

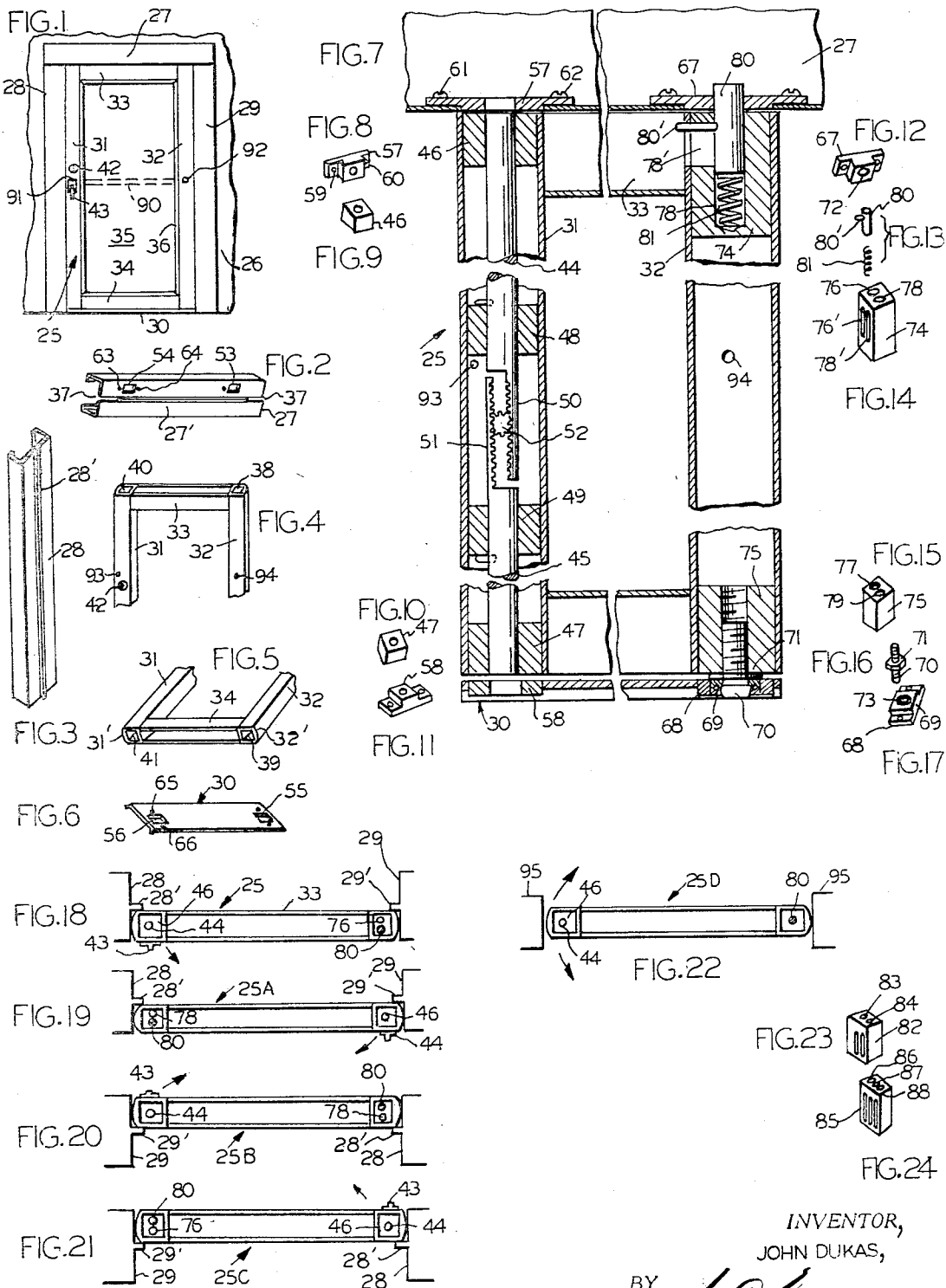
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DOOR AND FRAME CONSTRUCTIONS

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DOOR AND FRAME CONSTRUCTIONS

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ABSTRACT OF THE DISCLOSURE

A kit offers the parts for making of installations of a door to operate in any selected manner chosen from a multiplicity of combinations. Neither the door or frame is handed, and the manner of opening may be in selected directions. The parts comprise two jamb members, a header member and a saddle member, for assembly as the frame for a door included as one of the parts of the kit. The door has end stiles of rectangular tubular stock; the open ends of which serve as sockets for blocks, and various blocks are also provided to be set into suitable openings in the header and saddle. Also provided are pintles for the hinge end of the door and locking means with slidable bolts in the stile at handle end of the door; the pintles and bolts being operative in proper assembly with certain of said blocks.

The present invention relates to a door and its frame, which are adapted to be marketed as a kit if desired.

An object of this invention is to provide a novel and improved door and its frame, neither of which is handed. I provide special pieces of hardware to be mounted in suitable openings in the header and the saddle of the frame, and in the ends of the stiles of the door, whereby with different arrangements or such inserted pieces, the door may be installed in its frame, as a right-hand door opening only one way, either outwardly or inwardly, or as a left-hand door opening only one way, either outwardly or inwardly. In every such instance, the door is to pivot about a concealed offset axis, and the face of the door preferably, shall be flush with the edges of the jambs, when closed. The frame has a door stop. The door may have lock mechanism. There is no strike plate for a jamb. In twin-door installations, either door by the setting of its lock, may be made active or inactive. The general scheme is also applicable to accommodate center-hung doors, in which event, the frame will have no door stop, so the door can open outwardly and inwardly. Here too, the inclusion of a lock means is optional.

A further object thereof is to provide a novel and improved door, frame and hardware combination of the character described, which is simple in structure, is a kit reasonable in cost to manufacture, affording lower inventories to be held in stock by dealers in this merchandise, and which is easy to assemble in any required arrangement, and efficient in carrying out the purpose for which it is designed.

Other objects and advantages will become apparent as this disclosure proceeds.

For one practice of this invention, the stiles of the door are tubular and extend the entire height thereof, so the ends of said stiles offer sockets for blocks mounted flush therein. The stiles are of a thickness equal to the distance from a face of the frame of a door stop on the jambs, so the door when closed, will be flush with said face. The other stile is provided with a twin-cylinder lock means offering a keyhole on each face thereof near handle region, for the operation of oppositely-moving slidable locking bolts, one extending upwardly and the other downwardly through such stile, to be received by strikes in the header and in the saddle respectively; said header and saddle having openings in which blocks are mounted; such blocks having appropriate sockets to serve as said

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strikes. The upper end of the hinge-side stile of the door, has a block having two open-top sockets which are spaced in the direction of the thickness of the door and equidistant a certain length from the general central plane of the door, so each socket is offset in relation thereto. A block having two threaded holes respectively in alignment with said open-top sockets, is in the lower end of said stile. A pintle is provided in one of said threaded holes, to extend downwardly in a bearing block fitted in a second opening in the saddle. A pintle and a compression coil spring are provided in the aligned socket at the top of this hinge-side stile, to extend upwardly in the hole provided in a block set in another opening in the header of the frame. Means are provided to facilitate the removal of said spring-biased pintle when the door is open. Wherever possible, extruded aluminum stock is used for making the parts. For doors to be mounted to swing both inwardly and outwardly, the blocks have a center hole and there is no door stop.

In the accompanying drawing forming part of this specification, similar characters of reference indicate corresponding parts in all the views.

FIG. 1 shows an outside wall of a building equipped with a door and frame embodying teachings of this invention. This door as viewed, is left-handed and opens outwardly.

FIG. 2 is a perspective view of the header of the frame.

FIG. 3 is a perspective view of one of the jambs of the frame. It is between these jambs that the door is mounted.

FIG. 4 is a fragmentary perspective view of the upper portion of the door.

FIG. 5 is a fragmentary perspective view of the lower portion of the door.

FIG. 6 is a perspective view of the saddle, which with said jambs and header constitute the door frame.

FIG. 7 is an enlarged fragmentary view showing a section taken in the general plane of the door, including the header and saddle together with the associated hardware.

FIGS. 8-17 are perspective views of the various insert blocks and other items included in the assembly, which are here called the hardware.

FIGS. 18-21 are diagrammatic top plan views of the door and the jambs, showing different ways of association, so the door is installed to be right-handed or left-handed, opening either outwardly or inwardly.

FIG. 22 is a diagrammatic top plan view of a door and the jambs of its frame; the door being swingable outwardly and inwardly. Here the jambs have no door stop and the door is centrally hinged at its hinge-side stile.

FIGS. 23 and 24 are perspective views of insert blocks which are suitable for use to effect any of the installations shown in FIGS. 18-22.

The FIGS. 18-24 are drawn to a scale which is larger than that of the FIGS. 1-6, but smaller than that of the FIGS. 8-17, 23 and 24. The scale to which FIG. 7 is drawn, is largest of all.

The installation shown in FIG. 1 of the drawing, consists of a door indicated generally by the numeral 25, set in a frame mounted around an opening in a building wall 26, comprising a header 27, the opposite identical jambs 28, 29, and a saddle 30. The door includes the vertical stiles 31, 32, extending the entire height thereof, joined by a top rail 33 which is an upright channel, and a bottom rail 34 which is an inverted channel, all serving to frame a glass panel 35, in a moulding 36 which they carry. The jambs 28, 29 and the header 27 may be of extruded, substantially rectangular channel stock having a lengthwise rib on the outer face of its floor wall; such ribs being shown at 27', 28' and 29', which being inwardly of the door frame, serve as a door stop. A usual notch as shown at 37, is provided in each end of the header, to seat the jamb ribs 27', so the frame can be assembled. The door

stiles 31, 32 are tubular extrusions, having their outer faces 31', 32' rounded; the general section of said stile stock is rectangular, so they offer sockets, one at each end thereof, which are indicated by the numerals 38, 39, 40 and 41 respectively. These sockets are preferably of square section. The thickness of the door stiles is equal to the distance between said door stop and a face of the jamb the door 25 is to be flush with, when closed. The stile 31 is equipped with a lock mechanism comprising for example, two aligned cylinders presenting keyholes at opposite faces of the door, one such being exposed to view in the drawing at 42. These lock cylinders which are located at the region of the handle 43, are associated for operation from either side of the door, of the locking bolts 44 and 45, one of which extends upwardly and the other downwardly in said stile 31. Guides for these locking bolts are offered by the blocks 46 and 47, which are mounted flush in the sockets 40 and 41 respectively, and similar guide blocks 48, 49 are provided in said stile 31, near to the rack formations 50, 51 at the inner ends of the locking bolts, which racks are in meshed engagement respectively with the gear 52, positioned between them and carried fixed on the connected coaxial cylinders, not shown but well known, of the lock means, so upon turning said gear by key operation in either of the cylinders, the locking bolts will slide longitudinally in opposite directions. Fittings 57 and 58 are their strike plates.

The blocks 46 of FIG. 9 and 47 of FIG. 10 are identical cubes with a center hole, and the blocks 48 and 49 are also identical. To one side of the stop rib 27', the header 27 of FIG. 2, has two square holes 53 and 54 for alignment with the sockets 38 and 40 respectively, shown in FIG. 4. The saddle 30 of FIG. 6, an inverted channel, has two square holes 55 and 56, in alignment with said header's holes 53 and 54 respectively, for alignment with the sockets 39 and 41 respectively, shown in FIG. 5. The fittings 57 and 58 of FIGS. 8 and 11, are identical, each being a block of square form, with a center hole on a base through which a hole extends, and said base has holes in each instance as 59, 60, for screws as 61, 62, in corresponding threaded holes 63, 64, in the header of FIG. 2, and 65, 66 in the saddle of FIG. 6. The fitting 67 of FIG. 12 is like 57 of FIG. 8. The fitting 68 of FIG. 17, is like 58 of FIG. 11, but includes a ball bearing 69 for the pintle 70 of FIG. 16, which holds a lock nut 71 thereon. However the holes 72 and 73 are off center. The block 74 of FIG. 14, has two sockets, and the block 75 of FIG. 15 has two threaded holes, offset equidistant from center. When the blocks 74 and 75 are installed in the sockets at the ends of the hinge-side stile 32 of the door 25, the socket 76 and the hole 77 are in alignment, and the socket 78 and the hole 79 are in alignment. Said block 74 has a side opening to each of its sockets; these openings being the slots indicated at 76' and 78' respectively. In FIG. 13, the numeral 80 indicates a pintle with a lateral pin 80' at mid-region, and 81 denotes a compression coil spring therefor.

Doors 25 are kept in stock completely assembled, and are furnished with unassembled frame parts consisting of a saddle 23 having the openings 55 and 56 and the screw holes, the header 27 provided with the notches 37, the openings 53 and 54 and the screw holes, and the jambs 28, 29. The assembled door 25 already has the lock mechanism installed, if there is to be a lock, and the force fitted guide blocks 46 and 47 through which the locking bolts 44 and 45 respectively extend, and the force-fitted fitting 74 at the upper end and the force-fitted fitting 75 at the lower end of the hinge-side stile 32. Together with all this, the installer receives the hardware he needs in a package containing the fittings 57, 58, 67, 68, the pintles 80 and 70 carrying the nut 71, the spring 81, the handle 41, and also if required, a usual push bar 90 having a hole at each end, for assembly on the door by the bolts 91 and 92, through suitable holes 93 and 94 in the respective

door stiles 31, 32. For doors which are to be center hung, the blocks for the stile 32, shall have a center socket like 83 and center hole in the lower block for such stile for the lower pintle.

The installer receives this unhandled door 25, its frame parts and hardware, for assembly and installation. Depending on how he combines the parts, he can have any of the installations illustrated. In reality, the installer receives a kit, the parts of which he assembles as the need requires.

In the installation shown in FIG. 1 and indicated in FIG. 18, the door 25 is left handed and opens outwardly. In FIG. 19, the door 25A is right handed and opens outwardly. In FIG. 20, the door 25B is left handed and opens inwardly. In FIG. 21, the door 25C is right handed and opens inwardly. In all installations, the door is forward of the door stop rim on a frame component, to open outwardly, and rearwardly of the door stop to open inwardly. In all installations, the openings in the header 27 are directly over the blocks 47 and 74 respectively when the door is closed, and the openings in the saddle 30 are directly under the blocks 47 and 75 respectively, when the door is closed. In all installations, the pintle 80 and its spring 81, are in the socket of the block 74, which is farthest from the door stop, and the pintle 70 is in alignment with the pintle 80. So to make any of the shown installations, the fittings 67 and 68 are appropriately mounted in the hinge side openings in the header and saddle respectively, while the identical center-holed fittings 57 and 58 are mounted in the handle side openings in the header and saddle respectively. The installer has to mount just these four fittings 67, 68, 57, 58, and then mount the pintles 70 and 80 with its spring 81.

The hinge side of the header and saddle is determined by the position of the door in the frame, and the position of the openings in the header and saddle is always to that side of the door stop the door is.

With respect to the building wall 26, the assembly of FIG. 21, is that of FIG. 18, turned 180 degrees, and the assembly of FIG. 20 is that of FIG. 19, turned 180 degrees.

In FIG. 22, the door 25D is center hung. Here, the jambs 95, and the header not shown, have no ribs, for this door is to open both ways and so it is minus a stop. Instead of the previously shown fittings 74 and 75, center-hole fittings like 46 and 47 are used in place thereof respectively, and instead of the fittings 67 and 68 which have off-set holes, center-holed fittings like 58 and 59 are mounted in their stead in the header and saddle respectively. It is believed that this is readily understandable to those versed in the art, without the necessity of any further illustration.

A fitting in place of 74, and one to correspond to it to take the place of 75, may be provided to adapt the door to be mounted either off-set or center-hung, by having a fitting 82 as shown in FIG. 23, where the socket 83 is central and the socket 84 is off-set. This would be loose, to be appropriately installed in the stile 32 by the installer. In place of fitting 82, there can be a factory installed fitting 85 which has a central socket 87, intermediate two sockets 86 and 88, offset equidistant from said central one. Of course, appropriate corresponding fittings at hinge side for the openings in the header and saddle would have to be furnished. What is not shown, is believed to be readily understood by those versed in the art, without the necessity of further illustration.

The amount of offset the holes in the fittings shown are to have off center, and the extent of rounding of the stiles' outer surfaces 31', 32', shall be proper to permit door movement. For relatively thick doors, the stiles would have interiors of oblong cross section, and so the fittings would be oblong instead of square, to conform; the longer length of such oblong, being along the

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thickness dimension of the door. A block fitting having an oblong cross section is shown at 85.

It is evident that a dealer in this type of merchandise carries only unhandled doors, and separately a supply of the fittings for mounting on the header and saddle. Of course, he also carries precut jambs, their headers and saddles; the latter two having the required openings therein, wherein the fittings are to be mounted. His inventory is materially less than when he needed doors and their frames which were delivered ready for right-handed and left-handed installations.

To remove an installed door, it is opened. A pry is set into the channel 33 and is made to engage the pin 80', which is then pushed down to bring the pintle 80 wholly within the socket 78. Now a blade is interposed between the fittings 74 and 67, so the door can then be removed.

Although I have shown a single twin-cylinder lock, the lock means may comprise two separate twin-cylinder locks, one at the top and the other at the bottom of the stile 31, which is readily understood without further illustration. In twin-door installations in a single wide frame, either door may be made inactive by setting its lock means in locking condition. This avoids the use of latch hardware heretofore employed to hold one door closed.

It is to be noted that the installations shown in the FIGS. 18-21, provide an off-set hinge structure which is concealed within the confines of the door faces, without bulges or any exterior lateral extensions. The door may be without a lock means, but the strikes 57, 58, or solid plugs shall be mounted in the header and saddle therefor, to close the holes which otherwise would be vacant. Access for removal of the pintle 80 may be had through suitable slots in the rounded wall of the stile 32, in which event, the block 74 is positioned with the slots 76', 78' thereat. This invention is applicable to solid doors, by providing sockets for the fittings 46, 47 and 74, 75.

This invention is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the embodiment shown herein shall be deemed merely illustrative and not restrictive and that the patent shall cover all patentable novelty herein set forth; reference being had to the following claims rather than to the specific showings and description herein to indicate the scope of this invention.

I claim:

1. A kit of the character described, including two jamb members, a header member and a saddle member; said members being adapted to be assembled as a frame for a door, a door having a handle side and a hinge side end; said door being provided with a downward rectangular socket at the hinge side end of its top edge and a similar upward socket at the hinge side end of its bottom edge; said sockets being in alignment, a tubular stile of rectangular cross section at the hinge side of the door and extending the full height of said door; the end openings of said stile constituting said sockets, a first rectangular block securely fitted in said downward socket, a second rectangular block securely fitted in said upward socket; said header having a rectangular opening and said saddle having a rectangular opening; said openings being at such positions therein respectively, that when the door is within the frame in closing position, said openings will be in alignment with said sockets, third and fourth rectangular blocks, adapted to be fitted and securely mounted in said openings respectively; said first block having a vertical socket downwardly from its upper face; the second block having a hole in alignment with said socket in the first block; the third and fourth blocks, each having a hole which will be in alignment with said aligned socket and hole when the door is positioned in the frame in closing position, a first pintle for insertion into the socket in the first block and the hole in the third block, a second pintle

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for insertion through the holes in the second and fourth blocks; the hinge side of the door and the handle side of the door being transversely rounded and the position of the axis of said pintles when the door and frame are assembled being such as to allow the door to swing to open and close.

2. A kit as defined in claim 1, wherein the axes of the socket in the first block and the hole in the second block, are centrally of the planes of the faces of the door.

3. A kit as defined in claim 1, wherein the axes of the socket in the first block and the hole in the second block, are offset from the central plane of the door; one of the frame members having an element to serve as a door stop when the door is in closed position in the frame; the central plane of the door being between said stop and axis of the socket in the first block when the door and frame are assembled and the door is in closed position.

4. A kit as defined in claim 3, wherein the first block is provided with a second socket offset from said central plane, a distance equal to that between said central plane and the first mentioned socket in said first block; said plane being between said sockets in the first block; the plane of centers of these two sockets in the first block, being perpendicular to said central plane; the second block having a second hole in alignment with the second socket in the first block; the pintles to be in alignment on assembly.

5. A kit of the character described, including two jamb members, a header member and a saddle member; said members being adapted to be assembled as a frame for a door, a door having a handle side and a hinge side end; said door being provided with a downward rectangular socket at the hinge side end at its top edge and a similar upward socket at the hinge side end of its bottom edge; said sockets being in alignment, a first rectangular block securely fitted in said downward socket, a second rectangular block securely fitted in said upward socket; said header having a rectangular opening and said saddle having a rectangular opening; said openings being at such position therein respectively, that when the door is within the frame in closing position, said openings will be in alignment with said sockets, third and fourth rectangular blocks, adapted to be fitted and securely mounted in said openings respectively; said first block having a vertical socket downwardly from its upper face; the second block having a hole in alignment with said socket in the first block; the third and fourth blocks, each having a hole which will be in alignment with said aligned socket and hole when the door is positioned in the frame in closing position, a first pintle for insertion into the socket in the first block and the hole in the third block, a second pintle for insertion through the holes in the second and fourth blocks; the hinge side of the door and the handle side of the door being transversely rounded and the position of the axis of said pintles when the door and frame are assembled being such as to allow the door to swing to open and close, a downward rectangular socket at the handle side end of its top edge and a similar upward socket at the handle side end of its bottom edge; said sockets being in alignment, a fifth rectangular block securely fitted in said downward socket at the handle side end, a sixth rectangular block securely fitted in said upward socket at the handle side end; said header and saddle, each having a rectangular opening at such position therein respectively, that when the door is set within the frame in closed position, said openings will be in alignment with said sockets at the handle side end, seventh and eighth rectangular blocks, adapted to be fitted and securely mounted in said openings; said fifth, sixth, seventh and eighth blocks, each having a central hole; said last mentioned holes being in alignment when the door is set in the frame in closed position, and lock means openable from both faces of the door, positioned at the handle side of the door; said lock means including slidable locking bolts extending into the holes of the fifth and sixth blocks

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respectively and adapted to enter the holes in the seventh and eighth block respectively when the lock means is operated to assume locked condition when the door is in closed position; said third and sixth blocks being interchangeable in the openings in the header, and the fourth and eighth blocks being interchangeable in the openings in the saddle.

6. A kit as defined in claim 5, wherein the door includes tubular stiles of rectangular cross section; said stiles extending the full length of the door; the end openings of said stiles constituting the sockets holding the first, second, fifth and sixth blocks respectively.

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References Cited

UNITED STATES PATENTS

1,099,415	6/1914	Winslow	16—176 XR
2,796,628	6/1957	Van Meter	16—176 XR
2,908,050	10/1959	Sullivan	49—386
2,948,366	8/1960	Kelley et al.	49—501
3,091,819	6/1963	Wheeler et al.	49—386

FOREIGN PATENTS

742,089	12/1932	France.
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