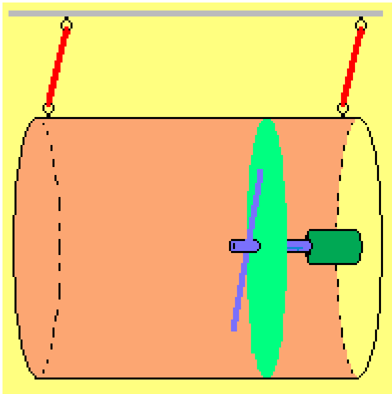
Alfred Evert 2016-05-31

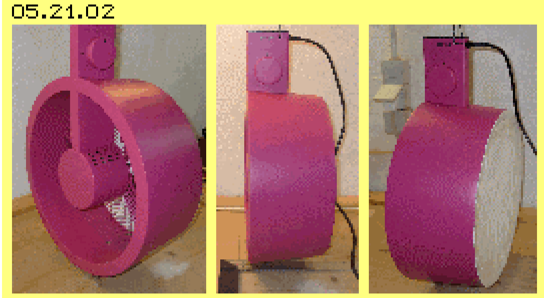
05.21. Experiments and Consequences

Useless Functional Model



At the summary of the book ´Air Pressure Power Box´, I made up a most simple model for approval of the general function: a simple rotor (blue) is turning around the air within a round cylinder (red), so the air is moving along a glide-face (green). Left side of this face weights only the reduced static pressure. Right side of this face is weighting the total atmospheric pressure. The free suspended unit is pushed towards left side.

Corresponding the that conception, I did rebuild a ventilator (see picture 05.21.02). The rotor-blades were mounted within a conical cylinder. I deformed the blades, so no longer pushing the air into axial direction, but only into turning sense. One side was open (left), the other was closed (white, right side).


05.21.02

Resulting was a strange effect: the unit could be drawn towards left, if only one did hold the hand in front of the open side (with no direct contact) – but this was not the aim. If also that side-face was closed, no longer did exist any motions aside.

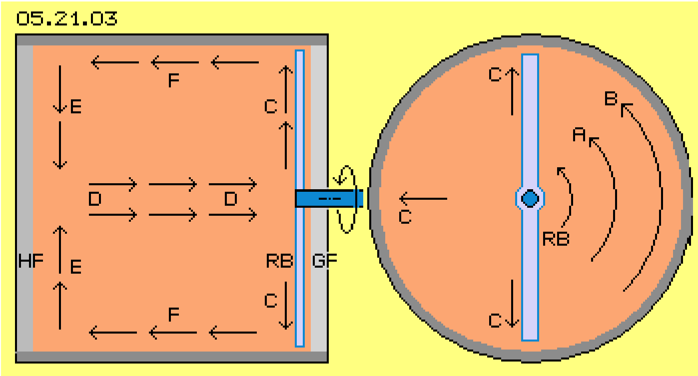
Two colleagues had build similar models with likely results. So these function models did completely fail. Nevertheless, this negative result does not bother the essentials of the bowl-engine conception. Only this model was designed too simplistic and a known Bernoulli-law was not taken in account.

Bended Flow-Lines and continuous Suction

Air particles are moving from areas of high density into areas of lower density all times, automatically ´by themselves´, based on their steady molecular motions. A local shifting of air particles occurs also based on the bending of flow-lines towards neighbouring faster flows: if occasionally a particle is pushed towards the faster flow, it goes on ´swimming´ forward with that flow. These particles are rejected some later and slower, or they even come never back to their original location. There, they are no longer available as collision-partners, so following particles can fall into the fast flow. Like an area of low density, every fast flow is affecting ´suction´ towards neighbouring slower flows.

This situation here exists (see picture 05.21.03 cross-sectional view right side), where the rotor-blades (RB) make running a rigid vortex: inside exists a flow A, further outside exists the faster flow B, so automatically comes up an additional motion C of air particles, from inside outward directed.

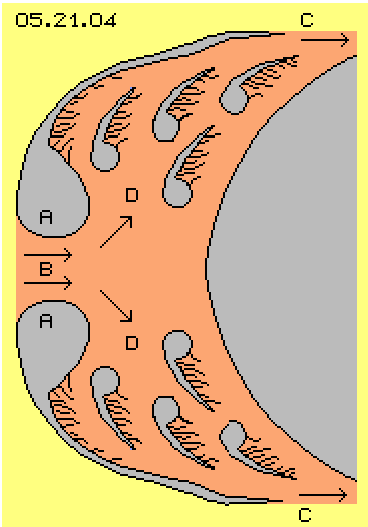
Resulting is a reduced density at the central area near the slide-face GF. This empty area is filled up by flow D along the central axis (see longitudinal cross-sectional view left side). At a closed system, the suction is further affecting along the stick-face HF, so flow E comes up, inward directed. The high density outside near the slide-face becomes released and balanced by a flow F along the outside wall.



The flows D and F are directed contrary, so the one flow F is pushed towards the wall, the second flow D is concentrated along the middle axis. The whole air is circulating along all inner faces, generally at spiral tracks. So no difference of speeds comes up at the slide- and stick-faces, thus no difference of static pressures. This kind of air movement practically is a ´short circuit centrifugal pump). Thus it´s absolutely unsuitable for the aims of the bowl-engine conception.

Irrespective of, the Bernoulli-law is still valid: flows of different speeds show different dynamic flow-pressures and thus also their static pressures are different, inevitably. Unchanged, this is the foundation and decisive principle of the bowl-engine conception. So it´s no theoretic question, but only a practical problem to generate flow differences at its best (without the disturbing side-effects of previous functional model).

Trout-Motor
One century ago, the well known naturalist Viktor Schauberger pointed out the phenomenal ability of trouts: motionless standing still within the flow, swimming and even jumping waterfalls up, some meter high. Everybody can study the trouts and it´s often shown at TV. Obviously these fishes are able to compensate the flow-pressure respective to transform the forces into thrust. Unfortunately, Schauberger´s ´Trout-Motor´ could not be realizes up to now.



One decade ago, I analysed that problem at chapter ´05.09. Trout-Thrust´ and deduced constructive solutions. Unfortunately up to now, I do not know whether these proposals were taken up somewhere. Picture 05.21.04 schematic shows the head of a trout.

A flow B enters the open mouth A. The water is sucked and pulled off by the flows C outside along the body. The internal flow D is gliding along the gills.

The gills of the trout (and salmon) probably have most smooth faces looking forward. At the rear side of, the flows are delayed by ´tuft- or crest-structures´. Locally comes up a difference of flow speeds, thus also of dynamic and static pressures and finally the thrust forces.

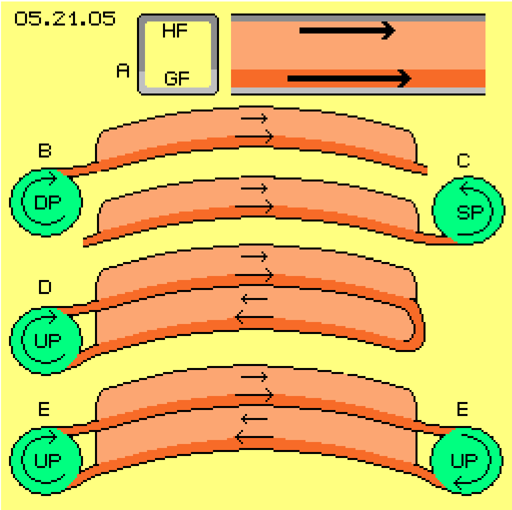
Possibly that motion principle could be rebuild: the dam-up pressure at the bow of a vehicle is pushing the water, respective the air, into canals. The flow along both sides of the vehicle will suck off and pull out the medium from these canals. Inside, the canals must be structured and function according to these gills. Details are described at previous mentioned chapter. An application of that ´trout-principle´ e.g. is shown at chapter ´05.08. Airplane NT´.

The conception of the bowl-engine is a consequent progress of these considerations: the flow through canals can also be done mechanical, e.g. by circulating pumps. At the aero-vehicles, the light medium of air should be used. The decisive presumption for generating thrust- and uplift-forces thus is the suitable structure of the faces within according canals – like obviously is realized by the gills of these trouts.

Air Circulation within Canals

Systematic investigations are demanded for testing the flows within a standard canal (see picture 05.21.05 upside A, e.g. with edges of 15 cm length). The upper ´stick-face´ HF (and the upper part of the side-walls, dark grey) should show rough structures, the below ´slide-face´ GF (and remaining parts of side walls, light grey) should show most smooth structure. The flow within the canals at its below area should be fast (dark red), the flow at the upper area of the canal should be delayed (light red).

Suitable measurements at the stick-face e.g. could be dents or cross-grooves, sticks or flexible strings, pockets or scales contrary to the flow. Suitable measurements at the glide-face e.g. could be longitudinal grooves or scales in flow direction, the acceleration of speed by jet-effect within bottle necks and especially the suction along convex curved faces. Each structure must be tested by different grains. In general, the stick-face must show most rough structure with strong resistance versus the flows. Opposite the glide-faces must be most smooth and free of friction. For example, 3D-printers are able to build most different coats, from the quality of a ´woodchip paper´ up to the ´Lotus-effect´.



Generally, the bending of canals should be preferred (e.g. like sketched at the following rows of that picture). The results will differ, if the air is pushed into a canal by a pressure-pump DP or if the air is drawn off a canal by a suction-pump SP (see B and C). The application of pressure inevitably builds up counter-pressure and increasing resistance. The application of suction decreases the pressure retrograde within a canal and the reduced resistance allows high mass-throughput.

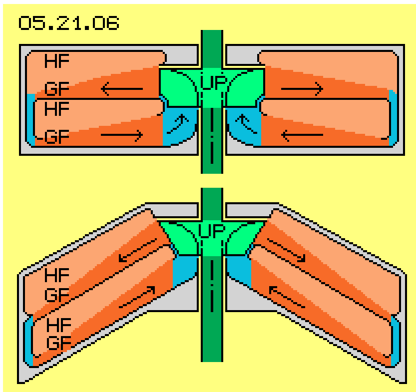
Generally, the air should move within closed circuits. For example, at D the air within a canal at two levels is pushed/sucked by a common circuit-pump UP. If two circuit-pumps E are installed, the air can be moved through rather long canals. At these closed systems should also be tested the results with different strong air-pressure respective density of the enclosed air.

At chapter ´05.18. Pro and Contra Bowl-Engine´ (at picture 05.18.03) was shown, how thrust can be generated at sails by an ´artificial wind´. Now here, the air is guided along ´curved sail faces´ at changing directions, to and fro. Multiple of such units can be piled up one above the next, representing relative wide effective faces within a narrow space. The air circulation can be done e.g. by a pump in shape of a long impeller.

These investigations can not be done by hobby handicrafts. Certainly however, suitable structures with remarkable differences of speeds, at least five percent, will be achieved by professional procedure and high-tech resources. Afterward, also solutions could be approved corresponding to previous functional model.

Centrifugal Pump
At this functional model, the rotation of the air along the slide-face inevitably was overlaid by an outward motion. Based on the back-affecting suction, inevitably came um a corresponding inward-motion along the stick-face. That problem could be solved with two disk-shaped canals, one upon the other. Both flows could move along slide-faces, like schematic sketched at the longitudinal cross sectional view upside of picture 05.21.06.

A circuit-pump (UP, light green) pushes the air outward along a slide-face (GF). Outside, the air (blue) flows down to the lower level. By the suction of the inlet-area (blue) of that centrifugal-pump, the air again is pulled inward, now along the lower slide-face. The speed of flows is constant, if the cross-sectional faces are equal, inside the pump and outside at this redirection-area. The areas of fast flows are marked dark-red. The areas of relative slow motions along the stick-faces HF are marked light red.

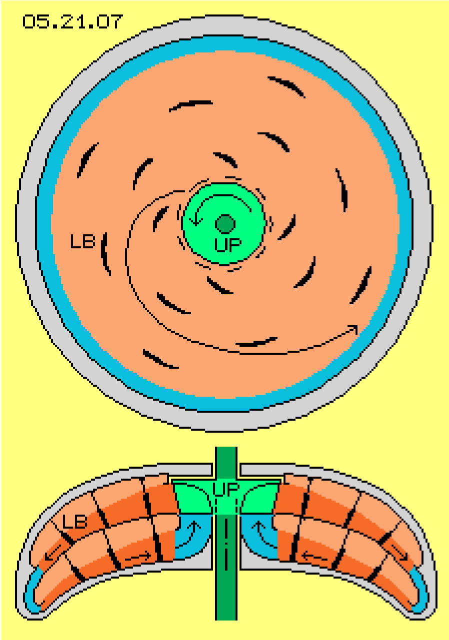


However, the construction with even disks will merely work effective. The advantageous flows along curved faces can be used only with a cone-shaped arrangement of both levels (see longitudinal cross-sectional view below at picture 05.21.06). There, two stick-faces HF are curved concave and both slide-faces GF are curved convex around the central axis.

The circuit-pump (UP, light green) pushes the air tangentially outward versus the upper stick-face. There, the air is dammed up with relative high static pressure towards this wall. The air particles are rejected by steep angles. Further inside, they push neighbouring air particles along the slide-face by flat angle. This inner wall is back-stepping in turning sense of the flow and thus it steady builds a suction area (analogue to the upside-rear area of wings). At the outer regions (light red) the flows are hindered and delayed by friction at the rough faces. At the inner regions (dark red) the air particles are moving faster ´by themselves´ (based on their normal molecular motions, falling into the relative void).

Quit outside, through a small gap, the air is pushed respective is pulled to the lower level. The pump here is ´sucking´ the air from outside inward, with increasing faster rotating motion. Here comes up the autonomous acceleration like at whirlwinds: the relative slow flow of the environment with its corresponding strong static pressure is pushing the air inward and forward in the turning sense. This motion is intensified as the wall further inside becomes stronger curved. So the air enters the inlet area (blue) of the pump already with a strong twisting flow. The air circulation within that cone-shaped construction needs only few energy-input. However it builds up a clear difference of flow speeds and static pressures at the stick- and glide-faces.

Bowl-Engine



Picture 05.21.07 shows a cross-sectional view respective a view top down. The circuit-pump (UP, light green) transports the air tangentially outward. Between the stick- and slide-faces could be installed some fins (LB, black) in shape of small wing profiles. The air is guided some inward by their curved inner face. The stronger curved outside face builds a suction area, where the air becomes accelerated and redirection also some inward (just like at wings). As a whole, the air keeps at spiral tracks (see curved arrow) with relative steady speed. Analogue should be installed guiding-fins also at the level of the inward motion. At a given throughput of masses, the air is moving most long along the curved faces with the advantageous different pressure and suction areas.

Below at this picture once more is sketched a longitudinal cross-sectional view. Now here is shown the bowl-shape with faces better fitting for flows. Between the stick- and slide-faces are marked some fins LB. Advantageously, these cone- and bowl-shaped units can be piled up, one upon the next. Commonly used centrifugal pumps can be installed, also at a common shaft.

A pump with diameter of 0.3 m can drive 6000 rpm without problems. The flow would move along all slide-faces with about 100 m/s. It should be possible to reduce the speeds along the stick-faces by 5 to 10 percent. Based on known formula P = 0.5 * rho * v^2 results a difference of static pressures of 500 to 1000 N/m^2 (at a density rho = 1.2 kg/m^3, at higher densities corresponding stronger).

If the unit shows a diameter of 1.25 m, the effective face will be about 1 m^2. At both levels of a unit, thus the pressure difference would be some 1000 up to 2000 N. Also this reviewed version for generating the demanded difference of flow speeds with these cone- and bowl-shaped engines, thus delivers sufficient uplift and/or thrust forces, suitable for many vehicles.

Net Result

Obviously the theoretic considerations at physics are rather worthless until not approved by experiments. Obviously also here, the practical experiment of building that real functional model finally did reveal the decisive mistake of that simplistic construction. Obviously, practical progress can only be achieved by the old fashioned method of try-and-error – like here demonstrated by the error correction and the deduced consequences.

The main obstacle to find alternative solutions however is still the mental fixation on suspected incontrovertible theories – or their wrong application. At the aero-techniques, at the one hand one well knows: ´input of energy is demanded to overcome the flow-resistance – while the uplift is just for free´. However one does not register, that´s an application of ´Free Energy´. At the other hand, the prevailing hypotheses still is: ´uplift is achieved only by pressing down a correspondent mass of air´. That´s corresponding to Newton´s law of mechanics – which however is only partly valid for fluids.

So one is far off the idea to generate the uplift exclusively by the difference of static pressures – and pressure-differences within gases automatically come up at flows of different speeds. One also is far off the idea, one must not only use pressure for generating flows, but it´s much more effective to use suction effects, especially along curved faces.

Now this subject is finished for me. Professionals of the aero-technologies however should just begin with searching alternative and effective solutions against the common environmental pollution of aero-traffic and other kind of traffics.

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