

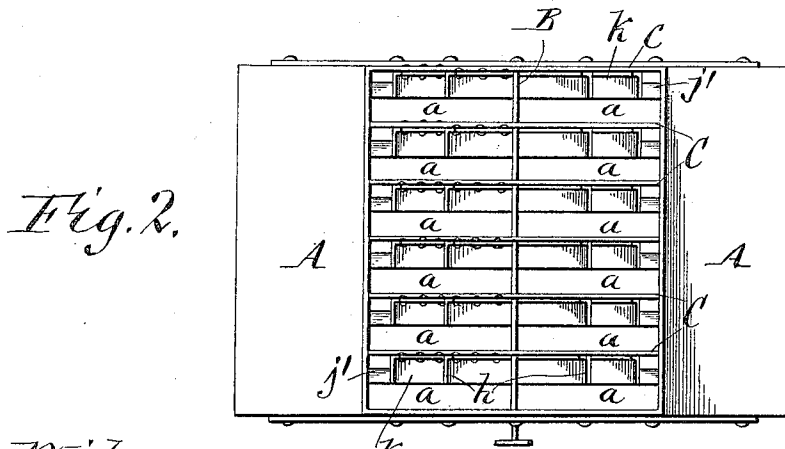
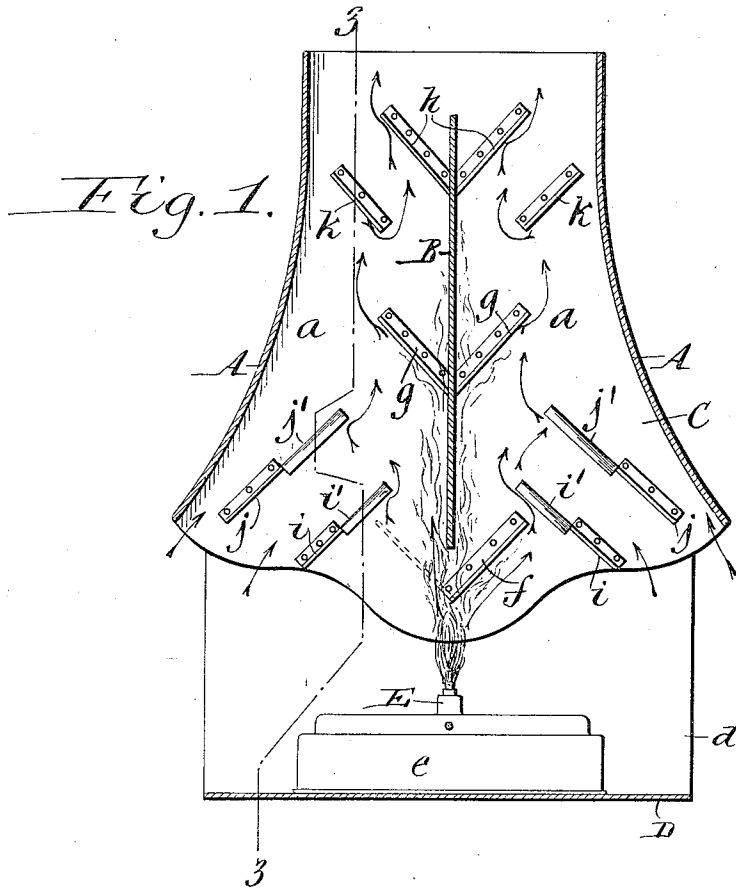
M. KELLY.
HEATER.

APPLICATION FILED MAR. 12, 1910.

1,045,561.

Patented Nov. 26, 1912.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

MICHAEL KELLY, OF BUFFALO, NEW YORK.

HEATER.

1,045,561.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MICHAEL KELLY, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Heaters, of which the following is a specification.

This invention relates to a heater and has for its object the production of a heater for this purpose whereby the flame from the burner is caused to heat the maximum amount of air in the room in which the heater is installed and cause a rapid circulation of the same.

In the accompanying drawings: Figure 1 is a vertical transverse section of my improved heater. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical longitudinal section of the heater taken in line 3—3, Fig. 1. Fig. 4 is a horizontal section in line 4—4, Fig. 3, looking upwardly.

Similar letters of reference indicate corresponding parts throughout the several views.

In its general organization this heater comprises two longitudinal rows of upright flues *a* which are arranged parallel lengthwise of the heater and which are preferably constructed by two longitudinal side walls *A, A*, a central or intermediate wall or partition *B* arranged lengthwise between the side walls, and a plurality of transverse walls or partitions *C* connected at their lateral edges with the side walls and at their central parts with the central wall or partition. These flues which constitute the body of the heater may be supported in any suitable manner but preferably by means of a base having a horizontal bottom plate *D* adapted to rest on the floor and two uprights or standards *d* rising from opposite ends of the bottom plate and secured to the outermost transverse plates of the body. The partition terminates at its lower end short of the lower ends of the transverse walls and its upper end terminates short of the upper ends of the transverse walls.

Upon the bottom of the base is arranged a burner *E* which may be fed with oil from a pot or tank *e*, but if desired the heat may be derived from the burning of any other kind of fuel. This burner is arranged below the lower edge of the central partition, so that the flame upon striking this edge is divided and caused to ascend partly in the longitudinal row of flues on one side of the

longitudinal partition and partly in the longitudinal row of flues on the other side of this partition and thus distribute the heating effect of this flame.

For the purpose of still further augmenting the heating effect of the flame upon the air in the flues and to expedite the circulation of the air, means are arranged in the several flues which project partly into the path of the flame and the current of air and deflect them out of their normal path, so as to bring the largest volume of air into contact with the flame while the air and flame are passing upwardly from the lower end of the flues to the upper end thereof. Various means may be provided for this purpose but those shown in the drawings are suitable and are constructed as follows:—

f represents a series of lower flame deflectors which are arranged adjacent to the lower end of the central partition and which incline from a point below the lower end of this partition upwardly and laterally into the adjacent flues and project partway across the flues in a direction lengthwise of the heater so that only part of the flame of the burner is intercepted and deflected laterally in the flues while other parts of the flame are permitted to follow an unobstructed normal path upwardly through the flues. These lower flame deflectors are preferably constructed of angle iron one flange of which serves as the deflecting surface while the other flange serves as the supporting means and is attached by riveting to the adjacent transverse wall, as shown in the drawings, or by any other suitable means. The lower flame deflectors are preferably arranged in staggered fashion in the lower ends of the flues, that is to say, a deflector of this character is arranged only in each alternate flue of each row and each deflector in a flue of one row is arranged opposite a flue in the other row which is unprovided with a lower flame deflector. It follows from this construction that the flame of the burner is alternately deflected partly into a flue of one row and partly into a flue of the other row in a direction lengthwise of the heater, thereby promoting a more uniform distribution of the heat of the flame throughout the several flues and equalizing the heating action of the heater as a whole. Adjacent to the central part of each transverse wall and inclining upwardly and out-

wardly from the central partition are arranged intermediate flame deflectors *g* which project partly across the flues in a direction lengthwise of the heater similar to the lower flame deflectors and thereby cause part of the heat of the flame to be deflected laterally into the current of air in the flues while other parts are permitted to rise in the flues and continue their normal upright path through the same. These intermediate flame deflectors are also constructed preferably of angle iron and secured by riveting to the adjacent transverse walls or partitions of the heater.

Adjacent to the upper parts of the transverse walls and inclining upwardly and laterally from the longitudinal partition are arranged a plurality of upper flame deflectors *h* which operate like the intermediate flame deflectors, inasmuch as they project partway across the flue area in the direction lengthwise of the heater and thereby deflect part of the flame laterally but permit other parts thereof to pass upwardly without interference. They are also constructed of angle irons which are riveted to the transverse walls of the partition.

The intermediate and upper flame deflectors are preferably arranged in each of the flues instead of alternately as is the case with reference to the lower flame deflectors.

Means are provided in the lower end of each flue for directing the air entering the lower end of the same inwardly toward the flame and thus insure heating of all of the air before the same reaches the top of the heater. These means preferably consist of a lower inclined deflector secured to the side of one of the transverse walls and inclining from its lower end upwardly and inwardly toward the longitudinal partition, said lower air deflector having a straight-faced lower part *i* and a channel-shaped upper part *i*¹, the concave side of the latter facing downwardly. This lower air deflector projects only part way across one of the flues in a direction lengthwise of the heater. The channel-shaped upper parts of some of the lower air deflectors project across the upper ends of the lower flame deflectors but are separated therefrom by an intervening space. Part of the air entering the lower end of each flue is intercepted by the straight faced lower part *i* of the lower air deflector and directed upwardly and inwardly while other parts of the air pass straight up through the flue. A portion of air intercepted by the lower inclined face *i* of the lower air deflector is directed by the same into the channel-shaped upper part *i*¹ of this deflector

and the latter positively carries the same upwardly and inwardly toward the central longitudinal partition, thereby forcibly bringing some of the air into the path of the hottest part of the flame.

Above each lower air deflector is arranged another intermediate air deflector which is of substantially the same construction as the lower air deflector and comprises a flat faced lower portion *j* and a channel-shaped upper portion *j*¹ which are secured to the adjacent transverse wall of the flue, so as to project only partway across the same lengthwise of the heater and incline from their lower ends upwardly and inwardly toward the longitudinal partition. This intermediate air deflector intercepts other parts of the air which rise in the flues nearer to the side walls and direct the same toward the flame adjacent to the longitudinal partition.

In the upper part of each flue is arranged an outwardly trending deflector *k* which is secured to the adjacent transverse wall near the side wall and inclines from its lower end upwardly and outwardly toward its upper end and projects partway across the flue in a direction lengthwise of the heater. Each of these upper air deflectors intercepts part of the heated air which escapes from the intermediate flame deflector below the same and directs the same toward the adjacent side wall so as to mingle the same with the stream of air moving upwardly along the inner side of the side wall.

The side walls of the heater are preferably separated a considerable distance at their lower ends and arranged closer together at their upper ends so that these walls converge upwardly, and thereby provide a large inlet for the unheated air at the lower end of the flues but a contracted outlet for the heated air at the upper end of the flues, whereby the air is prevented from escaping too freely from the flues and a thorough heating of the same is insured before it is discharged into the surrounding space.

I claim as my invention:

A heater comprising a flue, and a deflector arranged in an inclined position in said flue and having its lower end portion provided with an even underside and its upper end portion provided with a longitudinal channel on its underside.

Witness my hand this 24th day of February, 1910.

MICHAEL KELLY.

Witnesses:

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