Nov. 5, 1957 E. M. BEVILACQUA 2,811,740

COMBINED HINGE AND LATCH MECHANISM

Filed May 9, 1955 2 Sheets-Sheet 1

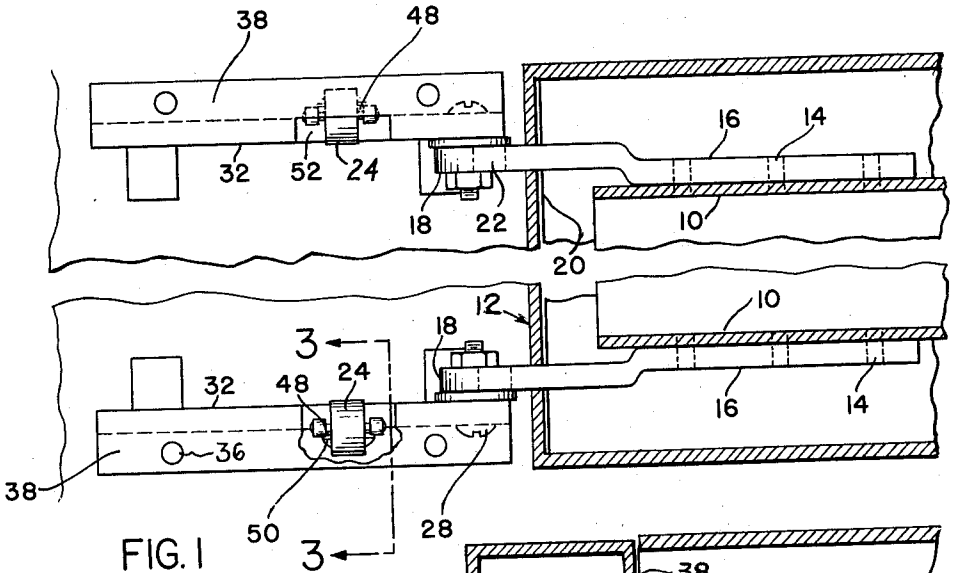



FIG. 1

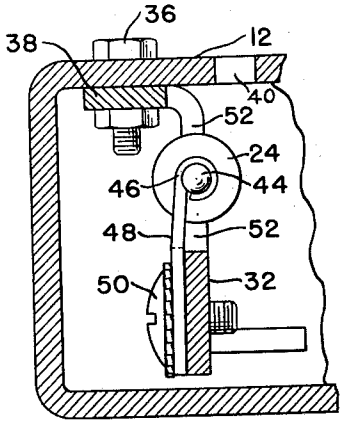



FIG. 3

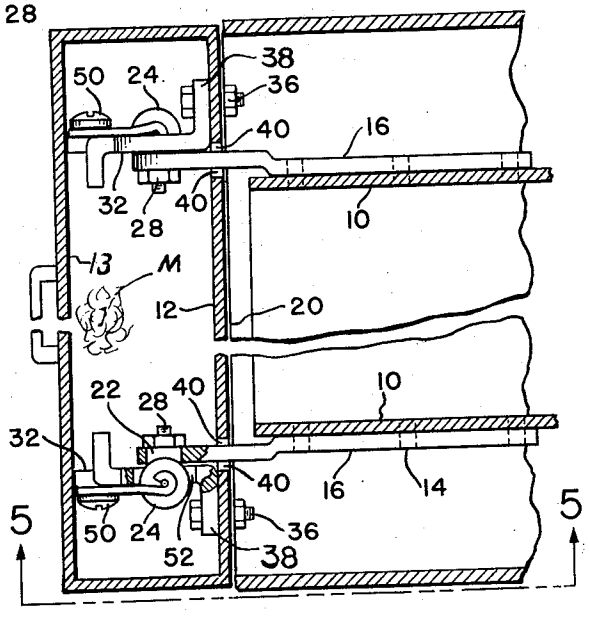



FIG. 2

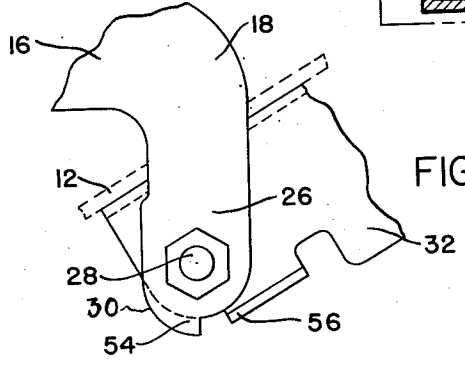



FIG. 8

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COMBINED HINGE AND LATCH MECHANISM

Filed May 9, 1955 2 Sheets-Sheet 2

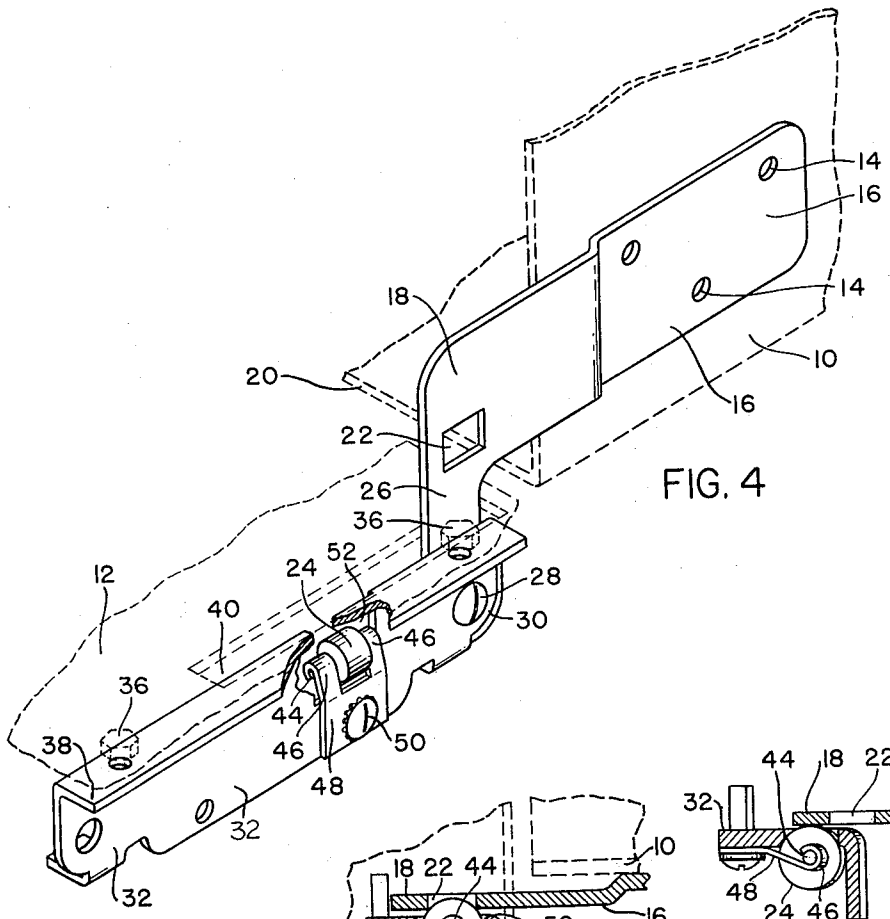



FIG. 4

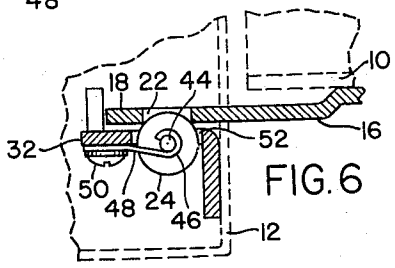



FIG. 6




FIG. 7

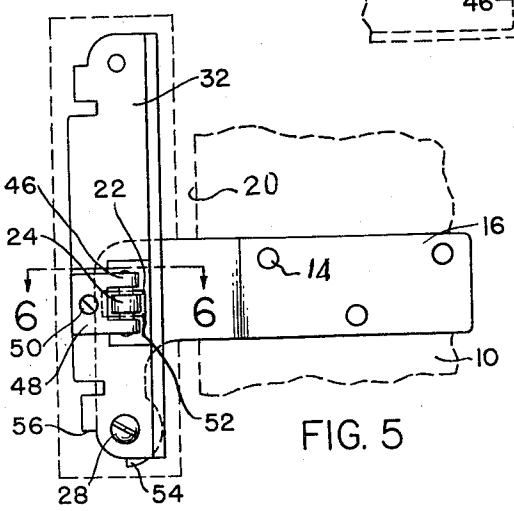



FIG. 5

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United States Patent Office

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2,811,740

# COMBINED HINGE AND LATCH MECHANISM

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Application May 9, 1955, Serial No. 506,786

1 Claim. (Cl. 16—142)

This invention relates to a combined hinge and latch mechanism for connecting a door to a frame defining an opening to be closed by said door and for firmly holding said door in closed position in such a manner that the door can be pulled open without any manipulation of the latch.

The full nature of the invention will be more clearly understood from the following specification and the accompanying drawings in which

Fig. 1 is a fragmentary and diagrammatic view, partly in top plan and partly in horizontal section, showing the application of my improved hinge and latch mechanism to the oven or broiler of a cooking range, the door being shown in full open position.

Fig. 2 is similar to Fig. 1 except that it shows the position of the parts when the door is in full closed position.

Fig. 3 is a sectional view taken on line 3—3 on Fig. 1.

Fig. 4 is an enlarged, fragmentary, isometric view showing the position of the parts when the door is open, only those parts of the door and of the oven or broiler frame to which the hinge and latch mechanisms are secured being shown in phantom lines.

Fig. 5 is an end elevational view looking in the direction of line 5—5 on Fig. 2 showing the parts as they appear in fully closed position.

Fig. 6 is an enlarged fragmentary sectional view on line 6—6 on Fig. 5 showing the position of the latch parts when the door is fully closed.

Fig. 7 is similar to Fig. 6 and shows the position of the latch parts when the door is partly opened.

Fig. 8 is an enlargement of the center portion of Fig. 4 showing the position of the parts when the door is partly closed.

In the drawings the invention is shown applied to the oven, or broiler, compartment of a cooking stove, only the side walls **10** and bottom **11** of said compartment being shown. Conventionally, the open front end of the compartment is closed by a door which is hinged at its bottom end to swing about a horizontal axis. A door of this type is usually formed of an inner panel **12**, an outer panel **13** and side, bottom and top walls which coact to form a box-like structure for receiving insulating material M only some of which is shown in Fig. 2.

The hinge of my invention includes a pair of rigid arms **16** which are rigidly secured, as at **14**, to the sides **10** of the broiler, or oven compartment and the outer ends **18** of which project beyond the vertical front edge **20** of the broiler or oven compartment. The outer ends **18** of arms **16** are provided with openings **22** which are adapted to be engaged by rollers **24** which will be further referred to.

The outer ends **18** of arms **16** are extended downwardly to form vertical portions **26** which are pivotally secured, as at **28**, to the inner ends **30** of elongated brackets **32** which are secured to the inner panel **12** of the door by bolts or the like **36** passing through flanges **38** at the inner ends of brackets **32**. The inner panel **12** of the door is provided with slots **40** through which the outer ends **18** of arms **16** pass when the door is in the closed position of Figs. 2, 5 and 6, to permit rollers **24** to engage openings **22** to hold the door in its closed position.

Rollers **24** are mounted on shafts **44** which are journalled in the opposite arms **46** of springs **48** which are



secured to brackets **32** as at **50**. As will be seen from Figs. 1, 2, 3 and 4, brackets **32** are provided with openings **52** through which rollers **24** project first to ride on the sides of the outer ends **18** of arms **16**, as in Fig. 7 and then to engage openings **22** as in Fig. 6. It will be noted from Figs. 6 and 7 that springs **48** bias the rollers toward the outer ends **18** of arms **16** or upwardly as viewed in Figs. 6 and 7 and to the left as viewed in Fig. 4. The lower ends of vertical extensions **26** of arms **16** are provided with shoulders **54** which when the door is in its fully opened horizontal position, engage shoulders **56** on brackets **32** to limit the counterclockwise rotation of this door.

The operation is as follows:

When the door is moved to its closed, vertical position, rollers **24** are urged by springs **48** into openings **22**. This holds the door in said closed position. When the door is pulled open, the peripheries of rollers **24** ride out of openings **22** and against the adjacent portions of the front ends **18** of arms **16**. When the door has been partly opened, rollers **24** clear the front ends **18** of arms **16** and the door is free to move to its full open position, or until shoulders **54** abut shoulders **56**. It will thus be seen that I have developed a very simple, inexpensive and foolproof latch and hinge mechanism, and one which is effective for the purpose for which it is intended. It will also be seen that the springs **48** which are the only heat sensitive parts of the mechanism are located in the insulated body of the door where they are protected against the high temperatures which develop inside the oven or broiler compartments.

What I claim is:

A wall structure defining a compartment having vertical side walls with its front end open, a door, means hinging the bottom edge of said dor to the bottom wall of said compartment whereby said door is rotatable about a horizontal axis to a first substantially vertical position in which it closes said front end and to a second substantially horizontal position in which said door does not close said front end, a horizontal arm having its inner end rigidly secured to at least one side wall of said compartment with its outer end projecting through said open front end, there being a vertical opening in said outer end of said arm, an extention depending from said outer end of said arm, a bracket carried by the inner side, and near a vertical edge of said door, hinge means connecting the lower end of said extention to the adjacent end of said bracket, a roller carried by said bracket, said roller being disposed at a distance from said hinge means such that, when the door is moved to its first vertical position, said roller will engage said opening to retain said door in said vertical position, there being a slot in the inner side of said door for receiving said outer end of said arm when said door is in its vertical closing position, and a spring carried by said bracket and biasing said roller into said opening.

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