

No. 686,782.

Patented Nov. 19, 1901.

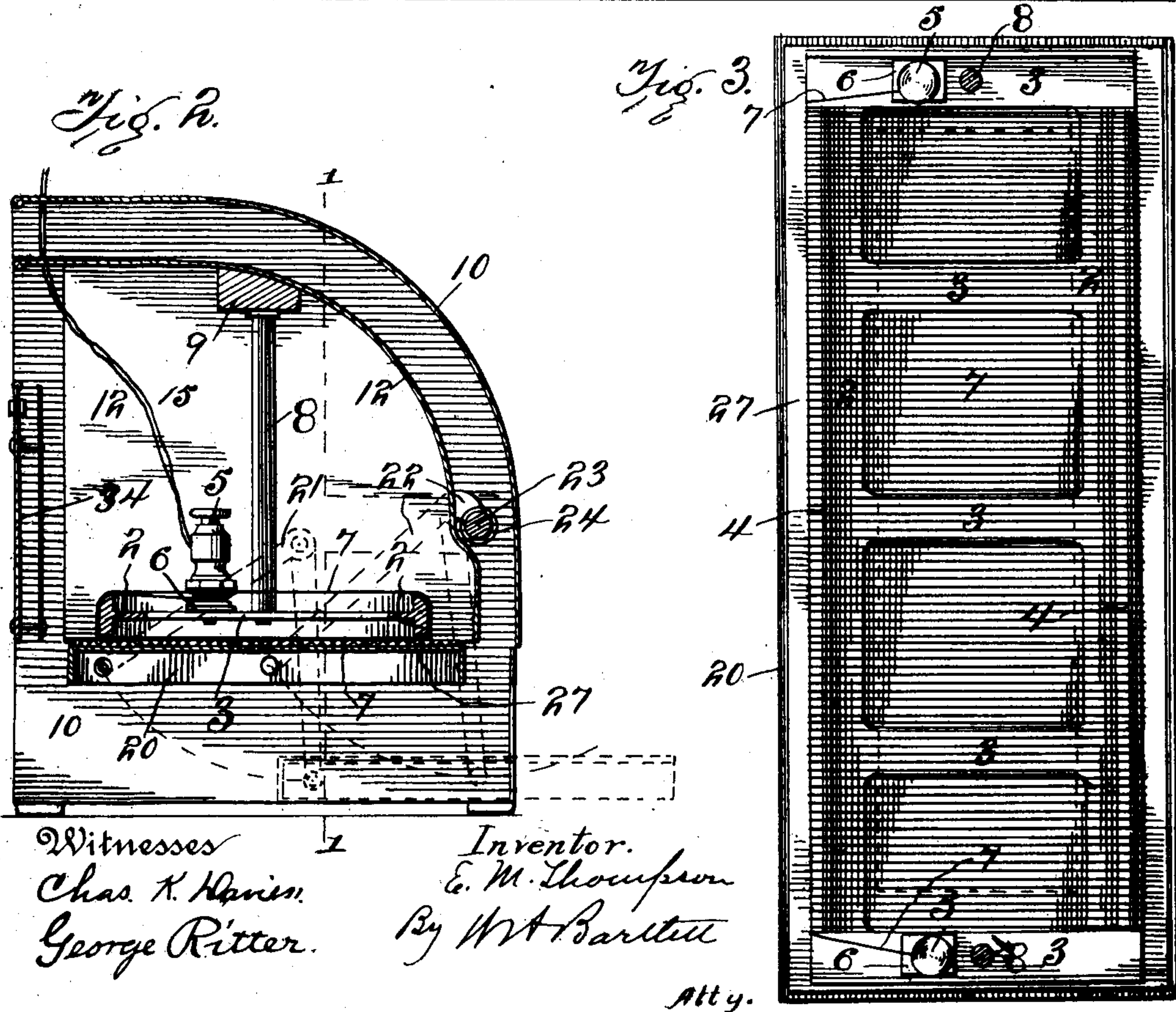
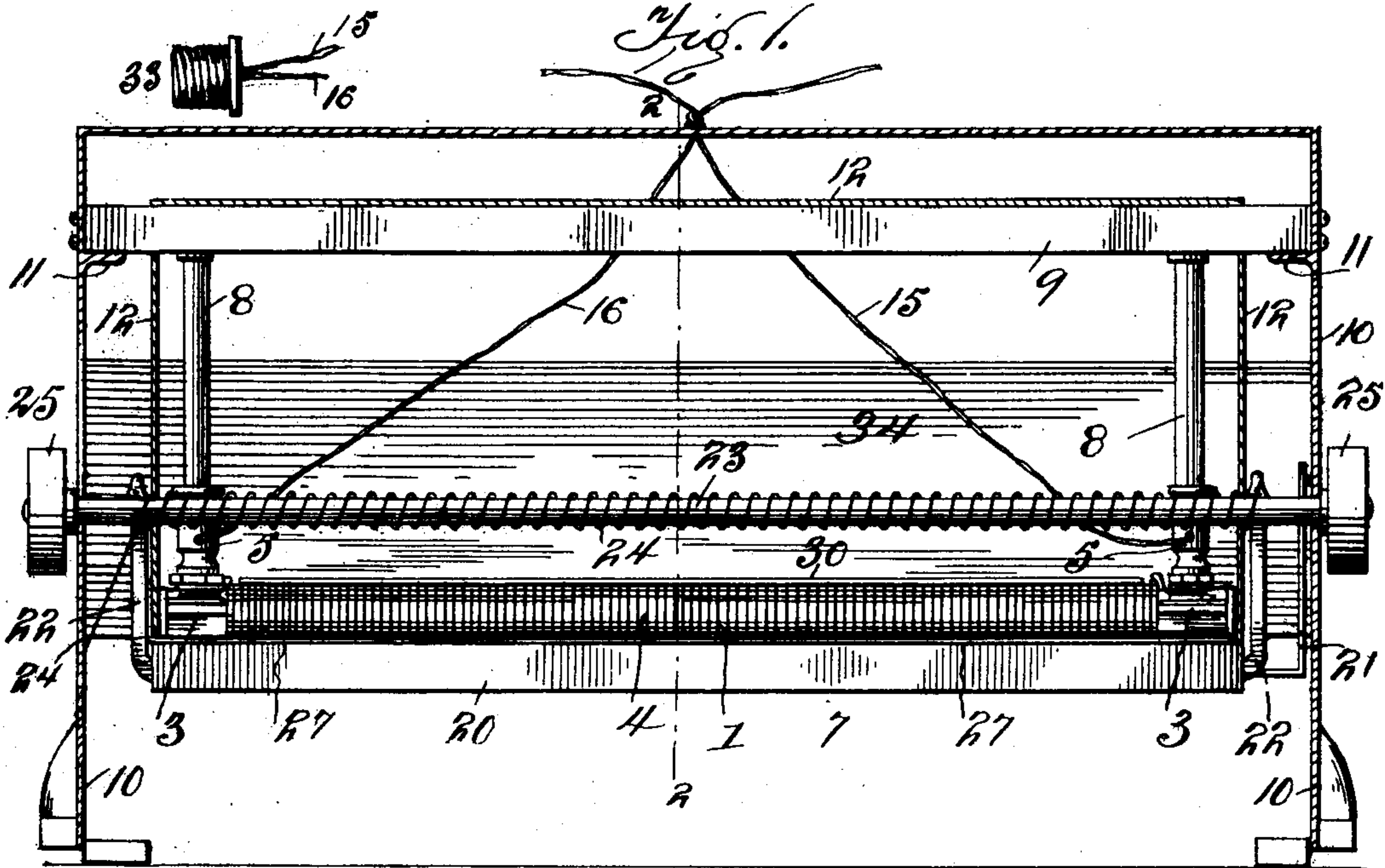
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ELECTRICAL HEATER FOR DEVELOPING AND FIXING INKS ON MANUSCRIPTS.

(Application filed Apr. 29, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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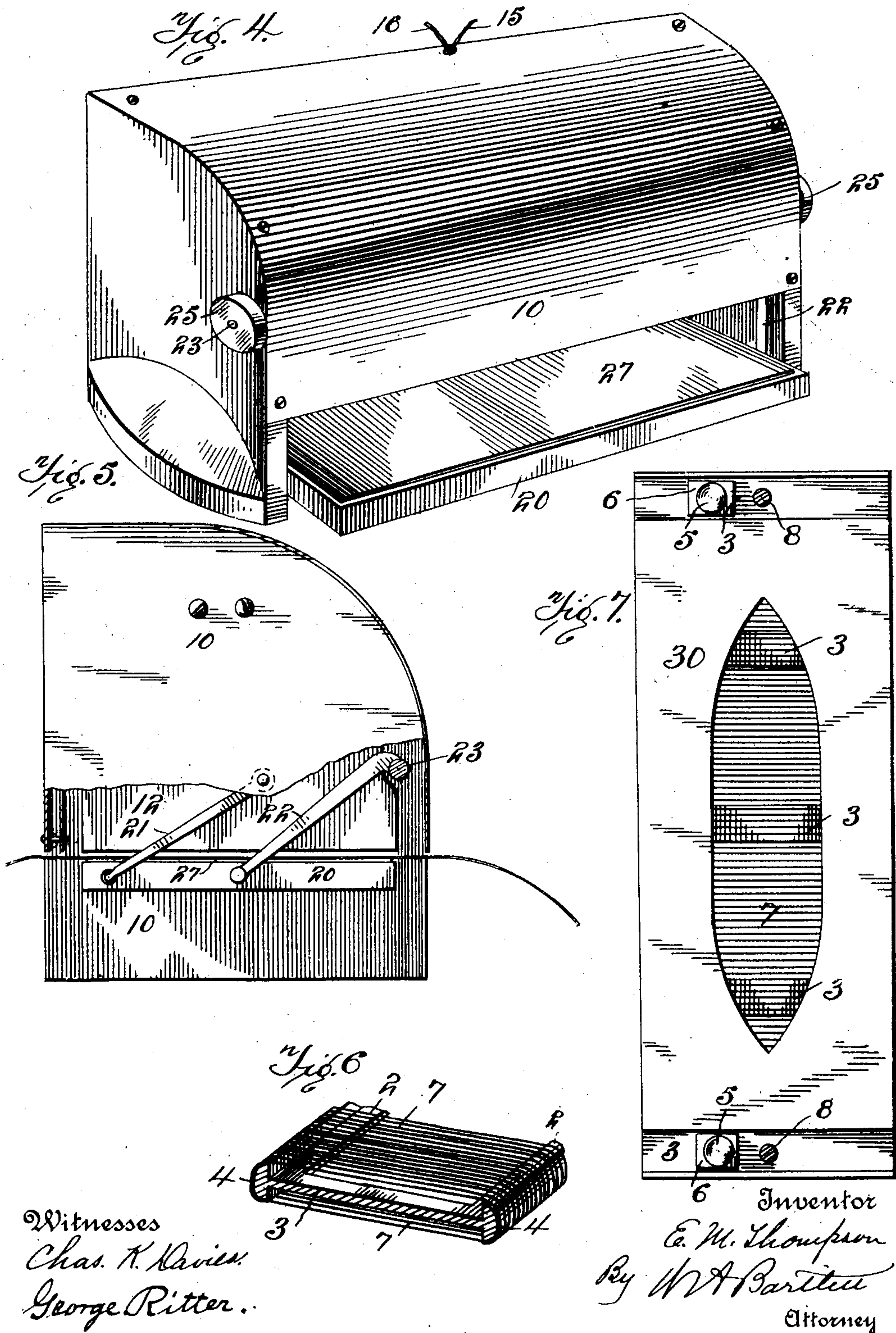
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UNITED STATES PATENT OFFICE.

EVERT M. THOMPSON, OF INDIANAPOLIS, INDIANA.

ELECTRICAL HEATER FOR DEVELOPING AND FIXING INKS ON MANUSCRIPTS.

SPECIFICATION forming part of Letters Patent No. 686,782, dated November 19, 1901.

Application filed April 29, 1901. Serial No. 58,102. (No model.)

To all whom it may concern:

Be it known that I, EVERT M. THOMPSON, residing at Indianapolis, in the State of Indiana, have invented certain new and useful
5 Improvements in Electrical Heaters for Developing and Fixing Inks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an electrical heater
10 for fixing the writing on bank-checks, drafts, and papers on which the writing should be permanent.

The object of the invention is to produce an electrical grating or grid on which a check
15 or other written document may be conveniently held and heated to fix the ink; also, to so cover said grating with a non-conducting covering as to minimize the inconvenience of heat radiation; also, to improve such
20 a heater in various particulars.

Figure 1 is a vertical longitudinal section on line 2 2, Fig. 2. Fig. 2 is a cross-section on line 1 1, Fig. 1. Fig. 3 is a plan of the grating or grid and check-platform. Fig. 4
25 is a front perspective of the heater with check-platform lowered. Fig. 5 is a broken end view with check-platform raised. Fig. 6 is a broken perspective section of a wire-wound grid. Fig. 7 is a plan of the grid and
30 shield applied thereto.

It should be premised that there are a number of inks and writing fluids known in the market which when used for writing a check, draft, or other document on paper and
35 fixed by the application of heat become permanent and ineradicable, except by the destruction of the surface of the paper, which would thus betray the fact that the writing had been tampered with.

To give a convenient machine for fixing the writing on paper is the main object of the present invention.

The leading mechanical feature of my machine is a grid or grating of wire which makes
45 a flat surface. The wire is a resistance-wire connected with electric terminals in such manner that an electric current is passed through such wire, the resistance causing it to heat.

Let the numeral 1 represent a metallic frame having side bars 2 2 and cross-bars 3 3. The side bars 2 2 are thicker than bars 3 3 and

are preferably rounded on their outer edges and covered with strips of asbestos-paper 4 4 or other non-conductor of electricity. At
55 each end of the frame there is a binding-post 5 5. This post is insulated from the bottom of the framing, as by mica washers or plates 6 6. A wire 7 is wound in the form of a flat spiral about the frame, the fakes resting on
60 the asbestos strips 4. The ends of the wire are connected to the binding-posts 5, so that when posts 5 are connected to the positive and negative terminals of an electric battery the current will be complete from post to post,
65 the wire being insulated from the metallic frame by resting on the insulating-strips 4.

The grate or grid 1 is suspended by hangers or drop-wires 8, which are suspended from the wooden or other non-conducting suspen-
70 sion-bar 9. Bar 9 is held in the casing, as will be described.

For comfort and convenience in operation the grate or grid 1 is supported in a metallic or other suitable casing 10. This casing is
75 preferably in form of a generally rectangular box with a corner rounded. The bottom of this box or casing 10 is open, and the back is or may be partly open. The bar 9 is supported on brackets 11 at the ends and extends
80 lengthwise of the casing. The box has by preference a zinc or other sheet-metal lining 12 at a distance of something like a half-inch from the outer casing. The space between
85 the outer and inner covering becomes an air space or non-conductor of heat. The air within lining 12 may become quite heated, and lining 12 will be similarly heated, but the outer casing 10 will remain about as cool
90 as the outer air. The grating 1 being suspended from hangers 8 and wires 15 16 (positive and negative) connected to the binding-posts, a circuit is established through the wire 7, and this wire, being resistance-wire,
95 becomes heated. Usually a heat of some 200° or more is enough for the purpose I have in view.

The shelf or platform 20 is suspended by links 21 22, which are pivoted inside the casing or between the inner lining and outer
100 casing. These links being pivoted to shelf 20 and to the casing, the shelf can be swung down through the open front of the casing, when its outer edge will project in front of

the casing 10 through a recess at the bottom of the front plate in said casing.

The links 22 are connected to a shaft 23, which extends lengthwise of the casing, preferably between the outer plate and lining, the links 22 being in the end spaces of the case between outer and inner plates. The shaft 23 is preferably surrounded by a coil-spring 24, one end attached to shaft 23 and the other to casing 10. This tends to rotate the shaft in such direction as to swing the shelf or platform 20 back into the casing and up against the lower surface of grid 1. Handles or wheels 25 outside the casing serve to rock the shaft 23 against the pressure of its spring. By taking hold of either of these handles the shaft or platform 20 may be swung down into the position shown in Fig. 4 or in dotted lines, Fig. 1.

A non-conducting sheet 27, preferably asbestos, is permanently attached to shelf 20. When swung down to the front of the machine, the shelf or platform is in a convenient position for the reception of a check or other piece of paper on which writing is to be developed. By releasing the shaft 23 spring 24 swings the shelf back into the casing and up against the grid. If the grid be heated by an electric current, fresh ink or fluid on the face of the check next the grid serves as a conductor to short-circuit the current from wire to wire on the grid. The ink is thus heated and carbonized, and thus fixed on the paper becomes indelible. A second or two is generally sufficient to develop the ink fully. The shelf may then be swung down and the check removed.

As there is a tendency for wires 7 to become more heated at the central part than the edges of the grid, I overcome this tendency very largely by placing over the grid a sheet of asbestos 30, having an opening in the middle. This concentrates the heat at the sides, but permits ventilation at the center.

The wires 15 16 are insulated and preferably attached to a screw-plug or similar attachment, which can be connected to any of the usual fixtures for the connection of an electric-lamp bulb or other electrical connection.

The back plate 34 of the casing preferably leaves an opening above and below for the escape of heated air. As the current for a common lamp-bulb will heat the grid, the heat developed is slight, and with the double casing shown the outer plates are of about the normal temperature of the room where the heater is used.

The outer casing may be made ornamental in various ways. For use in developing checks the grid should be some three or four by eight or ten inches in size and the shelf a little larger. For developing a sheet of paper like a letter, document, or will the grid and platform will of course be larger.

When the machine is not in use, the spring on the rock-shaft swings the platform back

into the casing, with the asbestos face of the platform against the heated grid. As the asbestos is a non-conductor both of heat and electricity, the platform merely keeps warm. When a paper is to be treated, the platform is swung down, with its edge extending out of the opening in the casing. This movement is effected by slightly turning one of the knobs or handles on the rock-shaft. Placing the paper on the platform with its written face upward, it is swung up into contact with the grid and left there a second or two, when the heat and electrical current will have fixed the ink on the paper. The platform may then be swung out and the paper removed.

The heat of the grid should not be enough to scorch the paper even if left some time against the grid. A high degree of heat is not needed.

The opening in front of the casing, through which the platform swings, extends up to about the level of the bottom of the grid. A similar opening at the back of the casing permits a large sheet of paper to project through the openings. A sheet may thus be placed on the platform and have its end portion lifted up against the grid, the extreme portion of the sheet projecting through the back opening in the casing. Then by taking hold of the projecting end of the paper the paper can be drawn along and successive surfaces of the size of the grid can be brought under the grid. To prevent smearing in moving the sheet, the platform can be lowered a little before drawing the sheet along.

What I claim is—

1. The combination, in an electrical heater for fixing ink on paper, as described, of an insulated wire grating having terminals, means for supporting said grating, and a swinging shelf or platform on which the paper can be placed, and its face swung into contact with or away from the grating, substantially as described.

2. The combination of a grating consisting of a framework and a coiled wire thereon but insulated therefrom, the coil having a flat face, and electric terminals, a shelf or platform having an insulated surface, and supported on pivoted links, and means for swinging the face of the platform into proximity with the flat face of the coiled wire, substantially as described.

3. In an electrical heater for the purpose described, the grating constructed with a framework and wire coiled in flat fakes thereon but insulated therefrom, terminals by which the grating has electrical connections, and a non-conducting covering having closed edges but an open center, by which the heated surface of the grating is equalized.

4. In an electrical heater as described, a non-heat-conducting casing having an open passage-way in its sides through which a paper sheet may project, a flat-faced grid within but insulated from the casing, and having

its face in proximity to the said open passage, and a movable platform by which the face of a paper sheet may be carried against the grid, while both ends of the paper project from the casing.

5 5. In combination, the non-heat-conducting casing having a side opening, a flat grid having electrical connections and arranged within said casing, the platform supported on
10 pivoted links so as to swing one edge out through the opening in the casing, or to swing into the casing with its flat face in contact with the grid, and a spring acting to swing the platform into the casing.

15 6. The combination of the non-heat-conducting casing having side opening, the heated grid within the casing, the platform supported on links, the rock-shaft connected to links of the platform, and handles on the rock-shaft
20 outside the casing, by which the platform may be swung, all combined.

7. In combination, the non-heat-conducting casing having side opening, the electric-

ally-heated grid within the casing, the platform suspended by links so as to swing in
25 part through the opening, or to swing its face in contact with the grid, and the asbestos covering on said platform being a non-conductor both of heat and electricity, substantially as described.

30 8. In a heater as described, the heating-grid inclosed in a casing having front and rear openings, the platform having its face in working position in proximity to the face of the grid, a spring acting to lift the platform against the grid, and means for releasing the pressure on the paper, so that a large
35 sheet can be fed along between the platform and grid, through the openings in the casing all in combination.

40 In testimony whereof I affix my signature in presence of two witnesses.

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Witnesses:

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