



## Smithsonian Institution

*Smithsonian National Air and Space Museum Archives*

### Aaron A. Sargent 1883 Designs for Aerial Ship

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Berlin Sept 4th. 1883

Approximate Figures

To generate gas for balloon with acid and a metal =  $\text{Fe} + \text{H}_2\text{SO}_4 = \text{FeSO}_4 + \text{H}_2$ .

Proportion ~~of~~ 1 of  $\text{H}_2$  of 1 of  $\text{H}_2\text{SO}_4$  to 7 of Fe

Takes 23 times the weight of Fe, and 49 times the weight of  $\text{H}_2\text{SO}_4$  to make 1 of  $\text{H}_2$ .

1 cu ft  $\text{H}_2$  = 2.43 grams, 700000 cu ft  $\text{H}_2$  = 1,701,000 grams ~~[[divided by symbol]]~~ 451 (grams in lb avoirdupois) = 3771, total wt  $\text{H}_2$ .

Same amount of air at 14 times heavier = 52794 lb avoirdupois. Would take 86,733 lbs Fe to make 700000 cu ft  $\text{H}_2$  which at 8.02 lb = \$1734.66 for Fe (scrap Fe).

Would take 184,779 lbs  $\text{H}_2\text{SO}_4$ , which at \$.04 per pound = \$7391.16

700000 cu ft coal gas at \$2 per 1000 = \$1400.

Experiment with refining coal gas.

" " ~~[[dittos for Experiment with]]~~ deriving  $\text{H}_2$  from water <sup>^</sup> ~~[[by electricity]]~~ each cubic centimeter of which contains 1 1/4 liter of  $\text{H}_2$ . See Barkers College Chemistry under H.

[[line]]

One pound of  $\text{H}_2$  burning will raise the temperature of ~~[[strikethrough]]~~ 1 lb  $\text{H}_2\text{O}$ . ~~[[strikethrough]]~~ 50,000 lbs  $\text{H}_2\text{O}$ , 10. Haswell 569

One lb C = 14500 lbs  $\text{H}_2\text{O}$  raised 1 ~~[[degree symbol]]~~

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