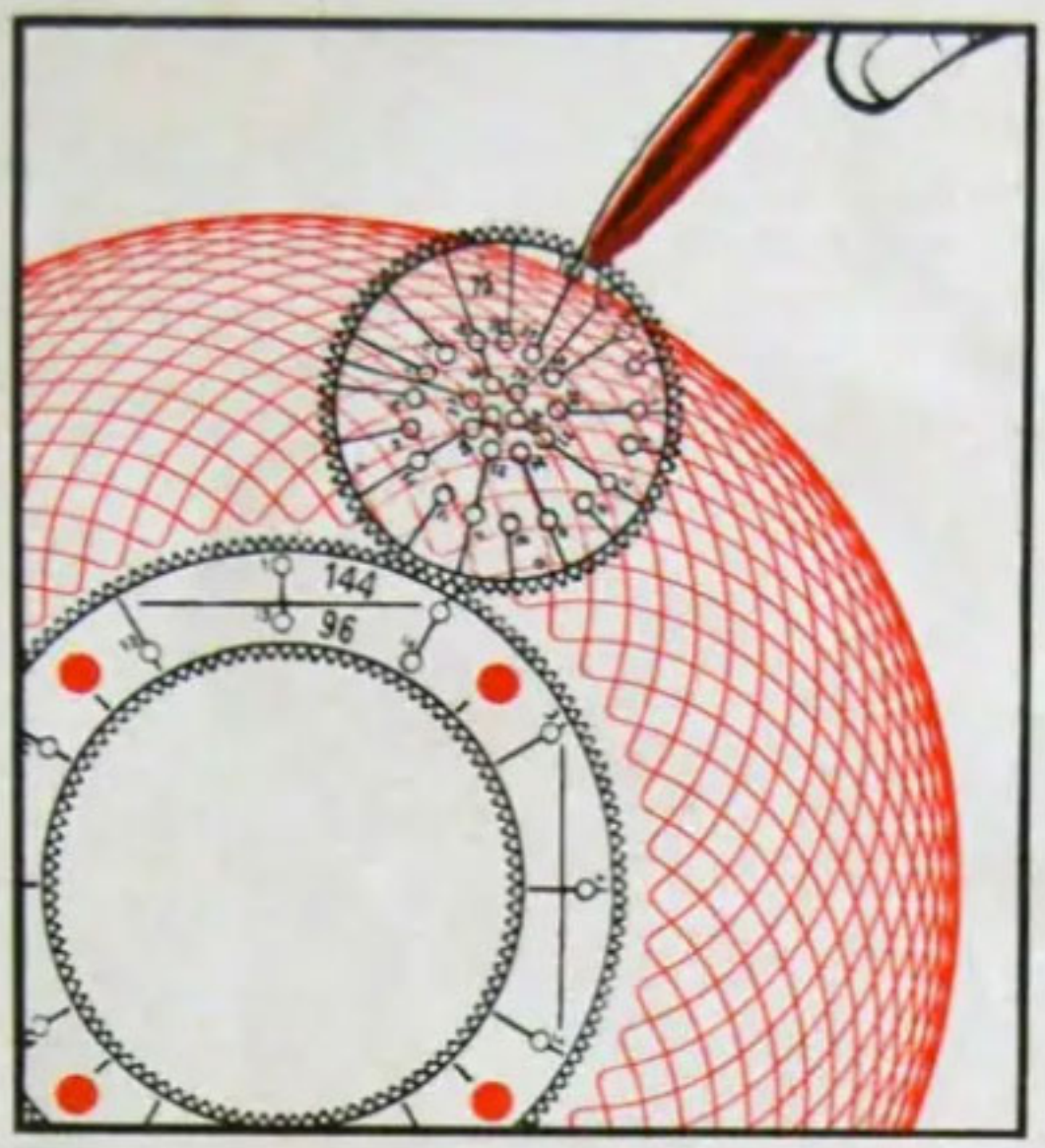
Now use **WHEEL** No. 45, Hole 6 at top. Draw pattern, green pen in Hole 6. Repeat with Holes 7 and 8.

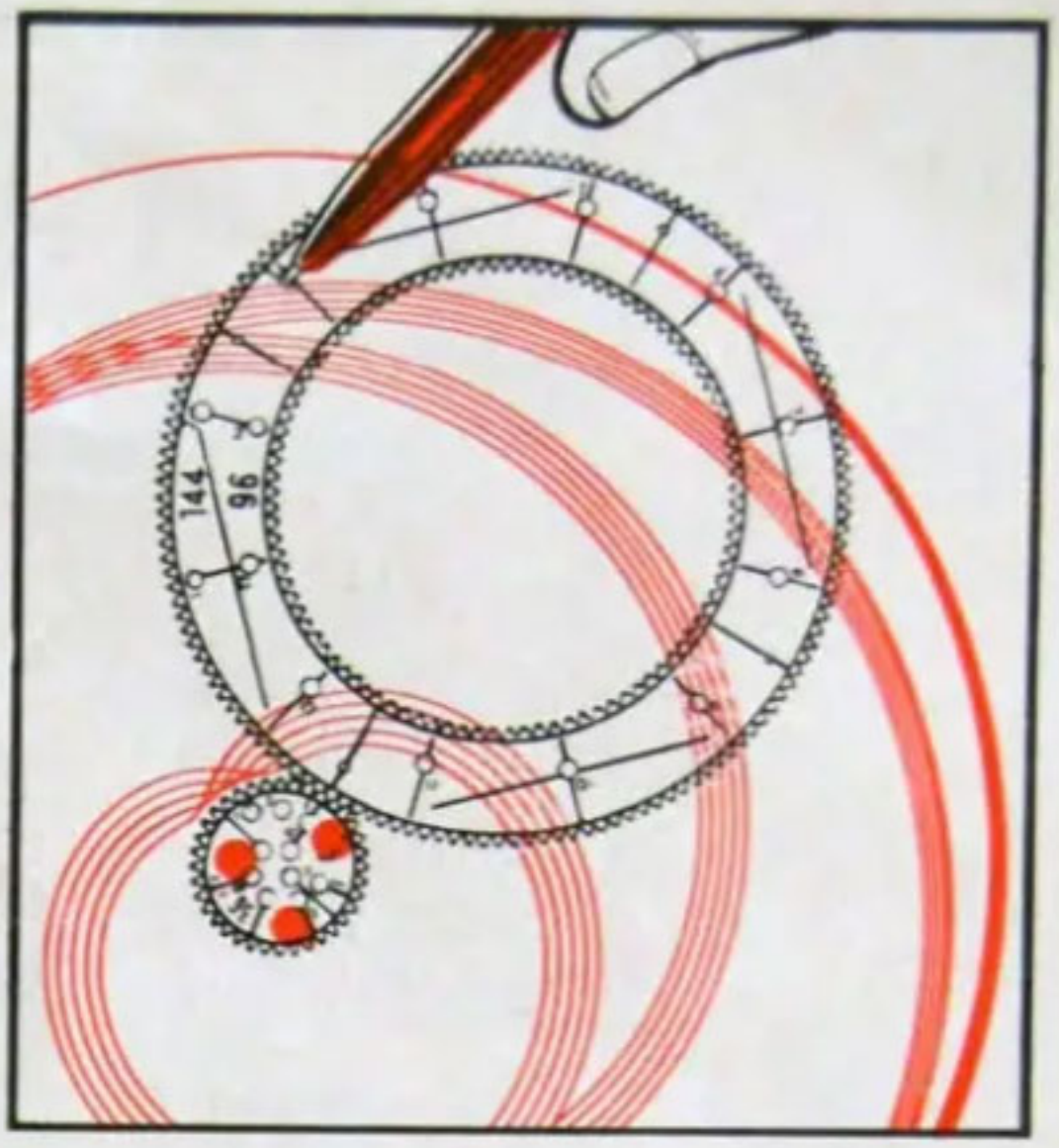
Next, use **WHEEL** No. 60, Hole 11 at top. Draw pattern, red pen in Hole 11. Repeat with Holes 12 and 13.

To finish, use **WHEEL** No. 75, Hole 16 at top. Draw, blue pen in Hole 16. Repeat with Holes 17 and 18.

Giant-Size Patterns and Long Patterns

Also see both sides of back cover and page 12

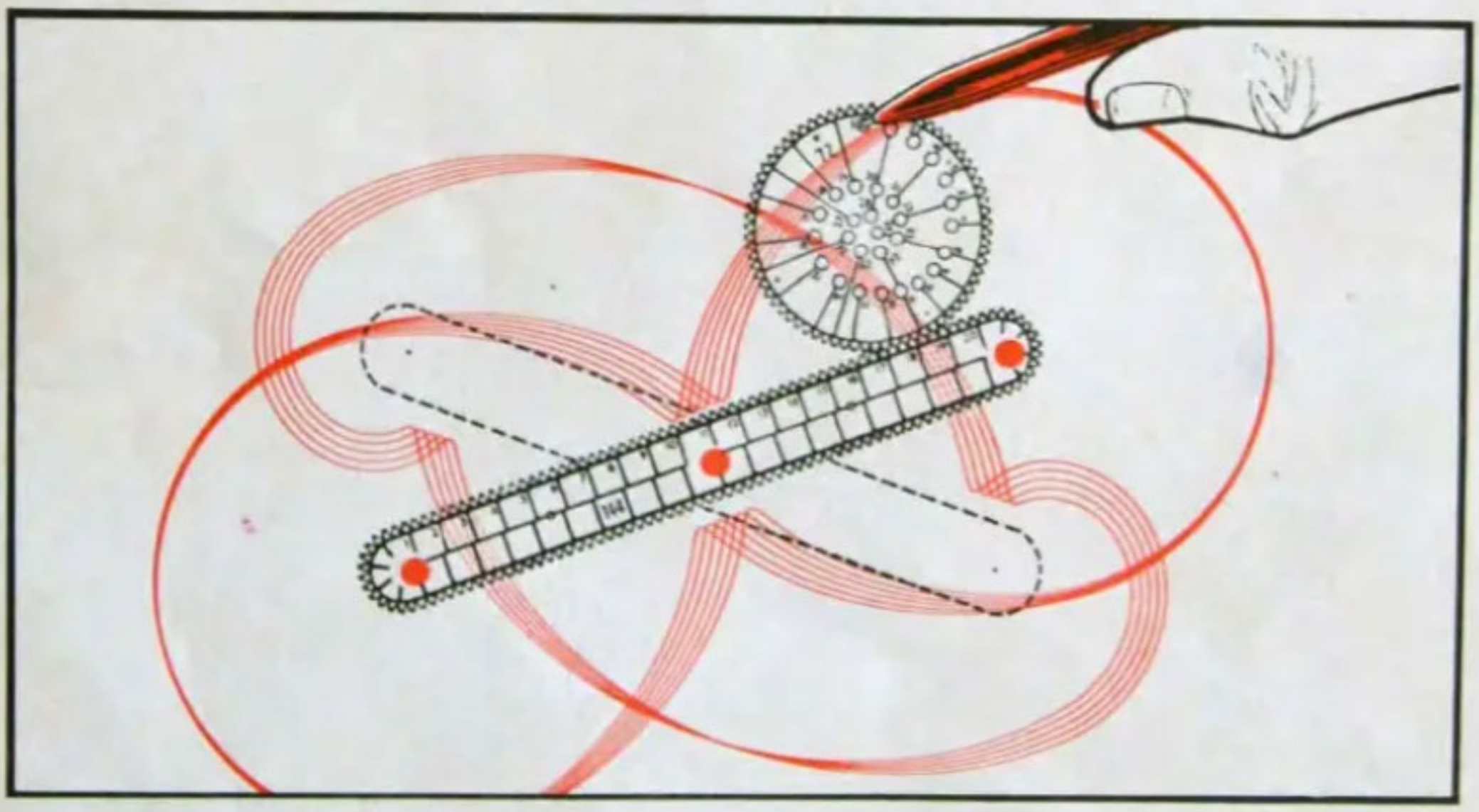




TWO WAYS TO DRAW GIANT-SIZE PATTERNS

1. Pin down a **Ring** and revolve a **Wheel** around the outer edge.
2. Pin down a **Wheel** and revolve a **Ring** around it.

You can draw still more interesting patterns, but slightly smaller, by pinning down a Wheel and rolling another Wheel around it.



TO DRAW LONG PATTERNS

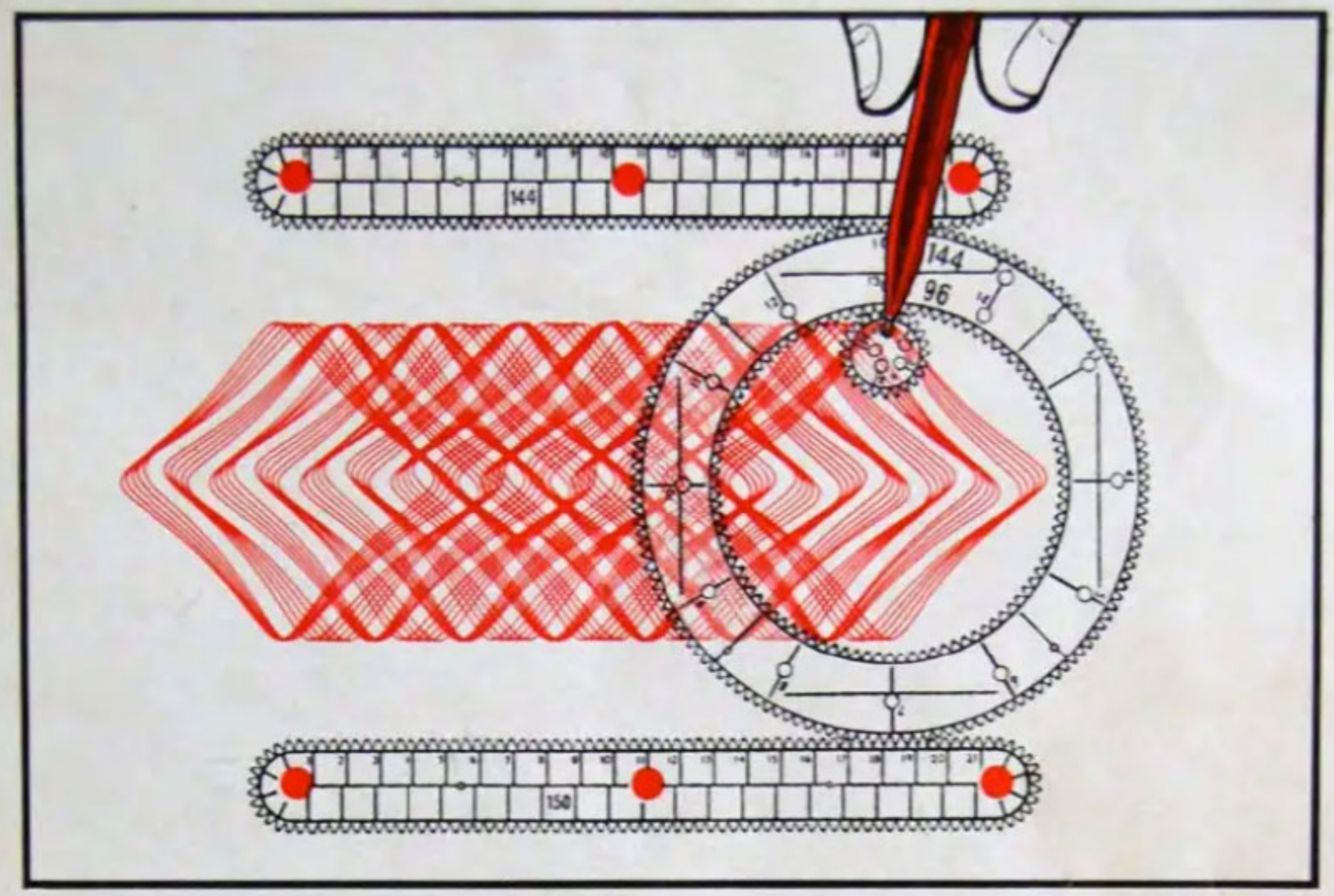
Pin down a **RACK** with pins through three pinholes. Roll a **Wheel** around it. Slow down when you go around the ends of the **Rack** so that the teeth stay in contact.

Beautiful designs can be drawn by changing the position of the **Rack**. Remove the two pins on the ends, leaving the center pin, and rotate the **Rack**. Pin it down again and repeat your pattern.

Another way is to move the **RACK** about a quarter inch up or down without rotating it.

Fascinating Continuous Patterns

Also see pages 13 and 14



IT'S REALLY QUITE SIMPLE!

There are many different designs you can make in this manner. To draw the design shown here, follow these steps:

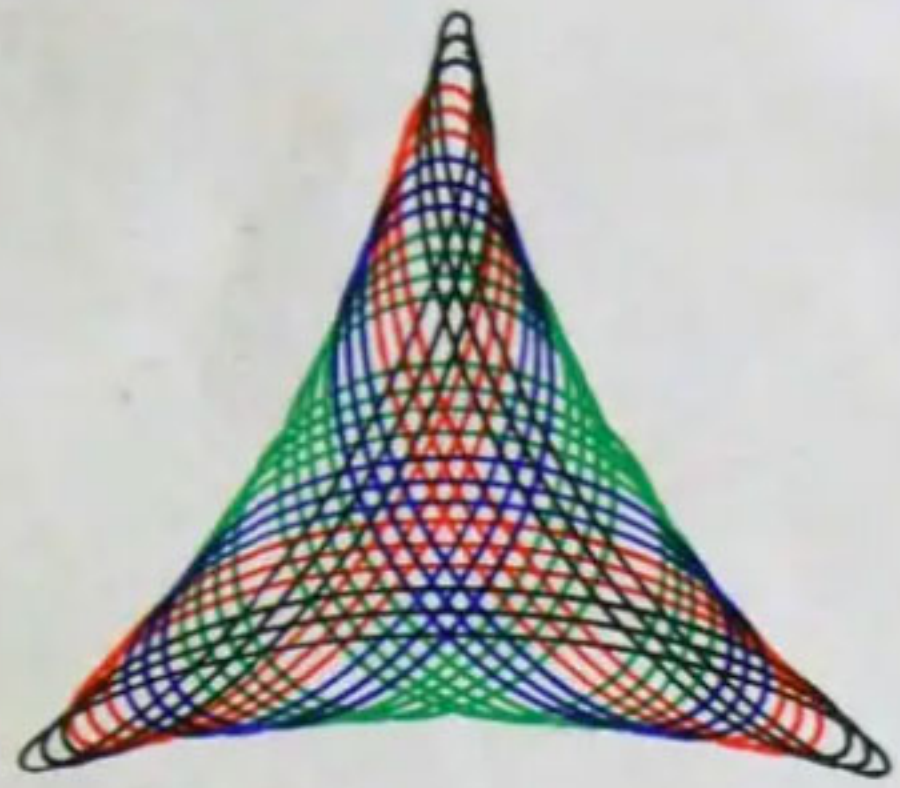
1. Pin down **Rack** 150 with 3 pins.
2. With **Ring** $\frac{144}{96}$ between them, pin down the other **Rack**.
3. Starting the **Ring** at the left end of the two Racks, use **Wheel** 24, pen in Hole 1 at the top and draw pattern.
4. Rotate the **Ring** one tooth to the right *along the top Rack*, leaving the teeth engaged on the bottom Rack. Draw pattern. Repeat until you have drawn six patterns.
5. Move the **Ring** two teeth to the right along *both* Racks and draw pattern.
6. Rotate the **Ring** one tooth at a time *along the bottom Rack*, leaving the teeth engaged on the top Rack. Draw pattern. Repeat until you have drawn six patterns.
7. Move **Ring** two teeth to the right on *both* Racks and repeat Step 4. Alternate top and bottom until the design is the length you want it.

For other continuous designs, you can use any method you wish, such as moving the Ring one or two teeth, either at top or bottom, or both. Use different Wheels and different holes in the Wheels.

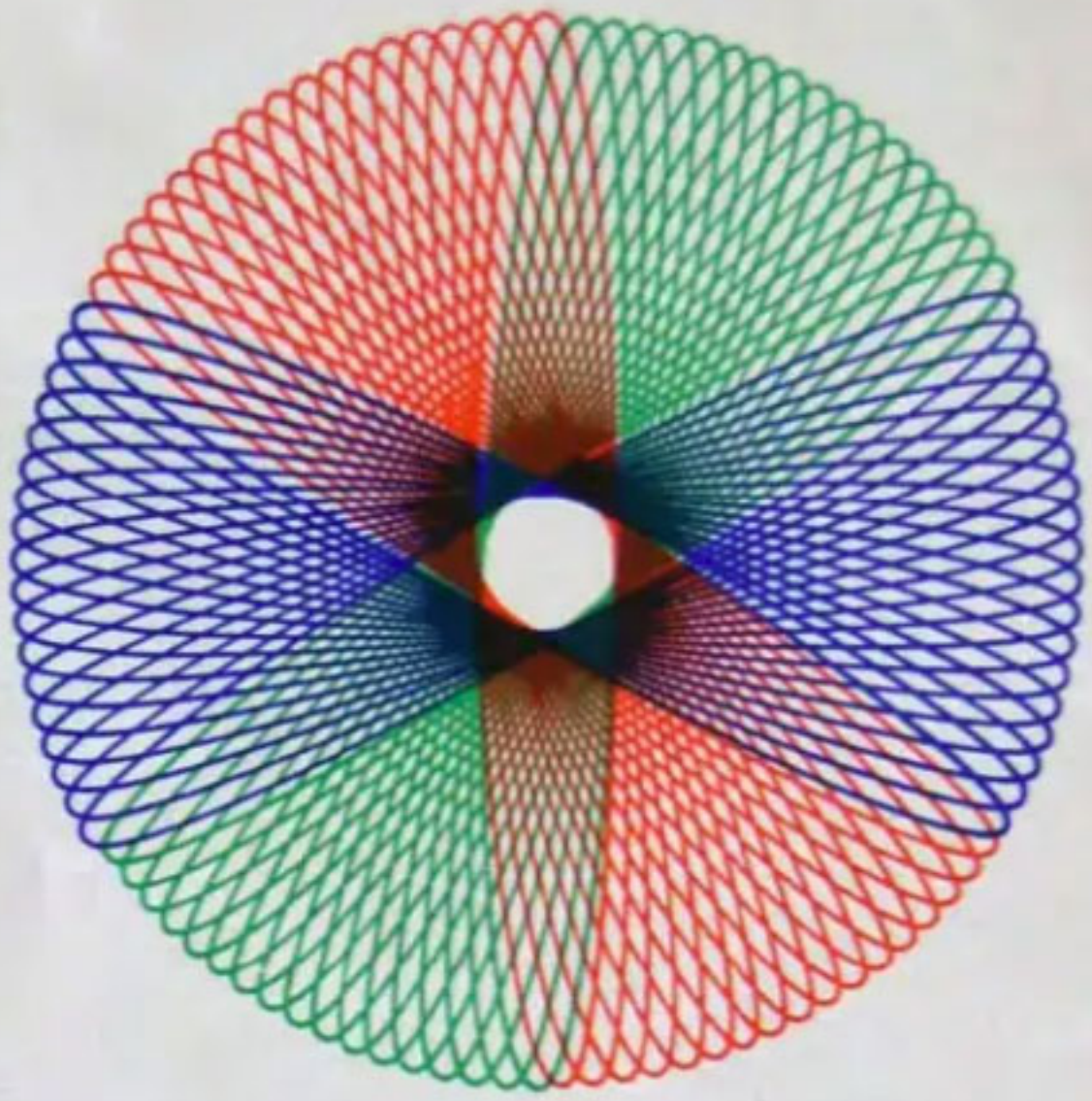
HOW TO USE THE EASY GUIDES THAT FOLLOW

In the guides for the patterns on the following pages, the RING to use is shown first. Then, the number of the WHEEL is shown in a Circle. The numbers thereafter indicate the HOLE in which to insert the pen. The color of this number tells you the color of the pen to use.

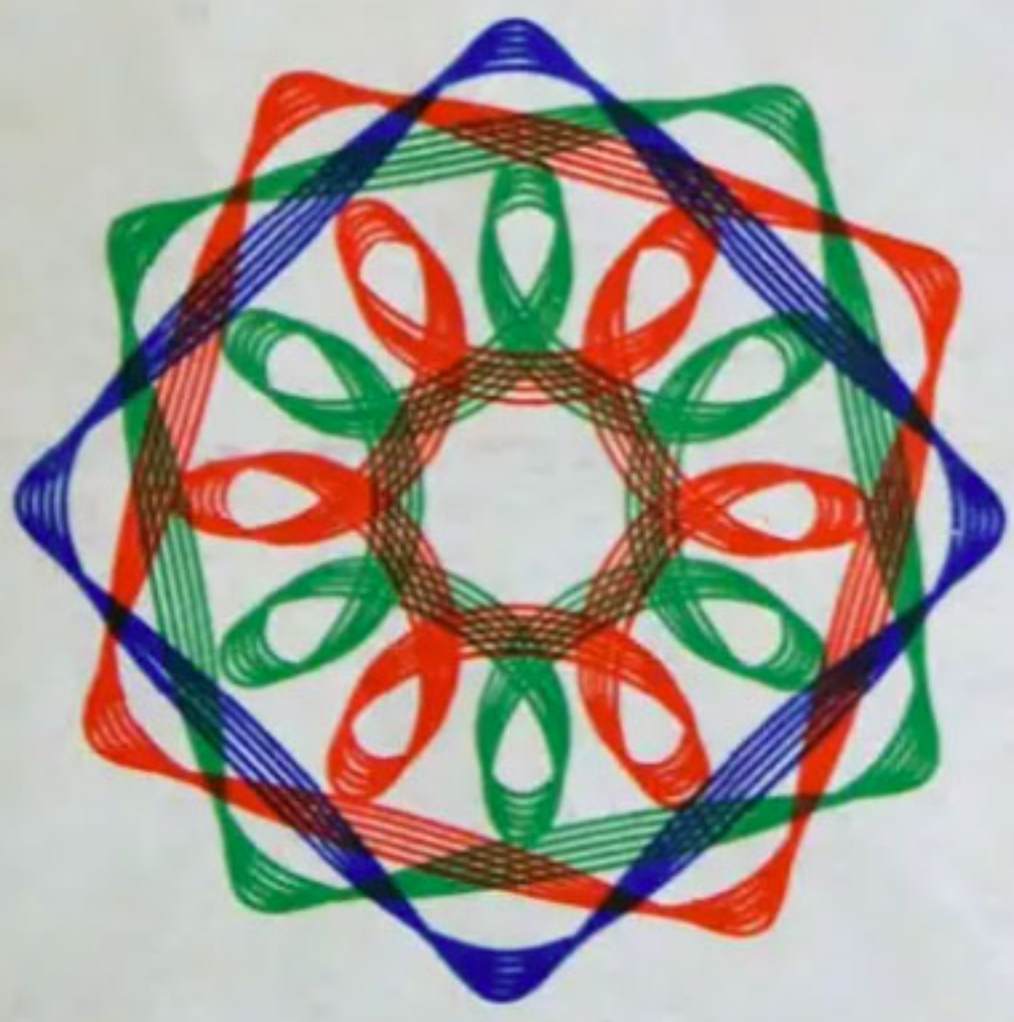
Have fun! Create your own patterns, too. Change the combination and position of the Wheels, Rings and Racks, using different holes and pens.



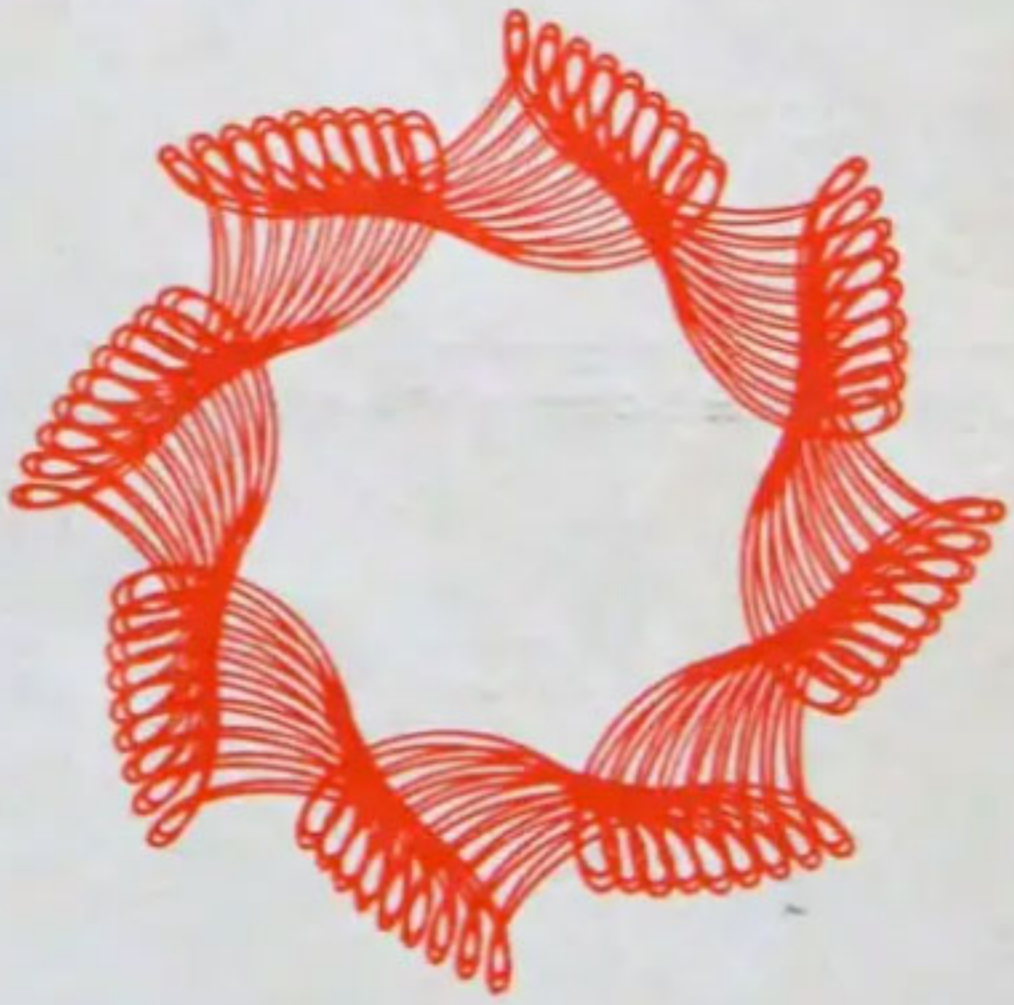
Ring No. 144/96 • Wheel No. (64) • Hole No. and Color of Pen 1-3-5-7-9-11-13-15-17 19-21-23-25



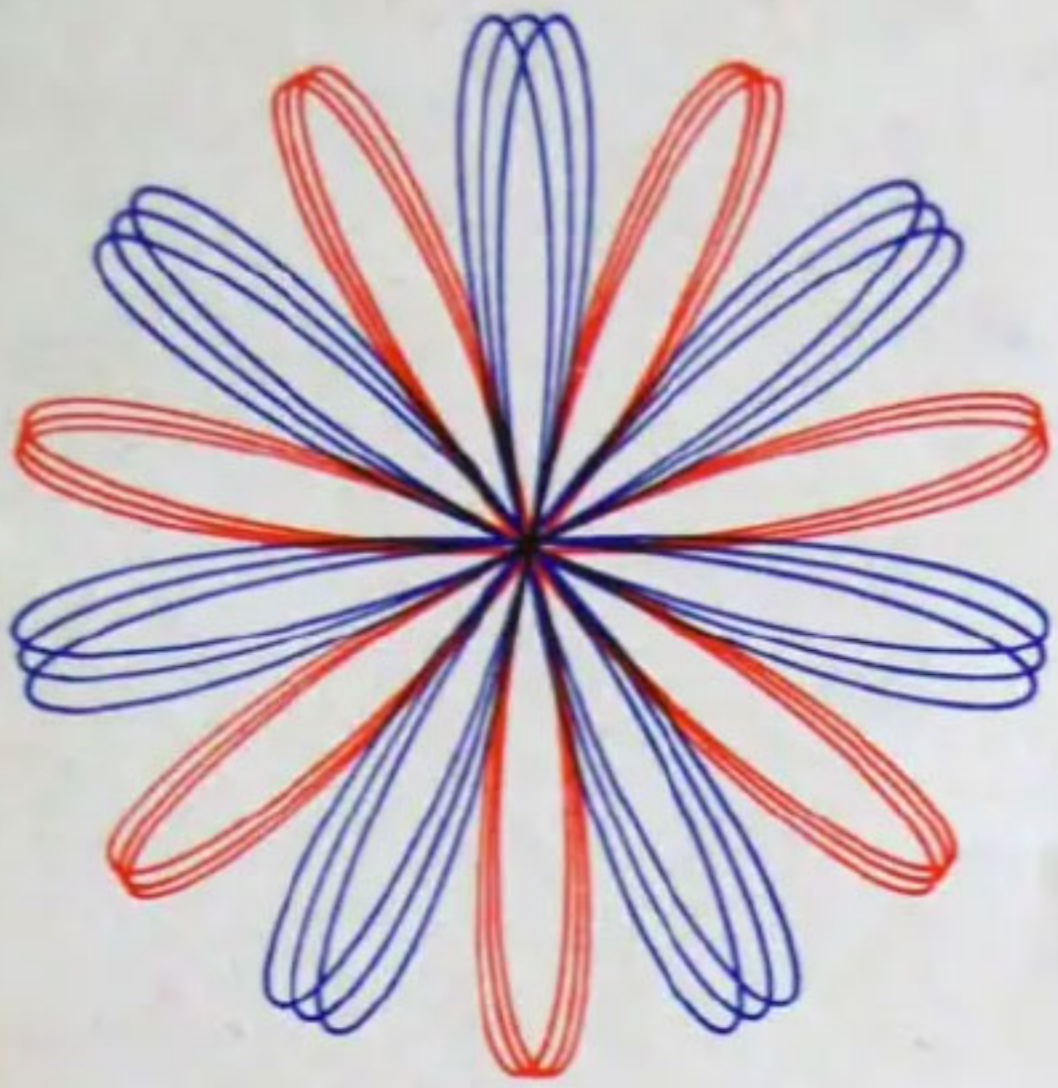
150/105 • (52) • 1 (18 loops) 1 (18 loops) 1 (to finish)



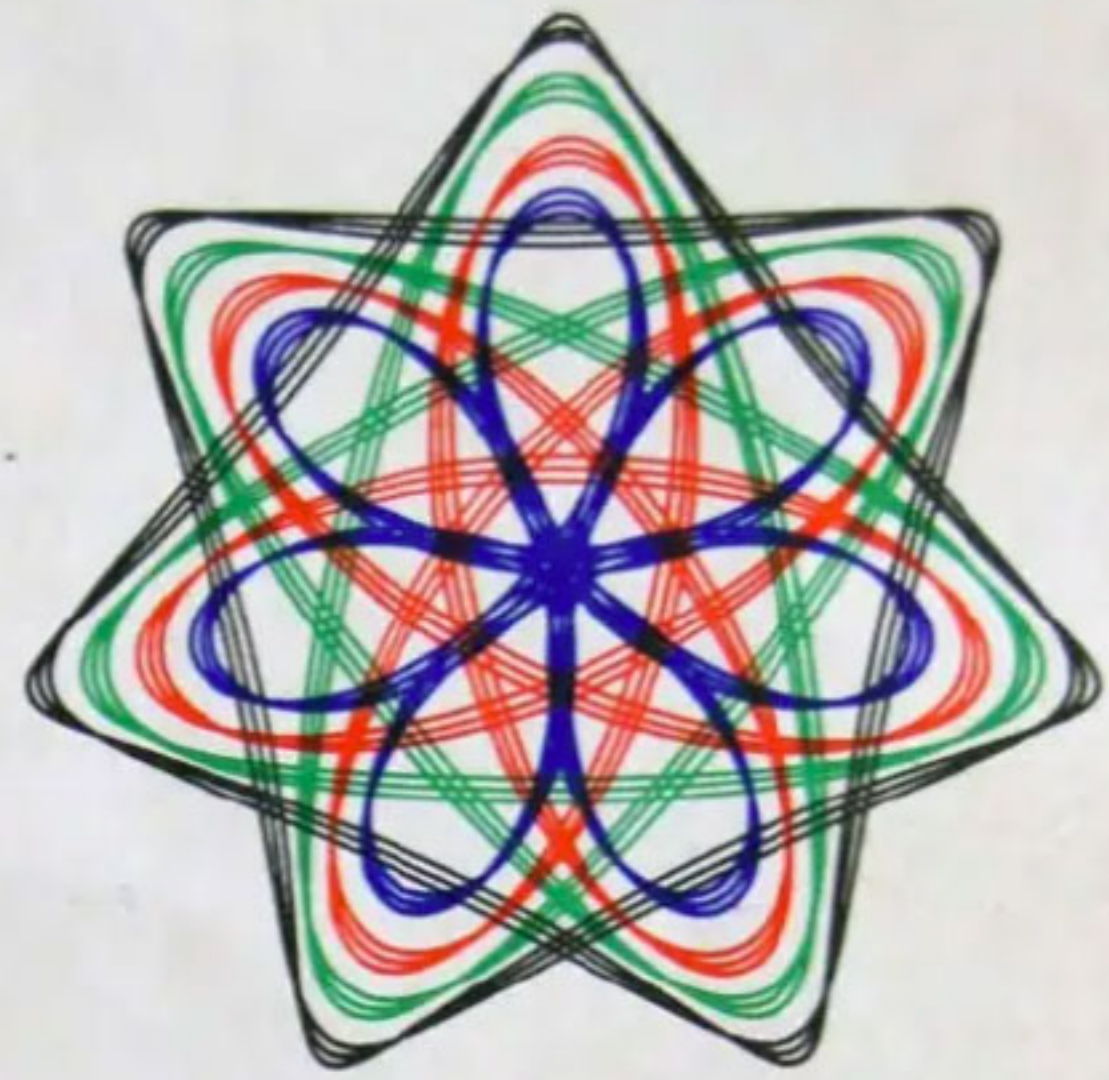
144/96 • (24) • 1-2-3-4-5 1-2-3-4-5, lined up at mark 2 on the Ring 1-2-3-4-5, lined up at mark 3 • (80) • 15-16-17-18-19 15-16-17-18-19 lined up at mark 2



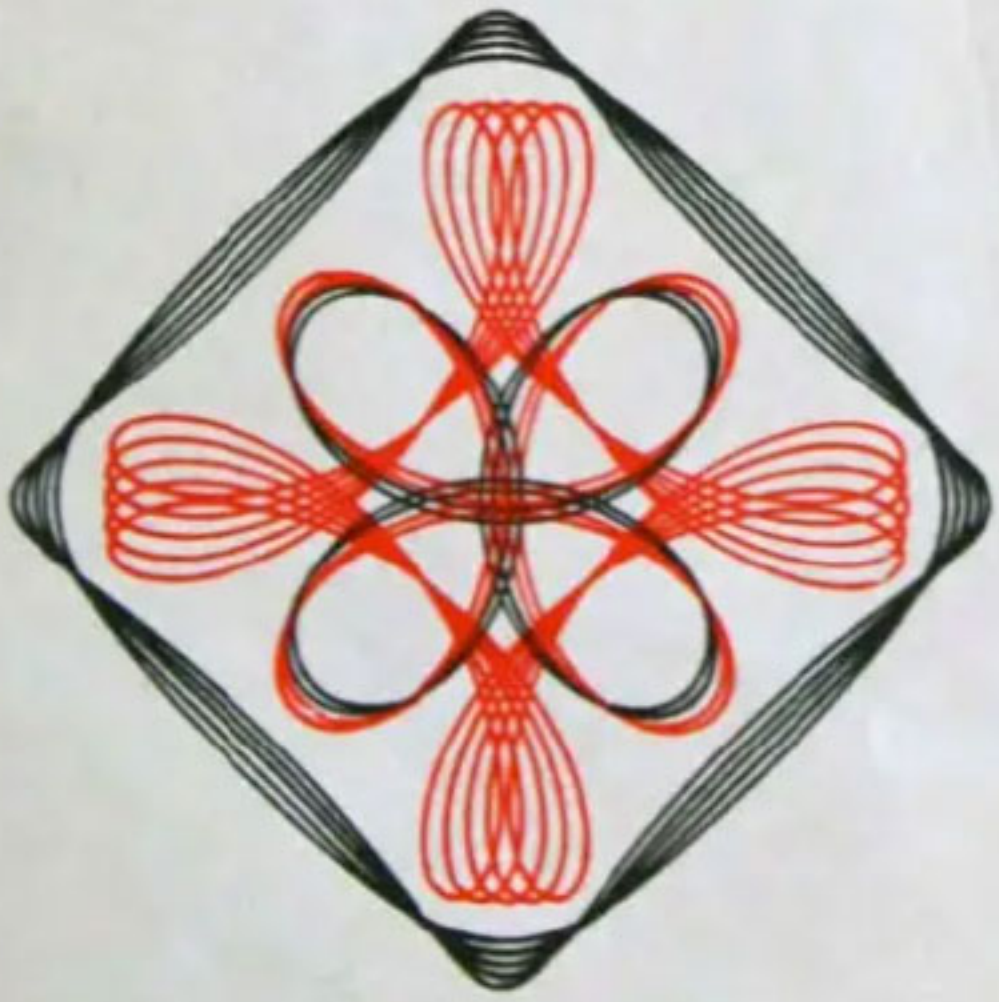
144/96 • (84) • 1-2-3-4-5-6-7-8-9, moving one tooth to the right every hole. Starting again at mark 1, draw 2-3-4-5-6-7-8-9-10, again moving one tooth right every hole.



$\frac{150}{105}$ • (60) • 3-3 one tooth to right; 3 one tooth left. Now line up with mark 2 on Ring and draw 3-3 one tooth to right; turn Wheel over and draw 3, lined up with mark 2.

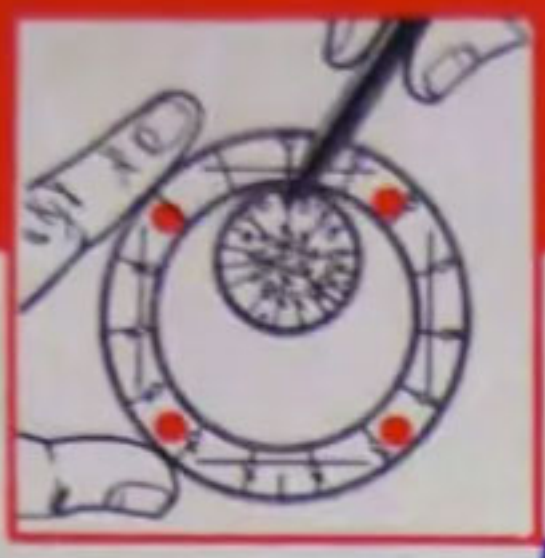


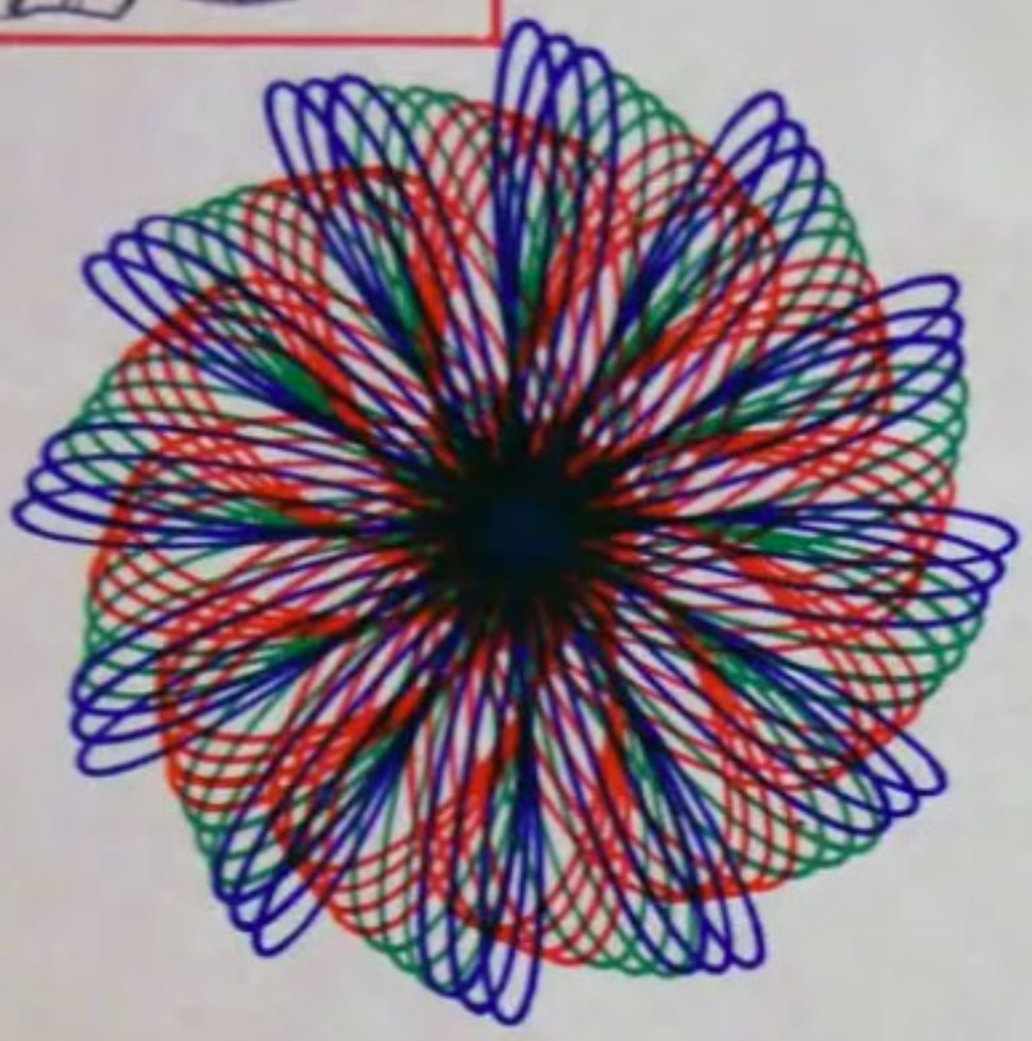
$\frac{150}{105}$ • (30) • 1-2-3 (45) • 6-7-8
(60) • 11-12-13 (75) • 16-17-18



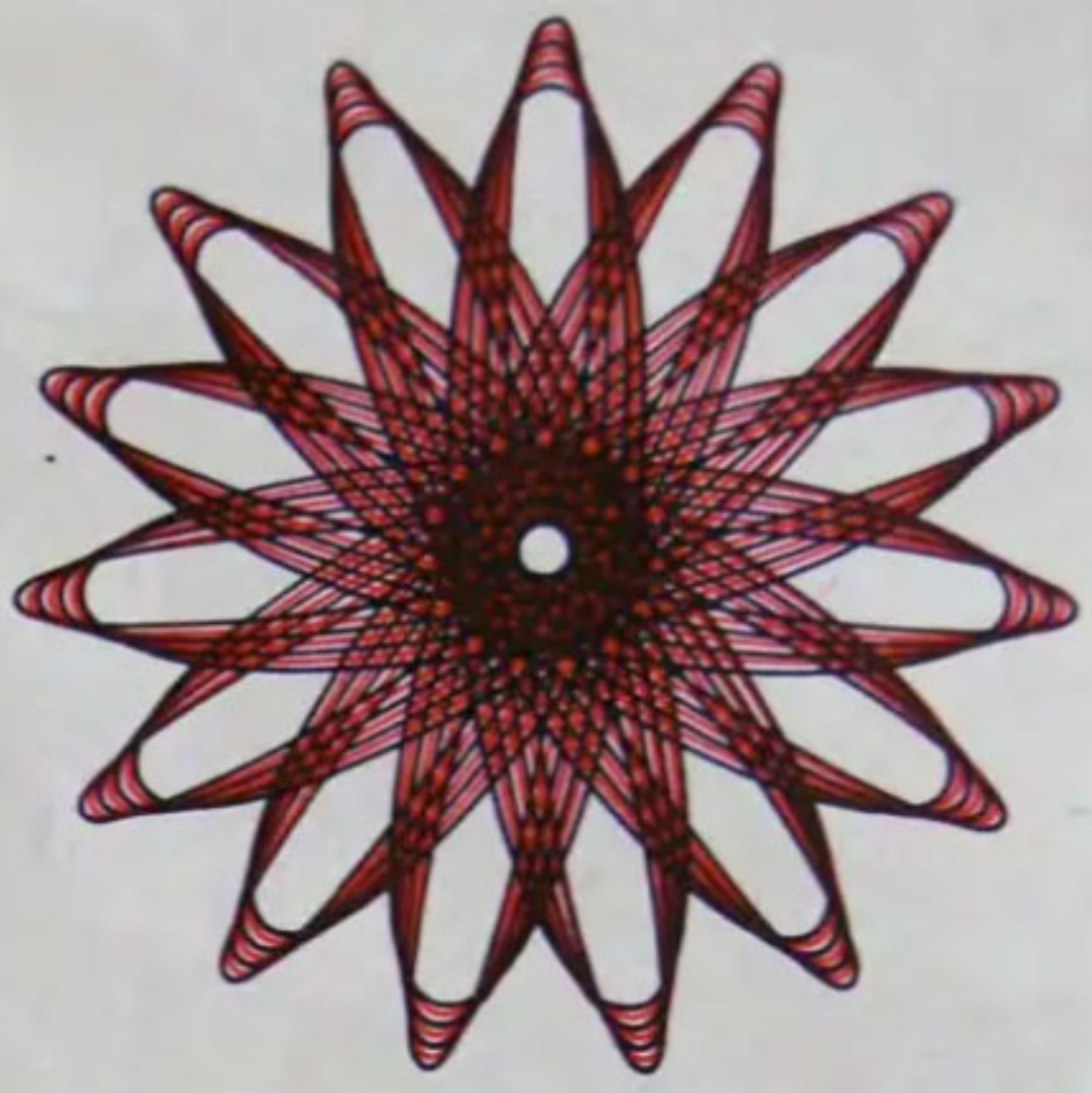
$\frac{144}{96}$ • (24) • 1-2-3-4-5
(72) • 9-9 one tooth right; 9 two teeth right; 9 one tooth left; two teeth left.
18-19-20-21 lined up with the mark half-way between mark 2 and 3.

$\frac{144}{96}$ • (63) • 1-3-5-7





144/96 • (56) • 1-2-3-4-5-6-7-8-9-10 moving one tooth right every hole.

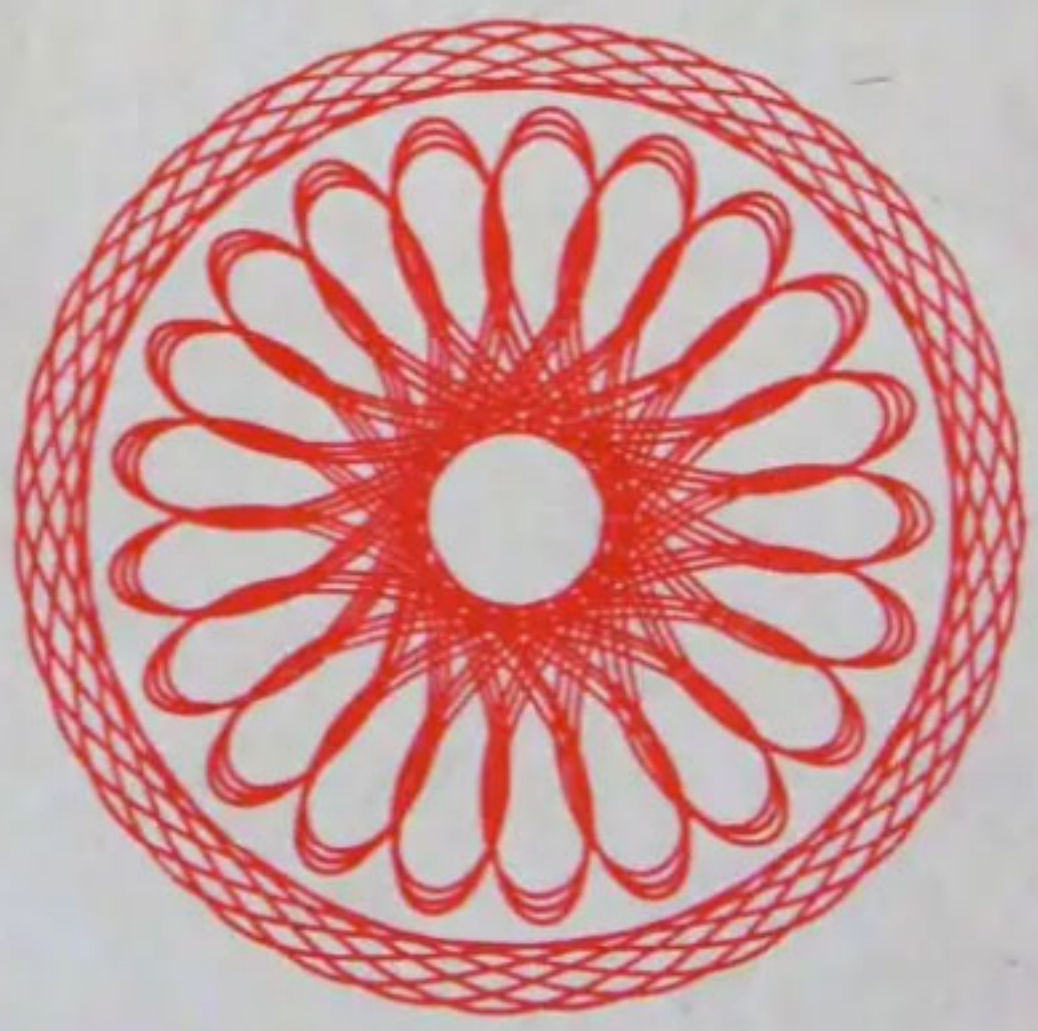


150/105 • (56) • 1-2-3-4-5-6-7

150/105 • (30) • 1-2-3-4-5

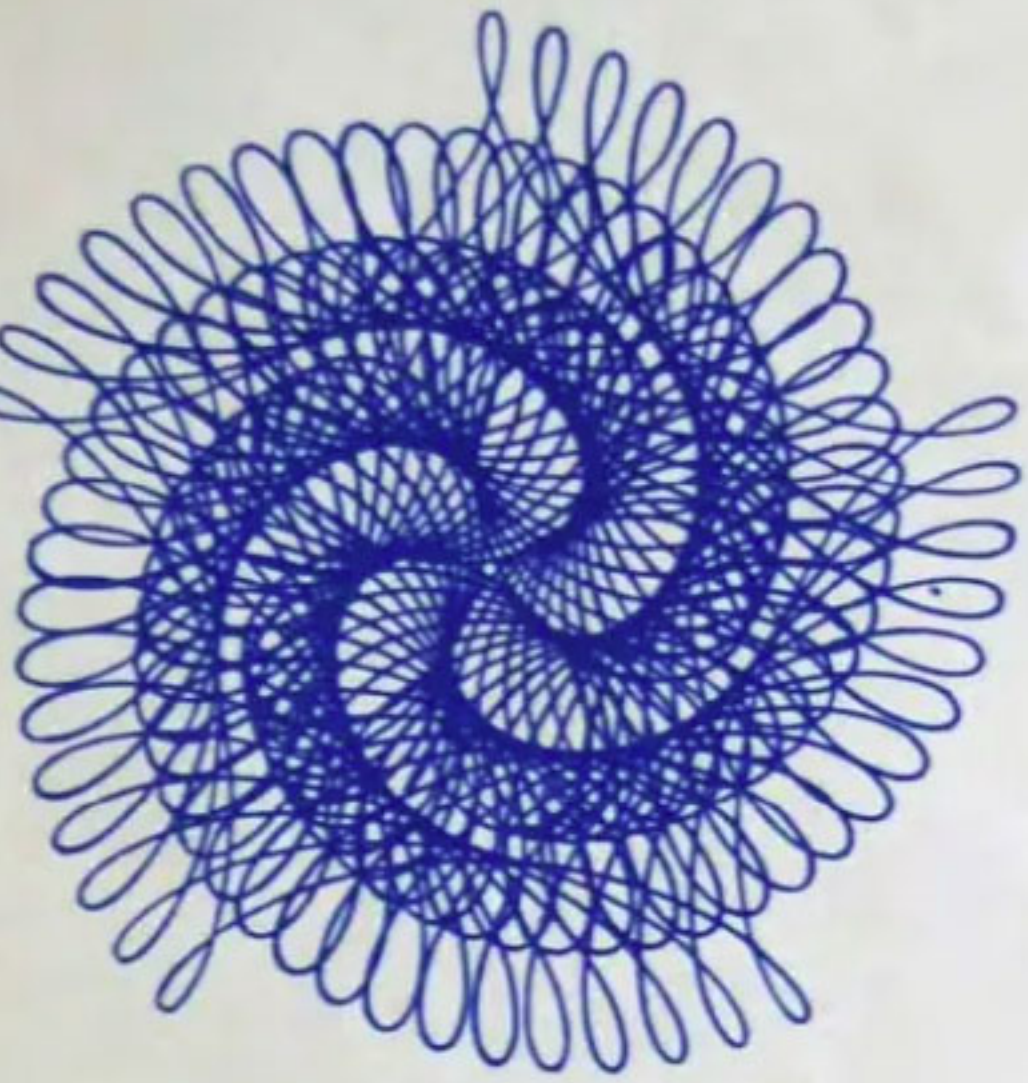
(45) • 1-2-3-4-5

(60) • 1-2-3-4-5

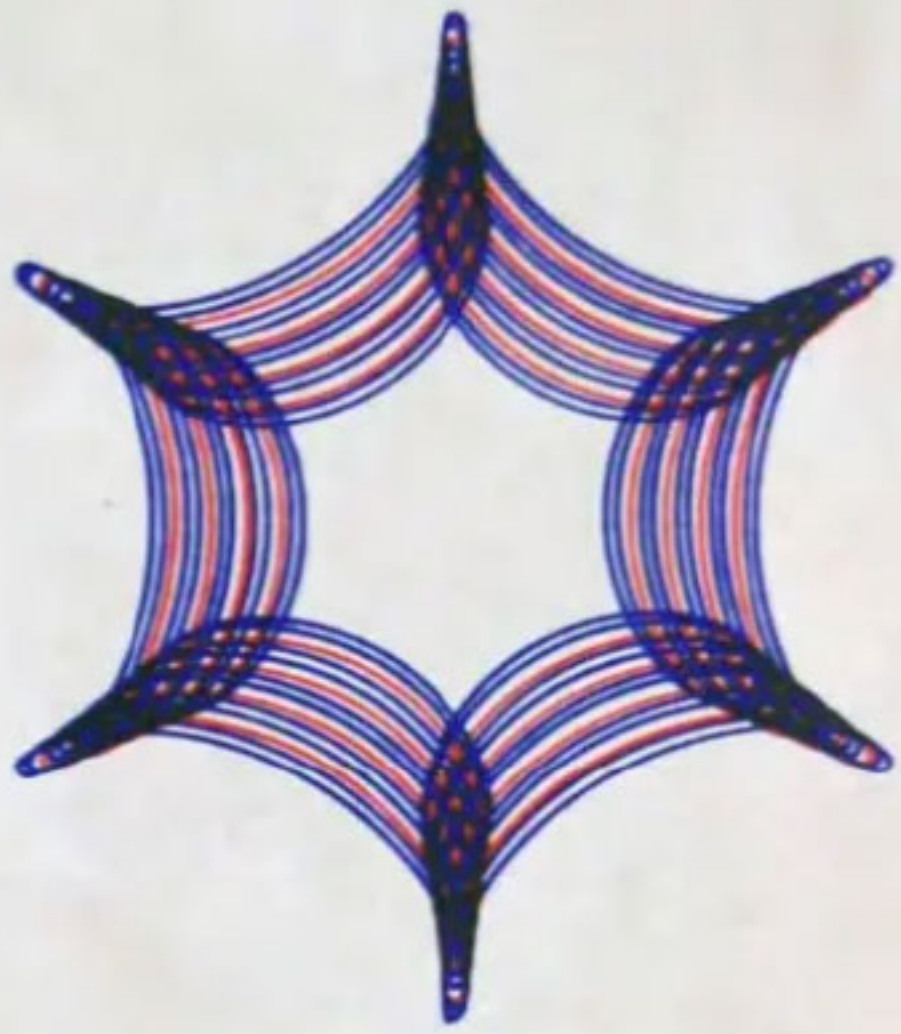


150/105 • (24) • 5

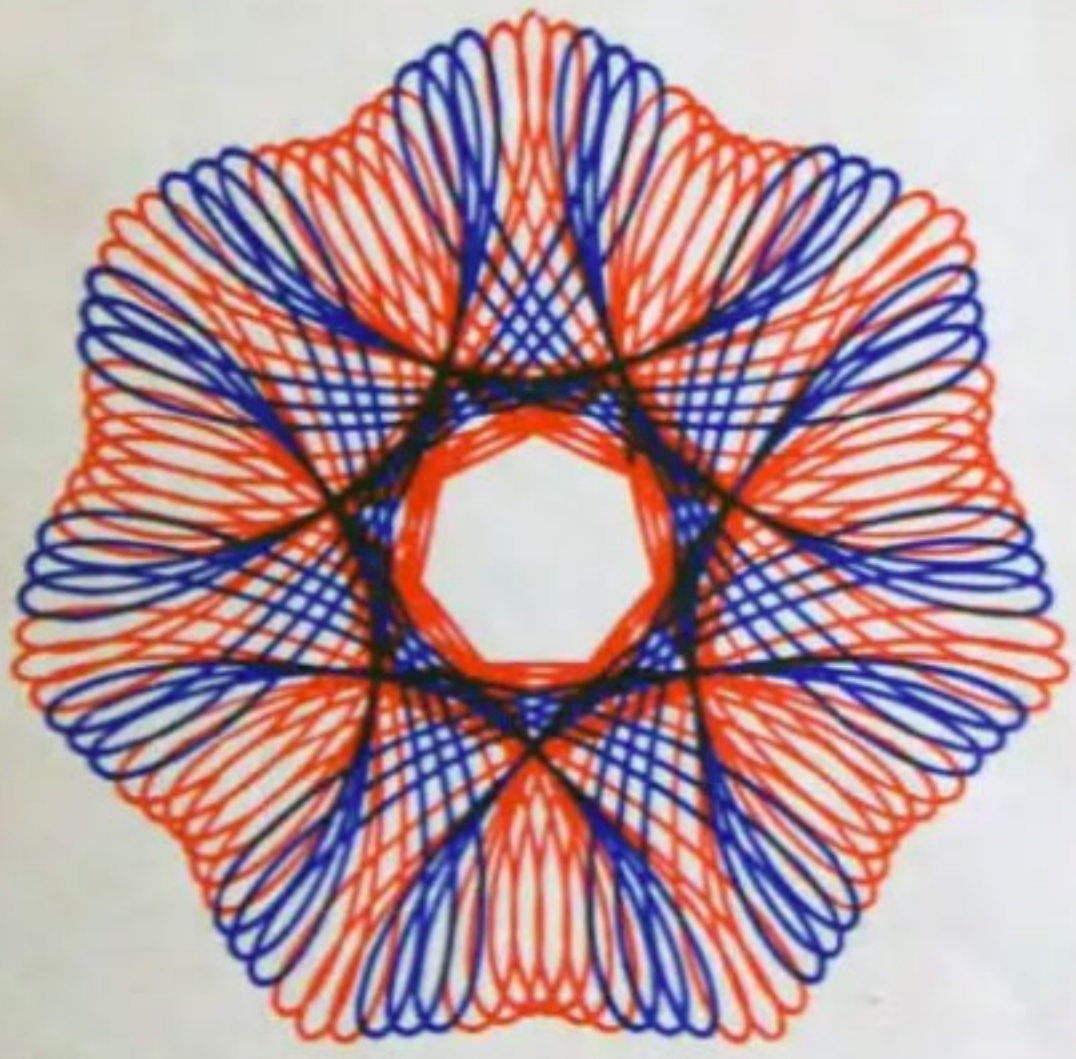
(80) • 13-14-15



$\frac{150}{105}$ • (84) • 1 thru 26 moving two teeth right every hole.



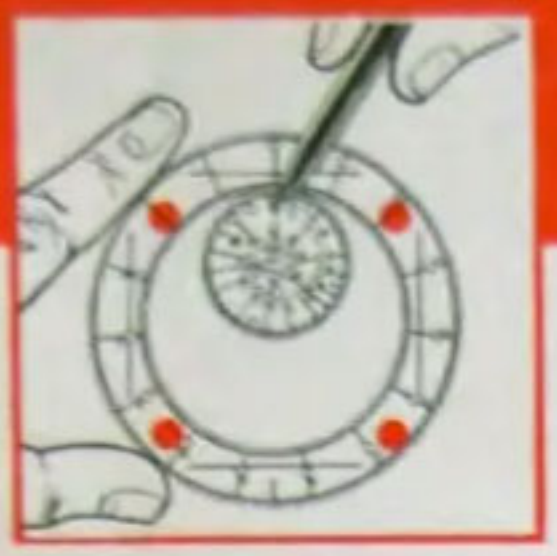
$\frac{144}{96}$ • (80) • 1-2-3-4-5-6-7-8-9-10-11-12-13-14

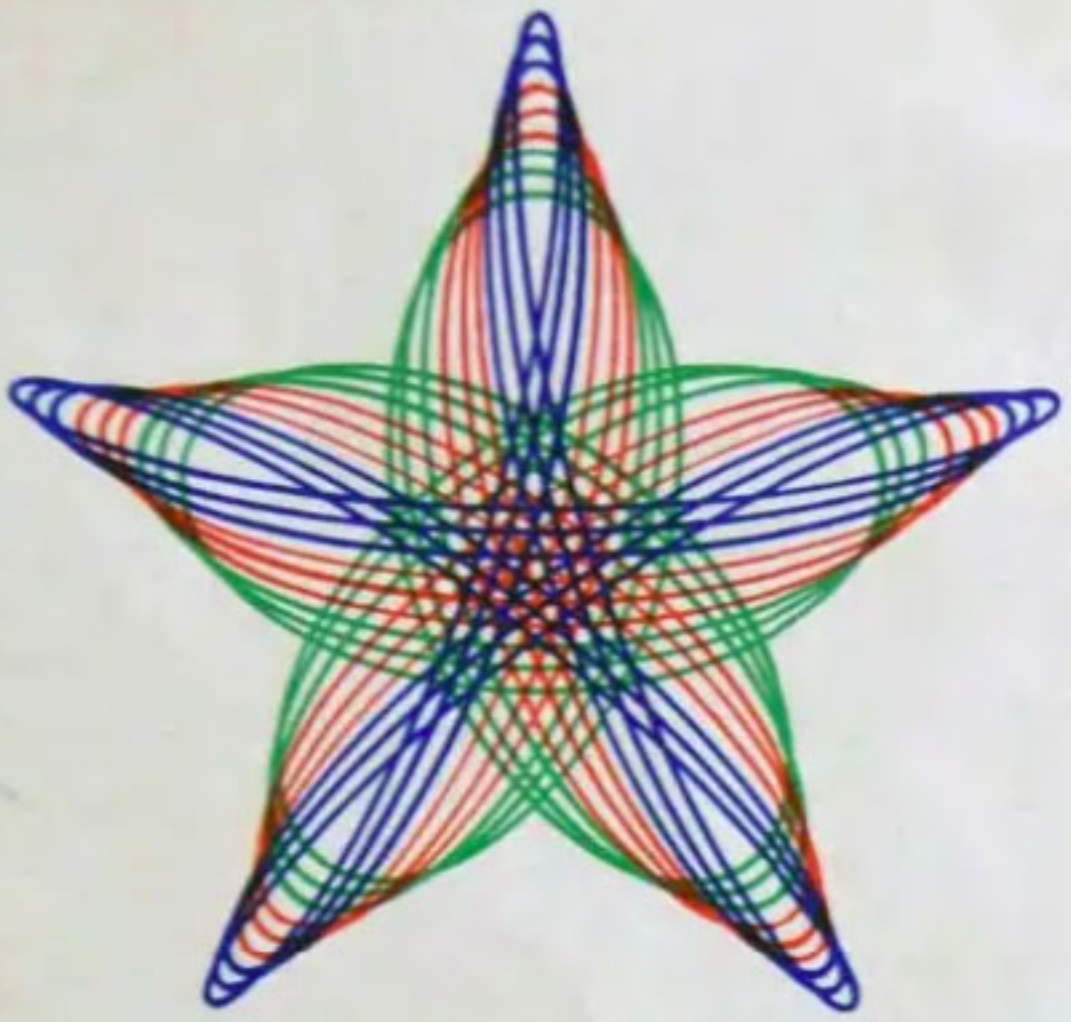


$\frac{150}{105}$ • (75) • 1-2-2-3-3-4-4-5-5-6-6-7-7-8-8

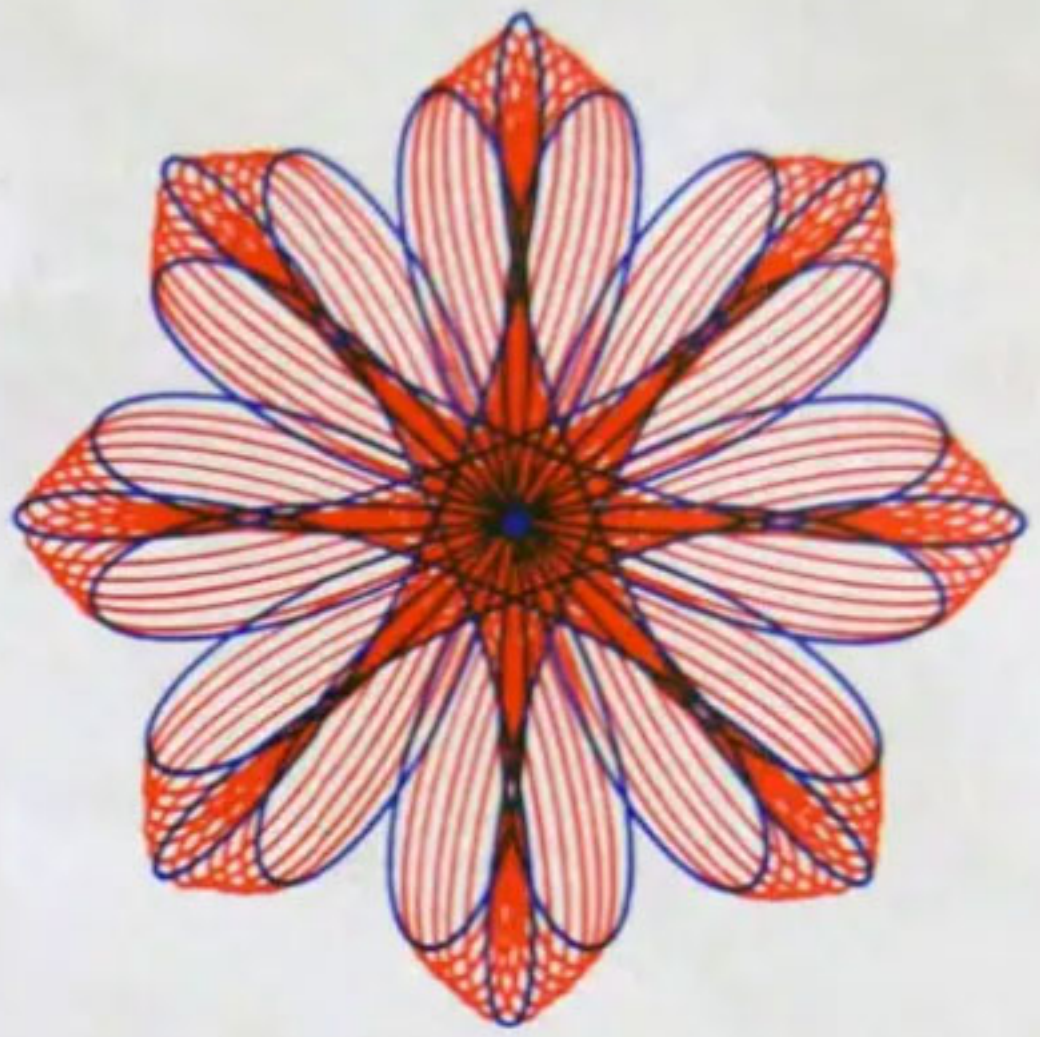
Draw with Hole 1 lined up at mark 1. Next, draw with Hole 2 one tooth to right, then one tooth to left of mark 1. Now Hole 3 one tooth farther to right, then one tooth farther left. Continue moving one tooth farther right and left with each hole.

$\frac{150}{105}$ • (80) • 1-6-11-16-21



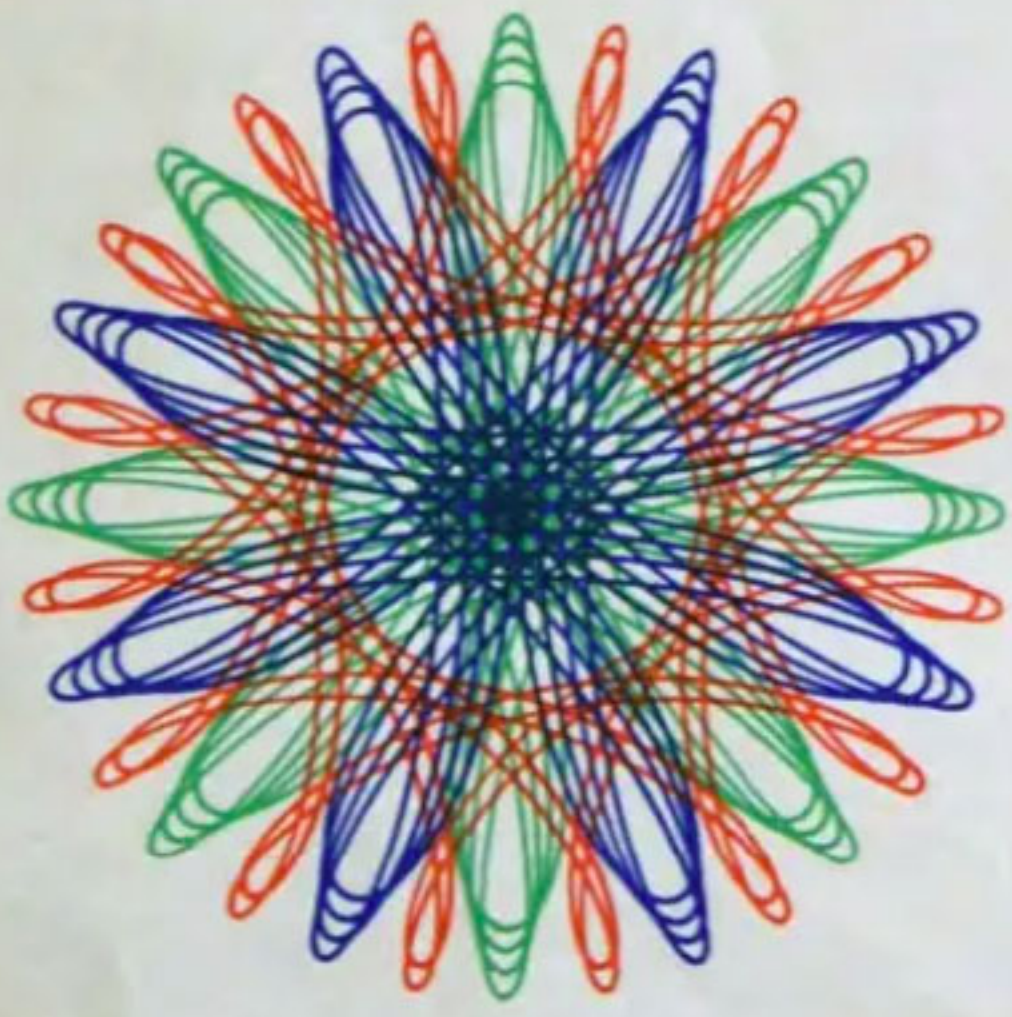


$\frac{150}{105}$ • (63) • 1-3-5-7-9-11-13-15-17



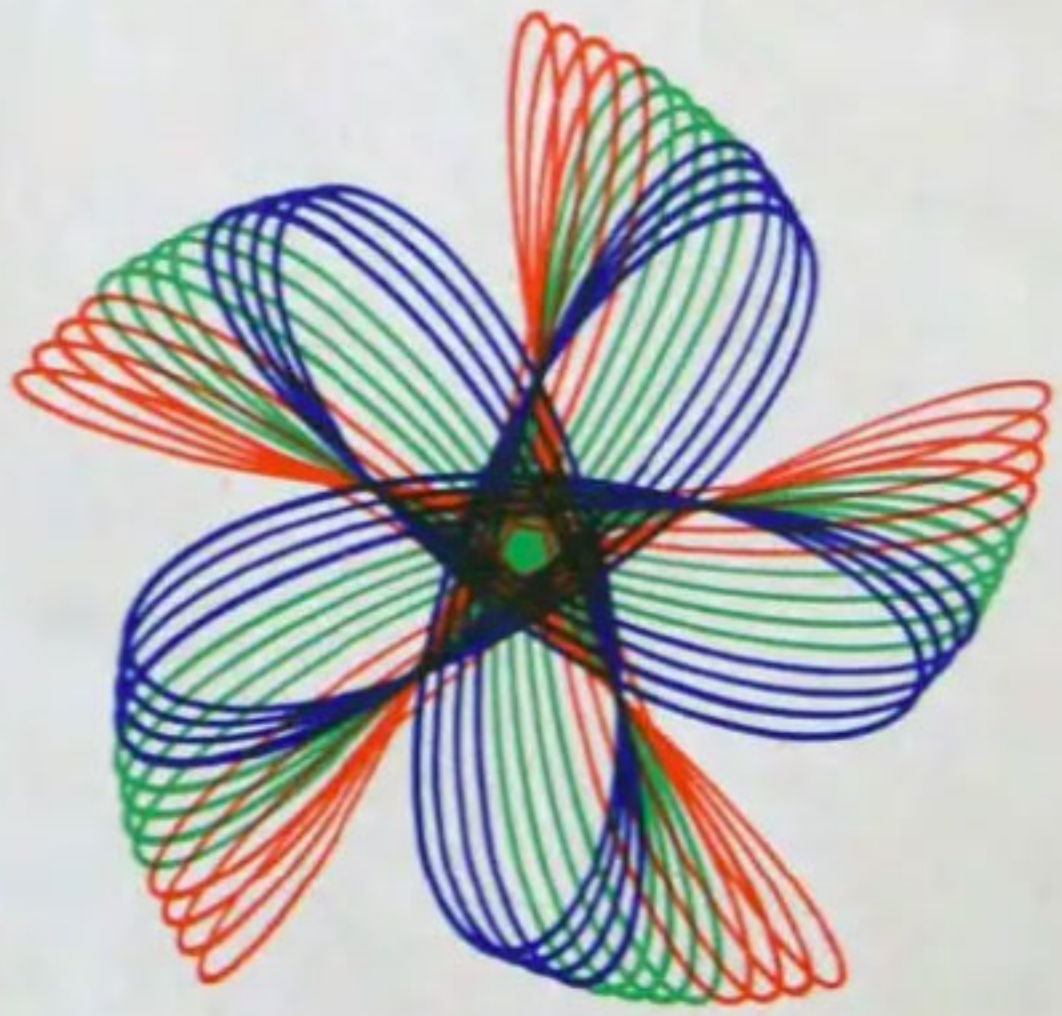
$\frac{144}{96}$ • (60) • 1-3-3-5-5-7-7 moving one tooth right and left every hole.

Turn Wheel over and draw 2-2-4-4-6-6 moving one tooth right and left of mark 1 every hole.

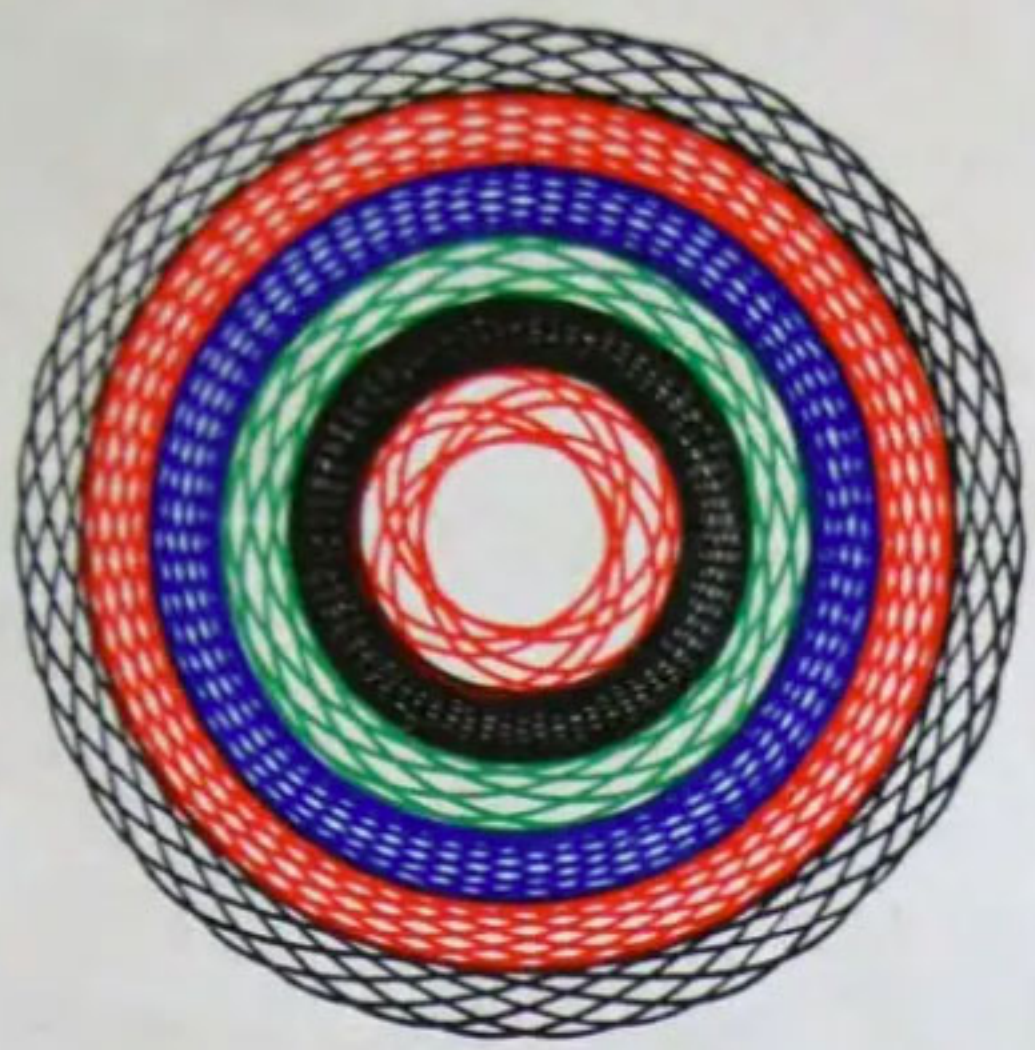


$\frac{144}{96}$ • (60) • 1-3-5-7. Move six teeth right and draw 1-3-5-7

(72) • 1-3 Line up so that Hole is directly in the center between the blue and green patterns.

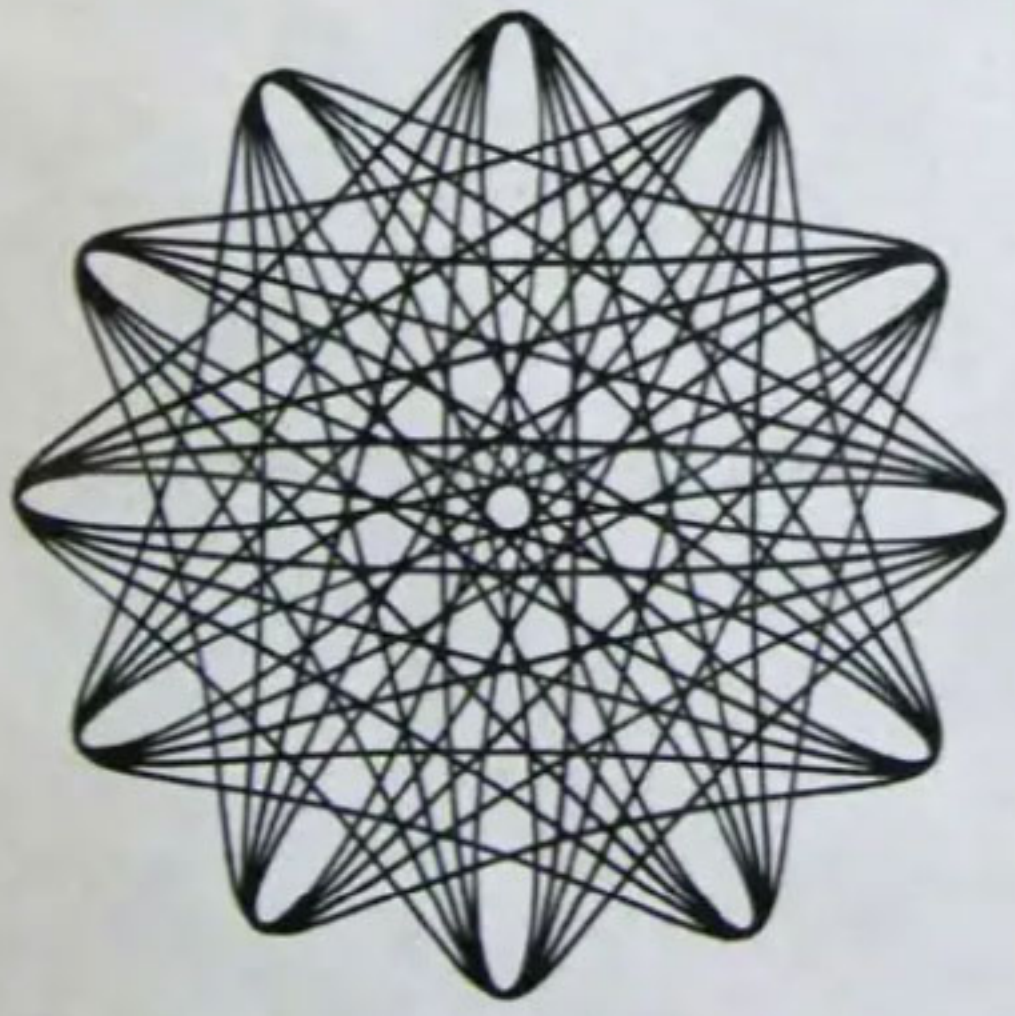


$\frac{150}{105}$ • (63) • 1-2-3-4-5-6-7-8-9-10-11-12 moving one tooth right every hole.



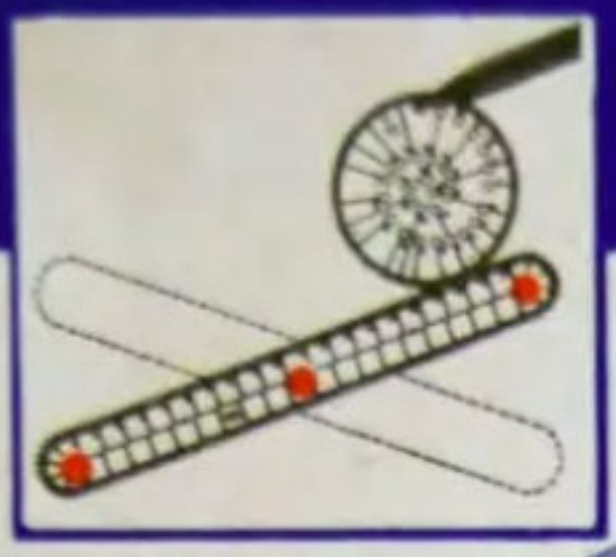
$\frac{150}{105}$ • (24) • 5 (36) • 11
(48) • 17 (60) • 23, starting at marks 1 and 3
(72) • 29 (84) • 35, starting at marks 1 and 3

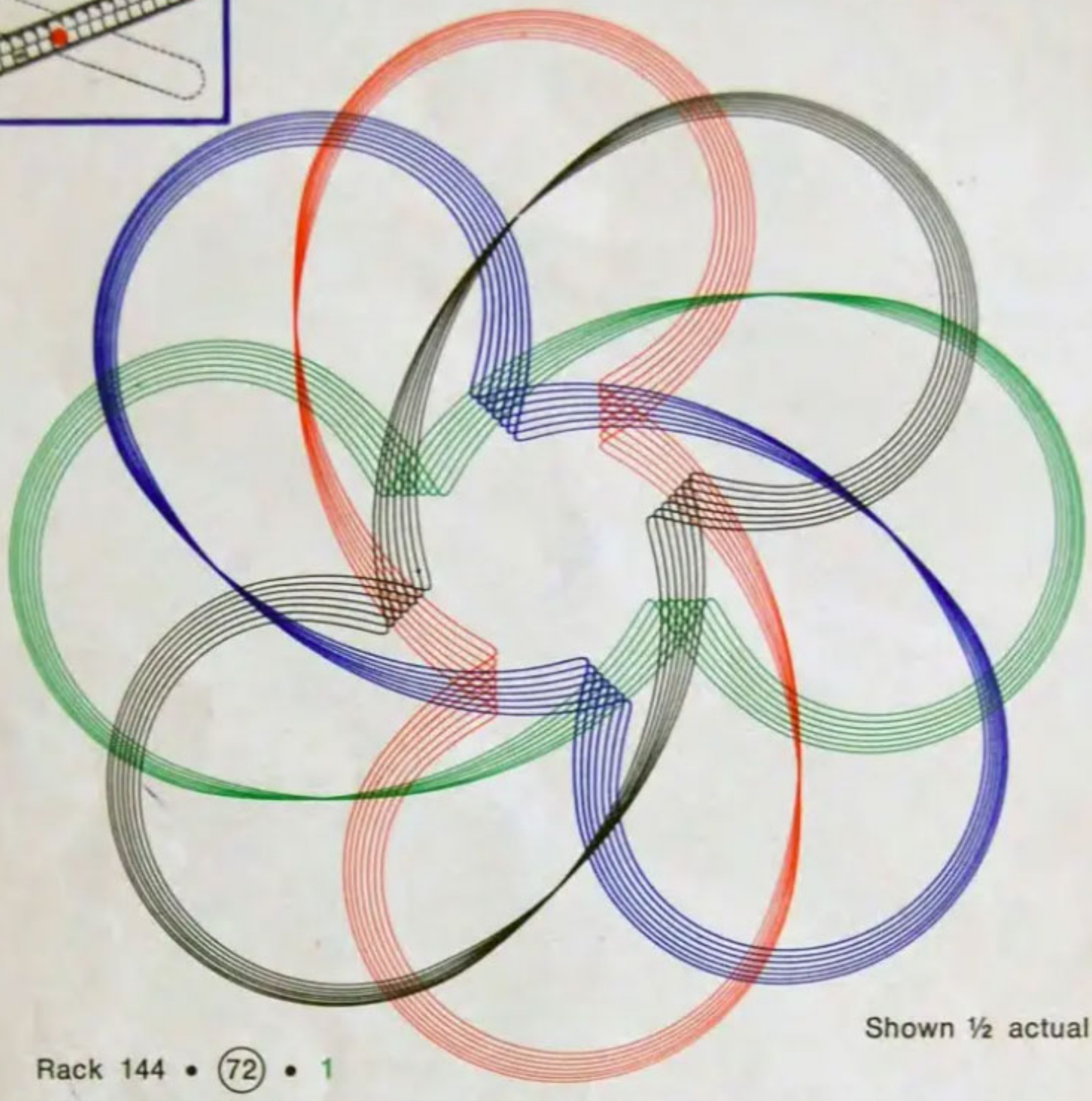
$\frac{144}{96}$ • (40) • 5 (56) • 9
(80) • 15, starting at marks 1 and 2
(72) • 13; (24) • 1 both starting at marks 1, 2 and 3
(32) • 3; (64) • 11 both starting at marks 1, 2, 3, and 4
(48) • 7, starting at marks 1 thru 5



$\frac{144}{96}$ • (40) • 1 (56) • 1
(24) • 1, starting at marks 1, 2 and 3
(32) • 1, starting at marks 1, 2, 3 and 4
(48) • 1, starting at marks 1 thru 5

$\frac{144}{96}$ • (45) • 1-10-16 (63) • 3-5

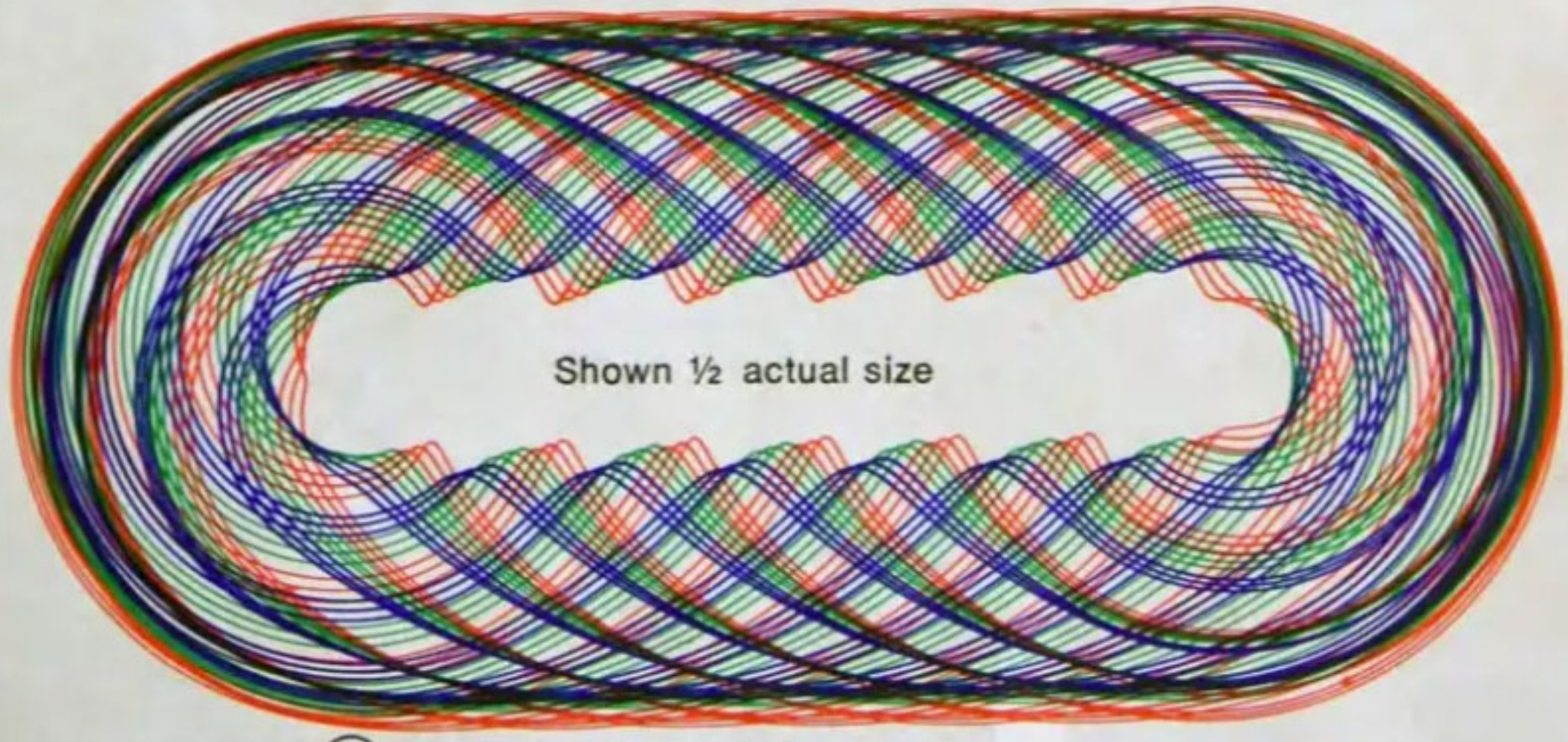




Shown ½ actual size

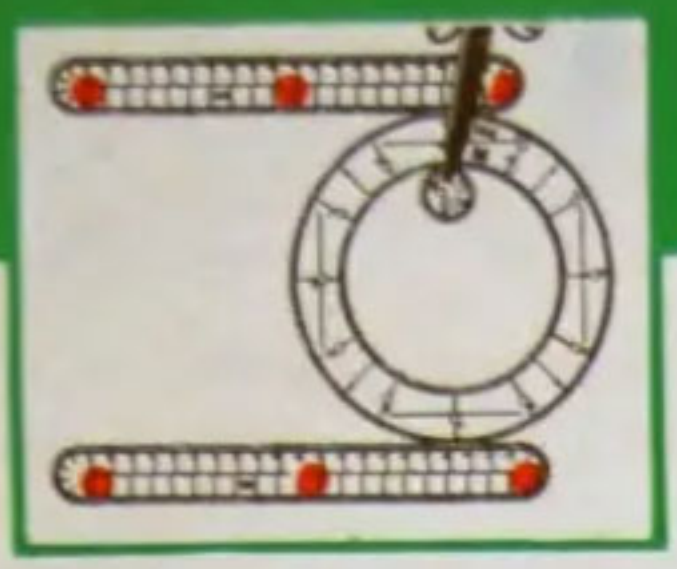
Rack 144 • (72) • 1

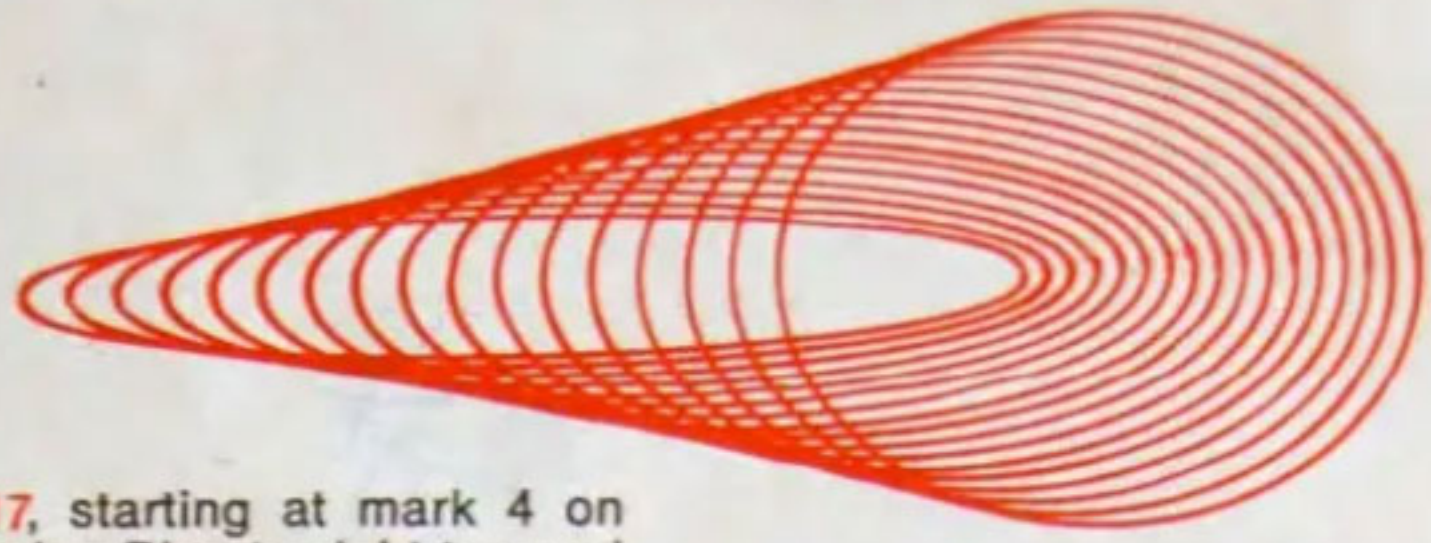
With Rack horizontal, start at mark 5 on Rack and draw seven times, moving one tooth right each time. Remove the two end pins and pivot Rack so that it is vertical and repeat with red pen. Again pivot so that Rack is between the two designs and draw with black pen, then pivot and draw with blue



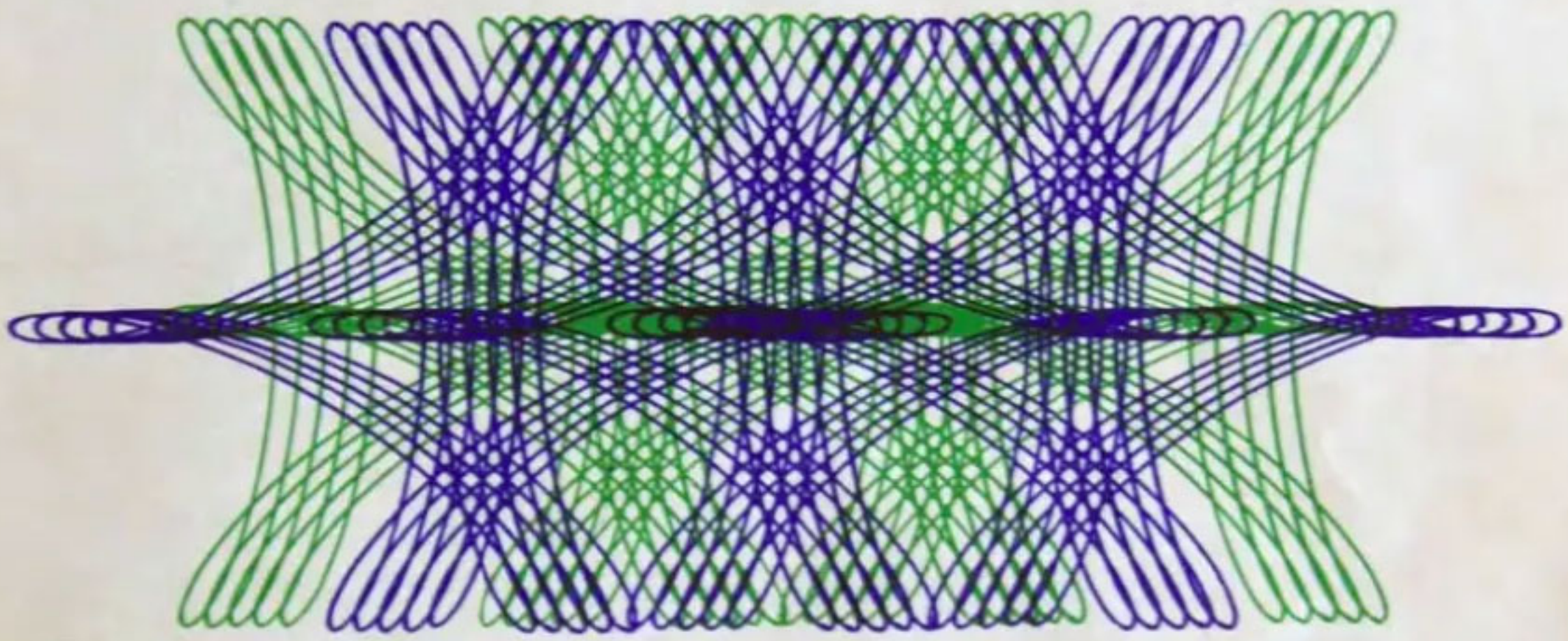
Shown ½ actual size

Rack 150 • (80) • 1-2-3-4-5-6-7-8-9 starting at mark 5 and moving one tooth right every hole.



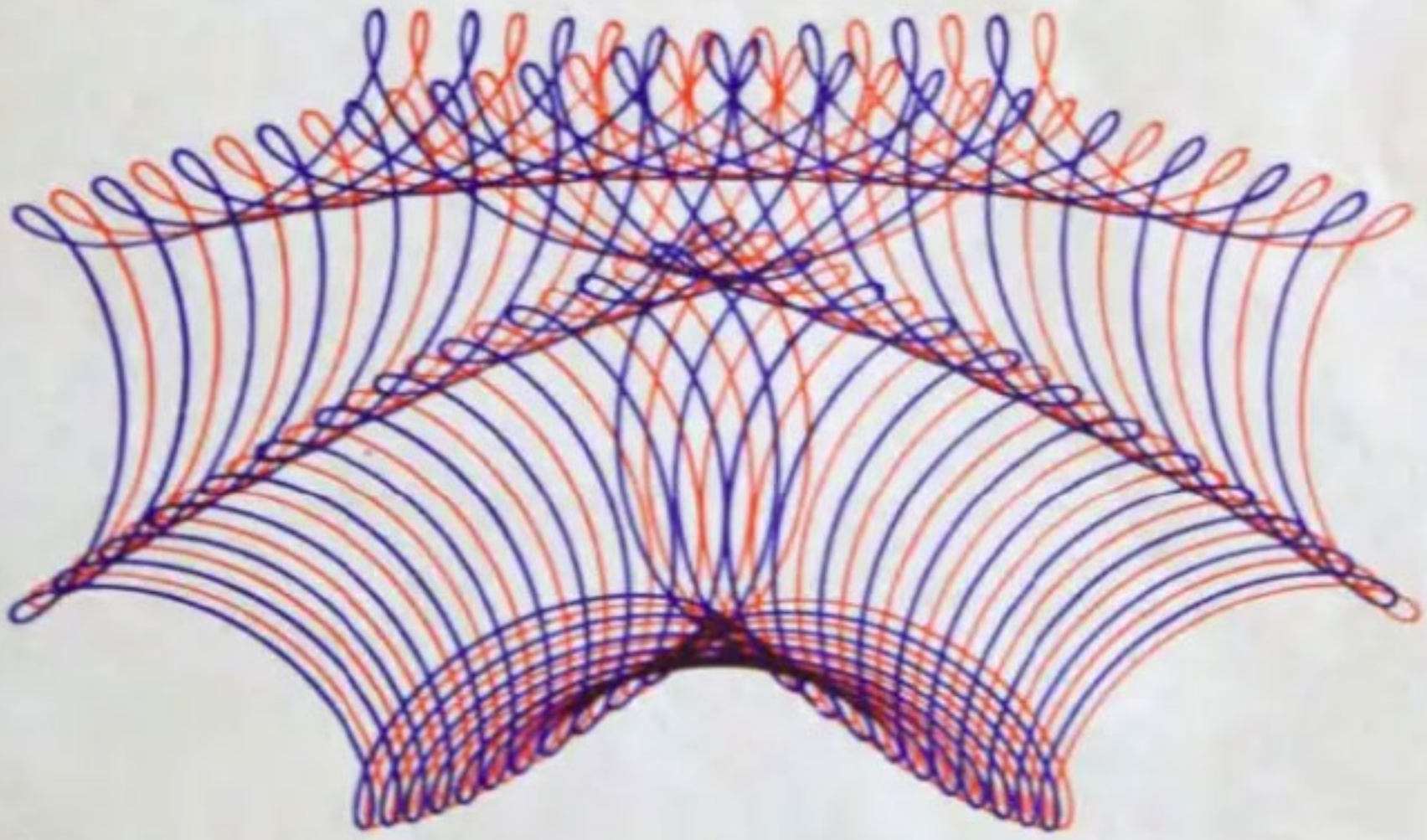


$\frac{144}{96}$ • (48) • 1 through 17, starting at mark 4 on Ring and moving Ring to right top and bottom for each pattern.

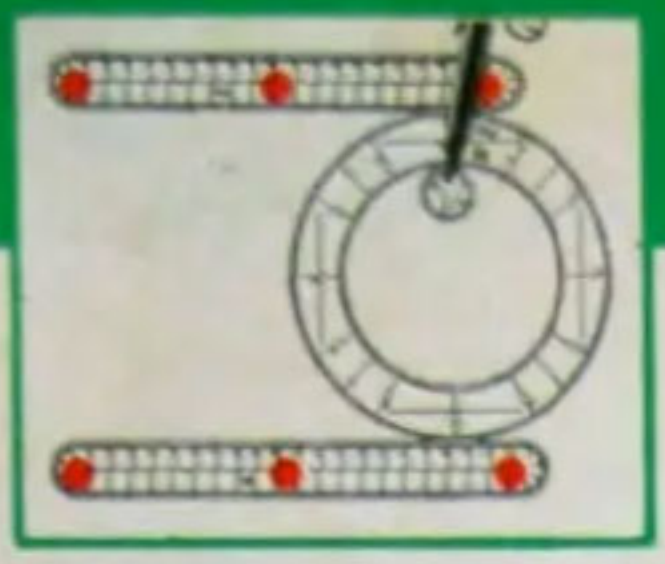


$\frac{144}{96}$ • (64) • 1 Begin at mark 10 on Ring and draw 5 blue patterns, moving Ring to the right one tooth top and bottom every time. Move two teeth, repeat in green; do this three times in each color.

After the sixth pattern, reverse, starting at mark 4 on the Ring and moving left.

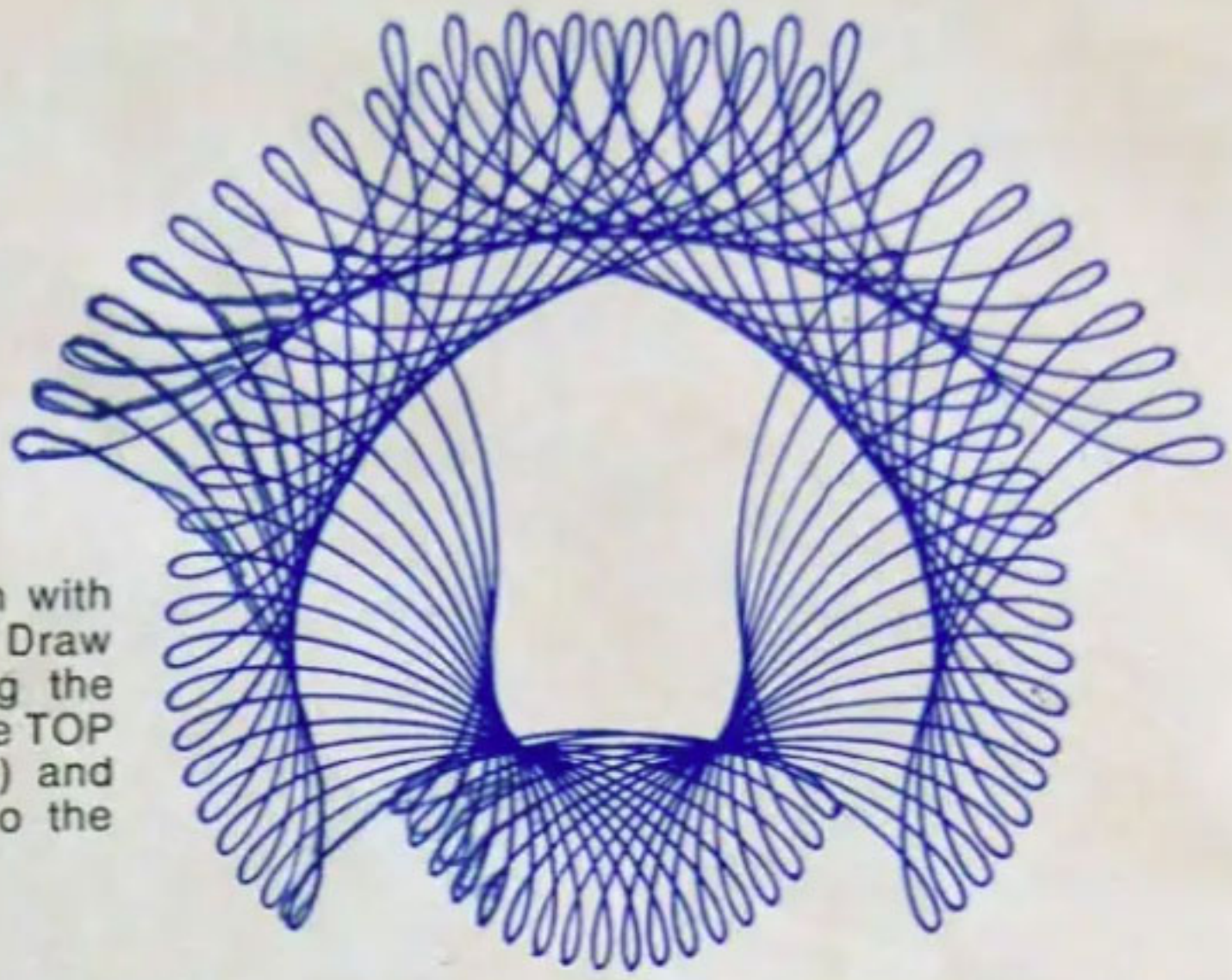


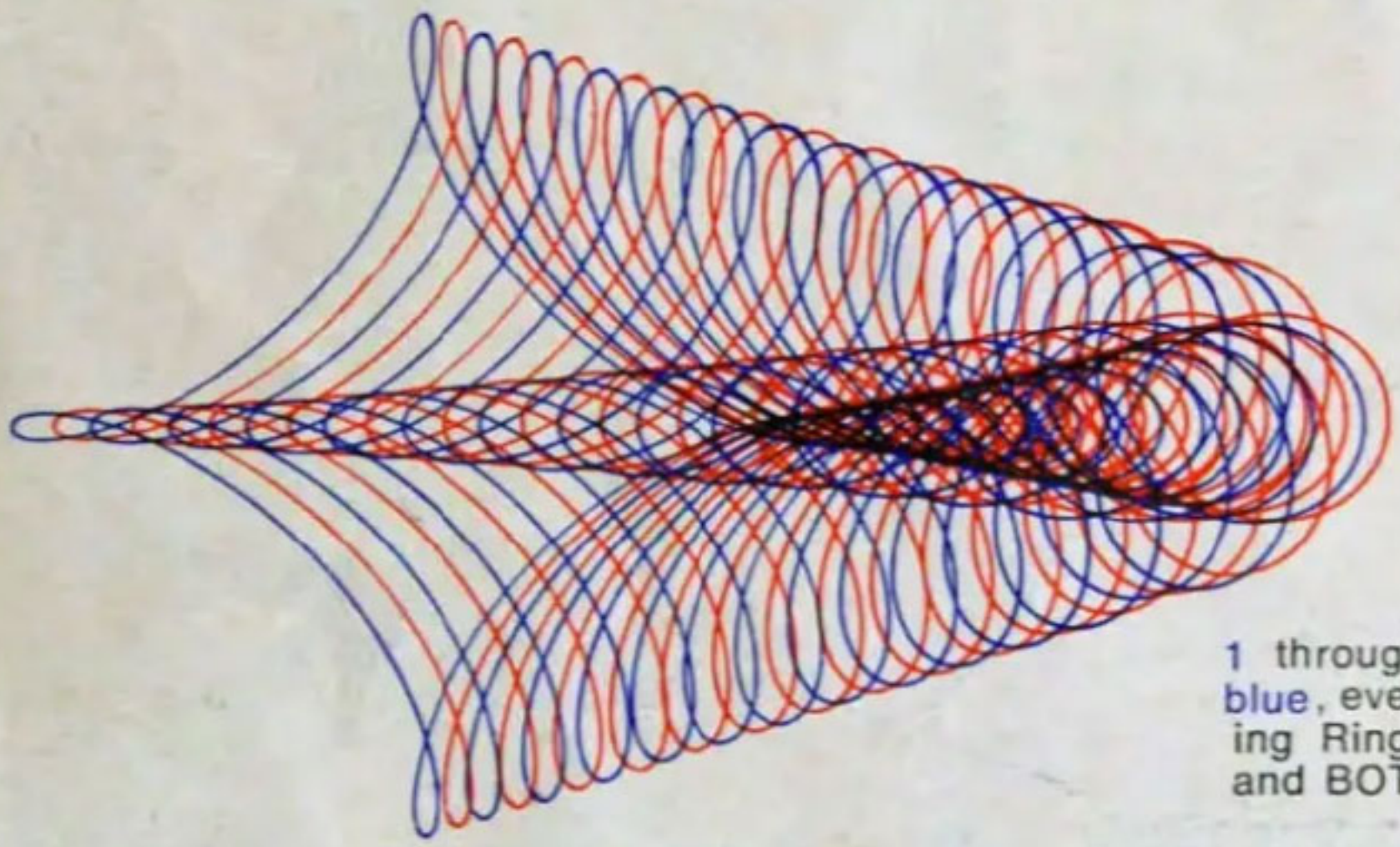
$\frac{144}{96}$ • (80) • 1 Start at left of Racks with mark 1 of Ring at top. Draw 14 designs, alternating red and blue, moving Ring two teeth right on TOP Rack every time. Always line up Hole 1 in the Wheel with mark 1 on the Ring.



$\frac{150}{105}$ • (84) • 1

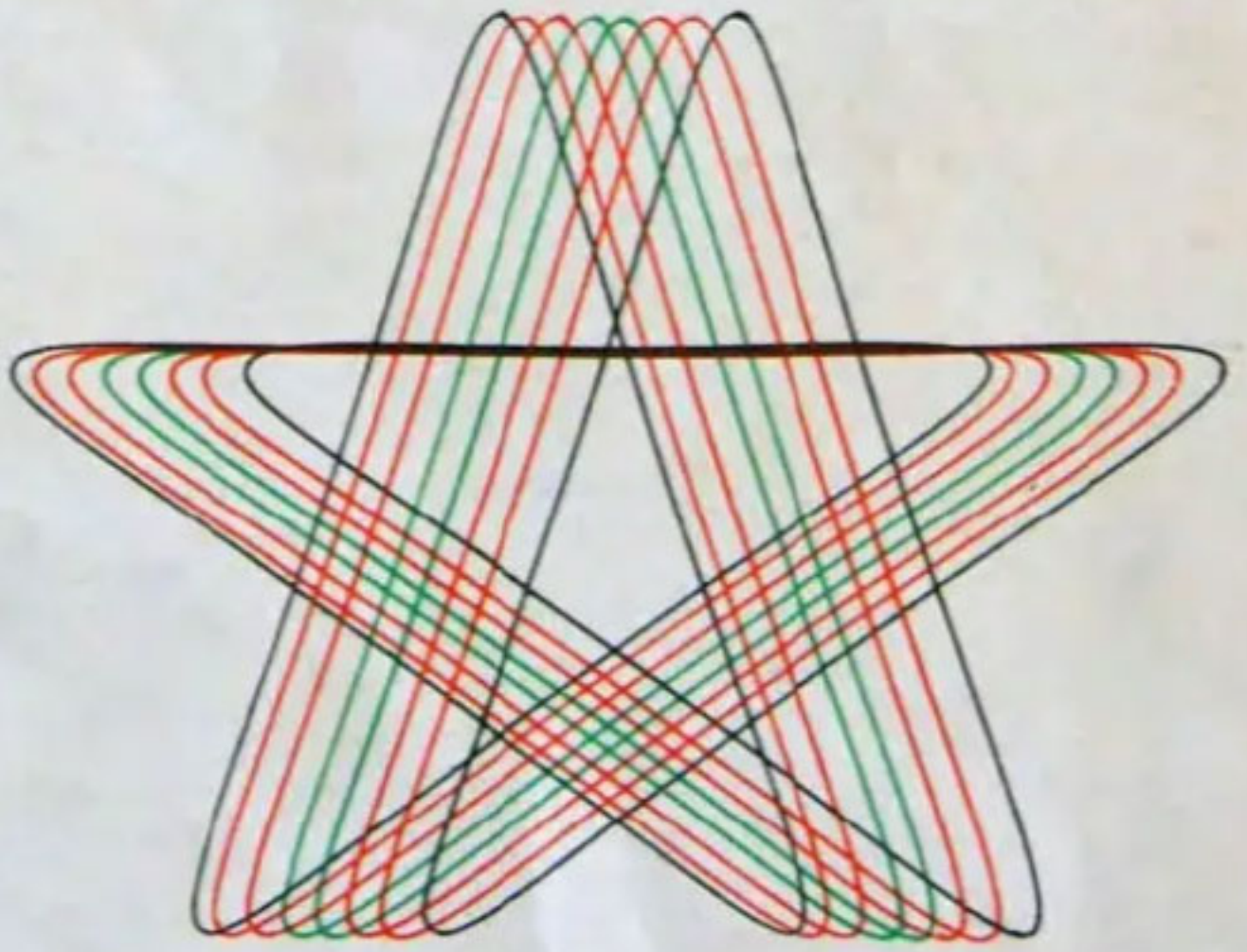
With mark 1 on Ring up, begin with Hole 1 of the Wheel at mark 3. Draw 18 patterns, each time moving the Ring one tooth to the right on the TOP Rack (leaving bottom in place) and moving the Wheel two teeth to the left on the inside of the Ring.





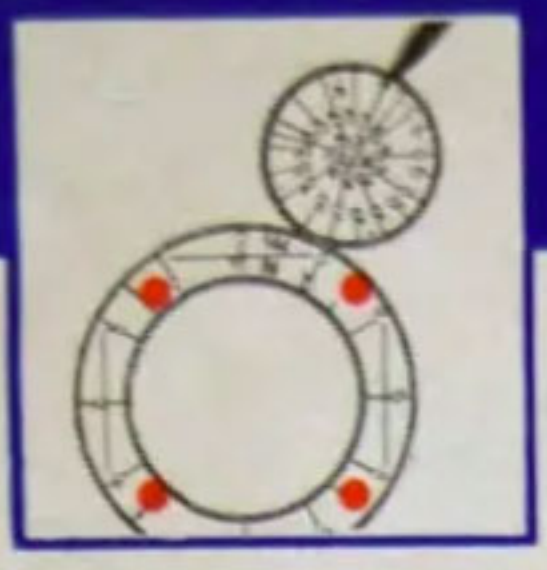
$\frac{144}{96}$ • (72)

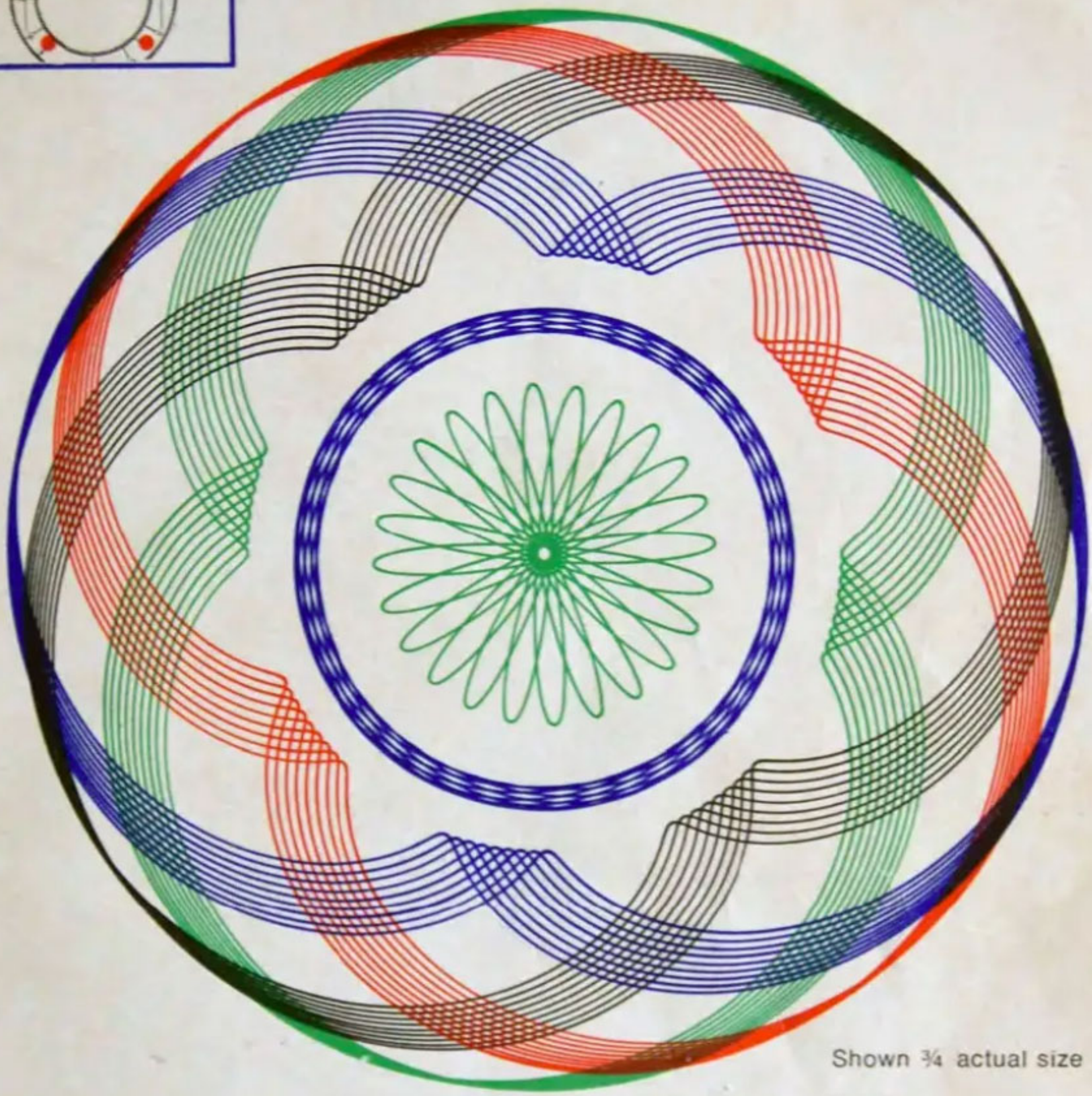
1 through 28, odd numbers in blue, even numbers in red, moving Ring one tooth right TOP and BOTTOM for each pattern.



$\frac{150}{105}$ • (42)

1-1-1-1-1-1-1-1, moving to right top and bottom for each pattern.





Shown ¾ actual size

OUTSIDE EDGE OF RING

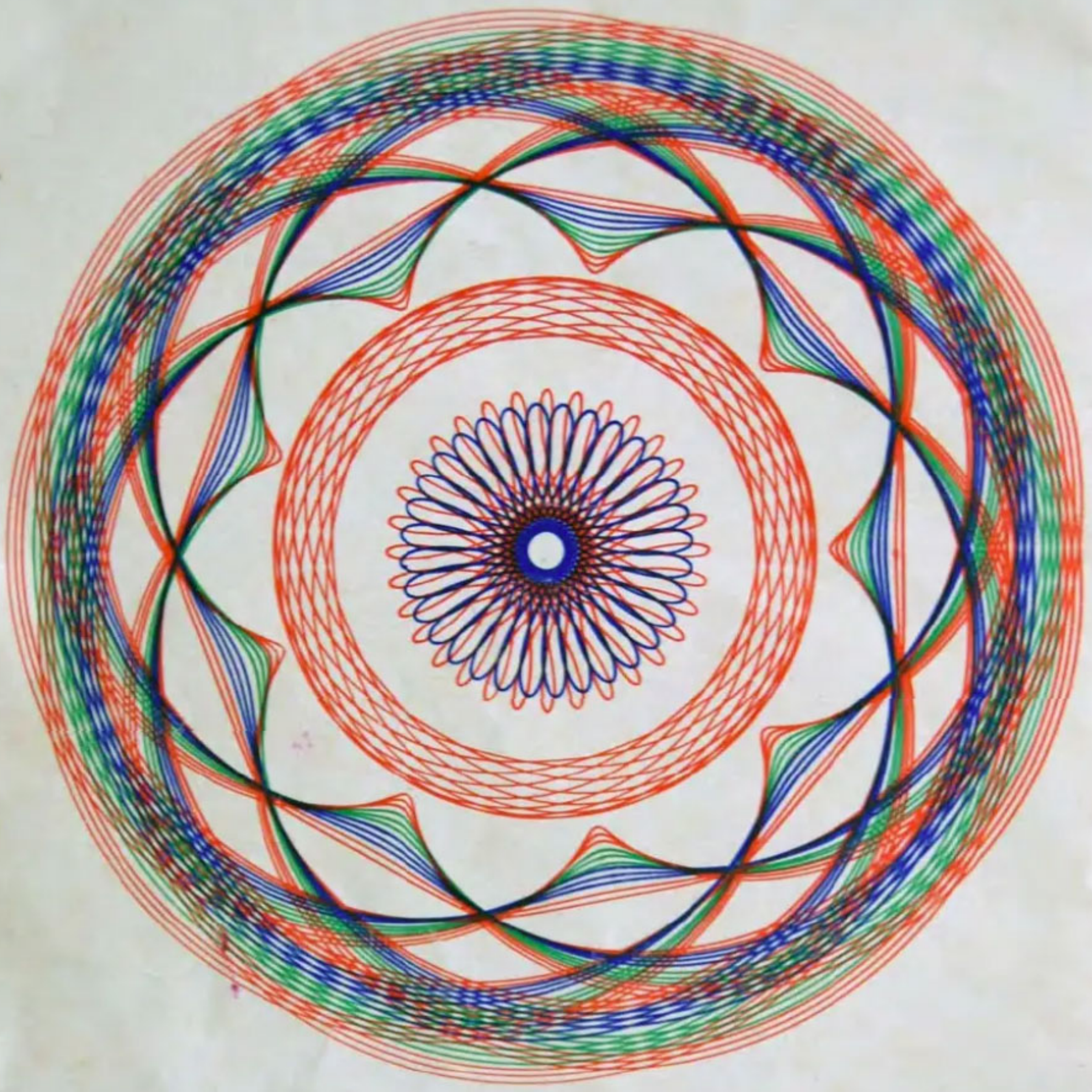
$\frac{144}{96}$ • (72) • 1; nine times, moving one tooth right every time; do the same in red, starting at the mark between marks 2 and 3; same in green, starting at mark 4; and in black starting at the mark between marks 5 and 6.

Leave Ring in place and draw INSIDE: (52) • 1

Now remove Ring and center Wheel (84) on the green pattern you have just drawn. Pin it to the board.

Use (40) • 13 around the Wheel.

Pattern on back cover is drawn in a similar manner . . . try it yourself.



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