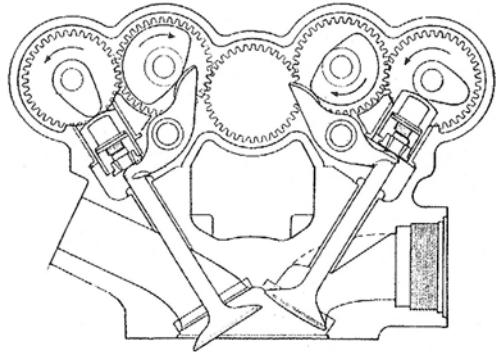


(f) This can be admirably demonstrated when attempting to drive a steam car that uses a single mushroom variety of an inlet valve for the throttle (regulator). Considerable force is required to open the valve, usually fully. Any attempt to throttle back lets the valve take over shutting itself in an instant. A definite use of kangaroo juice.

Can We "Get it Right"?

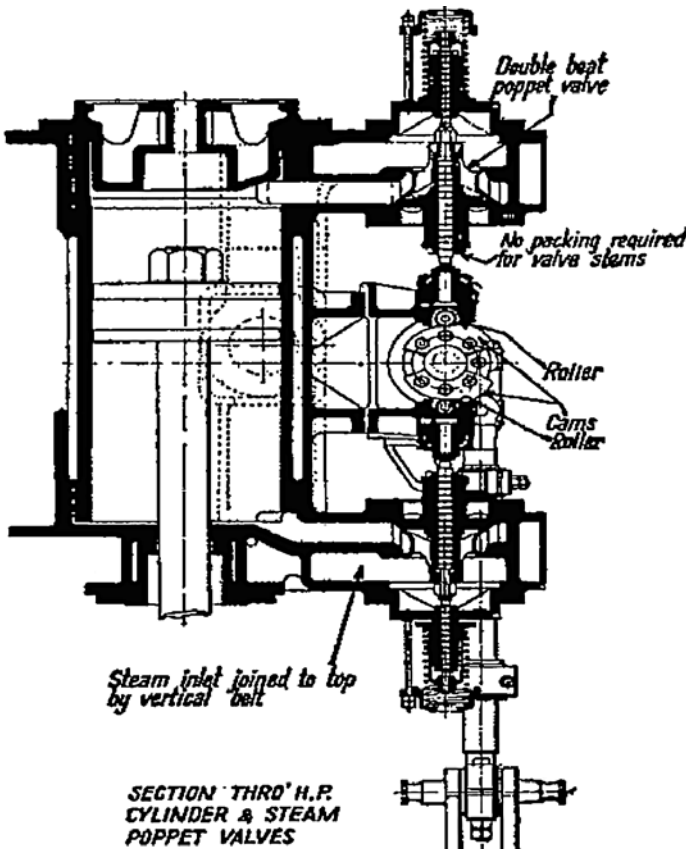
Possibly, with 11 Advantages against 5 Disadvantages, according to the Duke of Wellington's theory, we carry on. Let's deal with each of the Disadvantages.

Bash Valves - have proven that they can do it using "hammer blow" principle without detriment. AT cut-offs 30, 25, and 20% the lead produced by piston open the valve is tolerable. At 17% or less it becomes a positive advantage. Cam assistance is necessary until 3% then leave it to the Bash mechanism.



The Achievable

Desmodromic Valve Gear (see accompanying drawing) used very successfully for the past 40 years on racing Ducatis. Basically two additional cams to close the valve. The 500 c.c. Norton desmodromic engine. This valve gear (left), tried experimentally in 1959, used two shafts for each valve. The "closing" rockers are forked and bear on collars. In the Ducati desmodromic valve-gear system the central shaft carrying the "closing" cams is bevel-driven from a vertical drive-shaft.



Comment

Complicated (particularly on three dimensional cams) high rates of friction on HP steam engines.

Lotus Active Valve Train (or Similar)

(see Web page www.lotuseng.com) a hydro/electronic fully programmable with valve gear or cams.

Comment

Very interesting, on paper looks as though it can do anything asked of it right up to 4,000 rpm. Is the added complexity worth pursuing?

Double Beat or Balanced Poppet Valve

(see accompanying drawing) More in PART 2. I will leave the last word to Bugatti "This arrangement of two heads (double beat) is indispensable in the case of a steam engine, to compensate for the action of the pressure prevailing in the admission manifold which tends to open the valve".

Doug Leeming