Aug. 2, 1966 W. D. McGAHEE 3,263,269

SAFETY HINGES

Filed Sept. 2, 1964

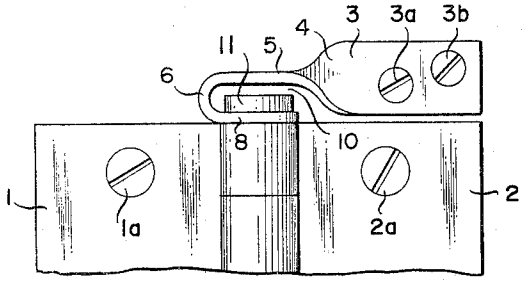

Fig. 1

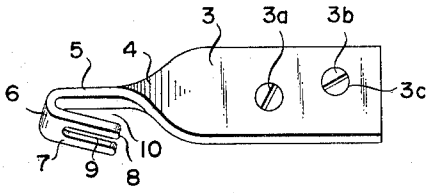

Fig. 2

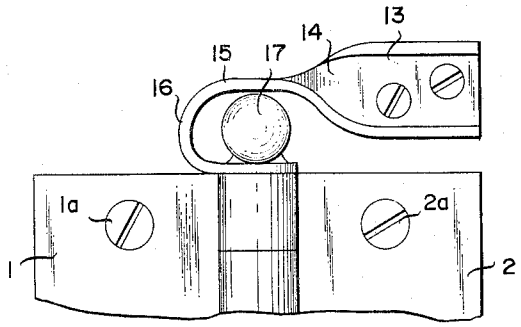

Fig. 3

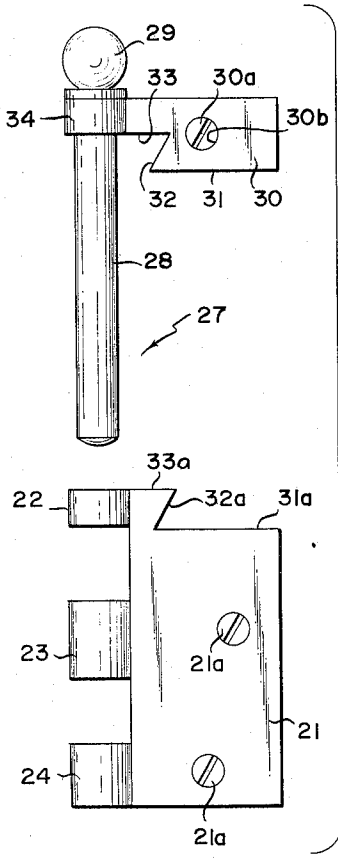

Fig. 5

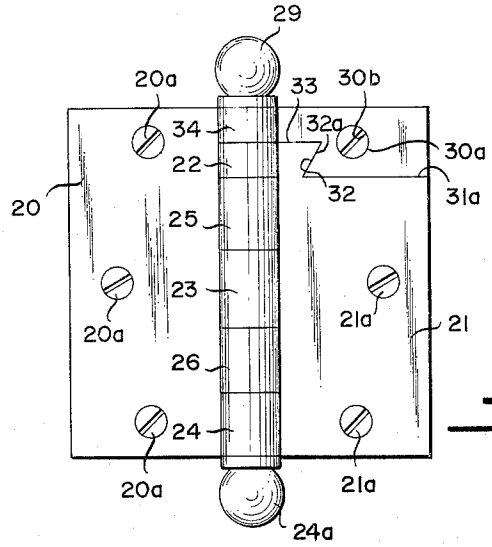

Fig. 4

INVENTOR

Welbourne D. McGahee

BY Ray & Mitchell

ATTORNEYS

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SAFETY HINGES

Welbourne D. McGahee, 170 S. Pine Drive,
Satellite Beach, Fla.

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This invention relates generally to the art of hinges for supporting doors and the like, and more particularly with loose-pin safety hinges having a nonrising pin or pintle. More specifically, this invention relates to improved safety hinges having nonrising pintles that cannot be removed by unauthorized persons to gain entry or egress without the permission of the owner of the premises.

Various means have been devised to provide nonrising pintles, see, for example, the U.S. patent to Gawlik 2,566,486 or the U.S. patent to Welker 2,978,736. The hinge structure herein disclosed might be thought of as improvements over the prior art.

The principal object of this invention is to provide an improved loose-pintle safety hinge having a nonrising pin.

Another object of the invention is to provide means for positively holding the pintle against improper movement.

Yet another object is to provide means whereby the pintle cannot be removed without considerable difficulty unless the door is open.

Other objects and advantages will clearly appear from a description of preferred embodiments as shown in the accompanying drawings, in which:

FIG. 1 shows a conventional hinge with retainer;

FIG. 2 illustrates the retainer shown in FIG. 1;

FIG. 3 shows a conventional hinge with a retainer modified to accommodate a spherical pintle upper head;

FIG. 4 is an elevational view of a modified hinge with the leaves in the open position;

FIG. 5 is an exploded view of the right hand leaf and pintle integral with the retainer.

Similar reference characters are applied to similar elements throughout the drawings.

Turning now to FIGS. 1–3, the leaves **1**, **2** of a conventional hinge are shown with the usual holding screws **1***a* and **2***a*. The flat pintle head **11** is held from upward movement from use or from unauthorized removal to gain entrance or exit by a pintle retainer **3** best seen in FIG. 2. The retainer **3** is mounted by screws **3***a*, **3***b* through holes **3***c* in the retainer **3** just above the conventional hinge as shown in FIG. 1. When the door is closed this portion of the retainer **3** along with the hinge leaves will be inaccessible whereby the retainer cannot be removed so that the pintle might be knocked out with a hammer blow or pulled out with pliers. The retainer **3** is provided with a ninety degree bend at **4**, an upper flat portion **5** extending outward from the bend, another bend at **6** substantially one hundred eighty degrees, and a lower member having fork portions **7**, **8** providing a slot **9** that fits around the pintle. The resulting space **10** between the forked portion and the upper flat portion **5** accommodates the flat head **11** of the pintle. The retainer **3** is made of suitable material, such as hard steel, which cannot be easily bent out of shape by means, say, of a screwdriver. It is seen that a hinge and retainer has been provided that precludes the unauthorized removal of a hinge pintle without considerable difficulty which, in

itself, may discourage a burglar from attempting removal because of possible noise and the time required to effect entry or egress, as the case may be.

FIG. 3 shows a modified retainer **13** with bend **14**, upper portion **15**, bend **16**, in all respects the same as the retainer **3** except that the bend **16** is such as to provide the space required to accommodate the spherical pintle head **12**. The retainers **3** and **13** are exemplary for those required for the flat type pintle head **11** and the spherical type pintle head **12**. Modification of the retainer to accommodate other types of pintle heads will be obvious to those skilled in the art.

While the retainers thus far described may be used with existing conventional hinges in use or to be installed, FIGS. 4 and 5 show a modified hinge construction having leaves **20**, **21**, holding screws **20***a*, **21***a*, and hinge knuckles **25**, **25** on the left-hand leaf and knuckles **22**, **23**, **24** on the right-hand leaf to receive the pintle **28** with a conventional head **29**, here illustrated as spherical. It is obvious that the pintle head may be flat or otherwise as desired. The pintle head is only decorative and may even be omitted. Integral with the pintle **28** is a retainer **30** having a hole **30***b* for screw **30***a*, said retainer further having a lower horizontal edge **31**, an inclined edge **32**, and a second horizontal edge **33** cooperating with complementary edges **31***a*, **32***a*, and **33***a* on a cutout portion on the leaf **21**. The angle between edges **31***a* and **32***a*, and also between edges **31** and **32**, may be 30°, but the value is not critical and may be, for example, 45°, or other desired value. The knuckle **34** of retainer or locking plate **30** is fixed to or integral with the pintle **28**.

The hinge just described is attached to the door and door frame in the usual manner except that the last operation involves the insertion of the pintle **28** in the knuckles with the retainer **30** outward, after which the retainer **30** is turned counterclockwise so that the edges mentioned supra mate together (may require a slight tapping force) whereupon the screw **30***a* may be inserted to provide locked unitary hinge structure. It follows that when the door is closed the screw **30***a* is inaccessible. Thus the pintle cannot be pulled out with pliers. Should the dummy head **24***a* be knocked off without greatly damaging the lower end of pintle **28**, a hammer blow still will not permit the knocking out of the pintle **28** since the upward force is transmitted to the edges **32** and **32***a* at an angle which tries to bend the pintle body towards the right. This, of course, deforms the knuckle **22** which further increases the difficulty of removing the pintle. The retainer **30** cannot move horizontally because the hinge is closed with the door and door frame on either side thereof. Thus the retainer is mechanically locked to the other hinge portions.

It can be seen from the instant invention that simple and rugged means have been provided that prevent undesired movement of the pin upward and also prevent unauthorized removal of the pin in door hinges.

While the purposes of description I have shown and described specific embodiments of my invention, it will be apparent that changes and modifications can be made therein without departing from the spirit of my invention or the scope of the appended claims.

I claim:

1. A hinge comprising a left-hand leaf, a right-hand leaf, knuckles on both said leaves for receiving a pintle, said right-hand leaf having an angled cutout portion, a

pintle, a retainer member integral with said pintle, said retainer member having an angled lower portion for cooperation with said right-hand leaf angled cutout portion whereby said pintle is restrained in upward movement.

2. A hinge in accordance with claim 1 wherein said retainer member is provided with at least one screw hole adapting said retainer member to be affixed to a flat surface.

3. A hinge in accordance with claim 1 wherein cooperating adjacent edges on said right-hand leaf cutout portion and on adjacent edges on said retainer member define an angle between thirty and forty-five degrees.

4. A hinge in accordance with claim 1 wherein said pintle comprises an upper and a lower head.

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PATRICK A. CLIFFORD, *Primary Examiner.*

D. L. TROUTMAN, *Assistant Examiner.*