

First basic terms:

1) Movement - The term movement refers to the entire set of gears, plates, levers, and so forth. You could also call the movement the mechanical "guts" of the clock.

2) Clock plate - Most clocks have two plates, a front and a back. These plates hold all the gears and allow them to turn as necessary and keep all the gears in their respective places. Most often the plates are made of brass.

3) Train - The train of the clock is a set of gears to perform a specific function. Typically these are the time train, the strike train, the chime train and some would say the motion works. For example, a time and strike clock, which means that it strikes the hour and many times the half hour, is a two train movement.

4) Gear - The clock gear is actually four parts in most cases. Those parts are the wheel, arbor, pinion, and pivot.

5) Wheel - The wheel of the gear is most always made of brass and contain many teeth. Wheels nearly always drive the pinion of the gear above it in its train. Most wheels are spoked and the most obvious when you view the movement.

6) Arbor - The arbor is the axle of the gear. The arbor holds the wheel, is the base of the pinion, and the ends of the arbor are the pivots.

7) Pinion - The pinion is a small wheel that is driven by the wheel of the gear just below it in the train. Pinions are smaller than the wheels and usually just below the wheel on the arbor. Pinions are usually made of hardened steel. A "tooth" of the pinion is called a leaf and the "teeth" are called leaves.

8) Pivot - The pivot is the end of the arbor and it is highly polished to reduce friction because the pivot goes through the plate of the clock and slightly out. The reason for the slightly out is so that when the bearing wears, the end of the pivot will not imbed itself into the bearing. The pivot is usually made of hardened steel. Almost always, a gear has two pivots, one to go into each plate.

9) Bearing or Bushing - The bearing is the hole in the plate that holds the pivot. Bearing are most always brass and can be jewels.

10) Motion Works - The motion works is typically a set of three gears designed to carry the hands and allow the clock owner to set the time without harming the time train. These three are the minute shaft, the intermediate wheel, sometimes call the idler gear or minute wheel, and

the hour tube.

The minute shaft usually has both the minute wheel and cannon pinion. These two wheels are held together by some sort of spring force or tension washer. This is what allows the clock owner to move the hands. The cannon pinion drive the intermediate wheel and the intermediate wheel drives the hour tube. The gear reduction is 12 to 1 so that 12 revolutions of the minute hand equals one revolution of the hour hand.

Basic Non-Professional Cleaning

In clockwork, there is not much concern for the cleanliness of the gears. That's not to say they are not cleaned and inspected but it's the end of the gears that protrude into and slightly out of the plate that concern us.

At these points the pivots, the small end of the arbors, come through the plate and the plate at that point is call a bearing or bushing and is most always made of brass.

What happens over time is that the pivot wears out the bearing. So you potentially can have two problems. The bearing can be worn, this would be represented by an egg shaped hole rather than a perfectly round hole. The second problem is the pivot in that or any other bearing. As the pivot wears out the bearing, the pivot also becomes worn, scratched, or pitted and greatly increased friction.

Pivots can be worn, scratched, or pitted even if there is no evidence of bearing wear.

For basic cleaning, use tooth picks and remove as much dirt as possible from the bearings. Do this on both inside and outside the plate. Most of the dirt is usually on the outside of the plate but the inside can be just a dirty. This is the primary cause of the wear and the points of friction.

Basic Non-Professional Lubrication

The above mentioned points of friction are also the points of lubrication. Use a 5W-what ever 100% synthetic motor oil at those points.

The what ever can be 30W, 40W, 50W or anything because the way motor oil is rated the 1st number is the thickness of the oil at roughly room temperature. A 5W oil is perfect for clocks.

Here, less is definitely more. Just wet the pivot in the bearing. If oil runs down the plate it will pull all of the oil out of the bearing over time and then you will have dry bearings which will wear out much faster. The hole end of a very small sewing needle will usually carry the right amount of oil. Again, just wet the pivot.

The above is a very rudimentary cleaning and lubrication and will help but there are no guarantees. In clockwork, we disassemble the entire movement and polish or replace the pivots and clean or replace the bearings. This reduces friction to the minimum and brings all the gears back to the original plane that they were in when the clock was manufactured.

That disassembly is absolutely necessary in order to do a top notch job and warranty that work. We Clocksmiths also have the job of getting it all back together and in the case of a striking or chiming clock, some gears have to be placed back in the exact location as far as wheel tooth to pinion leaf contact in order for the strike and chime to function as they should.

The reason I mention that last paragraph is because if the job is done right, it will not be cheap. Just remember when you are shopping for someone to work on your clock, you get what you pay for, so don't expect quality work unless you are prepared and willing to pay for it.

Mike

Mike's Clock Clinic
1600 Maryland Avenue
Myrtle Point, OR 97458-1508

Phone: 541-559-1090, or 877-286-6762

Web address "<http://www.atmosman.com/>"

Main FTP site is located at:
"<http://www.home.earthlink.net/~atmosman/earthftp.html>"

Membership: NAWCC
Formally AWCI's 400-day Bench Course Instructor

Founder of Atmos-Pros & Clocksmiths (formerly Clockers)