

Feb. 18, 1958

H. GREENFIELD

2,823,462

DOOR TEMPLATE

Filed April 29, 1954

2 Sheets-Sheet 1

Fig. 1.

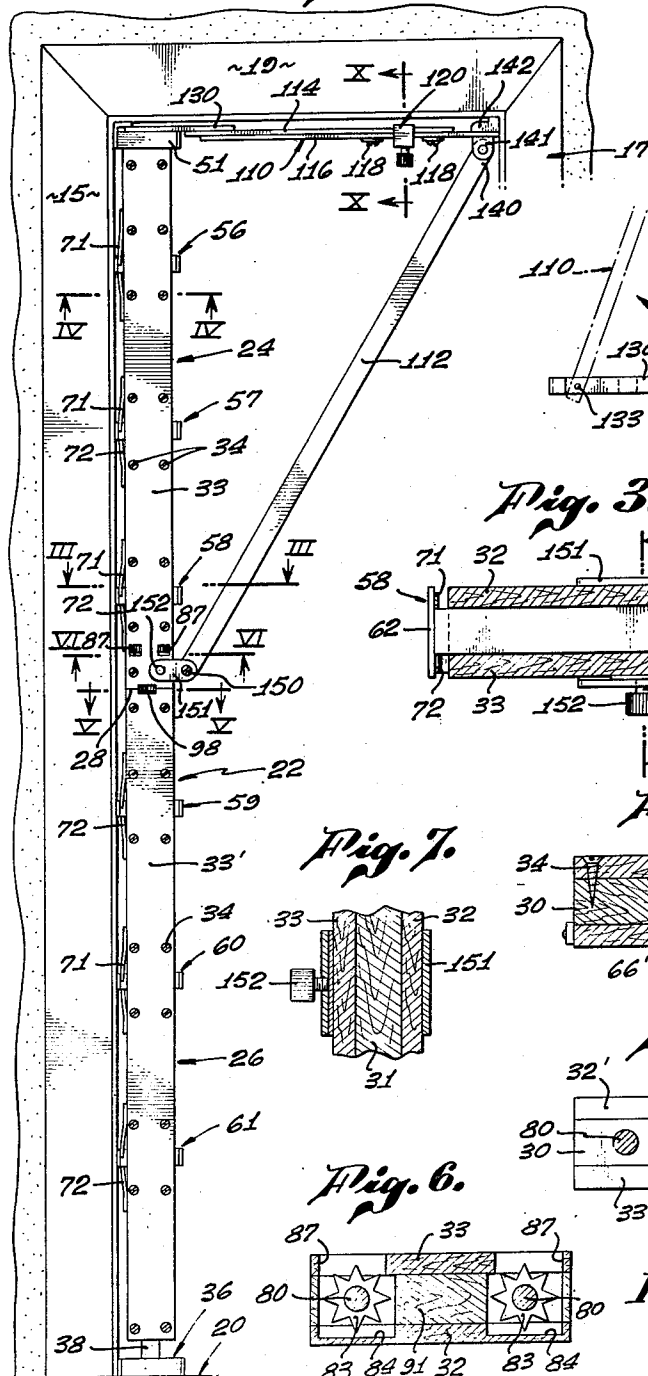


Fig. 2.

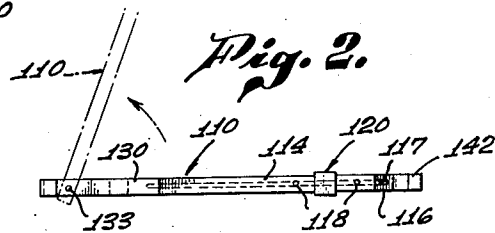


Fig. 3.

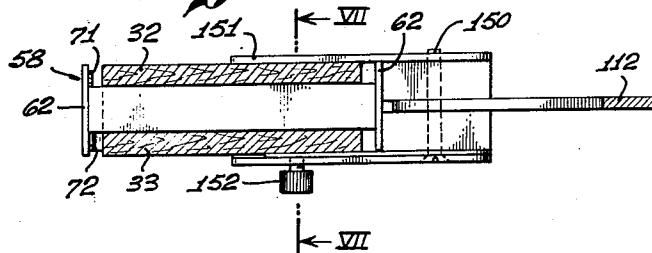


Fig. 4.

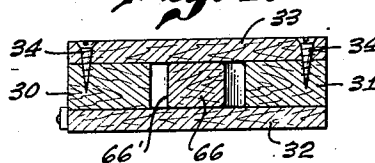


Fig. 5.

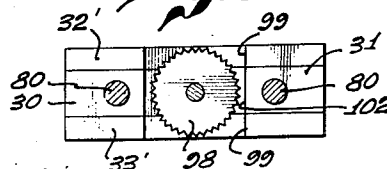
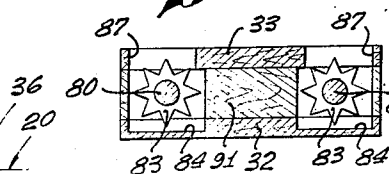


Fig. 6.



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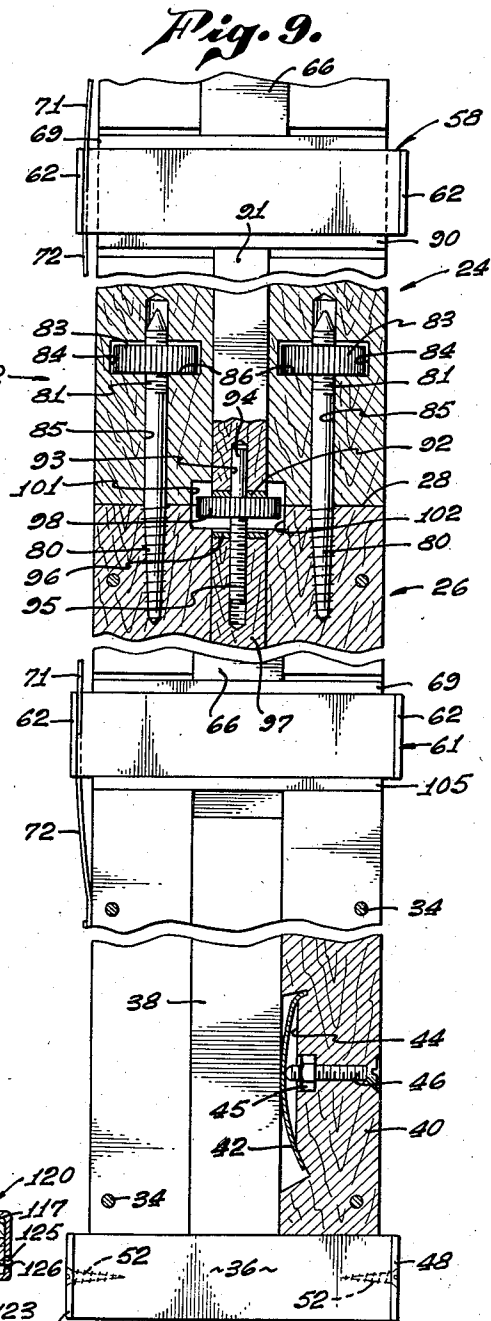
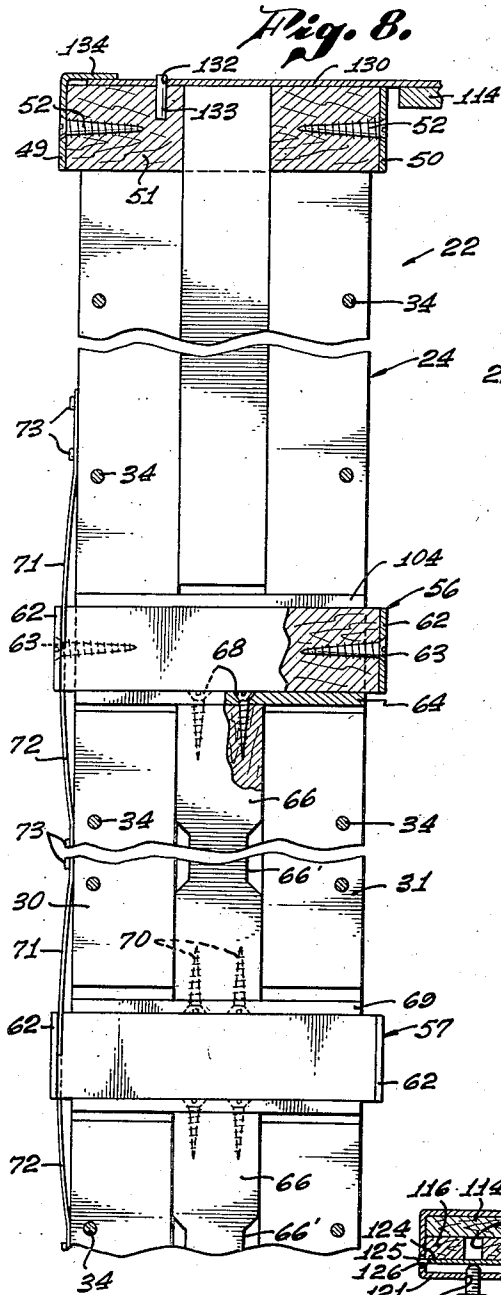
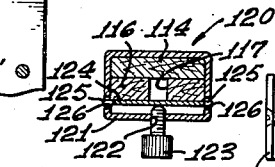


Fig. 10.



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2,823,462

DOOR TEMPLATE

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Application April 29, 1954, Serial No. 426,416

5 Claims. (Cl. 33—194)

This invention relates generally to apparatus for use in fitting hinged doors to door openings in carpentry and particularly to an adjustable template for facilitating and expediting the cutting of a door to proper size and for planing edge portions of the door to conform accurately to the contour of a door frame.

As is well known, a door frame or door opening is seldom perfectly square and its side members are seldom perfectly planar. As a result, it has been customary to fit a hinged door to a door opening by a laborious and time-consuming series of trial fittings, each fitting involving picking up the door, placing it in position in the opening and noting the point or points where the side edge of the door must be planed or cut down in order to permit a workman-like fit. In the present invention, apparatus is provided for reproducing the contour of the side of a door opening, and the apparatus is easily portable so that the door need not be moved during fitting until it is completed and ready to be hung. Stated another way, instead of moving the weighty door to a door opening for comparison, the present invention permits the contour of the door frame to be brought to the door through the medium of a light weight device.

The present device, in its preferred form, includes an elongated frame housing which is slightly shorter than the height of the average door opening with which the apparatus is to be used. The housing includes a number of feeler fingers slidably carried by the housing and spaced therealong, each of the fingers being movable laterally relative to the housing and including resilient means for urging each of the fingers in the same direction laterally of the housing. The housing is also provided with means for simultaneously locking all the feeler fingers. At the upper and lower ends of the housing there are laterally projecting feet extending beyond the side walls of the housing, the feeler fingers being slidable in a direction parallel to the feet and perpendicular to the longitudinal axis of the housing. Desirably, the feet at the upper and lower ends of the housing are of equal lengths, and each of the slidable feeler fingers is also of the same length as that of the feet. The feet are fixed against lateral movement relative to the housing but preferably at least one of them is extensible axially of the housing in order that the entire apparatus may be adapted for use in door openings of varying height. The upper and lower feet are desirably arranged to contact the upper and lower horizontal members respectively of a door opening or frame in which a door is to be fitted.

A particular feature of the present invention is the provision of means permitting the longitudinal frame housing to be readily disassembled into two portions, each of approximately half of the overall length of the housing. This is important, as will be readily understood, in order to facilitate carrying and use of the apparatus since the housing proper when assembled is of the same height as that of a door opening, that is, in

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the neighborhood of seven feet. The means herein shown for detachably connecting the two sections of the housing together insures that the two component sections are accurately aligned and at the same time the means for locking the feeler fingers operates to lock the fingers in both sections of the housing upon the actuation of only a single digitally operable member.

Means are provided as part of the present invention for insuring that a door will correctly fit a door opening even when the latter, as is occasionally the case, is somewhat out of square.

It is an object, therefore, of the present invention to disclose novel light weight template means for fitting a hinged door to a door opening.

Another object of the invention is to provide a longitudinal hollow housing in which are mounted a plurality of longitudinally spaced, laterally slidable feeler fingers including resilient means biasing all such fingers in the same direction and means for selectively locking all fingers against lateral movement.

A further object is to disclose a device of the above character wherein the laterally slidable feeler fingers are permitted a limited movement longitudinally of the housing, and including a single digitally operable means for simultaneous locking of all feeler fingers.

Another object of the invention is to disclose a device for use in connection with door openings which are not precisely "true," the device affording to the workman an easily portable means for minimizing handling of a heavy door during fitting.

A further object of the invention is to provide apparatus of the above character which may be readily disassembled into easily portable component sections.

Another object of the invention is to disclose apparatus for facilitating the fitting of a door to a door opening which is rugged in construction but relatively inexpensive to manufacture.

These and other objects and purposes of the invention will become clear from a study of the following description of an illustrative embodiment thereof taken in connection with the accompanying drawings in which:

Fig. 1 is a fragmentary side elevational view of a door opening together with the feeler housing of the present invention mounted therein and a detachable angularity indicator in operative position attached to the feeler housing.

Fig. 2 is a vertical plan view of the angularity indicator shown in Fig. 1 with the horizontal arm thereof partially shown in dotted outline when rotated on its pivot pin during assembly or disassembly.

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

Fig. 4 is a sectional view taken on line IV—IV of Fig. 1.

Fig. 5 is a sectional view taken on line V—V of Fig. 1.

Fig. 6 is a sectional view taken on line VI—VI of Fig. 1.

Fig. 7 is a sectional view taken on line VII—VII of Fig. 3.

Fig. 8 is a side elevational view, on an enlarged scale and with portions omitted, of the upper part of the frame housing of the present invention including a fragmentary portion of the angularity indicator, certain portions of the mechanism being omitted and others shown in section for clarity of illustration.

Fig. 9 is a side elevational view, on an enlarged scale, of the central and lower portions of the frame housing of the present invention with certain parts omitted and others shown in section for clarity of illustration.

Fig. 10 is a sectional view taken on line X—X of Fig. 1.

Referring now in detail to the drawings and first to Fig. 1 thereof, a door opening includes a vertical side member indicated generally at 15 and an opposed vertical side member indicated generally at 17, the two side members being connected by a transverse overhead horizontal member 19. The door frame or opening defined by these members is erected upon a floor indicated generally at 20. The frame or housing proper of the present invention is indicated generally at 22 and includes an upper section indicated generally at 24 and a lower section indicated generally at 26. The two sections 24 and 26 meet and are connected along the line of juncture 28 virtually midway of the overall length of the housing 22. The upper section 24 of the housing 22 is here illustratively shown as being made up of a series of pairs of longitudinally spaced wooden spacer members (as shown, for example, at 30 and 31 in Fig. 4) and a longitudinally extending flat back plate 32 and a front plate 33. The back plate 32 may have the several spacer members 30 and 31 permanently attached thereto as by gluing when the parts are made of wood as I prefer. The front plate 33 is attached to the spacer blocks 30 and 31 by suitable detachable means such as screws 34. The lower section 26 is similarly fabricated, having rear plate 32' and front plate 33' (see Fig. 5). Thus the central axial portion of the housing 22 is hollow to accommodate the internal mechanism of the device to be later described. The spacer blocks and plates are preferably made of wood, the latter being desirably of laminated plywood as shown. The sides of the housing sections, formed by the sides of successive spacer blocks and by the flush edges of the front and rear plates are parallel.

At the lower end of lower section 26 of the housing there is provided a foot indicated generally at 36 fixed to the lower end of a slidable leg 38 projecting downwardly from the section 26. As best appears in the lower portion of Fig. 9, the leg 38 with its attached foot 36 may be adjusted to provide any desired extension from the lower section 26, and suitable means are provided in the spacer block 40 for locking the extensible leg 38 in desired position. In the present illustration such locking means take the form of a resilient metal strip 42 housed in a recess 44 of spacer block 40, the resilient strip 42 being adapted to abut against the side of leg 38. A threaded nut 45 is received in a shallow recess of the block 40 and a bolt 46 threadedly engages the nut 45. It will be understood that rotation of the screw or bolt 46 to move the same inwardly will cause the tip of the screw to press the strip 42 firmly against the leg 38 and in this manner frictionally clamp the leg in any desired position.

The foot 36 is preferably but not necessarily rectangular in section and is provided at either end with metallic toe plates 47 and 48. The outer surfaces of the toe plates 47 and 48 project somewhat beyond the side walls of the housing itself, and this is likewise true of the outer surfaces of the toe plates 49 and 50 of the foot 51 at the top of the upper section 24 of the housing (see Fig. 8). The several toe plates of the two feet 36 and 51 are retained in position on their respective feet by suitable means such as screws 52. The feet 36 and 51 are equal in length and the corresponding toe plates 47 and 49 define a plane parallel to the plane of toe plates 48 and 50, both planes being parallel to the side walls of the housing 22.

A plurality of laterally slidable wooden feeler fingers are carried by the housing 22 and are disposed at preferably substantially equal intervals longitudinally of the housing. Six are shown in the present illustration, but any desired number might be provided. Such fingers are indicated generally at 56, 57 and 58 in the upper section 24 of the housing and at 59, 60 and 61 in the lower section 26 of the housing. Each is provided with metallic end plates 62 held thereon by suitable fastening means 63. The end plates extend laterally beyond the side walls

of the finger proper, as best seen in Fig. 3 and by abutment against the plates 32, 32', 33, 33' and constitute means limiting sliding movement of the fingers in the housing.

With particular attention to Fig. 8 and the feeler fingers 56 and 57 there shown, it will be seen that a flat strip of wood or the like indicated generally at 64 underlies the major portion of the length of finger 56, the upper surface of the strip 64 being in frictional contact with the lower surface of the finger. Strip 64 is attached near its center by suitable means 68 to a longitudinally extending bar 66, and the sides of the bar slidably engage the inner opposed walls of the blocks 30 and 31. The central portion of the bar 66 may be of narrowed cross section at 66', to minimize friction against spacer blocks 30 and 31 and to minimize weight of the entire device. At the lower end of bar 66 there is provided a similar thin strip of wood or the like indicated generally at 69 and attached to the bar 66 by screws 70. Thus the bar 66 with strips 64 and 69 fixed thereto may move upwardly or downwardly as seen in Fig. 8, the bar sliding between the spacer blocks 30 and 31 and the upper and lower limits of travel being established by abutment of the strips 69 and 64 against the lower and upper ends of spacer blocks 30 and 31.

Each of the laterally slidable fingers 56, 57, 58, 59, 60 and 61 is loosely housed between opposed faces of successive strips 64 and 69 and may be moved freely from side to side so long as no substantial amount of friction is imposed on the fingers by the bar 66 and its terminal strip members 64 and 69. Moreover, the overall length of each of the fingers and end plates is equal to the overall length of the feet 36 and 51. Desirably, means are provided in association with each of the fingers whereby the finger is urged to one end of its lateral travel. In the present illustration such means are provided by one or more resilient leaf springs 71 and 72. The springs are fastened at one end to the housing 22 by suitable means 73 and are resiliently biased so that their free ends engage the inner surface of the left end plate 62 as seen in Figs. 1, 3 and 8 and urge the finger 56 leftwardly. Similar resilient means 71 and 72 are provided for each of the other fingers 57, 58, 59, 60 and 61, so that all fingers are individually urged leftwardly relative to the housing 22.

Means are provided for removably joining together the two sections 24 and 26 of the housing 22. Such means are here exemplarily shown as including a pair of metallic pins 80 (see Fig. 9) such as stairway bolts fixedly mounted in the lower section 26 and projecting upwardly therefrom in parallel relation. The upper portions 81 of the bolts 80 are threadedly engaged by nuts 83 which are rotatably housed in recesses 84 of the upper section 24. The upper ends of the bolts 80 are adapted to be received in vertical bores 85 formed in the upper section 24, the nuts 83 being rotatable to hold the parts in assembled relation as shown in Fig. 9 by abutment against the lower walls 86 of the recesses 84. Access to the nuts 83 is had through apertures 87 formed in the front cover plate 33 (see Fig. 6) and they are rotated by engaging the blade of a screwdriver or similar instrument against their peripheral serrations.

The construction illustrated in Fig. 8 and heretofore described as including a bar 66 extending longitudinally within the housing 22, together with its upper and lower transverse strips 64 and 69, is duplicated between successive pairs of feeler fingers 56, 57, 58, 59, 60 and 61 with the exception of the interval between fingers 58 and 59. In the latter interval, seen in detail in Fig. 9, a transverse strip 90 underlies the finger 58 and is fixed to a central longitudinal bar 91 which terminates adjacent the line of juncture 28 and may be provided at its lower end with a metallic plate 92. A longitudinal bore 93 extends upwardly in bar 91 from its lower end and is adapted to slidably and rotatably receive a vertical pin

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94. The lower end of pin 94 is threaded at 95 and engages an internally threaded opening in a plate 96 fixed to the upper end of a central bar 97. Means are provided for rotating the rod 94, such means being here shown as a knurled wheel 98 fixed to the central portion of the pin 94 and housed in recesses 101 and 102 formed in the abutting surfaces of upper section 24 and lower section 26 respectively (see Figs. 5 and 9). The wheel 98 may be digitally rotated by the thumb and finger of the user, and the upper surface of the wheel abuts and presses upwardly against the plate 92 of bar 91 when the wheel 98 is rotated in the appropriate direction. Access to the wheel 98 is had through openings 99 formed in the front and rear plates of the housing.

It will now be seen that bar 91 and bar 97 as shown in Fig. 9 in effect constitute a single bar extending between the finger 58 and the finger 59, such bar being extensible in length as desired by the user by rotation of the wheel 98. It will further be seen that when the bar 91 and the bar 97 are forced away from each other by the action of wheel 98 bearing against the plate 92 on the lower end of bar 91, force will be transmitted upwardly and downwardly by slight vertical movement of the several fingers and longitudinal bars and thus exerted upon all of the slidable fingers in the housing 22. In the case of the uppermost finger 56 (see Fig. 8), the upper surface of such finger is forced upwardly into frictional contact with the lower surface of a fixed transverse member 104. Similarly the lower surface of the lowermost finger 61 frictionally engages fixed transverse member 105. As a result, all fingers are frictionally retained in the positions assumed at the moment when force is applied by rotation of the wheel 98.

In order to insure that the upper foot 51 is held snugly against the side of a door frame when the invention is used, and for other purposes later referred to, there is provided a detachable angularity indicator best seen in Fig. 1 including a substantially horizontal arm indicated generally at 110 and an angularly disposed strut 112. The arm 110 includes two mutually slidable strips preferably made of wood, an upper strip 114 and a lower strip 116. One of the strips, here the lower strip 116, is provided with a longitudinal slot 117 therethrough extending the major portion of its length. The upper strip 114 is provided with a pair of vertically extending pins 118 which project downwardly and are slidably journaled in the slot 117. If desired, the pins may be wood screws or the like seated in the upper strip 114, the shanks of the screws constituting the pins slidable in the slot 117. Means are provided for selectively locking the two strips 114 and 116 against relative movement, such means being here shown as including a metallic keeper indicated generally at 120 (see Fig. 10). The lower plate 121 of the keeper is provided with a threaded opening 122 and a knurl-headed screw 123 engages the opening 122. A small flexible pressure plate 124 is carried within the keeper beneath lower strip 116 and may include oppositely extending pins 125 loosely received in openings 126 of the side walls of the keeper 120 to retain the plate 124 within the keeper. Digital rotation of the screw 123 forces the plate 124 upwardly and thus causes the entire assembly to be held in position by frictional engagement of their adjacent surfaces.

The upper strip 114 is provided at one end with a metallic extension 130 (see Fig. 8) which is adapted to extend over the top of the upper foot 51 and includes an aperture 132 formed therein, the aperture being pivotally connected to a pin 133 fixed to the foot 51 and projecting slightly thereabove. In order to retain the parts in their assembled relation, the plate 49 of the foot 51 includes an inwardly bent portion 134 spaced somewhat above the foot 51 whereby the end of metallic strip 130 may be received in the space thus existing beneath the horizontal portion 134. Disassembly of the

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arm 110 from the housing 22 is accomplished by rotating the arm 110 relative to the foot 51 so that the inner tip of the metal strip 130 is moved out from under the bent-over portion 134 of the plate 49, such rotational movement being indicated by the arrow in Fig. 2 where the arm 110 thus rotated is indicated fragmentarily in dotted outline. The arm 110 may then be lifted from its pivotal engagement with the pin 133.

The strut 112 is pivotally connected at its upper end 140 to a downwardly extending ear 141 of a metallic member 142 which is in turn fixed to the outer end of the lower strip member 116. The lower end of strut 112 is pivotally connected at 150 to a U-shaped clamp 151 (see Fig. 3). The clamp 151 includes tightening means such as knurl-headed screw 152 whereby the clamp may be removably attached to the housing 22 at any desired point.

The arm 110 including its component strips 114 and 116 is somewhat flexible so that it need not assume precisely a perpendicular orientation relative to the axis of housing 22. Thus when the device is assembled as in Fig. 1, the arm 110 may be lengthened to fit the width of the door opening and the clamp 151 may be moved upwardly or downwardly along housing 22 so that the metallic bracket 142 at the outer end of arm 110 is held snugly in place in the upper corner of a door opening distant from the housing 22.

In the operation of the device of the present invention, the feet 36 and 51 are held snugly against the vertical face of a door frame to which a door is to be fitted. It is obvious that the several feeler fingers 56, 57, 58, 59, 60 and 61 must be free to move laterally when the device is put into position and hence the wheel 98 of the tightening means must be adjusted to relieve pressure upon the fingers. When, now, the housing is in the position of Fig. 1, the fingers being free to move laterally in the housing, it will be seen that the fingers will move leftwardly as seen in the figure under the influence of their spring means 71 and 72 until the left plate of each of the fingers is in contact with its portion of the door frame. With the housing held in this position, the wheel 98 is actuated in order to exert force through the several bars 66, 91, and 97 upon the fingers, all fingers being clamped by this procedure at the same time. The apparatus may then be removed from the door frame by first releasing the clamping means 151 and thereafter rotating the arm 110 about the pivot pin 133 until the arm may be wholly removed from the housing 22.

Since all the fingers and feet 36 and 51 are of equal length, it will be seen that the exact position assumed by the right end of each of the fingers and feet is an accurate reproduction of the contour of the door frame member 15. The housing 22 may thus then be placed so that the right ends of the fingers and feet are against the edge of a door which is to fit the door frame member 15 and the user will immediately perceive the necessary corrections to be made such as by planing in order that the door will accurately fit the door frame member.

When the door frame to which a door must be fitted is itself not perfectly rectangular, it is desirable that the door be similarly shaped in order to accurately fit the door frame opening. When the apparatus is in the position of Fig. 1, the entire apparatus can be removed as a unit from the door frame opening and used as a template to mark the door for cutting. It will be seen that the present device is adapted to measure and record the contour of either vertical side frame member of a door opening.

The apparatus constituting the present invention is of inexpensive construction and the component parts may be readily replaced or serviced by removing the fastening means 34 retaining the front plate of the housing in position. Although I prefer the construction herein illustratively shown and described, nevertheless modifications and changes from the specific forms shown may be made

without departing from the spirit of the invention. All such modifications and changes are intended to be embraced within the scope of the appended claims.

I claim:

1. A template for reproducing the contour of a longitudinally extending surface comprising: an elongated hollow housing having opposed side walls and provided with upper and lower feet projecting laterally beyond the side walls, said feet being of equal length and terminating in vertically aligned ends; a plurality of fingers carried in said housing and slidable relative thereto parallel to the feet, said fingers being disposed in spaced relation along said housing and being equal in length to the feet, the ends of the fingers being longitudinally alignable with the ends of the feet; resilient means carried by the housing and bearing against each of the fingers for urging one end of each of the latter in a given direction laterally of the housing towards the longitudinal surface; and selectively operable means carried within the housing for locking the fingers against movement.

2. An adjustable template for reproducing the contour of a longitudinally extending surface comprising: an elongated hollow housing having opposed substantially parallel side walls; a plurality of fingers carried in said housing and transversely movable relative thereto, said fingers being disposed in spaced relation along said housing, the fingers being of equal length greater than the distance between said walls and projecting beyond both of said side walls, the fingers being permitted slight movement longitudinally of the housing; resilient means for urging said fingers in a given direction transverse of the housing; and selectively operable means for locking the fingers against movement, including means for forcing each finger into binding frictional engagement with members laterally fixed relative to the housing.

3. A template for reproducing the contour of a longitudinally extending surface comprising: an elongated hollow housing having spaced, substantially parallel side walls; a plurality of laterally slidable transversely disposed fingers within said housing and spaced longitudinally thereof, the fingers projecting laterally beyond the side walls and being afforded limited movement longitudinally of the frame; a plurality of stiff elongated mem-

bers movable longitudinally within the housing and restrained against lateral movement relative thereto, upper and lower ends of each said member being abutable against a pair of successive fingers; and selectively operable means for forcing said members and fingers into frictional engagement and thereby locking the fingers against movement relative to the housing.

4. The invention as stated in claim 3 wherein said means include a selectively extensible stiff elongated member extending longitudinally within the housing and abutable against a pair of successive fingers.

5. A template for reproducing the contour of a longitudinally extending surface comprising: an elongated housing, a plurality of transversely disposed members slidably mounted on said housing in a lateral direction and spaced longitudinally thereof, said fingers being of equal length with the ends thereof projecting laterally beyond said housing, locking means connected to said fingers for locking said fingers when one end of each of said fingers engage the longitudinal surface, resilient means for urging said fingers toward one side of said housing, and upper and lower feet attached to said housing, said feet being of the same length as said fingers, said locking means comprising a plurality of stiff elongated members movably mounted longitudinally on said housing, upper and lower ends of each of said members being abutable against a pair of successive fingers, and selectively operable means on said housing for moving said members into contact with said fingers and locking them against lateral movement of said housing.

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