

THE HALL TYPE WRITER.

The first record of a type writing device was in 1714. In that year there was issued from the British Patent Office a document referring to "An Artificial Machine or Method for the Impressing or Transcribing of Letters Singly or Progressively one after another as in Writing, whereby all Writings whatsoever may be Engrossed in Paper or Parchment so Neat and Exact as not to be distinguished from Print."

Henry Mill was the inventor. No record of another attempt appears till 1841. In 1859, Mr. Thomas Hall, of New York, invented a machine, which was completed in 1866, and sent to the Paris Exhibition in 1867. In 1881, the same inventor patented the writer now manufactured by the Hall Type Writer Company, of Salem, Mass. The present Hall type writer is a wonderful little machine. It is claimed that it has the greatest capacity of any machine in the market. It has no inked ribbon, as have the various keyed machines, but prints directly from the face of rubber type, thus avoiding the chance of blurred work. The type forms are interchangeable. Fifteen styles of English are made; also type in Greek, French, German, Spanish, Portuguese, Italian, Dutch, Norwegian, Russian, Swedish, etc.

The portability of the "Hall" writer is a prominent feature. Its weight is only seven pounds, and it is inclosed in a handsome box, usually of black walnut, but the case may be of any sort of wood, or covered with plush or leather. A handle is attached, for readiness in carrying. It seems incredible that such a little machine should work such wonders, but "the proof of the pudding is in the eating."

The Hall manufactory is at 194 to 200 Derby Street, Salem, Mass., and it is a well stocked and well organized factory. Various special machines and tools are required for the work, four of which are shown in our illustrations. All the parts of the machine are made with extreme care, and each part is nicely adjusted and fitted.

All the working parts of the machine are contained in a frame formed of end pieces and longitudinal bars, the frame being pivoted in the box containing the instrument, so that it may be elevated to any desired

aperture opposite the point of printing, and the upper part of the carriage is provided with an impression screw directly opposite the aperture in the lower part.

Between the upper and lower part of the carriage is arranged a system of arms by which a perfectly parallel motion in two directions is secured, and upon the mechanism of the parallel motion is secured the rubber type plate, which is furnished with the letters and characters to be impressed upon the paper.

An arm extends from the support of the type plate outward, in front of the machine, between the upper and lower portions of the carriage. To this arm is pivoted a single key carrying a conical pin or pointer, which may be inserted in any one of a series of cavities in the index plate. In the bottom of each cavity there is a letter or character corresponding to one of the letters or characters on the type plate carried by the parallel movement; and the index plate, parallel movement, pointer, and impression screw are arranged relatively to each other so that when the pointer is inserted in one of the cavities of the index plate, the letter or character represented by that cavity will be brought under the impression screw, when the downward movement of the key will press the carriage downward, bringing the impression screw into contact with the back of the type plate, and pressing the particular letter of which an impression is required downward into contact with the paper lying over the third bar of the main frame.

essential equidistant grooves, which bear a fixed relation to the spacing of the lines. The carriage which sustains and guides the principal working parts of the machine is formed of two parts mounted pivotally on the circumferentially grooved bar, the lower part carrying the inking pad and the feeding mechanism, the upper part carrying the feeding spring and the ingenious parallel movement which characterizes this machine. The inking pad is mounted upon a plate having an

spring is wound whenever the carriage is returned to the point of starting, and the forward step by step movement of the carriage is effected by an escapement, mounted on the right-hand side of the carriage and working into the circumferential grooves of the bar. The escapement is arranged so as to permit the carriage to move forward a distance equal to one or two divisions of the bar, as the character of the work may require, the change in the spacing being effected by a small cam at the side of the carriage.

The escapement key is mounted on the lower half of the carriage, in position to be engaged by the upper half of the carriage, when the latter is pushed downward in the act of printing; and to the forward extremity of the key is pivoted a finger piece, which may be depressed so as to operate the escapement independently of the printing mechanism. Upon the spacing key is mounted a latch, which may be moved independently of the key when it is desired to shift the carriage quickly in either direction. When the spacing key is depressed, it engages one of the grooves of the rounded bar, and at the same time lifts the latch out of engagement with the groove in the upper side of the bar, when the latch springs laterally one or two spaces, according to the adjustment of the spacing key; and before the key is released from the groove in the bar, the latch enters a groove in the top of the bar, so that, when the key is entirely withdrawn from the groove of the bar, the carriage will be liberated and moved forward until its motion is arrested by engagement with the latch.

Under the longitudinal bar of the main frame, upon which the printing is done, is located a paper-feeding roll, which is partly incased by a semi-cylindrical metallic casing which shuts over the paper and over the beveled edge of the printing bar, and holds it accurately in position for printing, and also presses the paper into close contact with the rubber paper roll, so that, whenever the roll is turned, the paper will be

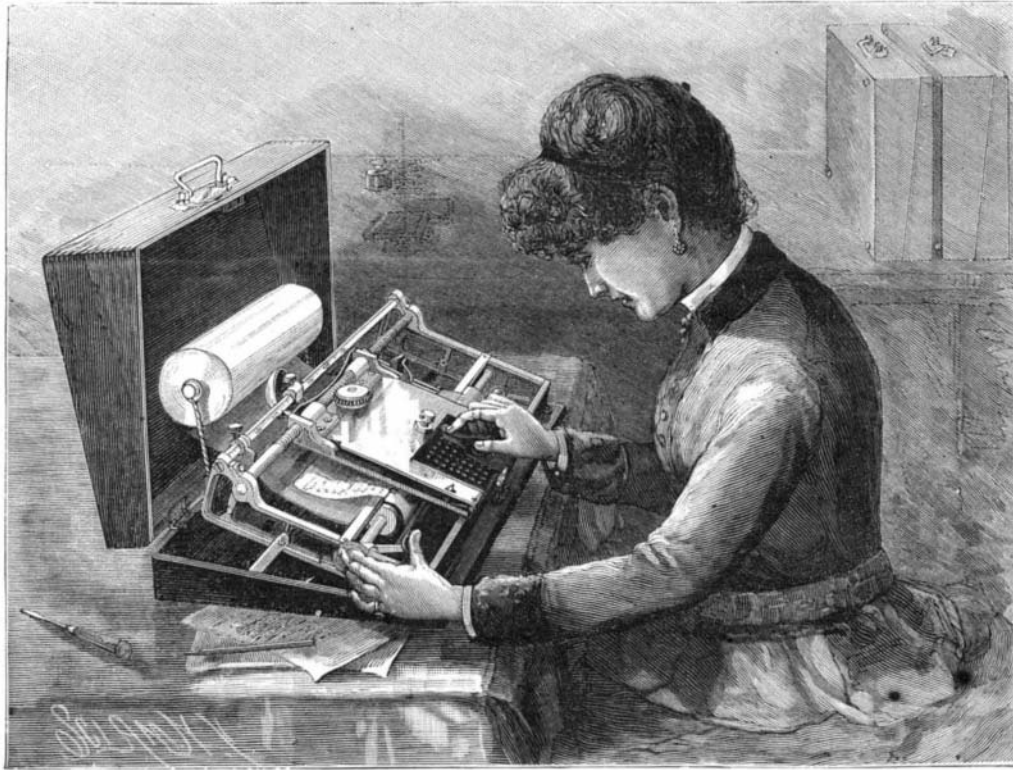


Fig. 1.—THE TYPE WRITER IN USE

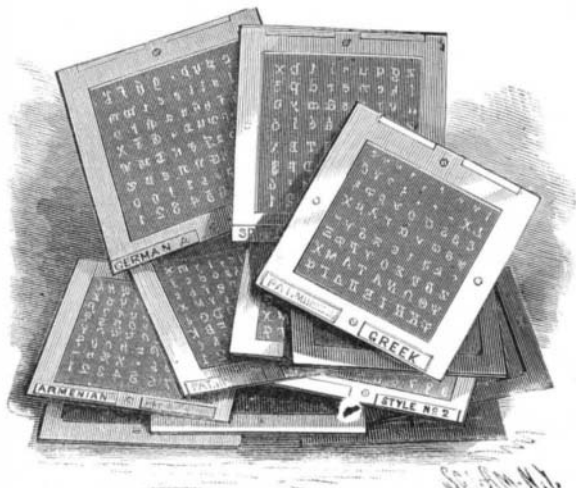


Fig. 3

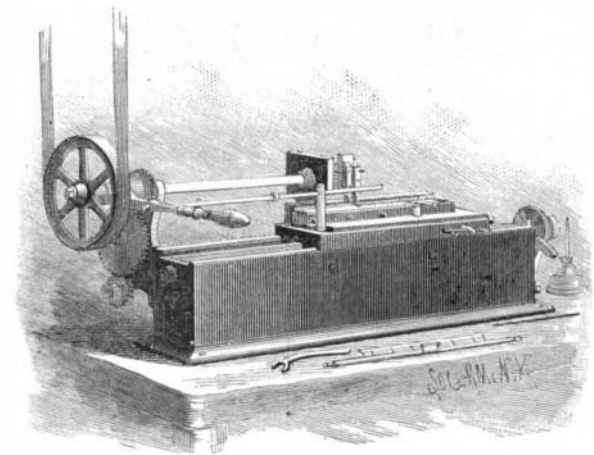


Fig. 4.

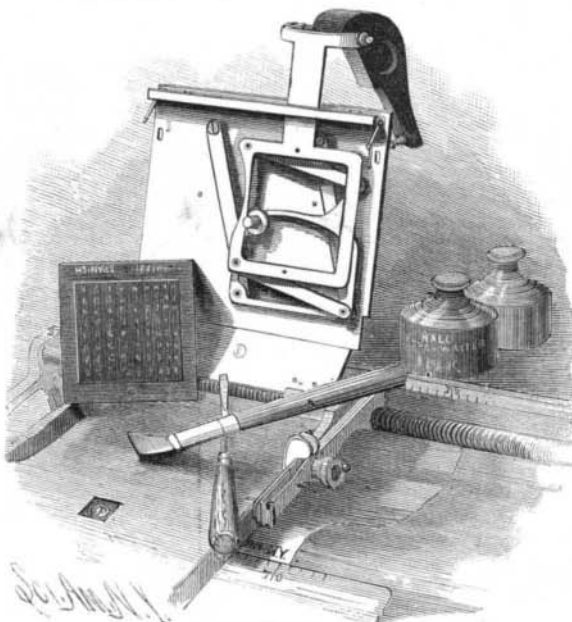


Fig. 2.

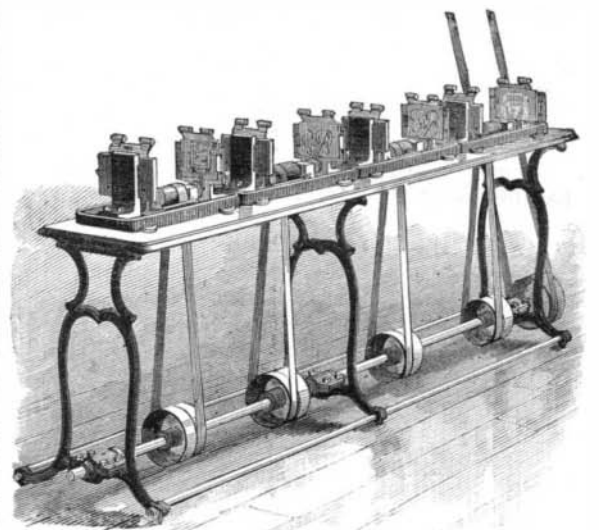


Fig. 5.

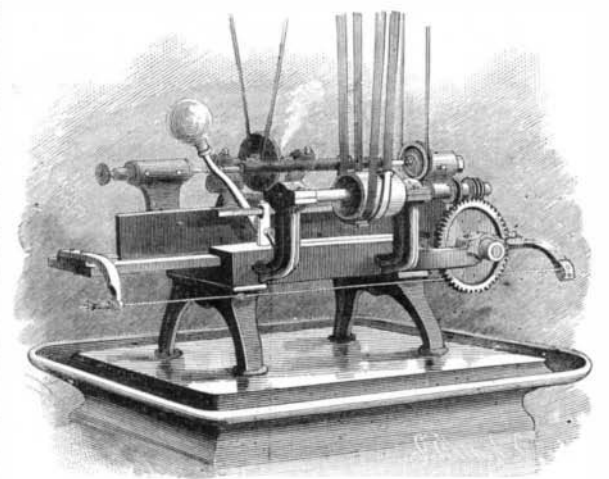


Fig. 6.

angle. The upper bar of the frame is a graduated scale carrying the stop for limiting the return motion of the carriage, and the bell for indicating when the end of the line is reached. The second bar is cylindrical in form, and is provided with series of circumfer-

The power for feeding the carriage forward is supplied by a spring contained by the drum mounted on the top of the carriage, and provided around its periphery with teeth engaging the circumferential grooves of the bar upon which the carriage is mounted. The

moved forward for a new line. The shaft of the paper roll is provided with a milled head at one end, by means of which it may be turned to move the paper forward or backward as may be desired. In the inner face of the milled head are formed radial notches,

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.

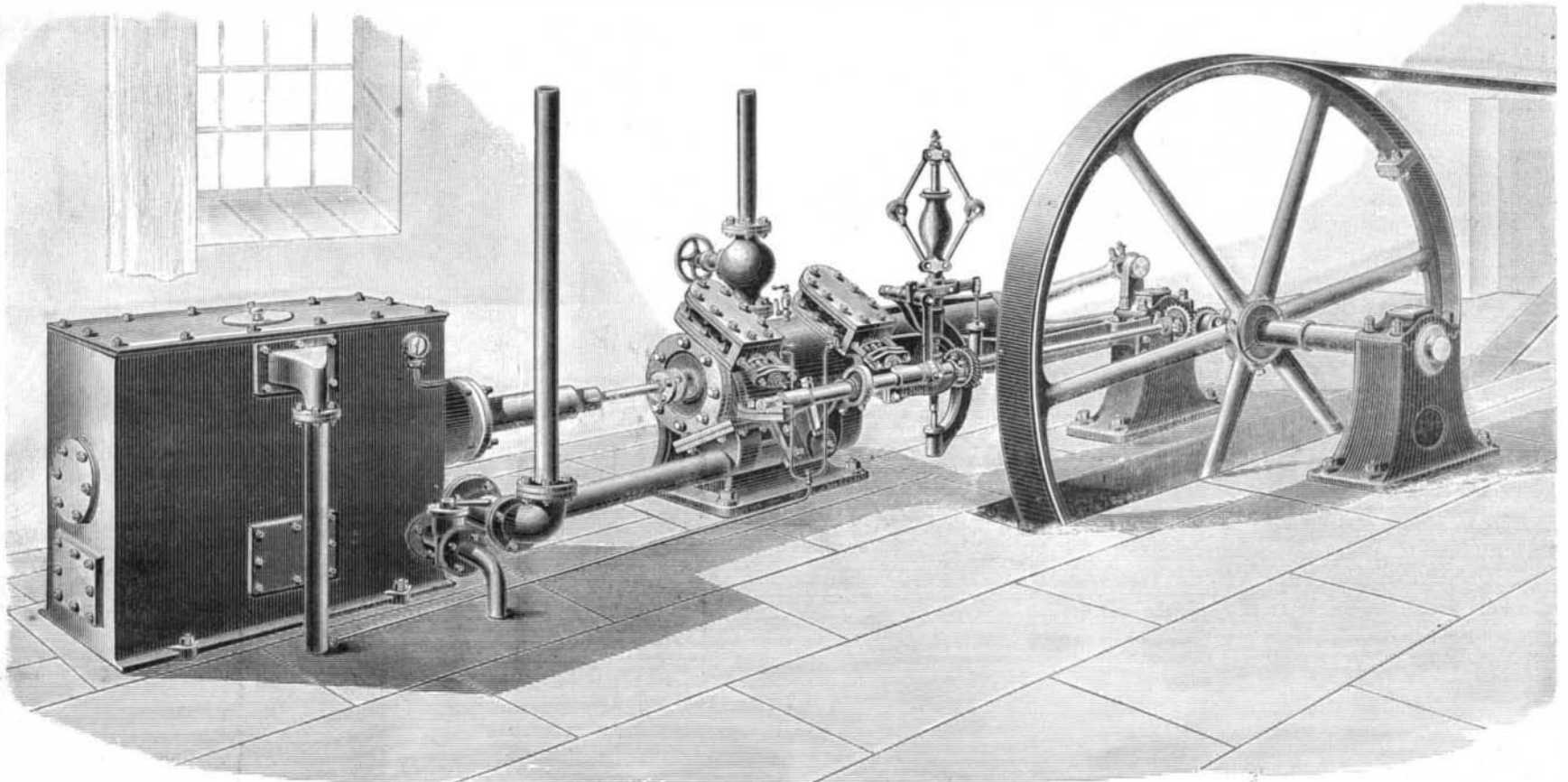
The delusive result of multiplying by two, or doubling numbers several times, is very well illustrated in the following story, which a Western newspaper man has set going the rounds:

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.