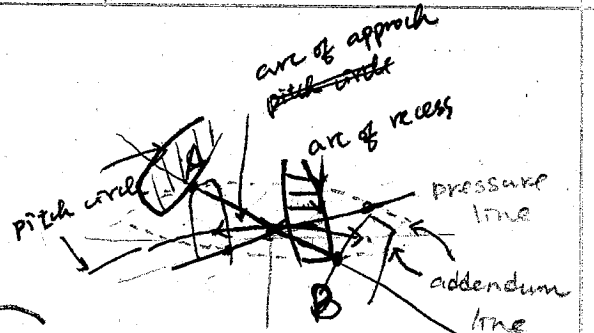
- project 2 due - Dec. 9. 1996
- find a guy to do ~~re~~ evaluation

H.W. 13.15
13.22



- last time
  - contact ratio $1.5 < C.R. < 2.0$ → arc of action / circular pitch (p) = CD / $P_b \leftarrow \frac{2\pi r_b}{N}$ (base)
  - interference → too close such that contact starts before A and/or ends after B
  - gear trains → from base circle taut string

today
- reading 13.13, 13.14, 6.1, 16.5 not cover 13.8 ~ 13.11, 13.15 ~ 13.17
- gear direction
- force analysis of spur gear
- clutches

addendum of driven & pressure line

addendum of driver & pressure line.

$$W_{j/a} = \text{sign}\,\frac{W_i}{a} \cdot \frac{N_i}{N_j}$$

example

	A	B	F	G
$W_{a\text{ total}}$			W_a	W_a
$W_{a/arm}$			$-\frac{25}{21}W_a$	$\frac{-N_F}{N_G}\cdot\left(-\frac{25}{21}W_a\right)$
W_i			$-\frac{4}{21}W_a$	$\left(1+\frac{25}{21}\frac{N_F}{N_G}\right)W_a$

$$\Rightarrow \left(1+\tfrac{25}{21}\tfrac{N_F}{N_G}\right)\cdot 1000 = W_G = 2\text{?}$$

$\Rightarrow$ different answer !!

why ?

If gears moved with arm (any of meshing) $\Rightarrow$ use $W_{i/a} = \text{sign}\,W_{i/a}\frac{N_i}{N_j}$

If gears are fixed at earth $\Rightarrow$ use $W_i = \text{sign}\,\frac{N_i}{N_j}W_j$

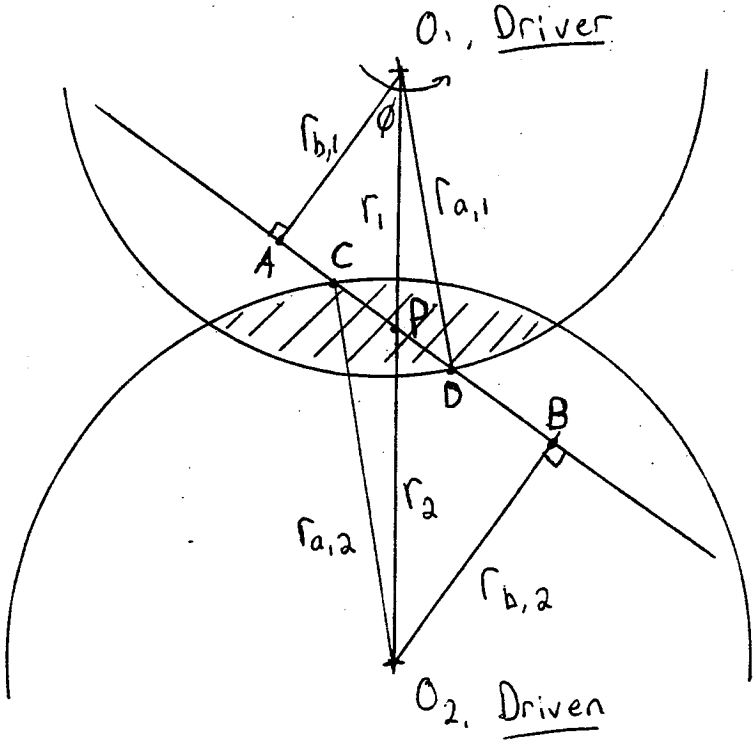
Recitation 11/22/96

$$AD = \sqrt{r_{a,1}^2 - r_{b,1}^2}$$

$$BC = \sqrt{r_{a,2}^2 - r_{b,2}^2}$$

$$AB = O_1O_2 \sin\phi$$

$$CD = AD + BC - AB$$



- A + B are pts of tangency to base circles
- r_1 & r_2 are radii of pitch circles
- Remember line AB is fixed throughout contact
- Circles drawn here are addendum circles

Contact Ratio - $C.R. = \dfrac{CD}{2\pi r_b/N}$ where $\dfrac{r_b}{N} = \dfrac{r_{b,1}}{N_1} = \dfrac{r_{b,2}}{N_2}$

$$1.5 < C.R. < 2.0$$

Interference - Interference will occur if

$$BC > AB$$

or

$$AD > AB$$