

Husky-Zee 2000 Cam-operated Valve Engine

This is a derivative of the "Husky" engine originally seen in Popular Mechanics (I think in the late 40's). Our engine doesn't have the neat exhaust pipes and is missing four of the six columns. Uses the same crank mounted cam (hand ground) pushing against a dowel pin valve. Dowel (valve) is held against the cam by air pressure (no spring). Cam is locked to crankshaft with allen screw (to allow valve timing adjustment). As cam rotates it allows valve to drop (pushed down by air pressure...from yellow hose) and air intake hole (to cylinder) is uncovered. When cylinder reaches bottom dead center, piston uncovers exhaust ports (see the three holes on the side of the cylinder.....works like a gas powered two-stroke). Makes a glorious clattering sound, not unlike an air-impact gun. Cam, made from ordinary 1018 stock, looks quite beat up after many hours of display running.....still the original, though. Despite small flywheel, this one idles very slow and has superior torque (but needs a fair amount of air.....~15 psi).

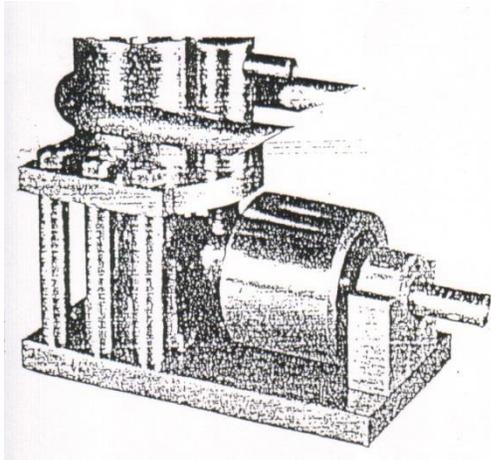
Here's an alternate explanation that restates some of the ideas above (this may clarify the operating principles for some folks).

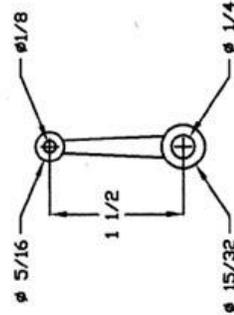
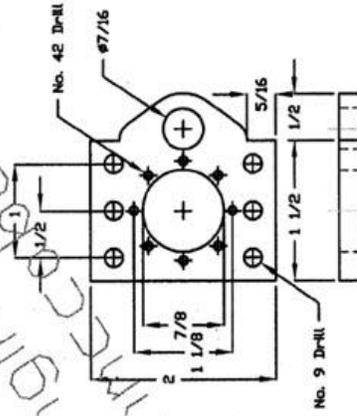
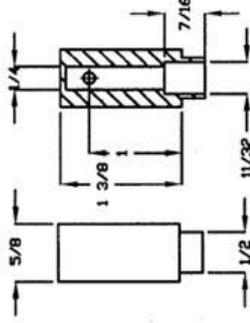
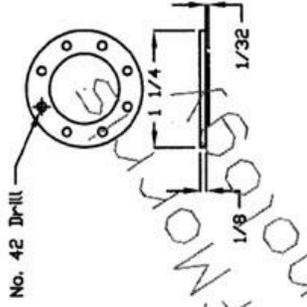
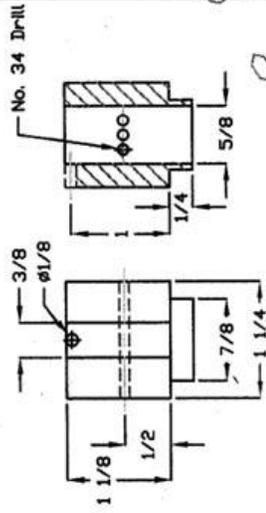
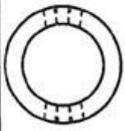
Compressed air enters the engine via the top of the head (see the yellow hose in the second photo of our project engine). This air presses down against a steel dowel that slides in a hole parallel to the cylinder. The air pushes the dowel (valve) against the cam. As the cam rotates to its "low" position, the dowel is forced down (by the air.....there's no actual valve spring). As the dowel moves down it uncovers a small transfer hole that allows the compressed air to enter the cylinder (and push the piston down).

When the piston reaches its lowest point (BDC), it uncovers the exhaust ports (the three holes near the base of the cylinder in both photos). Excess compressed air escapes. This is not the most efficient system (the engine does consume some power compressing trapped air as it travels up towards TDC), but it is a simple and reliable system (somewhat like 2-cycle gas engines).

The engine operates by "pressure differential". There is some pressure above the piston as it raises (a bad thing), but there is much more when air is admitted via the transfer port, pushing the piston down.

Black and white image at top left is original...the two color photos are our modern version.





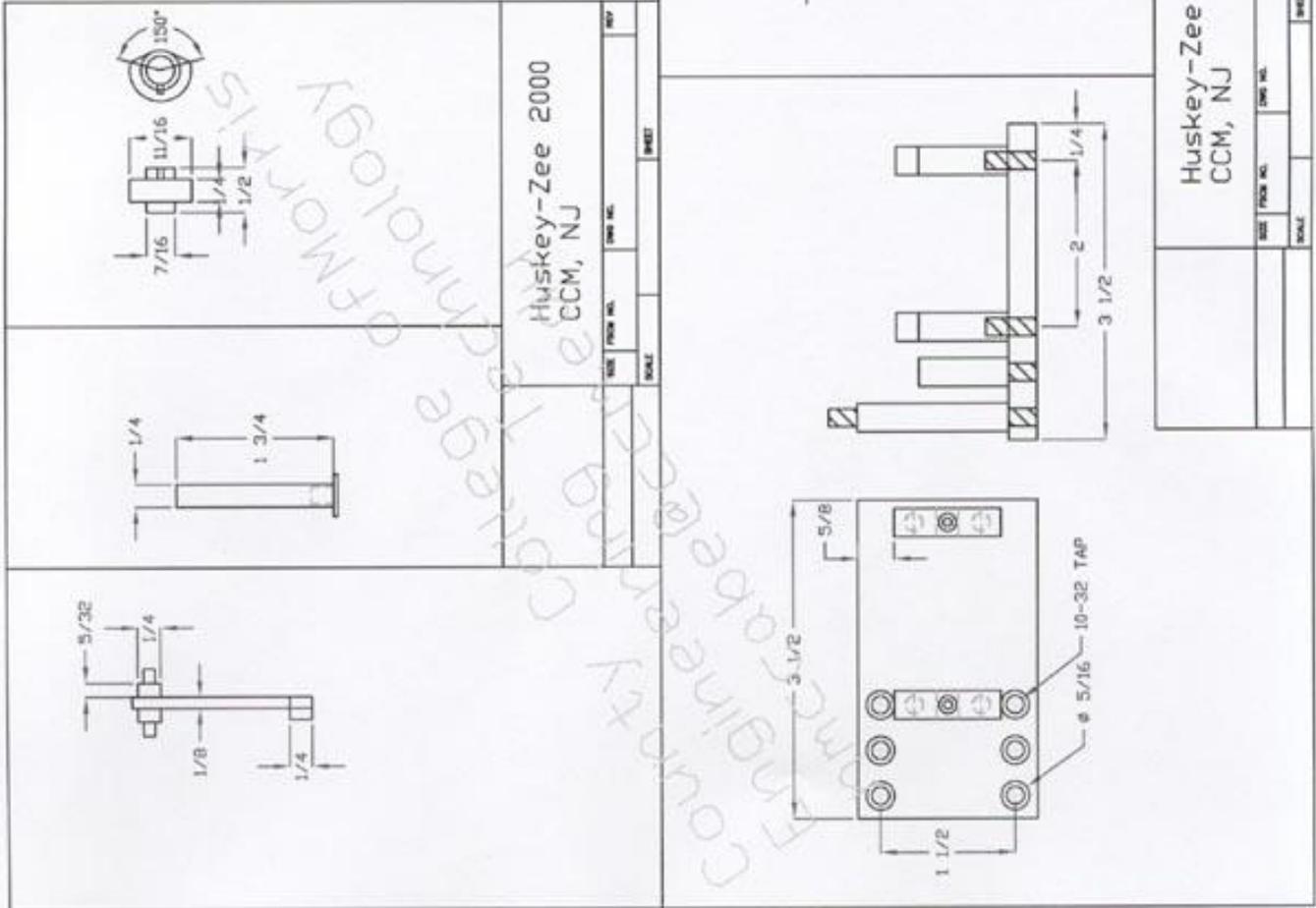
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SCALE SHEET

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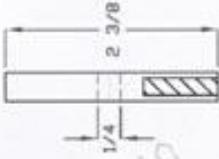
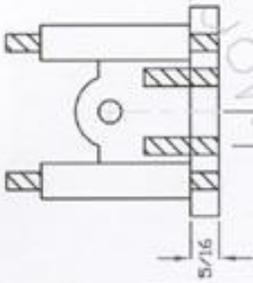
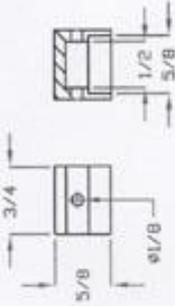
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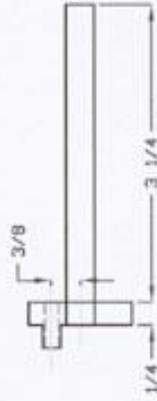
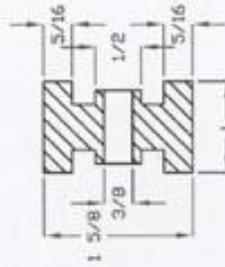
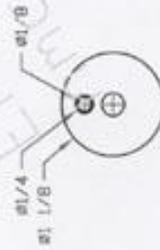
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DATE	FIGURE NO.	ISSUE NO.	SHEET



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Original Magazine Plans

