

which are engaged by a rounded spring fastened to the end of the frame. The spring and notches serve as a stop for spacing the lines. The roller shaft is also provided with a key, by which it may be turned forward the amount required to feed the paper for a new line.

The type plates are changed by loosening and tightening two small screws, and the inking pad may be lifted out and replaced by one of another color, after unlatching the upper portion of the carriage and lifting it from the lower portion.

Fig. 1 represents the type writer in use; Fig. 2, the carriage opened, showing the "motion"; Fig. 3, a group of type plates; Fig. 4, a graduating machine for the bell rods and "clips"; Fig. 5, a device for easing the "motions," that they may run smoothly; Fig. 6, a machine for grinding the rubber rollers; Fig. 7 illustrates the process of vulcanizing type plates and rubber rolls. The Hall type writer was awarded the medal of superiority at the semi-centennial fair of the American Institute, in New York, and the John Scott Medal by the Franklin Institute, of Philadelphia, an honor conferred on no other writer.

The Hall type writer has many points peculiar to itself which cannot be claimed by other writers, at the same time doing all the varieties of perfect work that are done by any writer. The Hall type writer is exceedingly simple, having only a fraction of the parts possessed by the keyed machines. It is perfectly portable, being of convenient size, and weighing only 7 pounds.

Each type plate has seventy-three characters. Fifteen styles of type are made for writing English, and many for other languages. The printing, being direct from the face of the type, is legible like ordinary printing. The machine takes paper of various widths and thicknesses, and will write on postal cards or envelopes. It will print with single or double spaces as required. It allows of the making of corrections with great ease.

The most intricate blanks may be readily filled in; letterpress copies from the writing are perfect; hektograph copies may be taken by using a special ink; manifold copies are secured by the use of "manifold" type forms—six good copies being readily obtained.

Catalogues may be had and all special information obtained by addressing the office of the company, 200 Derby Street, Salem, Mass., U. S. A.

MENNIG'S STEAM ENGINE.

Among the steam engines that figured at the Anvers Exhibition was that of the Mennig Brothers, of Cureg-

der. These valves are actuated by a shaft which is parallel with the axis of the cylinder, and which is driven by the main shaft through the intermedium of a pair of bevel gears. The distributing shaft carries the motive cams of the four slide valves and the helicoidal gearing that revolves the governor. The two cams of the admission valves consist of oblong sockets which slide along a square portion of the distributing shaft, and are connected with each other by a bent lever moved by the governor, which thus

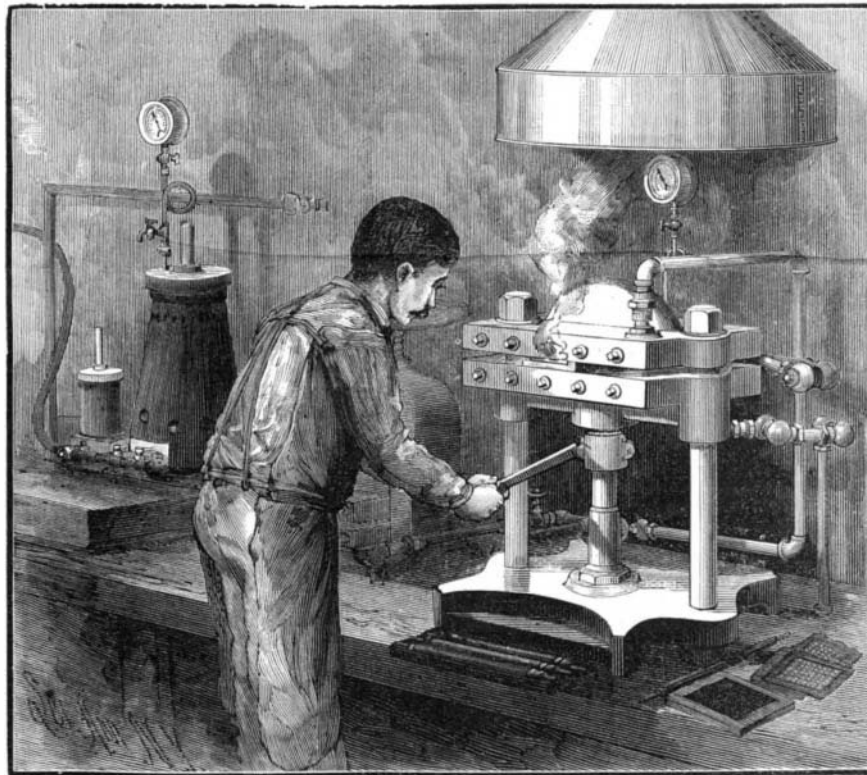


Fig. 7.—VULCANIZING TYPE PLATES AND RUBBER ROLLS.

regulates their position, and, consequently, the duration of the admission. As soon as the cams permit it, the admission is closed by springs that act upon the valve rods outside of the distributing boxes. The escapement valves have rods that are parallel with the axis of the cylinder, and are actuated by an undulating disk fixed upon the distributing shaft. This disk communicates a backward and forward motion to a lever that acts upon the valve rods.

The governor is of the Porter style, and is provided with a cataract.

The builders have taken care to construct the sockets and valve rods in such a way that the wear to which these parts are exposed may be easily taken up.—*Chronique Industrielle.*

TRANSPARENT SOAP.—According to Wright, many of the finer grades of transparent soap sold in England

Great Aggregates from Doubling Small Amounts.

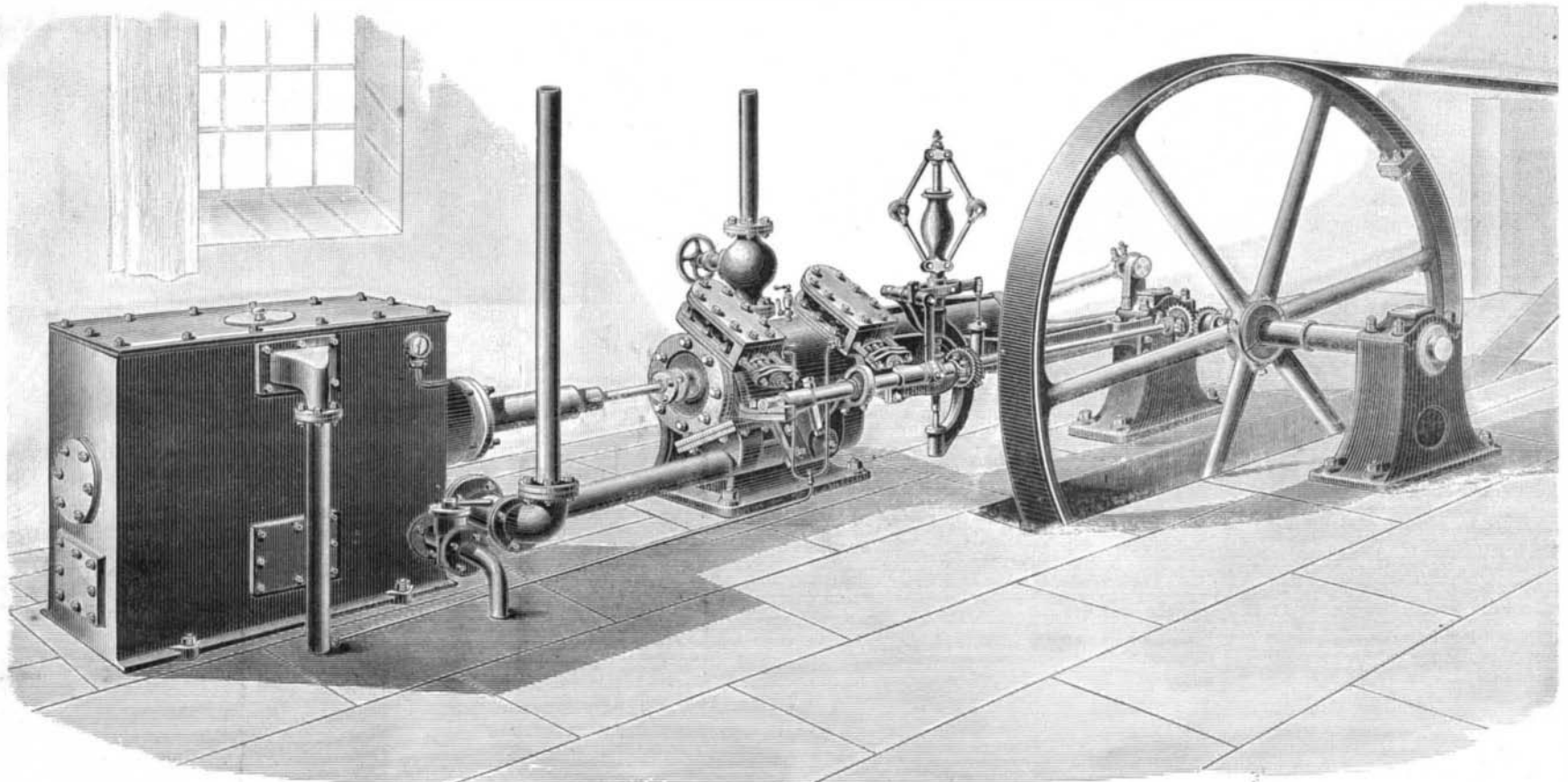
The delusive result of multiplying by two, or doubling numbers several times, is very well illustrated in the following story, which a Western newspaper man has set going the rounds:

A merchant employed a clerk, who wanted the place principally to learn the business, "salary being no object." At the suggestion of this industrious seeker after knowledge and contemner of worldly goods, the merchant willingly consented to fix the salary at 1 cent for the first month, 2 cents for the second month, 4 cents for the third, 8 cents for the fourth, and so on for three years. Here is the "account," as figured out by the bookkeeper, which we may well believe "staggered" the merchant: First month .01, second month .02, third .04, fourth .08, fifth .16, sixth .32, seventh .64, eighth \$1.28, ninth \$2.56, tenth \$5.12, eleventh \$10.24, twelfth \$20.48, thirteenth \$40.96, fourteenth \$81.92, fifteenth \$163.84, sixteenth \$327.68, seventeenth \$655.36, eighteenth \$1,310.72, nineteenth \$2,621.44, twentieth \$5,242.88, twenty-first \$10,485.76, twenty-second \$20,971.52, twenty-third \$41,943.04, twenty-fourth \$83,886.08, twenty-fifth \$167,772.16, twenty-sixth \$335,544.32, twenty-seventh \$671,088.64, twenty-eighth \$1,342,177.28, twenty-ninth \$2,684,354.56, thirtieth \$5,368,709.12, thirty-first \$10,737,418.24, thirty-second \$21,474,836.48, thirty-third \$42,949,672.96, thirty-fourth \$85,899,345.92, thirty-fifth \$171,798,691.84, thirty-sixth \$343,597,383.68; total salary for three years, \$687,194,767.35.

This is, we suppose, a modern companion of the old story where a Hungarian King bankrupted himself by paying (?) a blacksmith for putting in 32 nails in the shoes of a horse at the rate of a penny for the first nail, two for the second, etc., and suggests also the computation which shows that a grain of barley to the first square of a chess-board, two grains to the second square, and so on through the 64 squares, will give a final aggregate exceeding the whole barley crop of the world through an indefinite period. Such facts, however, always strike one with wonder the first time they are brought before the mind.

South Polar Inspection.

Since Wilkes and others found the Antarctic coast line "impenetrable," the U. S. Government should send a vessel provided with a suitable captive balloon outfit, so that if the 1,500 miles or more of inaccessible cliff 3,000 feet high cannot be passed over, it may, at least, be peeped over. From attainable altitudes, aided by telescope and camera views, to be magnified, much



MENNIG'S STEAM ENGINE.

hem. This engine, which we figure herewith, has four plane slide valves (two escapement and two admission ones), that move in planes parallel with the axis of the cylinder. The axes of the rods of the admission valves are at right angles with the axis of the cylin-

do not contain glycerine, as advertised, but sugar. Sugar seems just as well adapted to making transparent soaps as glycerine. As sugar is admitted into England free of duty, and is hence very cheap, this application of it becomes possible.—*See. Chem. Ind.*

that is interesting may be learned. And such a balloon can be easily manipulated so as to safely land passengers and supplies on these cliffs, secure communication, and bring them away when done.

W. L. DAVIS.