United States Patent

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[54] FIREPLACE GRATE

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[52] **U.S. Cl.** **126/165**
[51] **Int. Cl.** **F23h 13/02**
[58] **Field of Search** 126/164, 165, 298

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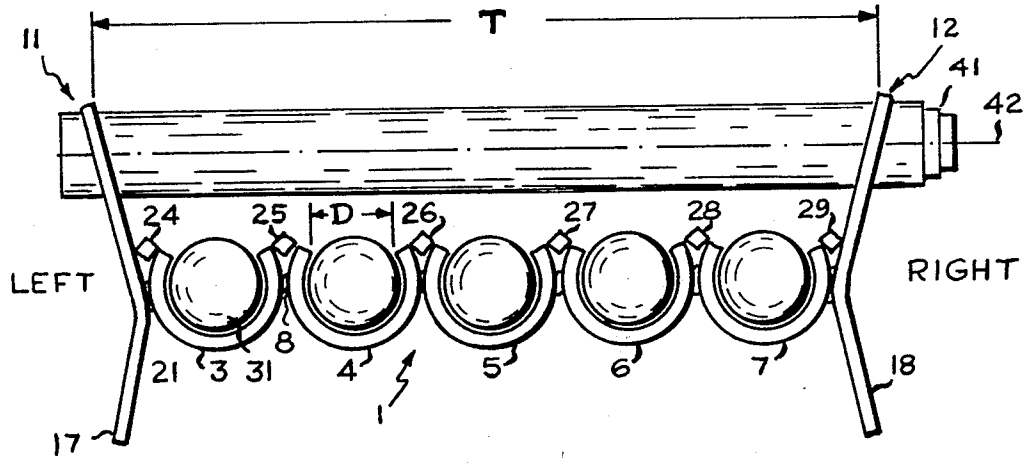
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[57] **ABSTRACT**

A fireplace grate for burning paper or paper and wood is designed to hold rolled up newspapers or magazines with the rolls of newspapers arranged in at least one row and held by sets of holders, the holders in each set being arranged side by side, each holder in each set having a corresponding holder in the other set which is in registration therewith and each holder having an opening into which an end of the roll of paper is inserted and held securely so that the paper is not likely to unroll. Embodiments of the invention include four sets of holders arranged to hold paper in two transverse rows one above the other with sufficient space between the rows and between rolls of paper in a row to permit ample flow of air between to sustain burning of the rolls.

10 Claims, 8 Drawing Figures



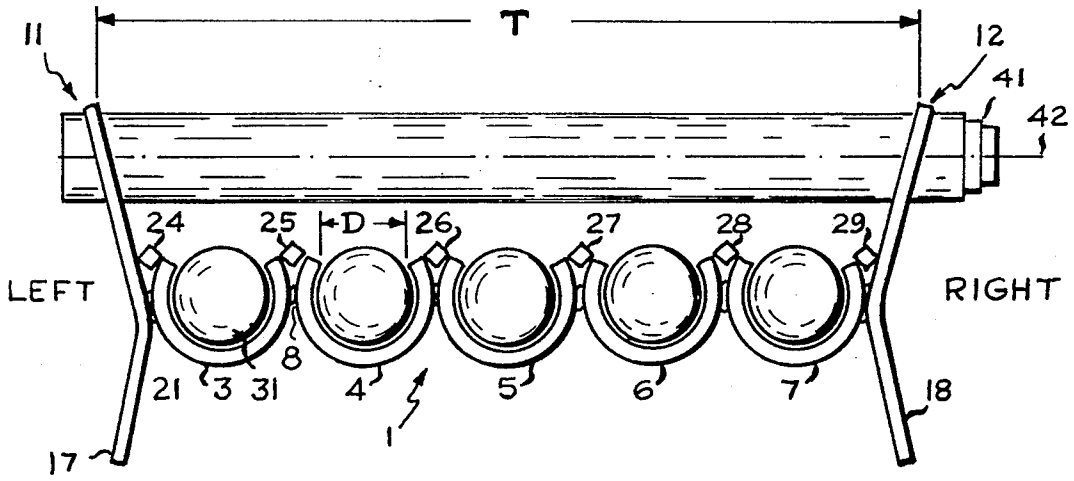


FIG 1

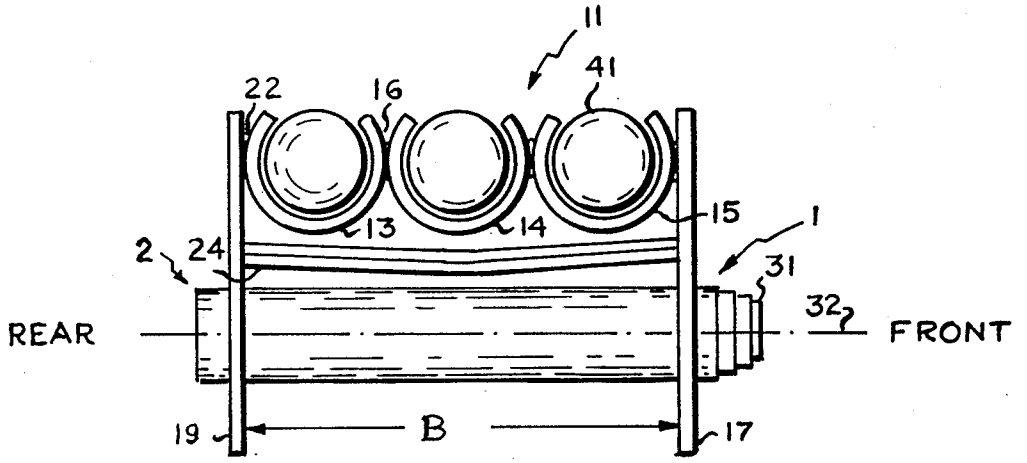


FIG 2

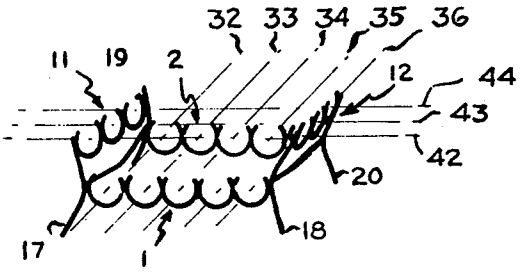


FIG 3

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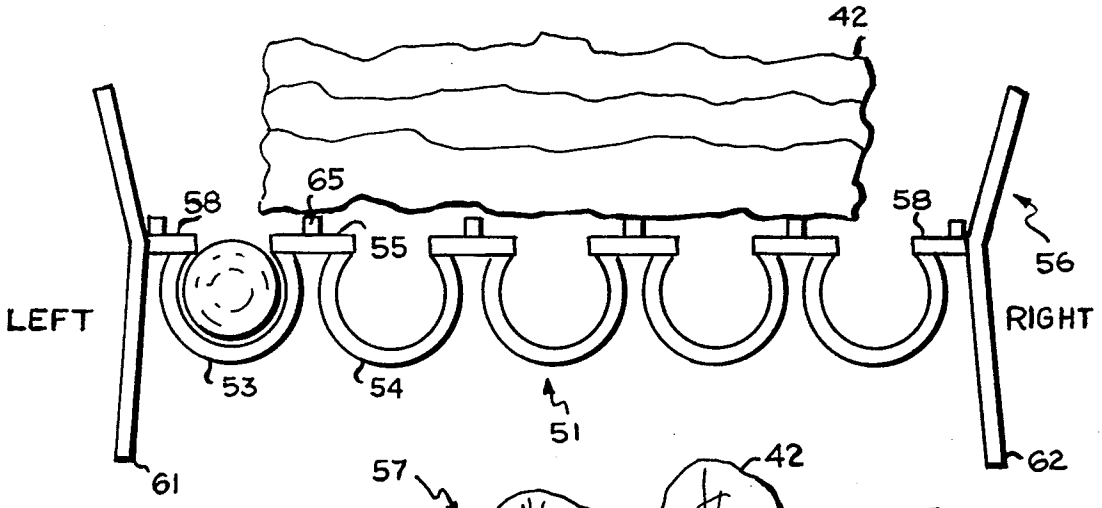


FIG 4

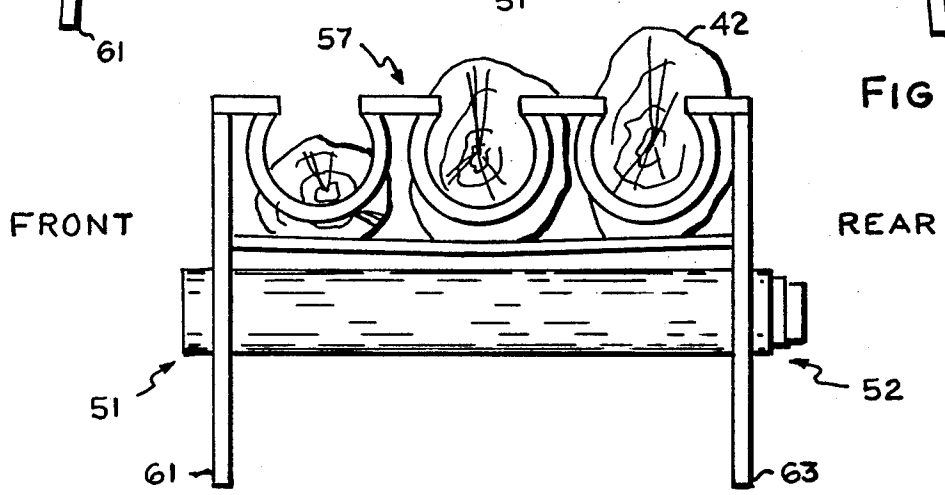


FIG 5

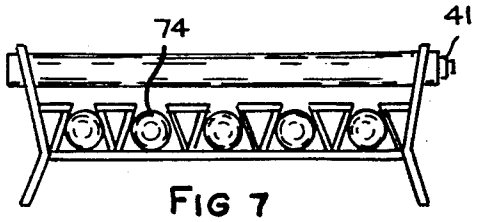


FIG 7

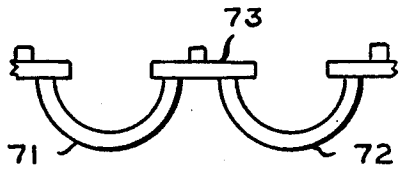


FIG 6

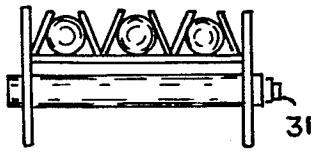


FIG 8

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FIREPLACE GRATE

This invention relates to grates for holding material to be burned and more particularly to a fireplace grate for holding paper in such a manner that the paper burns relatively long and steady and kindles logs.

Waste paper and particularly waste newspapers accumulate in every household. They are disposed of most commonly by carting off to garbage dumps or incinerators. Heretofore, some effort has been made to convert waste paper and particularly waste newspaper into logs which can be burned in a fireplace to give warmth and certain esthetic effects. One such effort consists of soaking the papers in water then compacting them and drying them to yield a somewhat rigid block which resembles a log, if not in burning quality at least in density and size. These efforts have not met with much success, because they are more trouble than they are worth.

Others have tried to roll newspaper into tight rolls and tie the rolls with string or wire. These are then laid on the fireplace grate and burned like logs. Where rope or cord is used, it burns through quickly and the roll of paper unrolls smothering the fire. Where wire is used, the fireplace becomes cluttered up with twisted loops of wire that have to be cleaned out and discarded later.

It is one object of the present invention to provide a fireplace grate specifically designed and capable of holding rolls of newspaper and the like so that the roll is not likely to unroll even burning, all without the use of cord, string, or wires.

It is another object of the invention to provide such a grate which is easily cleaned and can be used for burning wood and logs as well as the rolls of paper or can be used for burning both rolls of paper and wood and logs.

It is a further object to provide such a fireplace grate which has an attractive appearance and is reasonably economical in manufacture.

In accordance with a principle feature of the present invention, holders are provided for holding rows of rolls of paper, such as newspaper, each roll of paper being held by a holder at each end of the roll. Furthermore, the holders space the rolls to let air circulate between rolls and so insure even burning. Each holder defines a short channel open at the top, on an axis concentric with the roll of paper. The holder is wider at the axis than at the open top, and so the row of paper which spans the two holders can be inserted into the open tops of the holders and is held by the holders so that it is not likely to unroll or rise out of the holders when it burns.

Other objects and features of the invention will be apparent in view of the following specific descriptions of embodiments of the invention taken in conjunction with the figures in which:

FIGS. 1 and 2 are front and side views of one embodiment of the fireplace grate shown loaded with rolls of paper depicted by broken lines;

FIG. 3 is a three-quarter view of the same embodiment showing the transverse sets of axes defined by the holders and along which the rolls of paper are oriented in two layers;

FIGS. 4 and 5 show front and side views of another embodiment of the fireplace grate for holding rolls of paper;

FIG. 6 depicts an alternate technique applicable particularly in the embodiment shown in FIGS. 4 and 5; and

FIGS. 7 and 8 depict a third embodiment of the fireplace grate made of straight members.

Turning first to FIGS. 1 and 2 there is shown a unitary grate structure dimensioned to fit in a standard fireplace and so it is wider than it is deep. The front view of the grate shown in FIG. 1 is exactly the same as the rear view, because the structure is symmetrical front to rear as well as it is symmetrical side to side. The front view in FIG. 1 reveals the front set of holders 1 (which is the same as the rear set 2) and which includes five open rings 3 to 7 which are connected end to end at points such as 8 by, for example, welding. The open rings may be made from bar stock bent around a mandril and then cut to define an opening of dimension D at the top of each ring which is somewhat less than the inside diameter of the ring. Each set of holders could also be cast or cut by torch from plate stock.

An identical set of rings forms the rear set 2 directly behind the set 1 and substantially in registration therewith. The side set of rings 11 and 12 are also identical and constructed as shown in FIG. 2. Each consists of three rings which may be the same size as those in set 1 and arranged side by side and welded together where they abut such as at point 16. The front and rear sets 1 and 2 and the right and left side sets of holders 11 and 12 are arranged in a rectangle and welded to four corner posts 17 to 20 at points such as 21 where the ring 3 welds to post 17 and point 22 where the ring 13 welds to post 19.

Cross bars 24 to 29 connect the front set of holders 1 to the rear set 2 and lend rigidity to the structure and provide a sturdy grate between the two lower sets of holders 1 and 2 and the two upper sets 11 and 12. This grate can hold logs and the like which are not mounted in the holders.

In use, rolls of paper which are preferably newspaper are inserted first into the bottom set of holders. The sets 1 and 2 are preferably spaced apart so that the dimension B shown in FIG. 2 is less than the width of a page of the newspaper. The roll of paper 31 represented by broken lines is made from a stack of pages of the newspaper rolled from top to bottom or vice versa. This provides a roll such as roll 31 of length equal to or slightly greater than the width of the page. Rolls of paper made in this fashion are inserted into the holders of sets 1 and 2 and so they define a row of rolls of paper running from front to rear of the fireplace. These are arranged along the axes denoted 32 to 36 in the view of the embodiment shown in FIG. 3. These axes are concentric with the holder rings. Similarly, the spacing between the holder sets 11 and 12 denoted dimension T in FIG. 1 is preferably slightly less than the length of a page of the newspaper. The rolls of paper inserted in these holders are made by rolling a stack of pages of the newspaper from right to left or left to right to form a roll of paper such as 41 represented by broken lines in FIG. 1. Three such rolls are made and inserted into the holders of sets 11 and 12 and provide the top row of rolls of paper along the axes 42 to 44 as shown in FIG. 3. The rings in the top sets of holders may be smaller than the rings in the bottom sets. A top roll made from the same number of newspaper pages as a bottom roll is smaller in diameter than the bottom roll, and so the holder for the top roll should be smaller.

When the bottom and top rows of paper are mounted to the grating as shown in the figures, they may be burned without wood or they can serve as long burning kindling for logs placed on the top row. These rolls are lit from the bottom by, for example, crumpling a few newspaper and inserting them underneath the grating and then lighting these at several places. The rolls alone burn steady and even throughout the breadth and width of the rolls and will burn like this for a half hour to an hour. If logs are placed on top of the rolls, no wood kindling is needed; the paper rolls serve as kindling. Since the paper rolls, as held and positioned by the grate, burn evenly for a half hour or more, logs or heavy pieces of wood can be added to the fire to replace logs consumed and the logs added quickly ignite and burn just as at the start.

Another embodiment of the fireplace grate for burning rolls of paper is shown in FIGS. 4 and 5 which are front and side views, respectively. Here, the front and rear sets of holders 51 and 52 are each made of open rings such as 53 and 54 connected by short bars as 55 which attach from the edge of the opening on one ring to the nearest edge of the opening on the adjacent ring. Thus, the edges of these bars define a slot into the opening in the ring and space the rings apart to insure there is an adequate flow of air between the adjacent rolls of paper in a row to sustain even burning. The right and left side sets of holders denoted 56 and 57 in this embodiment are made of rings which may be identical to rings 53 and 54 connected to bars identical to bar 55 or the side rings may be of different size.

A short bar **58** extends from the ends of the front and rear sets of holders and connects to the corner posts **61** to **64**. All connections may be made by welding. Bars such as **65** connect the front and rear sets of holders to add rigidity to the structure and provide a grate between the bottom and top rolls. Clearly, the front, rear, and side sets of holders shown in FIGS. **4** and **5** may be made by casting or cutting from plate stock. Rolls of paper such as **31** and **41** shown in FIGS. **1** and **2** may be inserted in the bottom and top sets of holders just as already described or logs such as **45** can be placed on the cross bars **65** and the top rolls of paper omitted. In this case, the rolls **31** kindle the logs. When the rolls burn and drop from the holders fresh rolls of paper can be inserted into the bottom sets of holders from the front. The longer rolls can be used for this to avoid burning the hand as they are inserted.

FIG. **6** shows an alternate form of structure for making the sets of holders **51** and **52** and **56** and **57**. In FIG. **6**, the rings are semi-circles and so two rings such as **71** and **72** can be made from a single circular ring. The opening into each ring is made more narrow than the inside diameter of the ring by extending the connecting bars such as **73** partially across the opening. This structure is less desirable from the standpoint of holding the roll of paper than any of the structures shown in either of the first two embodiments, however it can result in more economical fabrication.

A fourth embodiment of the invention is illustrated by FIGS. **7** and **8** where the holders are made of straight pieces and so there is no requirement in fabrication to bend or form stock in a circle. In this embodiment, the holders such as **74** are each trapezoidal in shape with the opening at the top more narrow than the width at the base. Clearly, other structures can be used to provide the sets of holders for the front, rear, and sides of the grate. The common feature of the holders included in all embodiments of the present invention is that each holder has an opening or neck at the top through which the end of a roll of paper is inserted (or forced) sideways. Since the neck is more narrow than the width of the holder, it is inclined to prevent the roll of paper from rising out of the holder and unrolling. Furthermore, as long as the roll of paper remains in the holder, it cannot unroll and will burn relatively slowly and evenly somewhat like a log that has been fully kindled. The roll of paper can be rolled into a very tight roll which inserts easily through the opening in the top of the holders and when released in the holders then unrolls slightly expanding to fill out the diameter of the holders. Thus, in effect, the roll of paper springs apart when inserted into the holder and makes firm contact with the inside walls of the holder which then hold the roll of paper firmly in place and prevent it from unrolling any further.

Experience has proven that just about any kind of paper can be burned in the grate. However, newspaper seems to burn most evenly and completely. Magazines, and in particular glossy paged magazines, do not burn as well as newspaper. It is advised that when burning magazines to insert some newspaper rolls between rolls of the magazines.

The grate is particularly useful to hold both paper rolls and logs as illustrated in FIGS. **4** and **5**. Here the rolls serve as kindling for the logs and fresh rolls can be added beneath the logs as already described without disturbing the logs by inserting the rolls into the bottom holders from the front. This use does away with the need for kindling and so the user need only store logs and the previous days newspaper. The rolls beneath the logs bathe the bottom of the logs with flame for a considerable time and will quickly revive a dead or dying log fire.

The embodiments of the invention described herein are the best known uses and applications of the invention which are set forth in the accompanying claims.

What is claimed is:

1. A fireplace grate for holding paper to burn comprising,
first and second sets of holders, the holders in a set being arranged side by side in a row with each holder in the first set having a corresponding holder in the second set substantially in registration therewith and defining a common axis,
each holder consisting of a short channel open at the top and oriented so that the corresponding holders of the first and second sets define the common axis which is substantially horizontal, and
each holder channel being wider at the axis than at the top,
whereby a rolled up paper of length sufficient to span corresponding holders of the first and second sets when inserted sideways into the open tops of the corresponding holders is held therein and not likely to unroll.

2. A fireplace grate as in claim **1** wherein,
the holders arranged side by side are spaced sufficiently to permit ample flow of air between the rolls of paper held to sustain burning of the rolls.

3. A fireplace grate as in claim **2** wherein,
crossbars connect the first and second sets between and beneath the holders.

4. A fireplace grate as in claim **2** wherein,
crossbars connect the first and second sets between and above the holders.

5. A fireplace grate as in claim **1** and further including,
third and fourth sets of holders arranged with respect to each other as the first and second set and with the common axes thereof transverse to the common axes of the first and second set,
whereby a rolled up paper of length sufficient to span corresponding holders of the third and fourth sets when inserted into the open tops of said corresponding holders is held therein and not likely to unroll, and
when all sets contain rolls of paper, the rolls are in bottom and top rows which are arranged transverse to each other.

6. A fireplace grate as in claim **5** wherein,
crossbars connect the first and second set between the holders thereof and beneath the third and fourth sets of holders.

7. A fireplace grate as in claim **6** wherein,
the bottom row or paper rolls is held by the first and second set of holders,
the top set of paper rolls is held by the third and fourth set of holders, and
the axes of the bottom sets of holders run front to rear in the fireplace and the axes of the top sets of holders run side to side in the fireplace.

8. A fireplace grate as in claim **6** wherein,
the bottom sets of holders are spaced apart no greater than the width of a newspaper page and the top sets of holders are spaced apart no greater than the length of the same newspaper page.

9. A fireplace grate as in claim **1** wherein,
each holder is an open ring, the opening being more narrow than the inside diameter of the ring.

10. A fireplace grate as in claim **9** wherein,
the rings in a set of holders connect side by side by a piece which spans the end of a ring at the opening therein to the adjacent end of the adjacent ring at the opening therein.

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