(No Model.) 2 Sheets—Sheet 1.

J. D. HALL.

THERMOMETER PRINTING MACHINE.

No. 449,444. Patented Mar. 31, 1891.

Fig. 1

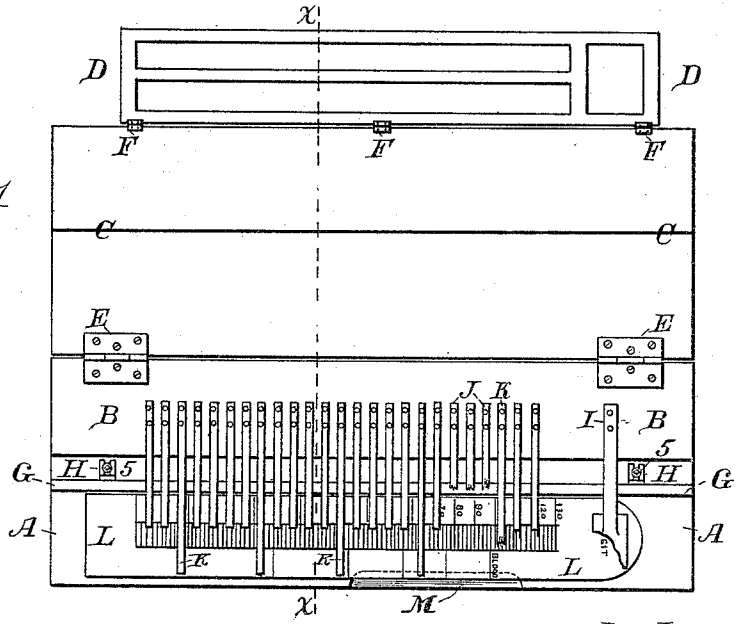


Fig. 2

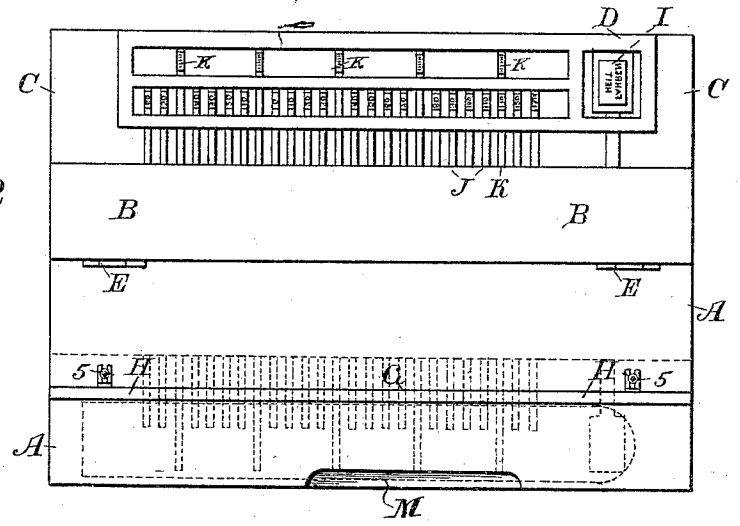
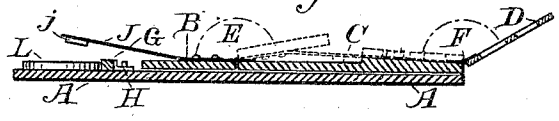


Fig. 3



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(No Model.) 2 Sheets—Sheet 2.

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THERMOMETER PRINTING MACHINE.

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FIG. 4.

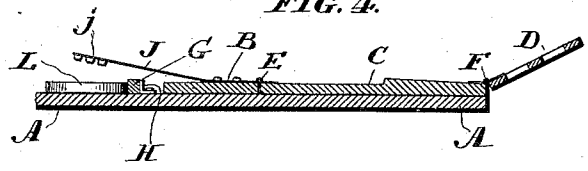


FIG. 5.

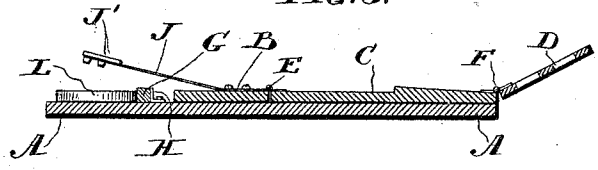


FIG. 6.

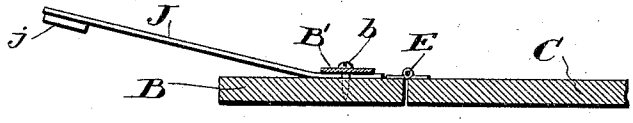
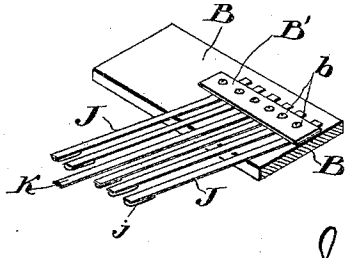


FIG. 7.



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UNITED STATES PATENT OFFICE.

JOHN D. HALL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THOMAS C. BALDERSTON, OF SAME PLACE.

THERMOMETER-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 449,444, dated March 31, 1891.

Application filed December 19, 1890. Serial No. 375,229. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. HALL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Thermometer-Printing Machines, of which the following is a specification.

In the manufacture of thermometers it is customary to designate every tenth degree by stamping, writing, or printing the requisite numerals upon the scales.

In practice it is found that the most expert workman cannot at will construct any given number of thermometer-tubes to fit any given scale, and that the distances between the 10° points which govern the positions of the numerals mentioned as well as those of other matters or things that are to be placed upon the scales are an ever-varying quantity.

The object of my invention is to produce a printing, figuring, or lettering machine with which the numerals designating the ten-degree spaces or lines and also all words and other matters or things that are to be placed upon the scales or faces of the thermometers may be readily and conveniently printed or stamped thereon, whatever the length or run of the scales, or by which such machine may print figures, designs, or reading matters upon the surfaces of other things.

My said invention consists of certain novel parts and combinations of parts, which will be separately pointed out in the claims concluding this specification.

For the purpose of informing those skilled in the art to which my invention appertains of the nature of my invention, and for the purpose of instructing them how the same may be particularly and advantageously employed, I will now describe the devices which embody separately and in total combination all the features of improvement which constitute my invention, and which are illustrated in the accompanying drawings, in which—

Figure 1 is a plan or top view of my complete machine for thermometer work, showing the parts in their relative working or printing condition. Fig. 2 is a plan or top view of said complete machine, showing the hinged type-carrying part B turned back in proper position for applying ink to the type with an ordinary printer's roller or brayer. Fig. 3 is a vertical cross-section taken on the line *x x* of Fig. 1. Figs. 4 and 5 are similar sectional views showing different styles of type-holders, and Figs. 6 and 7 show modification of affixing or clamping the type-holders upon their carrier.

This machine is cheaply and simply constructed, and it consists, mainly, of a plain bed-table or bench A and a rigidly-secured top surface part C, having a hinged section or part B at its inner edge, and to which the shanks of type-holders J and K are secured in parallel relation to each other crosswise of said hinged section, so as to extend over and beyond the non-hinged edge of said section and preferably at a slightly-upward inclination therefrom to give them a spring function upon said hinged part, for a purpose which I shall presently state. To the outer edge of this fixed top surface part a metal frame D is hinged in parallel relation to the type-carrying hinged part, so that such relation will permit the two hinged parts to be folded, the outer part D upon the type-carrying arms J, so that the section B, when folded, will present the printing side of the type upward within the hinged part D, as shown by dotted lines in Fig. 3, to be inked.

In practice I usually make the bed A of my machine for printing thermometers ranging in size from eighteen to thirty-six inches in length, about twenty-eight inches wide, and forty-two inches long, and for other sizes smaller or longer, as may be desired. I usually make this bed A and its fixed top surface part C of ordinary inch pine or poplar lumber and the hinged type-carrying section of the same material, all to be planed true and smooth, while the type-holders J K and the hinged frame D are made of strips of brass or other suitable metal. The pieces of lumber are either nailed or screwed together, and the section B is hinged by ordinary butt-hinges, while the hinged frame D is formed by soldering or riveting strips of brass together. These two hinged parts are of equal length and width, and when folded for the purpose stated occupy a position along one side of the bed or table. When unfolded, the

type-carrying section lies flat upon the bed or table with its type-carrying holders standing toward the opposite side of the table-bed and presenting the letters downward and holds them in position over the surface to be printed upon, which, as seen in Figs. 1 and 3, is a thermometer back or scale L. Sometimes I nail or screw the type-holders J K onto the hinged section B, as shown in Fig. 1; but they are preferably clamped thereon by passing common wood-screws through a metal strip B′ and into the wooden piece B, as seen in Figs. 6 and 7, a single screw passing between each two type-holders. These type-holders I sometimes make of a single strip of spring-brass about gage No. 22 and cement thin vulcanized rubber type-faces *j* onto them, as shown in Figs. 2 and 3; but I prefer a type-holder composed of two pieces of brass J J′ or other metal, as seen in Fig. 5. In this case the thin part J serves as a spring to hold the type in a slightly-upward inclined position ready for use and sufficiently yielding to allow the type to be pressed down, so as to make the impression upon the thermometer scale or face or other article that is being lettered or printed, while the part J′, which carries the letters, is secured in crosswise relation to all the spring-holders, and is of sufficient thickness to maintain a straight and flat condition while being pressed upon during the making of the impressions.

In the above I have considered the use of only thin or shallow bodied vulcanized-rubber type of the same description as those used in the construction of the ordinary rubber stamps of commerce. These types are made in sheets having as many words and figures as I require to use at one impression and are simply cemented fast to the spring-holders in the positions shown. I may, however, use shallow-bodied metal type and solder or otherwise affix them to quite thin and yielding strips of brass or other suitable metal, as shown in Fig. 4. These type-faces are manufactured singly and separately, so that when attached to thin and flexible sheet metal or other material they can all be readily pressed down into complete contact with the surface that is being printed, though it be hard and untrue. Of course the type-holders must be made of suitable size to contain the number of type required. Thus for the numerals of thermometers quite narrow strips answer the purpose; but for advertising matter that is to be printed at the upper or at the lower end of the thermometer-face much larger holders are required, as shown at I in Fig. 2; also, for printing matter upon the right-hand side of the thermometer-face the type-holders must have sufficient additional length to reach over beyond the others, as at K in Figs. 1 and 7.

As will be seen, H is an adjustable gage-strip secured upon the table-bed by means of the slotted angle-keepers 5 and in parallel relation to the type-carrying section for the purpose of setting and holding the thermometer-scale or other object in proper position under the type when it is being printed.

The purpose of the hinged frame D is to hold down the several type-holders into straight and level positions and over which frame the printer's roller is pressed while it is being passed over the type, which are held with their faces standing upward in the open spaces of this frame, as seen in Fig. 2, for the purpose of applying ink to them.

The object of the recess which I have shown as cut into the edge of the table-bed at M is to enable the operator to conveniently grasp the edge of the thermometer while he is printing, either for the purpose of removing it from the machine or to adjust it as required from time to time into proper positions to receive the several required impressions.

Having constructed my printing-machine as set forth, I describe its use as follows: First, place the thermometer back or scale L or other article that is to be printed into the machine as shown in Fig. 1; second, turn the hinged type-carrying section B in folded position and then turn and fold the frame over and upon the type-holders, as seen in Fig. 2, and then pass an ordinary printer's roller over the type and the frame D until the former have received the requisite coating of ink upon their faces; third, unfold these hinged parts, placing the type-carrying section flat upon the table to bring its inked type standing downward over the thermometer-back, as in Fig. 1; fourth, move the thermometer to the right or to the left, as required, to bring it in the right position to print any one of the required numerals—say 130—at the 130° point and print the same by merely depressing the proper type-holder with the finger; fifth, again move the thermometer to the right or to the left, as may be required, and in the same manner print the second numeral, say, 120; sixth, again move the thermometer as before, and in the same manner print other numerals and other matter until the work is completed.

So far as I am aware, this machine is intrinsically and entirely novel, and while it was originally conceived and designed for use on thermometer work it is still well adapted to be used on a variety of work, especially on hard, non-elastic, and untrue surfaces, such as are met with in the manufacture of glass and board signs, metallic labels, and the like.

I claim as my invention—

1. In a printing or stamping machine, the combination, with the table A, having the raised surface, of the reversible hinged section B, having type-holders composed of separate thin spring-strips J, secured in parallel relation to the surface thereof, projecting over and beyond its non-hinged edge, and having suitable type at their unattached ends, the said hinged section B arranged to carry all its separate spring-strips over onto a support and to be reversed to hold them in level

positions above the table for printing in the way described.

2. In a printing or stamping machine, the combination of the hinged type-carrier provided with flexible or spring type-holders, and an open hinged type-protecting frame arranged relatively to permit them to be folded, the said frame over and upon the type-holders, for the purpose stated.

3. In a printing or stamping machine, the combination of the hinged type-carrier provided with flexible or spring type-holders arranged to project transversely from one side of said hinged holder, an open type protecting frame arranged at one side of said hinged type-carrier, and a gage arranged at the other side of said hinged type-carrier, for operation substantially as described, for the purpose stated.

4. In a printing or stamping machine, a hinged type-carrier having composite type-holders secured to and projecting transversely over and beyond one edge thereof in parallel relation to each other, the type being secured at their free ends.

5. In a printing or stamping machine, a hinged reversible type-carrier provided with flexible or spring type-holders arranged to project transversely from one side of said hinged carrier, of unequal length, and having suitable type at their free ends.

6. In a printing or stamping machine, a hinged type-carrier provided with flexible or spring strips projecting transversely over and beyond one edge thereof, secured thereto by a clamping-bar, and having suitable type at their free ends.

7. In a printing or stamping machine, the hinged type-carrier provided with flexible or spring strips standing out in inclined relation to the surface of said carrier, parallel to each other, crosswise of said hinged carrier, extending beyond one edge thereof, and having suitable type at their free ends, in combination with an open type-protecting frame at one side of said hinged type-carrier and a gage-bar at the other side of said type-carrier, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN D. HALL.

Witnesses:
MORRIS R. BOCKIUS,
DANIEL E. BROGAN.