

ULATIONS.

inch safety-valve rise.
per hour at 72 lbs.

60::87
87
—
20

0 per min.

0 lbs. per hour.
inch escape.

$\frac{1}{8}$ of an inch.
= $\frac{1}{8}$ " breadth of

LCULATING THE
-LEVER, ETC.

of the valve by

sure per square
ward pressure.
(2nd) subtract
ve or pressure
re on the valve.
nce from ful-
um to weight;

on the end of
quare inch on
lve 4", from
ght lever, 24

. pressure =
hts of lever

MANUAL OF ENGINEERS' CALCULATIONS.

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and valve = $266.955 \times 4 = 1067.820 \div 29 (25+41) = 36\frac{3}{4}$ lbs.
weight required.

How to calculate the weight on a direct weighted safety-valve when its diameter is $3\frac{1}{4}$ "; pressure 70 lbs. per square inch:

$3.25 \times 3.25 \times .7854 \times 70 = 580.7$ lbs. weight. Being very nearly 580 $\frac{1}{4}$ lbs. direct weight required.

To find the weight to be placed on a double beat-valve to be equal to a given number of pounds, having diameter of valves given:

Rule.—Multiply the sum of the diameters by their differences multiplied by .7854 plus pressure equals answer.

Required the weight to be placed on double beat-valve to equal 32 lbs. per square inch; the diameter of valves being 8"x6". Then,

$8-6 = 2$ and $8+6 = 14 \times 2 = 28$
Then, $28 \times .7854 = 21.9912 \times 32 = 70.3$ lbs. required.

MOLWORTH'S RULE FOR THE AREA OF SAFETY VALVE.

The grate surface in feet multiplied by 8, what is the area of a safety valve for a boiler with 23.6 square feet of area of grate surface?

Then, $23.6 \times 8 = 18.88$ square inches, area of safety-valve by Molworth's Rule.

The following table of proportion of safety-valves gives areas, diameters, openings and dimensions:

Area of valve.....	5	10	15	20	25	30
Diameter of openings....	2.525	3.37	4.371	5.447	5.642	6.781
Diameter of valve.....	2.76	3.77	4.58	5.28	5.86	6.375
Length of lever.....	25	30	35	40	45	47.5
Distance of fulcrum.....	2.5	3	3.5	4	4.5	4.75