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ESCAPE-PROOF CAGE LATCH

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Fig. 1

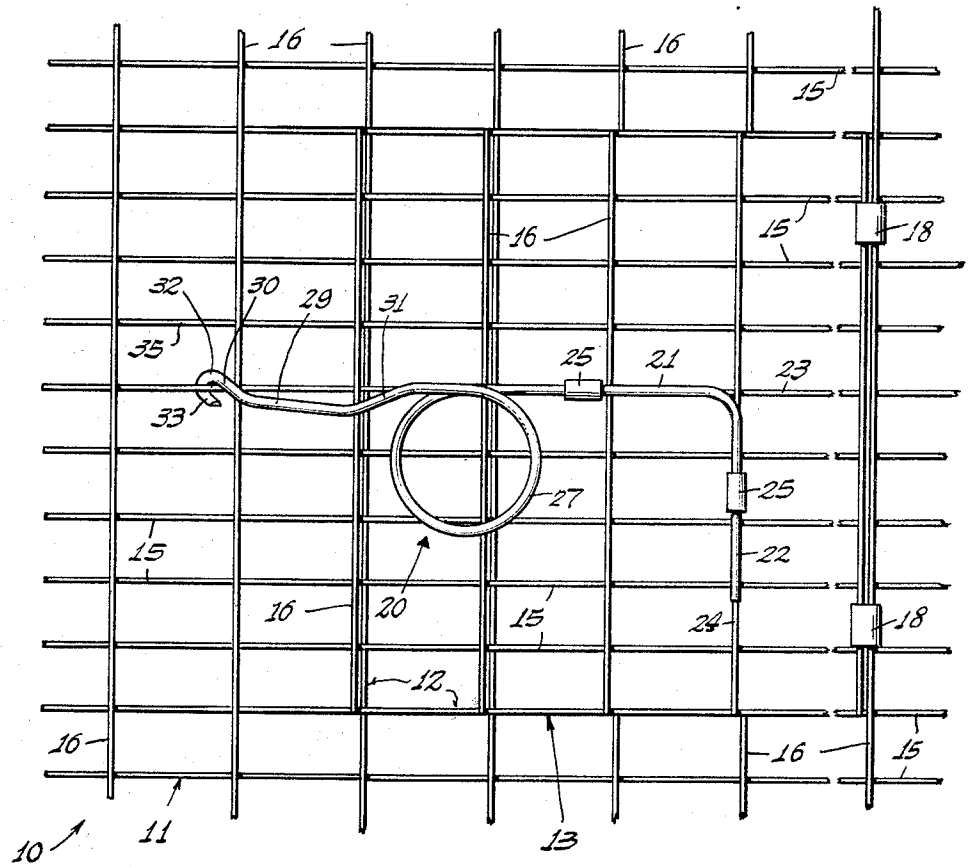
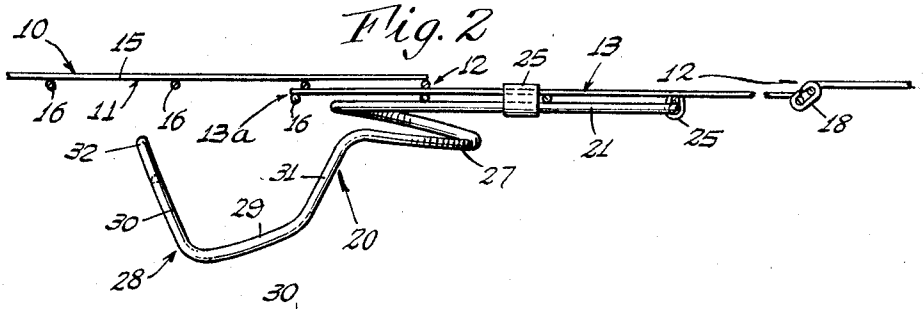


Fig. 2



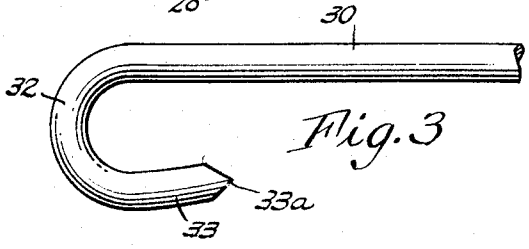


Fig. 3

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ESCAPE-PROOF CAGE LATCH

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This invention relates to latches or clasps, and more particularly to relatively light clasps of the type used in connection with cages for confining small animals.

The present invention is illustrated and described herein in connection with wire cages intended for chinchillas. However, it should be understood that the invention is not limited to chinchilla cages, since it has utility in connection with relatively small or light wire cages generally.

It has been found in the past that many types of latches as employed for chinchilla cages are not escape proof, the chinchillas tending to manipulate and operate the latches to cause their release, thereby enabling the cage door to be opened and permitting escape of the animals.

Efforts have been made at various times to provide escape-proof latches, but these have involved either complicated or costly structures, or else the latches did not permit easy operation by the keeper or other authorized user.

The above drawbacks and disadvantages of prior latches of this general type are obviated by the present invention, and one object of the invention is to provide a novel and improved lock or latch for wire cages and the like, which is particularly tamper- and escape-proof so that it may not be actuated by the caged animals but instead only by the keeper or by other authorized personnel.

A further object of the invention is to provide an improved latch as above set forth, which may be easily and quickly operated by one hand.

Another object of the invention is to provide a novel and improved latch in accordance with the above, which is extremely simple in its construction, and which may be readily fabricated by simple and relatively inexpensive tools.

A still further object of the invention is to provide a novel and improved latch as characterized, which will maintain a constant tension or force on the cage door, thereby to prevent looseness and rattling of the same.

A feature of the invention resides in the provision of a novel and improved latch as set forth, which may be readily formed in one piece from a single piece of wire stock, suitably bent and shaped.

Another feature of the invention resides in the provision of an improved latch having all of the above advantages and characteristics and which is nevertheless extremely inexpensive to produce and manufacture.

Other features and advantages will hereinafter appear.

In the drawings accompanying this specification, similar characters of reference indicate corresponding parts wherever possible in the several views, in which:

Figure 1 is a front elevational view of an improved latch made in accordance with the invention, mounted on an animal cage and shown in locking position.

Fig. 2 is a top view of the latch mounted on the cage, but shown unlocked.

Fig. 3 is a detail, enlarged, showing the hook portion only of the latch to illustrate the chisel-pointed configuration at the cut end of the hook bill.

As shown in the above figures, the latch of the present invention is particularly suited and adapted for use with light wire cages intended for small animals, such a cage being indicated generally by the numeral **10** in Fig. 1. The cage **10** has a front wall **11** provided with a rectangular opening **12** adapted to be closed by a small door **13**, also of wire cage material. The opening **12** and door **13** are preferably of rectangular configuration and of the same height, with the door being of greater width or horizontal dimension in order to provide an overlap portion **13***a*, as shown.

The cage and door structure may be of any usual crossed-wire construction, comprising horizontal wires **15** crossed by vertical wires **16** which are welded or otherwise suitably secured thereto. The wires **15** and **16** may be of any suitable diameter, as for example 1/16 of an inch.

Any desired type of hinge means may be used for swingably mounting the door **13** on the front wall **11** over the opening **12** thereof, that shown being in the form of C-clips **18** constructed of small strips of sheet metal bent around into a closed tubular shape.

In accordance with the present invention we provide a novel and improved latch means, mounted on the door **13** and cooperable with the front wall **11** of the cage, which latch means is particularly tamper- and escape-proof as regards the animals confined within the cage. Such latch means is, however, extremely simple, effective in its action, easily operated by the keeper or other authorized person, and inexpensive to fabricate and produce. As shown herein, our improved latch means may be constituted in one piece of a single length of metal wire stock, suitably formed and shaped.

This wire latch, indicated generally by the number **20**, has an angular anchorage or base constructed of two straight portions **21** and **22** disposed at right angles to each other, said portions being secured respectively to horizontal and vertical bars **23** and **24** of the cage door **13** by C-clips **25** similar to the clips **18**. The base portion **21** of the latch connects with a relatively large loop or coil **27** which constitutes in effect a strong and fairly stiff spring. Extending from the loop **27** is an actuating arm **28** having somewhat the shape of the letter U, with a yoke **29** and legs **30** and **31** which are divergent with respect to each other. The arm **28** is of such size and shape as to permit it to be easily grasped and manipulated, as for example by the forefinger or thumb, or both.

The leg **30** of the latch terminates in a hook **32**, the bill **33** of which is preferably disposed below the arm **28**. In the appended claims the leg **31** of the actuating arm is termed a "forward extension." The portion **29** of the actuating arm is termed a "handle" portion, and the portion **30** of the actuating arm is called a "latching" portion. As seen in Fig. 3, the actuating portion **30** constitutes part of the hook **32** disposed at the end of said portion.

As shown, the hook **32** is intended to engage or hook around a horizontal bar **35** of the front wall **11** of the cage. Normally, the latch is biased to occupy a position as shown in Fig. 2, wherein the arm portion **28** and hook **32** thereof are spaced forwardly and away from the front wall **11** of the cage. Thus, when the hook **32** is engaged with the bar **35** of the cage, as permitted by a yielding of the loop portion **27** of the latch, the overlapping portion **13***a* of the cage door **13** carrying the latch will be held with an appreciable force against the front wall **11** of the cage, preventing looseness and rattling. This will also cause the hook **32** to be tightly held in place, whereby the caged animals will be unable to unlock the clasp.

As seen in Fig. 3, the bill **33** of the hook **32** is made

with a tapered chisel point 33*a*, and this is provided for the purpose of minimizing the likelihood of the tip dwelling in abutting relation on the cage bar 35 during fastening of the latch. Such chisel point may be readily formed at the time that the wire stock is cut off, by use of a suitable cutting implement such as a pliers. The sharp edge of the chisel point should, of course, extend at right angles to the plane of the hook 32, as will be readily understood.

Operation of the improved latch of this invention is now readily evident from an inspection of the figures. To actuate the latch, the user merely applies the forefinger and thumb to the arm 28, engaging the front of the arm with the thumb. If the latch is already hooked, the arm 28 is pushed inward to disengage the hook 32 and then raised slightly, whereupon the door will be freed. If the intention is to latch the door, the arm 28 is forced inward to present the hook 32 within the cage, and then moved downward and released, thereby engaging the hook 32 with the bar 35.

We have found that our improved latch as above set forth and described is particularly tamper- and escape-proof, insofar as the animals in the cage are concerned. Even the most active and curious chinchillas will not be able to operate the latch so as to release it and enable the door 13 to be opened. Moreover, the latch places the door 13 under continual force at all times, and prevents looseness and rattling thereof. The latch may be easily and quickly actuated by one hand, to secure the door or release the same. And, by constructing it of a single piece of metal wire, the latch may be inexpensively produced, and may be readily secured in place by the C-clips 25.

It will be understood that the present improved latch as shown herein for right-hand operation, may be made in an exactly opposite manner as with right hand and left hand gloves, whereby the hook 32 is at the right end, thereby to adapt it to doors swinging from the left side, for left-hand operation.

Other variations and modifications of the invention may be made within the scope of the claims, and portions of the improvements may be used without others.

We claim:

1. An escape-proof cage latch comprising a one piece wire form having a base portion constituted of a length of said wire and adapted to be secured to a cage structure, said wire form having a coil portion which adjoins and extends from the base portion, which is substantially flat, and which is disposed generally in the same vertical plane as the base portion, said form having a forward extension which extends laterally and angularly forward of the said plane and coil portion and substantially horizontally, said extension starting at one of the convolutions of the coil portion and making a small acute angle with a vertical plane normal to the first-mentioned vertical plane, and being disposed immediately adjacent the coil portion, said form having a substantially horizontal handle portion extending angularly forward from and disposed substantially in the same horizontal plane as said extension, said handle portion making a small acute angle with respect to the first-mentioned vertical plane and extending substantially in a direction away from the base portion, said wire form further having a latching portion extending divergently and rearward of both said handle portion and said forward extension and extending toward the said vertical plane of the coil portion, the end of said latching portion having a hook lying in a vertical plane and constituted in part by said latching portion, said hook including a bill and being adapted for engagement with and disengagement from a bar of the cage wall structure when the handle portion is moved as permitted by the yielding action of the said coil portion, said forward extension, handle and latching portions together constituting an open U-shaped part of the wire form through which fingers may be readily passed, said divergent latching portion being free to follow a horizontal arcuate path of appreciable length in effecting said engagement and disengagement of the cage bar.

2. The invention as defined in claim 1, in which the base portion comprises a pair of straight lengths of said wire, disposed angularly with respect to each other and lying substantially in the plane of the coil portion, said plane making a large angle of close to 90° with the plane which contains the handle portion, the forward extension, and the latching portion.

3. The invention as defined in claim 1, in which the forward extension, handle portion and latching portion are all substantially of the same length, the handle portion is disposed forward of the plane of the coil portion by an appreciable extent to provide clearance with respect to the cage structure, said handle portion being adapted to be actuated by a finger of the hand, to lock or release the hook.

4. The invention as defined in claim 1, in which the bill of the hook has a short, relatively sharp, chisel-point tapered end portion to prevent it from dwelling in abutting relation on the cage bar which the hook is intended to engage.

5. The invention as defined in claim 1, in which the said extension and the latching portion are divergent in a rearward direction, said extension and latching portion being connected with the handle portion by bends of relatively large radius.

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