

SOME AIR RULES.

The volume of air under constant pressure increases directly as the absolute temperature increases.

The absolute temperature is the temperature shown by the thermometer, plus 461.

To find the volume of air at any higher temperature, multiply the volume at lower temperature by the higher absolute temperature and divide the product by the lower absolute temperature.

Example. If 50 cubic feet of air enters a heating coil at 20 degrees, what is its volume after it leaves coil at 100 degrees temperature?

(Volume) 50 561 (higher absolute temperature) 28,050 481 (lower absolute temperature) 58.3 cubic feet.

A pound of air at atmospheric pressure will occupy 12.38 cubic feet at 32 degrees temperature.

By substituting a constant for above value is obtained, 39.8, and with this constant the cubic feet of a pound of air can be found for any temperature by this rule:

Divide the absolute temperature of the air by 39.08. By doing this for two temperatures the difference will be the change in volume due to the difference in heat for each pound of air.

The length of an indicator diagram should be twice its height, in order to be proportionate in appearance.

You should keep before the people,
For they are very apt, you know,
To forget you are in business,
If you cease to tell them so.

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Late Chief Electrical Engineer Royal Electric Co.,
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**THE ENDURANCE OF ROTATING
SHAFTS.**

SOME of the results arrived at by recent tests made by the government authorities at the arsenal in Watertown, Mass., may be regarded as of special importance in relation to the endurance of rotating shafts. Thus, while it has been found that great improvements in tensile strength and elastic limit have been obtained, it has not been shown whether the limit of endurance under repeated strains has been increased. In the rotating tests of cylindrical shafts, alternate tensile and compressive strains are successfully applied, and under these

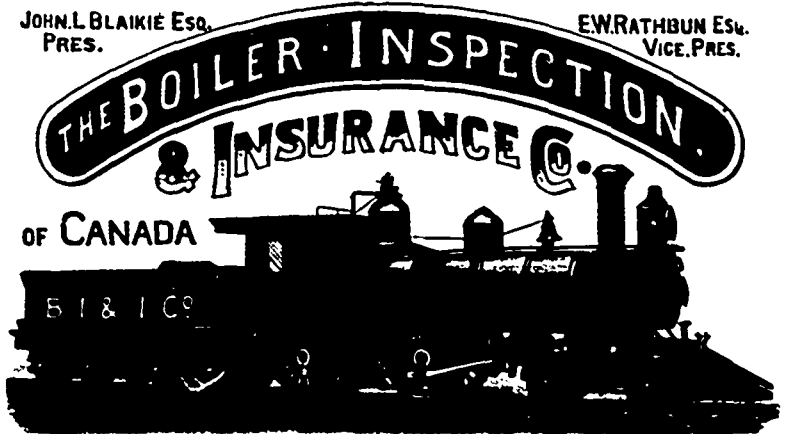
conditions of loading, no steel has yet been experimented with which will endure a fibre stress of 40,000 per square inch without rupturing, and this result has been reached after a total number of repetitions of from four to seven millions for steels of high elastic limit and tensile strength.

Friction is very nearly proportional to pressure.

The velocity of a river, by reason of the friction of the banks, is greatest in mid-channels, a little below the surface, and least near the banks.

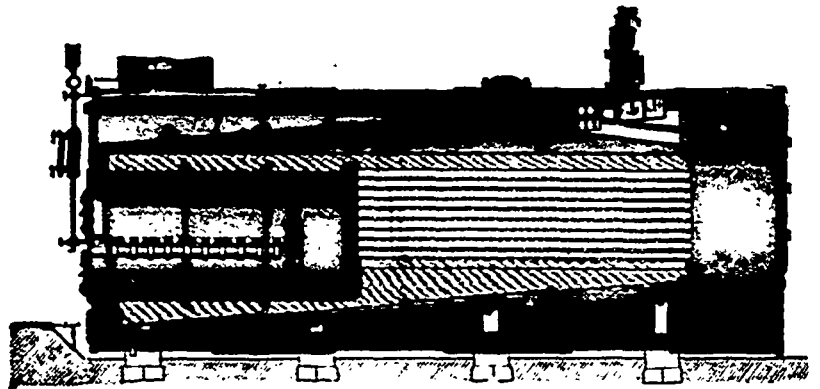
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