Sept. 8, 1970 K. K. KELLEMS 3,526,922

EDGE MOUNTED NONMORTISED HINGE

Filed May 10, 1968

Fig. 1.

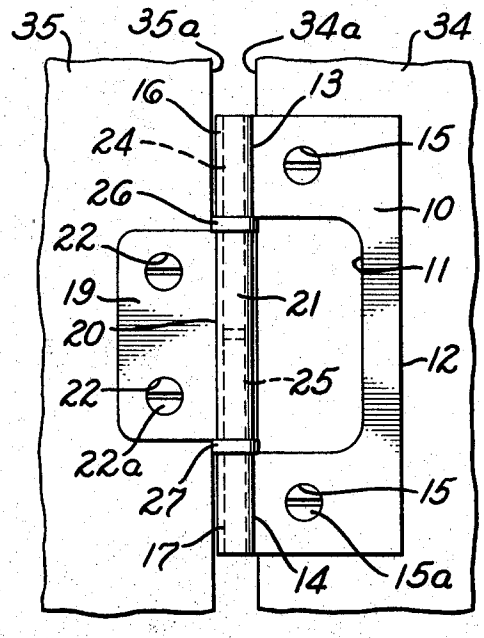


Fig. 2.

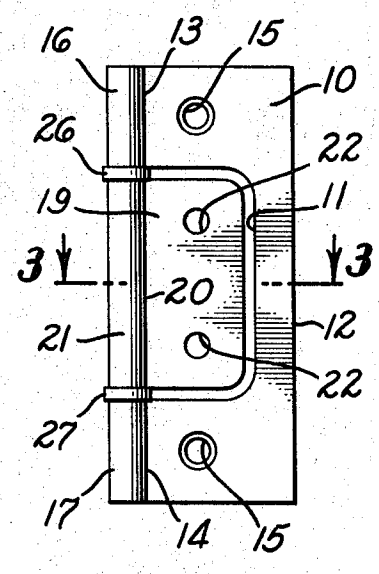


Fig. 3.

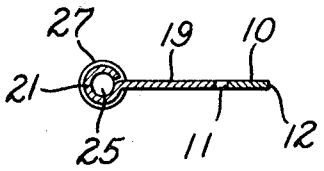
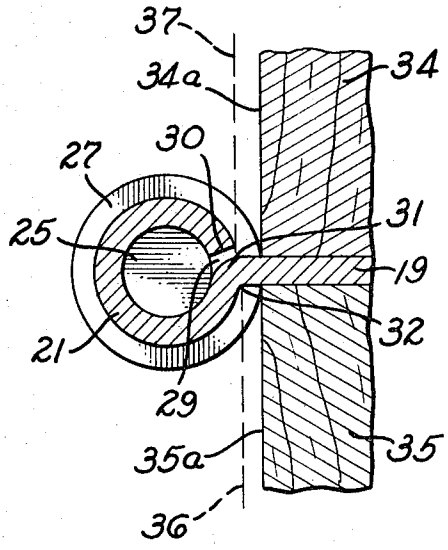


Fig. 4.



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3,526,922

EDGE MOUNTED NONMORTISED HINGE

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ABSTRACT OF THE DISCLOSURE

An edge mounted, nonmortised, leaf hinge for doors, or the like, having a pair of hingle leaves pivotally connected together by pintles.

This invention relates to a leaf hinge for pivotally connecting a pair of doors, or the like, or a door and door frame, adapted to be used without mortising the members upon which it is mounted and which it pivotally connects. Such hinges are generally shown in the patents to Shoen et al., No. 2,790,198, issued Apr. 30, 1957 and Lenahan, No. 922,605, issued May 25, 1909, and in West German Pat. No. 820,864, dated Nov. 12, 1951. Also to be noted is the patent to Clifton, No. 2,846,715, issued Aug. 12, 1958. The present invention is an improvement over the hinges of all of said patents.

Objects and advantages of the invention will appear from the following specification and drawing, which are for illustrative purposes only, and in which:

FIG. 1 is an elevational view of my hinge mounted and fully opened;

FIG. 2 is an elevational view of the hingle of FIG. 1, in collapsed position;

FIG. 3 is a cross-sectional view taken on the line 3—3 of FIG. 2; and

FIG. 4 is an enlarged, cross-sectional view of the left end of FIG. 3, shows doors attached thereto.

As shown in the drawing, my hinge has a first flat hinge leaf **10**, provided with a central opening **11**, and having, in effect, an outer edge **12** and parallel inner edges **13** and **14**, and suitable screw holes **15**. The inner edges **13** and **14** are provided with generally tubular knuckles **16** and **17**, respectively.

A second flat hinge leaf **19** is of substantially the same thickness as the first leaf **10**, and is adapted to fit into the opening **11** of the first leaf in the same plane thereof, as illustrated in FIGS. 2 and 3. The second leaf **19** has an inner edge **20**, parallel with the inner edges **13** and **14** of the first leaf **10**, and having a generally tubular knuckle **21** and appropriate screw holes **22**. The knuckles **16**, **17**, and **21** are all of substantially the same external diameter and axially aligned.

Also provided are a pair of preferably identical pintles **24** and **25**, having collars **26** and **27** thereon, respectively, the collars being of the same external diameter, substantially greater than the external diameter of the pintles and greater than the maximum external diameter of the knuckles **16**, **17**, and **21**, and this is an important feature of the invention, The ends of the pintle **24** are journalled or mounted in the knuckles **16** and **21**, and the ends of the pintle **25** are similarly journalled or mounted in the knuckles **17** and **21**, and the collars **26** and **27** serve as thrust bearings between the first leaf **10** and the second leaf **19**.

To permit the hinge leaves **10** and **19** to be rotated between the positions shown in FIGS. 1 and 2, as is required, the second leaf **19** must be rotatable on and relative to one or both of the pintles **24** and **25**, or if either of the pintles is rigidly connected to the second leaf it must in turn be rotatable relative to the first leaf to permit such relaive rotation between the leaves.

My preferred method of manufacture of my hinge is to first stamp, from flat sheet metal, blanks of the first and second leaves **10** and **19**, prior to formation of the knuckles **16**, **17**, and **21**. The blanks are then assembled in the position illustrated in FIG. 2, the pintles **24** and **25** are disposed in their final desired positions as illustrated in the drawing, are retained therein by suitable jigs or fixtures, and the inner edges of the blanks are wrapped by suitable machinery around the pintles to form and complete the assembly of the hinge. The entire operation is done by automatic or semi-automatic machinery, which greatly reduces the manufacturing cost of my hinge. It is desirable to have the hinge discharge from the manufacturing equipment with the parts folded as illustrated in FIG. 2, for economy of subsequent packaging. In such manufacture, it is desirable to wrap all of the knuckles **16**, **17**, and **21** around their pintles in the same direction from the same side, for economy of manufacture, and it is an object of the invention to provide a hinge in which the knuckles are so wrapped. Such wrapping normally results in a knuckle such as the knuckle **21** of the second leaf **19**, as illustrated in FIG. 4, in which there is a slight gap **29** between the end **30** of the knuckle and the start **31** thereof, and a radius **32**.

As best shown in FIG. 4, the external diameter of the collar **27** is substantially greater than the external diameter of its pintle **25** and greater than the external diameter of the knuckle **21**. As shown in FIGS. 1 and 4, the first hinge leaf **10** is secured by suitable screws **15***a* to the edge of a door or door jamb **34** and the second hinge leaf **19** is secured by suitable screws **22***a* to the edge of a door **35**, without any mortising of the doors required. As shown in FIG. 4, with the hinge in its collapsed or closed position, the faces **34***a* and **35***a* of the doors **34** and **35** are in the same plane, due to the fact that both engage the O.D. of the collar **27**, which thus serves as an indexing means for assuring that the faces of the doors are in the same plane when in its collapsed or closed position, which is an important feature of the invention. Absent the collar **27**, the door **35** could take a position in which its face **35***a* engages the radius **32** in one plane, indicated by the dotted line **36**, and the door **34** could take a position in which its face **34***a* engages the end **30** of the knuckle **21** in an entirely different plane, indicated by the dotted line **37**, which would be very undesirable. The collars **26** and **27** operate identically in this regard, to serve as indexing means. As indicated above, the collars **26** and **27** also serve as thrust bearings between the leaves **10** and **19**. With the hinge mounted vertically as shown in FIG. 1, most of the weight of the door **35** transmitted through the hinge to the other door or jamb **34** is carried by the collar **27**. If the pintles **24** and **25** were in one piece or rigidly jointed together it would complicate and increase the cost of manufacture of the hinge, but, and more important, there would be more tendency of the hinge to bind or squeak upon rotation between its open and closed positions, or visa versa. Thus, the provision of a pair of separate pintles, each having a collar thereon, is an important advantage of the invention from the standpoint of both lower manufacturing cost and improved operation.

Although I have shown and described a preferred embodiment of my invention, it will be evident to those skilled in the hinge art that such a hinge may take many forms without departing from the spirit of the invention. Therefore, I desire to be afforded the full scope of the following claims.

I claim:

1. A hinge, including:

a first flat leaf, having a central opening therein and

a pair of parallel, aligned inner edges adjacent said opening;

a second flat leaf of the same thickness as said first leaf and adapted to fit wholly into said opening in the same plane as said first leaf, and having an inner edge parallel with the inner edges of said first leaf;

a generally tubular knuckle formed on each of said edges, all of said knuckles having substantially the same external diameter;

first and second cylindrical pintles, each having a cylindrical collar thereon intermediate its ends and of a greater external diameter than its pintle and said knuckles, one of said pintles having one of its ends in one of the knuckles of the first leaf and its other end in one end of the knuckle of the second leaf with the collar on said pintle being disposed between adjacent knuckles, and the other pintle having one of its ends in the other knuckle of said first leaf and its

other end in the other end of the knuckle of said second leaf with the collar on said pintle being disposed between adjacent knuckles.

2. A hinge as defined claim 1, in which each of the knuckles is formed by an edge portion of its leaf extending circumferentially partially around the pintle extending thereinto, all of said knuckle-forming edge portions extending circumferentially in the same direction.

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