A self-centering cafe door hinge assembly with automatic centering means is disclosed. The disclosure includes an upper, one-piece molded hinge with a pivotable hinge pin and a lower two-piece hinge including a lifting member and a pivotable hinge pin. The upper and lower hinges are adapted to be mounted on a door jam and interconnected to the top and bottom edges of one-half of a cafe type door by means of the hinge pins. The hinge pin of the upper hinge is rotatable about its longitudinal axis and also along said axis while the same is true with regard to the lower hinge pin. The lower hinge also includes a lifting member and a cam surface so that upon movement of the door from its centered position to an open position, for example, the lifting member will ride on the cam surface and lift the entire assembly in a vertical direction until the open position is achieved. When the door is released, the force of gravity and the weight of the door will cause the lifting member to slide back down the cam means to a centered position. Built-in stop-slam plates are also included.

3 Claims, 6 Drawing Figures
3,858,274

SELF-CENTERING CAFE DOOR HINGE ASSEMBLY

BACKGROUND OF THE INVENTION
The invention relates, in general, to hinges for use on cafe-type doors and in particular relates to hinges molded from nylon or a similar material adapted to be utilized with both wrought iron, plastic, and wooden doors of this type to achieve an automatic self-centering effect while still permitting the door to be held open in either direction without the use of any holding devices.

DESCRIPTION OF THE PRIOR ART
The following prior art is known to Applicant:

Enghauser U.S. Patent 2,628,441
Hopkins U.S. Patent 2,920,340
Foltz U.S. Patent 3,083,402
Benham U.S. Patent 3,107,758
Wargo U.S. Patent 3,113,649
Matyas U.S. Patent 3,398,487
Edeus U.S. Patent 3,648,327
Davis Design Patent 204,872

SUMMARY OF THE INVENTION
This invention relates to hinges adapted to be used in connection with either wrought iron or wooden cafe doors and includes upper and lower molded hinge assemblies made of nylon or a similar material.

The upper hinge assembly is a one-piece L-shaped member, one leg of which is adapted to be secured to the door jam and the other leg of which is adapted to be interconnected with the top edge of the cafe door by means of a hinge pin.

The lower hinge assembly includes a leg member which is adapted to be secured to the door jam and which includes integral stop-slam plates. This lower hinge assembly is also adapted to be interconnected to the lower edge of the cafe door by means of a hinge pin.

The hinge pins of both the upper and lower members aremovable in a vertical direction along their longitudinal axes as well as being pivotable about those axes.

The lower hinge assembly also includes a lifting member, centering means and cam means so that upon movement of the door and thereby movement of the lifting means about the axis of the hinge pin, the entire assembly will ride up the cam means until the lifting arm strikes one of the stop-slam plates, thereby holding the door in the open position. The door will be returned to its centered position by slight pressure on it following which gravity will cause the lifting member to ride back down the cam means to the centered position.

The invention has the advantages of simplicity and a minimal number of parts while still achieving an automatic self-centering function without the use of springs or any other such mechanisms.

Furthermore, because of the material which, as noted, is nylon or a material having similar properties, the hinges need no lubrication and would be relatively silent in operation.

Accordingly, production of an improved cafe door hinge assembly of the character described becomes the principal object of this invention, with other objects thereof becoming more apparent upon a reading of the following brief specification, considered and interpreted in view of the accompanying drawings.

OF THE DRAWINGS
FIG. 1 is a perspective view of a pair of cafe doors in place within a door jam.
FIG. 2 is an elevational view partially broken away in section showing the upper and lower hinge mountings on a typical installation.
FIG. 3 is a sectional view taken along the line 3—3 of FIG. 2 showing the lower hinge assembly, with the door in its centered position.
FIG. 4 is a view similar to FIG. 3 showing the door pivoted 90° to its open position.
FIG. 5 is a sectional view taken along the line 5—5 of FIG. 2 showing the upper hinge assembly.
FIG. 6 is an exploded perspective view of the lower hinge assembly.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENTS
With reference first to FIG. 1, it will be noted that the upper and lower hinge assemblies 10 and 20, respectively, are used to mount opposed cafe-type doors 30,30 within a door frame 40. In the form of the invention illustrated, the door is of a conventional wooden construction, but as will be explained in greater detail below, the invention, which resides in the hinge structure, is equally applicable to use with a wrought iron assembly.

Referring next then to FIG. 2 for a detailed description of the hinge assemblies, it will be noted that the door 30a has a projecting member 14 which will take the form of a bracket of some sort. In this regard, the particular construction of this member is not of great importance to the invention since it only serves as a mounting point for the upper hinge assembly 10.

Referring to FIGS. 2 and 5, the upper hinge assembly 10 consists, essentially, of a mounting bracket 11 which is L-shaped in side elevation having a central body portion 11c and a pair of opposed tapered raised bosses 11a and 11b extending from the bottom thereof to the top and widening toward the top for support purposes.

Extending outwardly at right angles from the planar face of the body portion 11c is a projecting portion 13 which is appropriately apertured for reception of the hinge pin 15 as shown in FIGS. 2 and 5.

In the assembled condition as shown in FIG. 2, for example, a pair of screws 12,12 have been inserted in the door jam 40 through appropriate openings in body portion 11c to hold the mounting bracket 11 in place. Following this, once the aperture 14a in the bracket and the aperture 13a in the projecting member 13 are aligned, hinge pin 15 can simply be dropped through the holes. In this condition, the pin is capable of rotation about its axis and also is capable of movement in a vertical direction indicated, for example, by the arrow 60 in FIG. 5 for purposes which will be described below. A push nut 16a can also be secured to the bottom end of the hinge pin 15 to avoid unintentional removal.

Referring next then to FIGS. 2, 3, and 6 for a description of the lower hinge assembly 20, it will be noted again that a bracket 50 projects from the bottom 30b of the cafe door, with this bracket again being a simple flat, metal plate having as its primary purpose a means
of interconnecting the hinge assembly with the door per se.
The bottom hinge assembly 20 includes a mounting bracket 21 which has a central body portion 22 and opposed bosses 22a, 22b which flare outwardly from the bottom of the body 22 for support purposes.

Projecting upwardly from the body portion 22 are a pair of stop-slam plates 23 and 24. Both the stop-slam plates 23 and 24 in the bottom body portion 22 are apertured as at 22c, 23a and 24a to receive three screws 26, 26, 26 for mounting against the door jam as shown in FIG. 2.

The bottom bracket 21 also has an enlarged central body portion 25 which has opposed cam surfaces 25b and 25c and a centering notch 25a. The top face 25d of the body portion 25 has a through bore 25e therein for reception of the hinge pin as will be described.

Also, included in the lower hinge assembly 20 is a lifting member 27 which consists of a flat body portion having an aperture 27a for reception of the hinge pin, and a slot aperture 27b for centering and securing the same to the bracket 50 as clearly shown in FIG. 2.

Depending from the bottom of the lifting member 27 is a lifting follower 28 and in its assembled condition as shown, for example, in FIGS. 2 and 3, the device is assembled by inserting the hinge pin 29 through the aperture 27a in the lifting member 27 and the aperture 25e in the body portion 25 of the lower mounting bracket.

In the condition of FIG. 3, the lifting follower 28 seats at the bottom of the cam surfaces 25b and 25c in the vicinity of notch 25a and in this position, the door is centered and closed as shown in FIG. 1.

Upon movement of one of the doors 30, 30 either to the right or left, the follower means 28 will ride along the appropriate cam surface 25b or 25c, depending upon the direction in which the door is pushed. Due to the fact that the hinge pins 15 and 29 are both rotatable about their axis and movable longitudinally along that axis, the entire assembly including the door will ride up the track 25b or 25c as the case may be. This will cause the pins and the assemblies in the direction of the arrows 60, 60 as shown for example in FIG. 4 with relation to the bottom assembly. Once the door has been moved 90°, the assembly will butt against the stop-slam plates 23 and 24 and will remain in the open position with the lifting member resting on the top surface 25d of central body portion 25.

When it is desired to close the door, it is simply necessary to barely push the door 30, following which the normal force of gravity and the weight of the door will cause the entire door assembly to move back to the centered position. The assembly will be dropping as the follower means 28 slides down the cam track 25c until it engages the notch 25a at which time the door will be closed and in its centered position.

As noted above, the assembly has been illustrated as being utilized in conjunction with a wooden door which necessitates the use of extension brackets 14 and 50. It is also possible, of course, to utilize the hinges with a wrought iron cafe-type door which may or may not have its own integral projecting extension brackets. In that event, it is merely necessary to drill holes at the appropriate places in the brackets to align them properly with the holes in the hinge brackets so that proper clearance is achieved between the door jam and the ends of the extensions or hinges.

It has been shown, therefore, how a relatively simple, yet effective hinge assembly can be produced by simply molding light-weight, nylon hinge assemblies which have a minimum of working parts, but which achieve the capabilities of swinging a door open and holding it open while permitting the door to automatically return to its closed or centered position without the use of springs or any other tension means.

While a full and complete description of the invention has been set forth in accordance with the dictates of the Patent Statutes, it should be understood that modifications can be resorted to without departing from the spirit hereof or the scope of the appended claims.

Thus, while nylon has been mentioned as a suitable material, other materials having similar properties can also be used.

What is claimed is:
1. A hinge assembly for interconnecting cafe-type doors to a supporting surface, comprising:
   A. an upper hinge assembly including
      1. an L-shaped mounting bracket, one leg of which is adapted to be secured to said supporting surface and
      2. a hinge pin interconnecting said door and the remaining leg of said mounting bracket
      3. said hinge pin being freely pivotable about its longitudinal axis and movable linearly along said axis;
   B. a lower hinge assembly including
      1. an L-shaped mounting bracket, a first leg of which is adapted to be secured to said supporting surface and
      2. a hinge pin interconnecting said door and the remaining leg of said mounting bracket and
      3. said hinge pin being freely pivotable about its longitudinal axis and movable linearly along said axis
      4. said remaining leg including an enlarged body portion having opposed cam surfaces carried thereon and terminating in opposed flattened horizontal surfaces on said body portion; and
   C. unitary lifting and centering means including a cam follower depending therefrom and being
      1. secured to said door for movement therewith and
      2. interconnected with said mounting bracket by said hinge pin with
      3. said cam follower cooperating with said cam surfaces to move said door pivotally in a horizontal plane and linearly in a vertical plane and with said flattened horizontal surfaces to hold said door in an open position.
2. The assembly of claim 1 wherein said first leg of said mounting bracket of said lower hinge assembly includes opposed integral stop-slam plates projecting upwardly from said body portion and disposed adjacent said flattened horizontal surfaces and adapted to be secured to said supporting surface.
3. The assembly of claim 1 wherein said mounting bracket of said lower hinge assembly includes a centering notch interposed centrally between said cam surfaces.