

J. L. ZANDER.
PYROMETER OR THERMO BATTERY.
APPLICATION FILED JAN. 25, 1911.

1,038,258.

Patented Sept. 10, 1912.

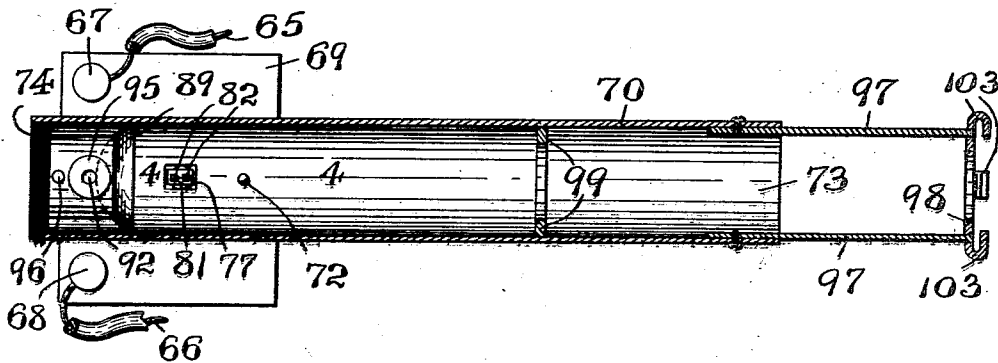


FIG. 1.

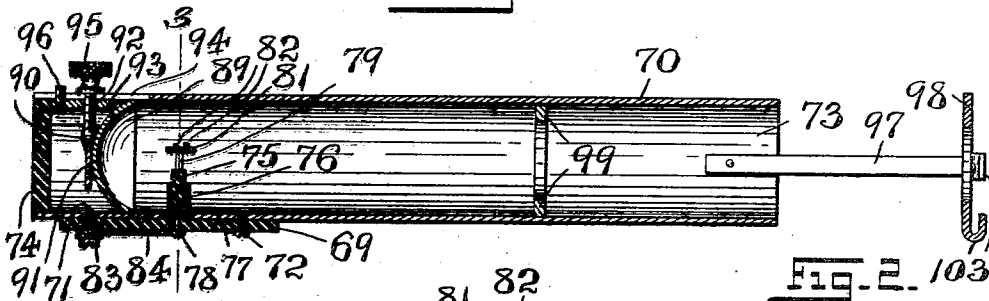


FIG. 2.

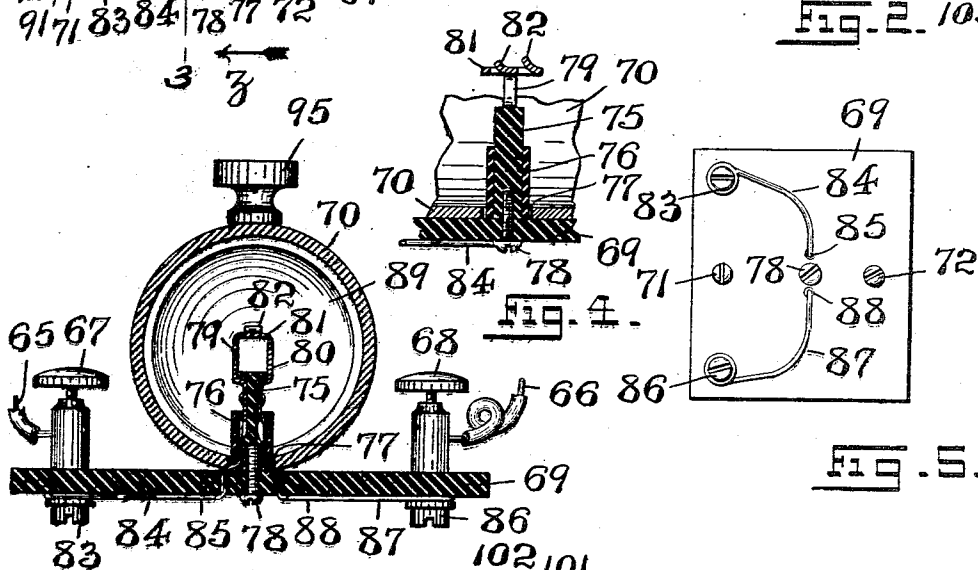


FIG. 3.

WITNESSES:

Frederick W. Pfauter
Harry C. Pfeiffer

FIG. 4.

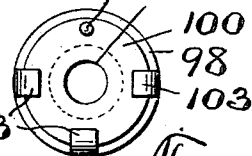


FIG. 5.

INVENTOR:
John L. Zander,
BY
Fraentzel and Richards,
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN L. ZANDER, OF IRVINGTON, NEW JERSEY.

PYROMETER OR THERMO-BATTERY.

1,038,258.

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To all whom it may concern:

Be it known that I, JOHN L. ZANDER, a citizen of the United States, residing at Irvington, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Pyrometers or Thermo-Batteries; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The present invention has reference, generally, to a novel and simply constructed device or apparatus in the form of a pyrometer.

My present invention has for its principal object to provide an apparatus of the general character hereinafter more fully specified, in the form of a simply constructed and efficient heat-collector and thermocouple, adapted to be arranged in electric circuit with a galvanometer, and by means of which the current induced by the various degrees of temperature and caused by the collected heat-rays within said collector may be made to produce corresponding movements of the energizing coil and the index-hand of a galvanometer.

Other objects of this invention not at this time more particularly enumerated will be clearly understood, from the following description of the present invention.

With the various objects of the present invention in view, the said invention consists, primarily, in the novel heat collector hereinafter set forth; and, the invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claims which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a horizontal sectional repre-

sentation of a heat-collector showing one embodiment of the principles of the present invention; Fig. 2 is a longitudinal vertical section of the same, taken centrally through the heat-collecting tube of the device; and Fig. 3 is a transverse vertical section, taken on line 3—3 in said Fig. 2, looking in the direction of the arrow 2, said view being made on an enlarged scale. Fig. 4 is a detail longitudinal vertical section, on an enlarged scale, said section being taken on line 4—4 in Fig. 1 of the drawings; Fig. 5 is a bottom view of a base-plate upon which the heat-collecting tube is adapted to be secured; and Fig. 6 is a face view of the heat-ray collecting end-portion of the heat-collecting tube, provided with a removable reducing shutter or slide.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now to Fig. 1 of the drawings, there are shown herein two circuit-wires, 65 and 66, which are suitably attached to the binding-posts 67 and 68 of a base 69 made from suitable insulating material, and upon which is suitably mounted the herein-before mentioned heat-rays collector. This collector consists, essentially, of a tubular body 70, secured at its one end-portion upon said base 69, by means of screws 71 and 72, one end of the said body 70 being left open, as at 73, while its other end is closed, preferably by means of a disk 74 made of suitable insulating material. Within the said tubular body 70, at a point near its closed end, is a thermo-couple. This thermo-couple consists, essentially, of a post 75 made from suitable insulating material which is surrounded by a chambered or tubular casing 76, also of suitable insulating material, the lower portions of said post 75 and the casing 76 extending through an opening 77 in said tubular body 70 and being secured to the base 67 by means of a screw 78, or other suitable fastening means. Suitably riveted upon the opposite sides of said post 75, or otherwise secured thereto, are contact-making metal plate-like members 79 and 80 with which is connected a frame-like metal member or element, as 81, which is formed with suitably shaped and angularly disposed

heat-ray collecting riffles or projections, as 82, which are preferably struck up out of the metal of which the member or element 81 is made. Connected with the binding post 67, and suitably secured thereto by means of a binding screw 83, is a circuit-wire 84 which passes through a perforation or hole 85 in the base 69 and into and through the chambered or tubular casing 76, said wire leading out therefrom and being suitably connected with the plate-like member 79. In like manner, there is connected with the binding post 68, and suitably secured thereto by means of a binding screw 86, a circuit-wire 87 which passes through a perforation or hole 88 in the base 69 and into and through the chambered or tubular casing 76, said wire leading out therefrom and being suitably connected with the plate-like member 80. In this manner, the thermo-couple may be properly arranged in circuit with a galvanometer, as will be clearly evident; and, whereby the heat-rays which are collected by the riffles 82 will produce an electric current in the completed circuit, and said current will be conveyed to the galvanometer. Back of the said thermo-couple is a concave mirror 89, made of silver, or any other suitable material of great radiating efficiency, said mirror having suitably secured upon its back, by means of solder 90, or other suitable fastening means, a member 91 which is provided with an upwardly extending screw-threaded shank 92. This shank 92 extends through a slide, such as 93, which is suitably fitted in and is slidably arranged in the tubular body 70, the upper screw threaded end-portion of said shank 92 also extending through a slot 94 in the said tubular-body 70 and having arranged thereon a binding or tightening nut or fingerpiece 95. The said slide 93 is also provided with a guiding-stud, as 96, which extends upwardly and is slidably disposed in said slot 94, so as to retain the slide in its proper sliding relation, and to properly retain the mirror in its position for receiving the rays of heat and by reflection focusing said rays upon the collecting riffles of the thermo-couple. This arrangement of these several parts also permits of an adjustment of the mirror, back and forth, to a certain degree within the tubular body 70, as will be clearly evident. The said tubular body 70 is also provided at its open end-portion with forwardly extending arms or rods, as 97, which carry upon their free ends a perforated shield, as 98, through which the heat-rays are projected into said tubular body for distribution upon the mirror from which the rays are reflected directly upon the riffles of the thermo-couple. Within the said tubular body 70 there may also be ar-

ranged a ring-shaped device or perforated shield 99 which prevents any false currents of air from radiating upon the thermo-couple. If desired, the opening in the shield 98 may be made smaller by the arrangement over said shield of a suitable shutter 100 which is provided with a reducing opening 101, the said shutter being provided with a fingerpiece 102, and being removably arranged upon said shield 98 by an arrangement of fingers, as 103, with which the said shield may be provided. Of course it will be understood that any suitable form of reducing shutter may be employed, and any other suitable means may be used with the said shield and shutter for connecting said shutter with said shield.

The workings and operations of the several parts of the apparatus will be clearly understood from the foregoing description and from an inspection of the several figures of the drawings, and need, therefore, not be further described.

I am aware that changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of the present invention as set forth in the foregoing specification, and as defined in the claims which are appended thereto. Hence, I do not limit my present invention to the exact arrangements and combinations of the devices and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

I claim:—

1. A heat-collector for measuring instruments consisting of a tubular body, a thermo-couple within said body, consisting of a tubular member and a post, both of insulating material, plate-like members of metal secured to said post, a frame-like element connected with said metal members, and heat-collecting riffles upon said frame-like element.

2. A heat-collector for measuring instruments consisting of a tubular body, a thermo-couple within said body, consisting of a tubular member and a post, both of insulating material, plate-like members of metal secured to said post, a frame-like element connected with said metal members, heat-collecting riffles upon said frame-like element, and a mirror back of said couple for reflecting the heat-rays upon said riffles.

3. A heat-collector for measuring instruments consisting of a tubular body, a thermo-couple within said body, consisting of a tubular member and a post, both of insulating material, plate-like members of metal secured to said post, a frame-like element con-

nected with said metal members, heat-col-
lecting rifles upon said frame-like element,
a mirror slidably and adjustably arranged
back of said thermo-couple for reflecting the
5 heat-rays upon said rifles, and means for se-
curing said mirror after adjustment in its
fixed position.

In testimony, that I claim the invention
set forth above I have hereunto set my hand
this 23rd day of January 1911.

JOHN L. ZANDER.

Witnesses:

FREDK. C. FRAENTZEL,

FREDK. H. W. FRAENTZEL.