

When Minutes Turn To Hours

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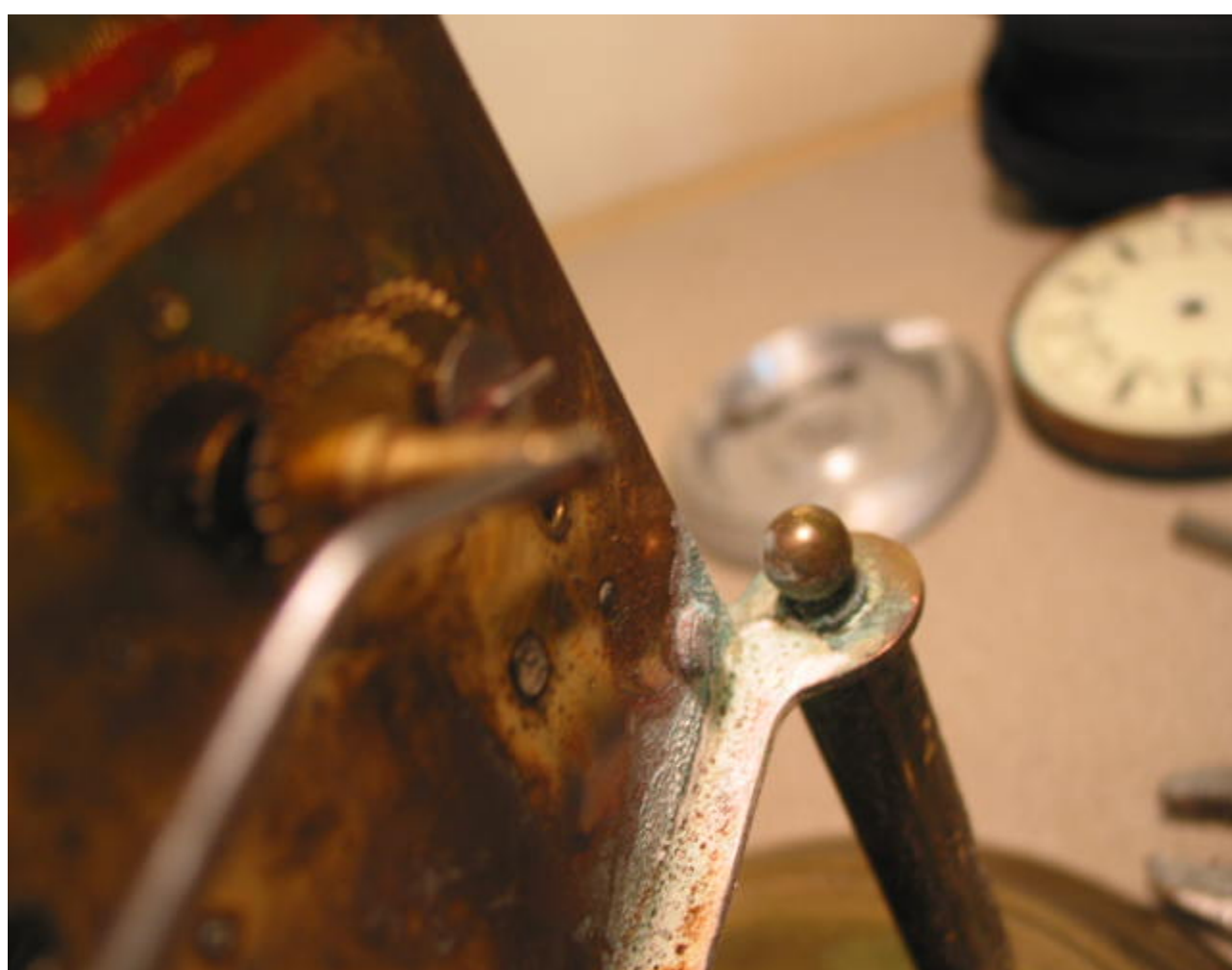


Illustration 1: This is an anniversary clock with the face taken off.

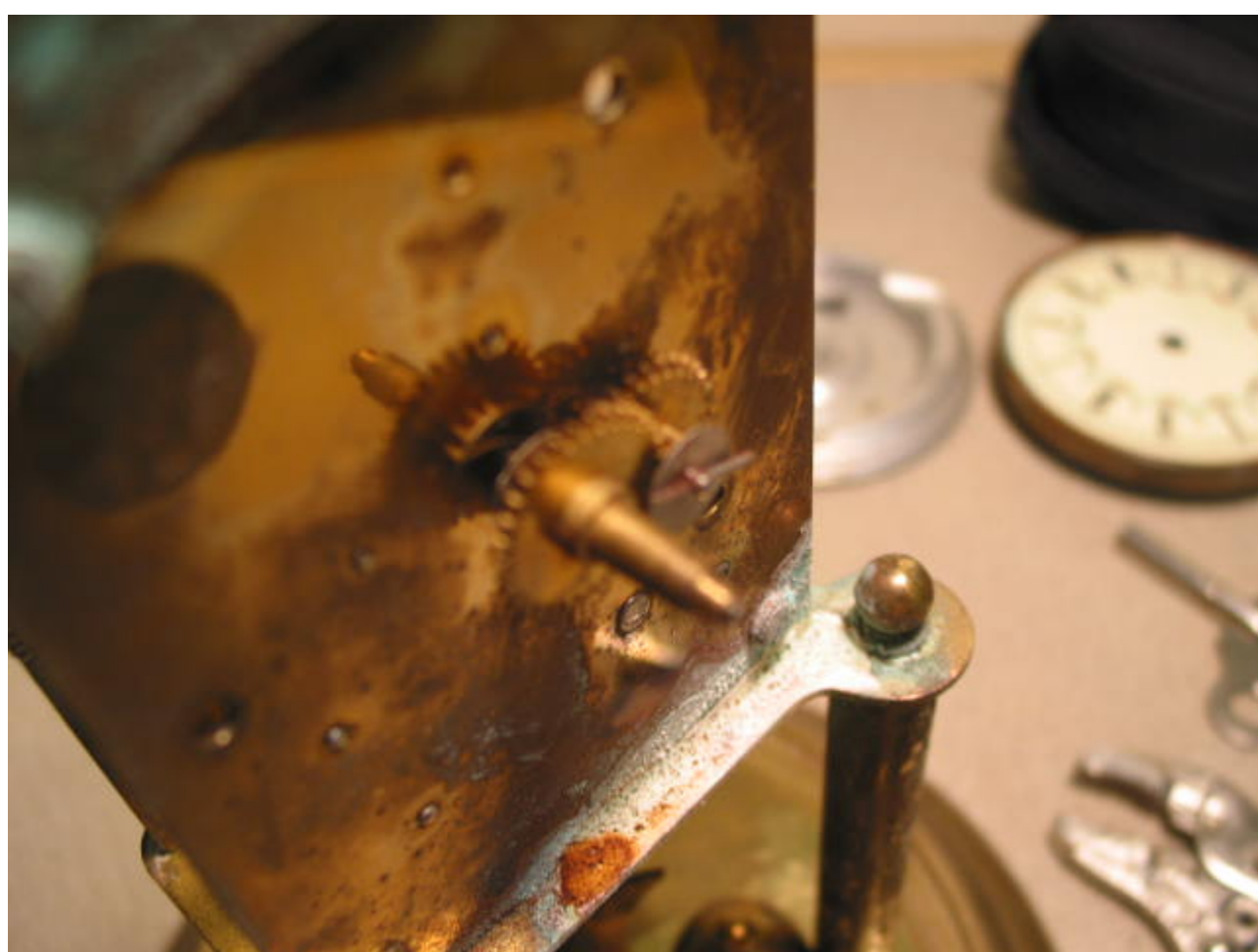


Illustration 2: The very tip is a steel shaft that goes all the way back into the clock, it rotates once every minute.

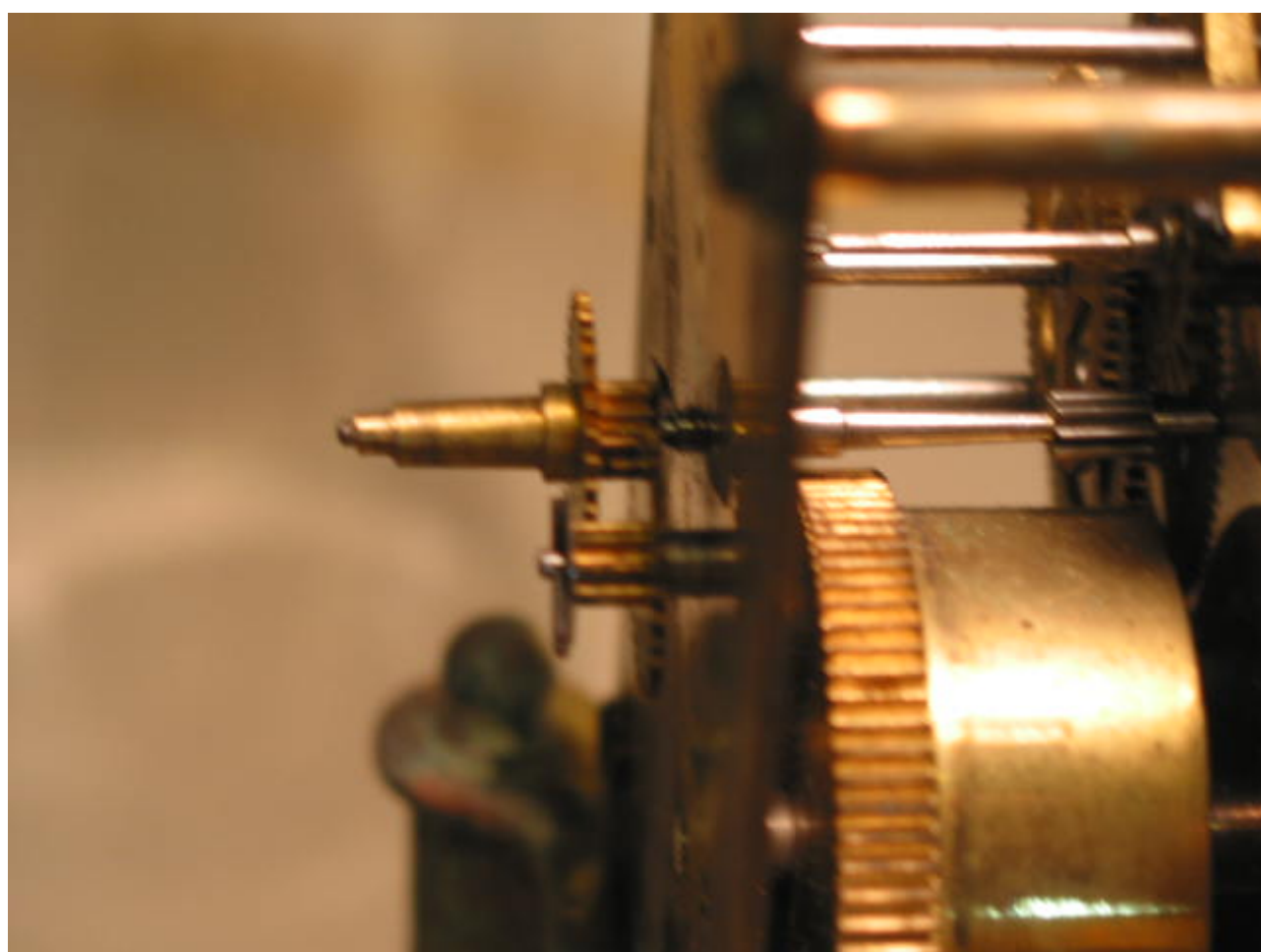


Illustration 3: There is a leaf spring behind the minute and hour hand holders (steel spring behind brass gears) This allows the hands to slip so one may set the time by moving the hands.

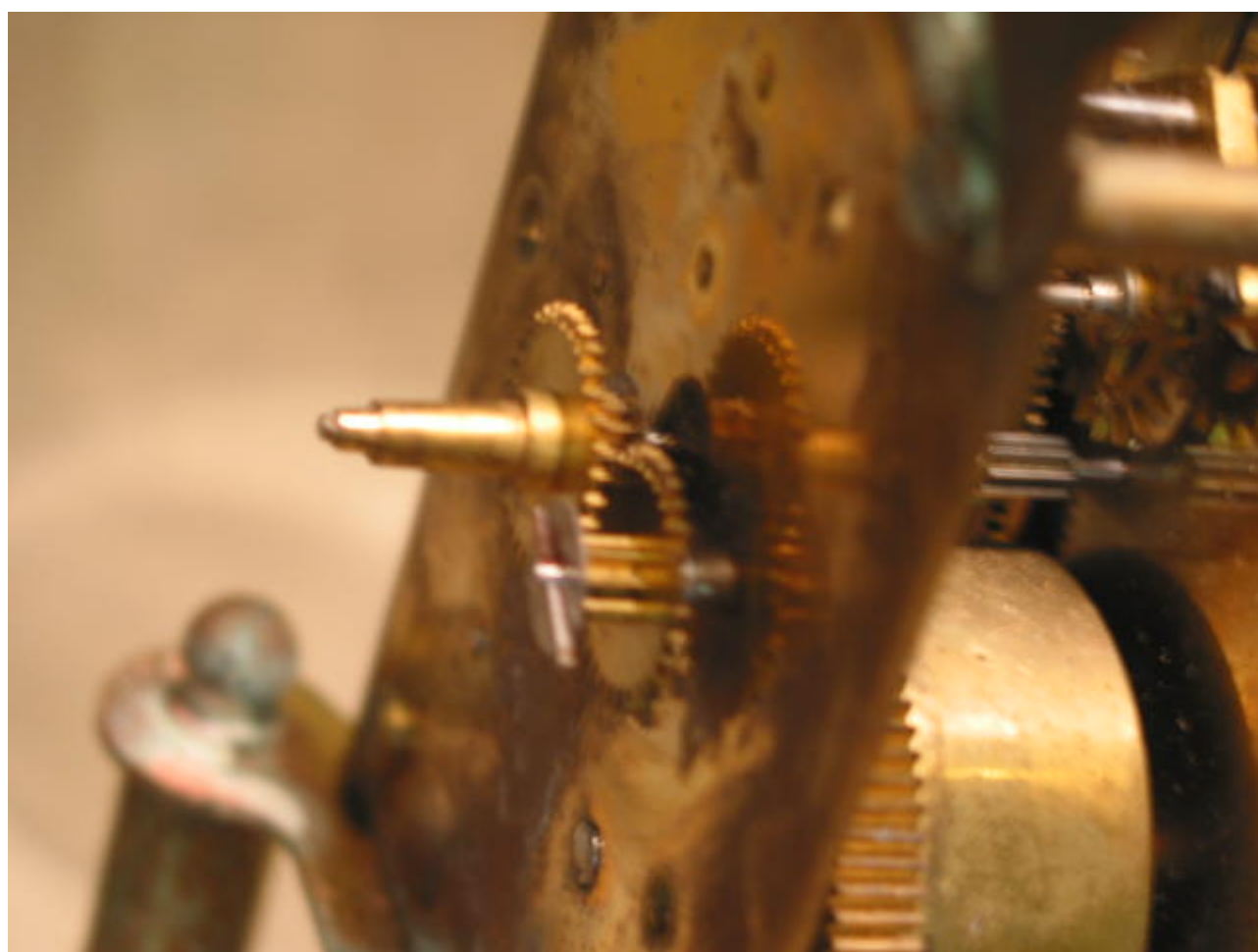


Illustration 4: The small diameter of brass holds the minute hand, the larger lower diameter holds the hour hand.



Illustration 5: The whole assembly is held on by a pin and steel shim, I'll take this off.



Illustration 6: Now I am free to take the wheels (gears) off.



Illustration 7: First the hour wheel comes off.

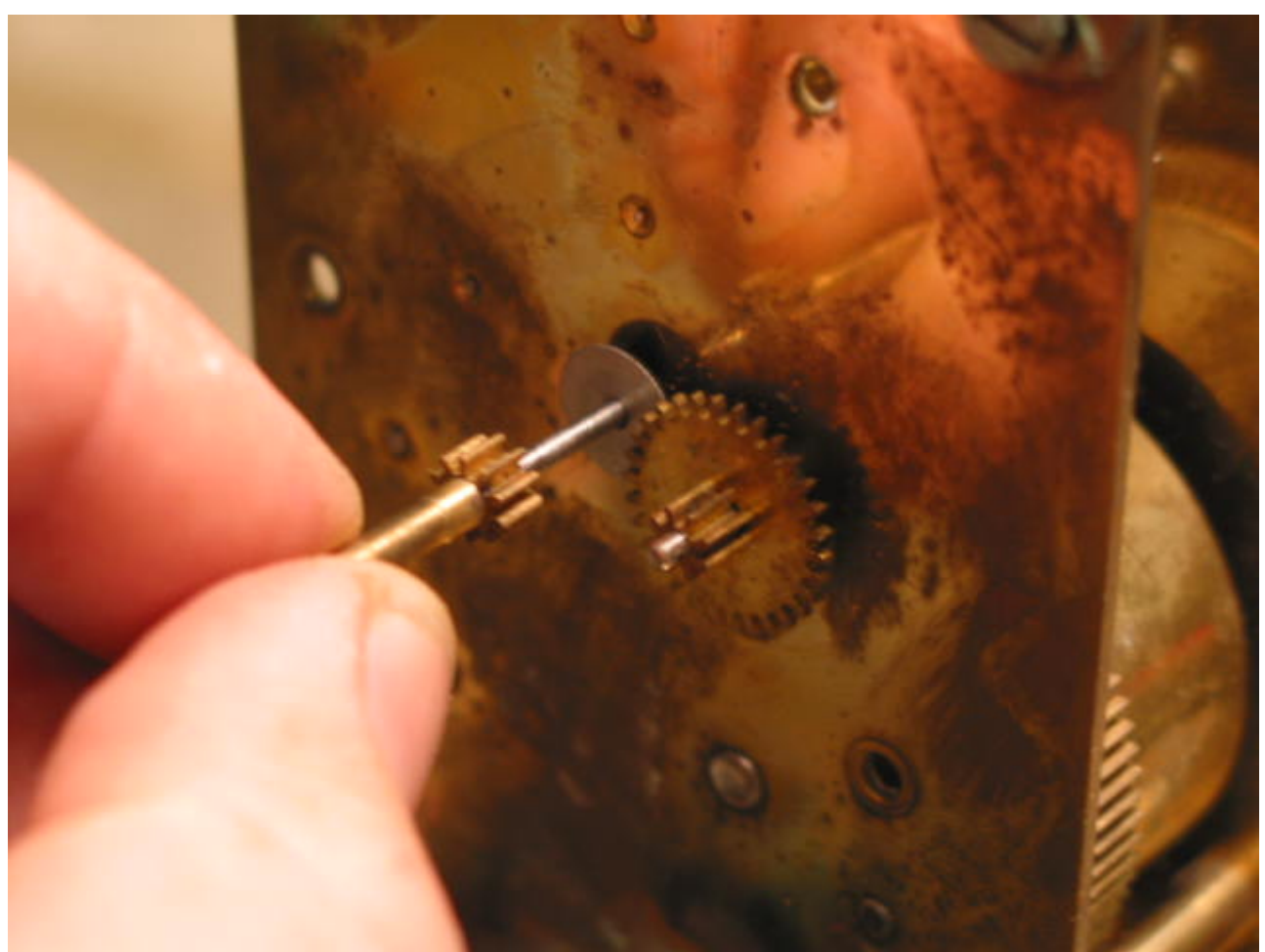


Illustration 8: Then the minute wheel.

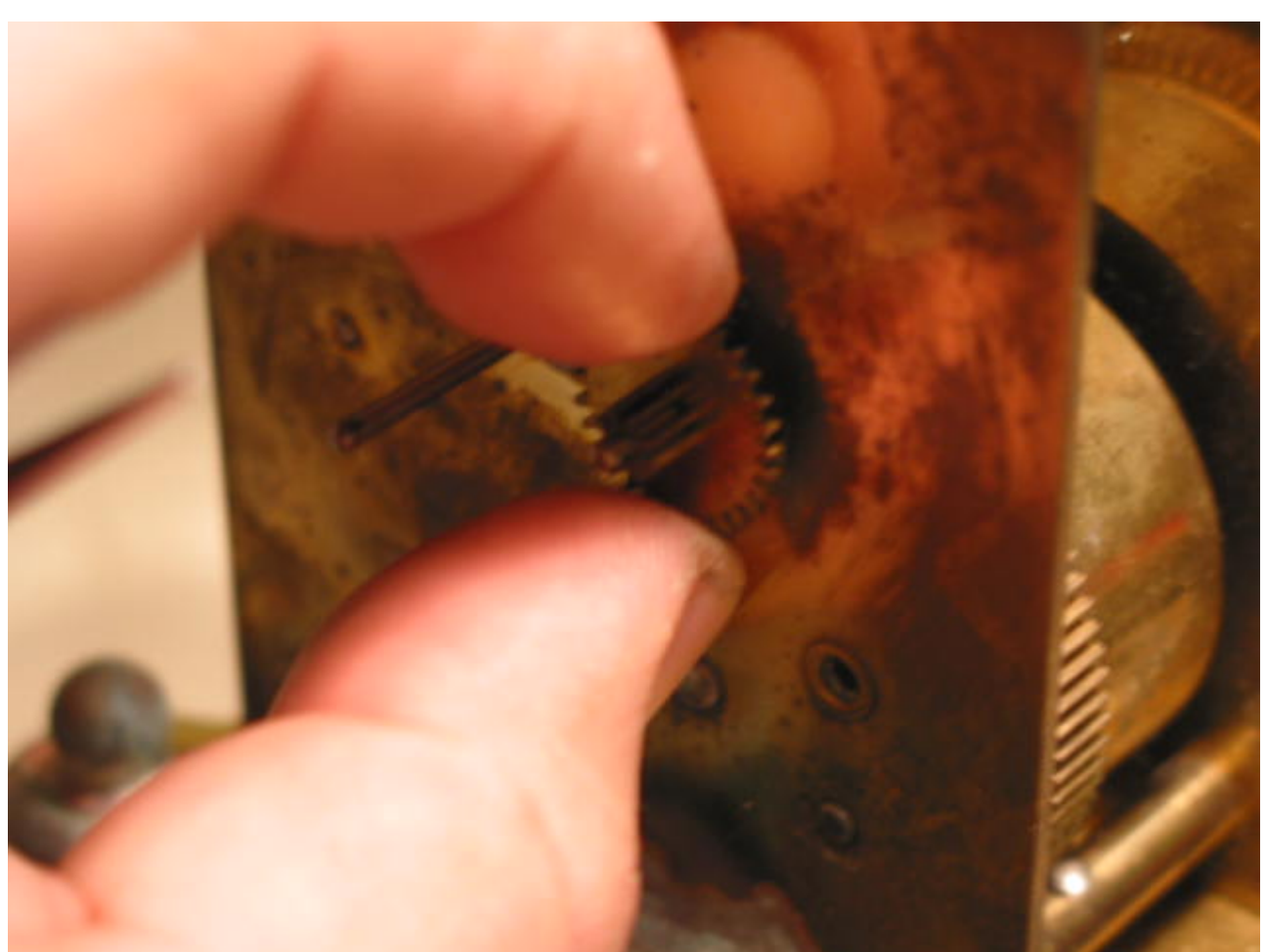


Illustration 9: Finally the reduction drive. It splits up the reduction into two gear meshes. For every 1 revolution of the minute hand the hour hand must only move 1/12 of the way around, or another way to put it is every 1 revolution of the hour hand requires 12 revolutions of the minute hand.

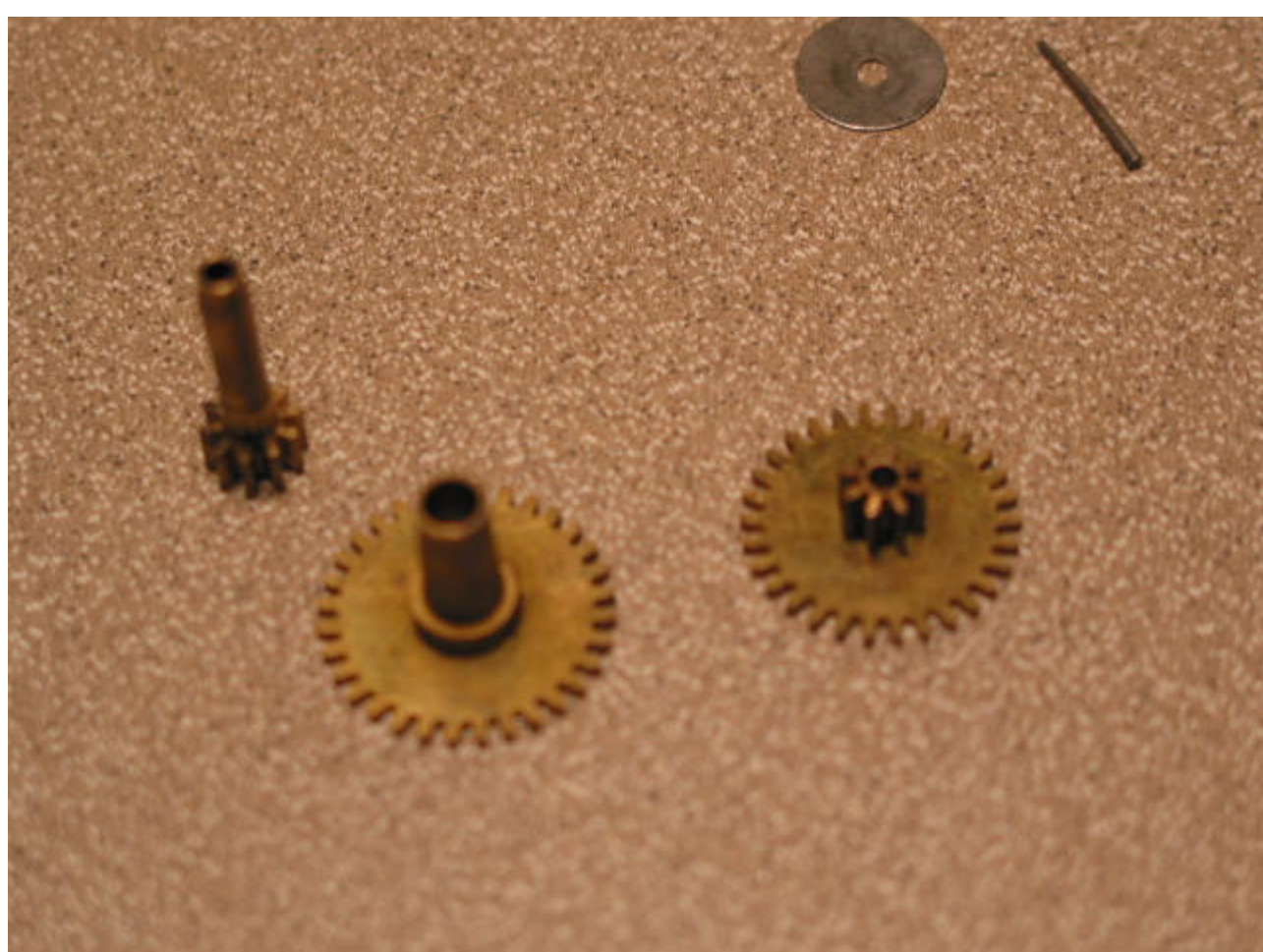


Illustration 10: Here are the three wheels separated, remember the steel shaft that goes through all of this is the minute axle that turns the center wheel (minute wheel very left) by friction. Ok so now to the light math. The number of teeth on the minute wheel (thus denoting circumference) is 10 teeth, it meshes with the reduction wheel with 30 teeth. that's 1 to 3 (see GCF www.brainlubeonline.com/fractions/fractions.htm) or that means that the first gear will have to turn 3 times for 1 revolution of the reduction drive wheel.

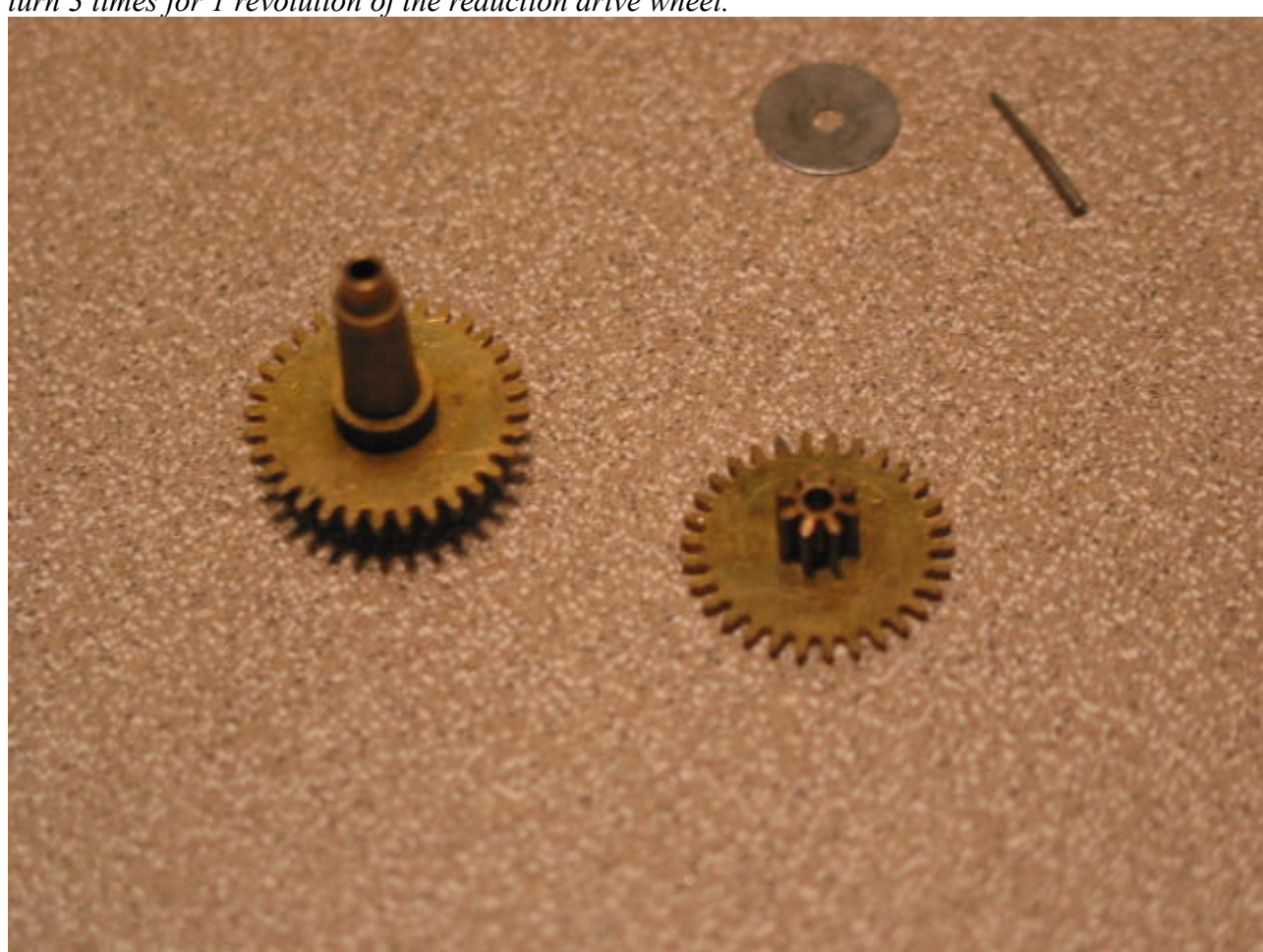


Illustration 11: Now the top of the reduction wheel meshes with the hour wheel (now placed over the minute wheel), the top gear of the reduction wheel has 8 teeth, the hour wheel has 32 teeth that 1 to 4 (circumference, GCF) SO IF WE KNOW the first gear must turn 3 times for just one revolution of the reduction wheel and the reduction wheel must turn 4 times for one revolution of the hour wheel that means the minute wheel MUST TURN 3 TIMES 4 (12 times or turns) turns for the hour hand to make one complete revolution.

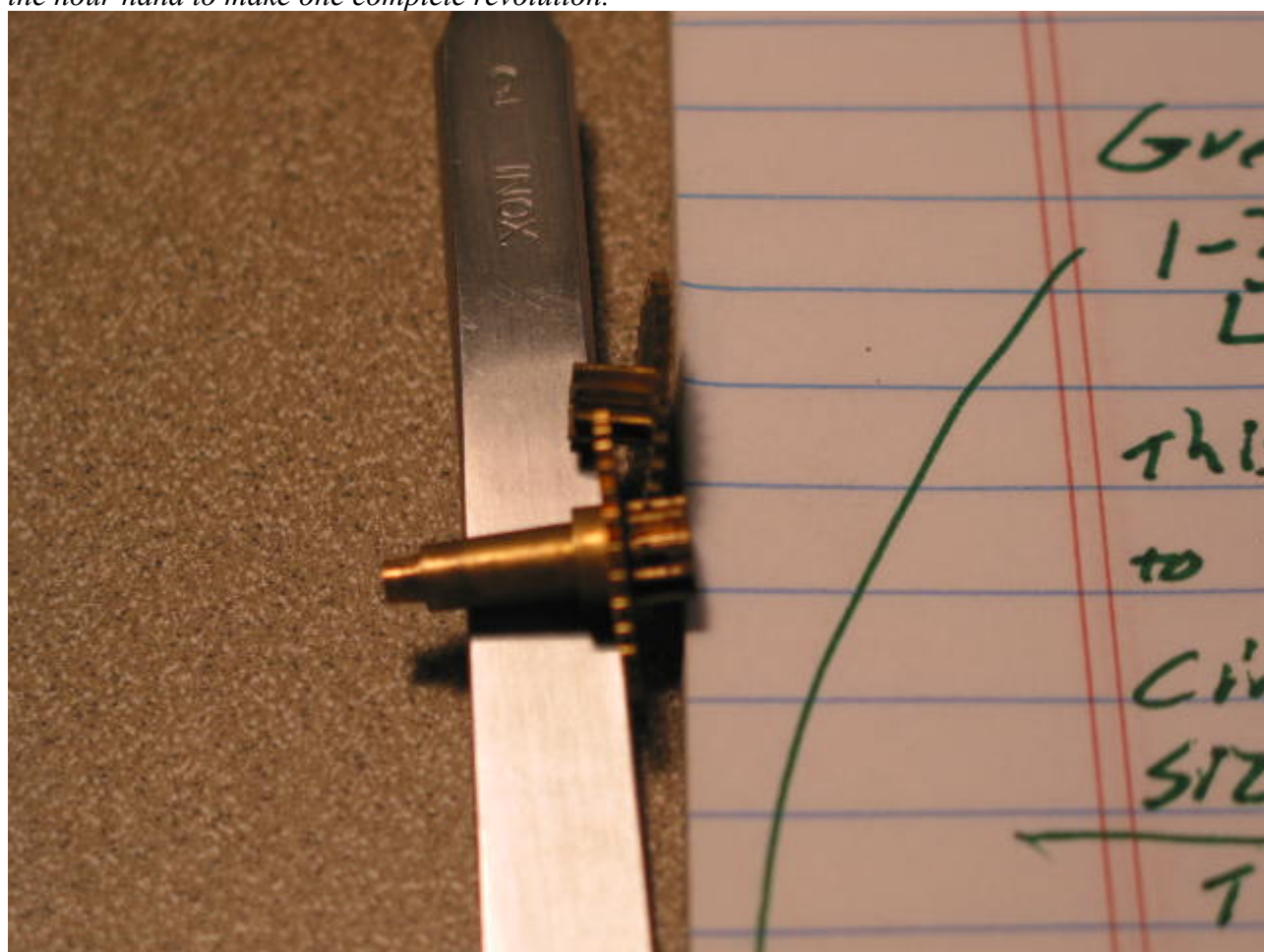


Illustration 12: The next to learn is the escapement but I will leave that to this site: www.abbeyclock.com Neat site, more gears than you can stand!!!



Illustration 13: Here is the assembly slightly pulled out.



Illustration 14: So that is the equivalent of a 1 to 12 difference in circumference. This is also a good design because the reduction wheel reverses the direction back to clockwise for the hour wheel.