Types of Rose Engine

Q: Is there a name for the type of Rose engine that slides back and forth on linear bearings as opposed to rocking on a centrally mounted pivot; thus eliminating the arc that results from rocking? I am planning a new project/build and considering this Type.

A: I don't think there is a special name for it but here are 11 different types that I am aware of, together with my own descriptions:
[1] Pumping Mandrel (the earliest type: used for swash turning (illustrated by Moxon 1677-84);
[2] Sliding Mandrel (the back of the mandrel pivots in a socket while the front slides horizontally against a spring and a rubber on the rosette profile);
[3] Rocking Headstock (where it rocks on end bearings below, or sometimes above, bed level);
[4] Sliding Headstock (modern type where headstock is mounted on linear bearings to slide both x & y movements against springs and rubber);
[5] Sliding Carriage (modern type where the slide-rest is mounted on linear bearings for x & y movements);
[6] CNC (the latest developments with movement effected by programmed stepper motors);
[7] Twin bed (where one bed rocks and the other is Fixed); 8] Pendulum type, where the headstock is mounted upside-down, pivoting on bearings high above the lathe bed; invented, I believe, by Prof. Gottfried Bockelmann);
[9] Rocking Slide-rest (another early type, illustrated by Bergeron in 1816), where the slide-rest rocks on end bearings at or below bed level; the rosette is mounted behind the chuck and the rock is controlled by front or back rubbers mounted on an extension of the slide-rest frame);
[10] Geometric Slide-rest (invented by Pudsey-Dawson 1870) with sliding slide-rest under control of a spring resisting cam which rotates 'n' times for each rotation of the mandrel, driven through the gear train of the spiral apparatus);
[11] Twin Mandrel, Birch's improvement (1891) on
the Pudsey-Dawson principle, where 2 mandrels are connected by a gear train; the secondary (back) mandrel holding one or two rosettes which push against a sliding/rotating slide to give combinations of rocking and pumping and the facility of merging the profiles of two rosettes - - - - -
- - - - - - - - - - -and this list does not include the various Straight Line Engines, the earliest of which I believe was described by Bergeron (1816).

John Edwards February 2018

Q: Are there any advantages that would make #4 the best choice?

A: Difficult to say - I have no experience of #4 but I would be concerned about the capability of the rubbers to push such a heavy headstock without it jamming. I have use #1 combined with #2 & #3 and found them satisfactory for what they were intended. I have found #5 can run smoothly and it has the advantage that rocking and pumping may be varied proportionately by changing the angle of the slide-rest. I believe #7 is too heavy. #8 is one that interests me greatly; unfortunately I don't have the means to make one, but I think the fact that it is suspended like a pendulum, means the weight is less of a problem than it is with #4. It will be slow to respond to the pressure of the rubber but, so long as it is not run too fast, I think it should give as fine a finish as any. I don't like the theory behind #9 because I think the arc of the cut might be visible and would therefore be unacceptable. I have used #10 and found it very productive as it gives so many variations by changing the gearing to determine the number of repeat patterns from the selected cam; and the cams are simpler to make than rosettes. #11 is my absolute favourite, because it can be used to simulate rocking, pumping, summing between two rosettes and multiplying the number of counts of the cam profile by changing the ratio of the gear train.

John Edwards February 2018