May 5, 1936. W. P. VOLLMER 2,039,505

FINGER PROTECTOR

Filed Aug. 13, 1934

Fig. 1.

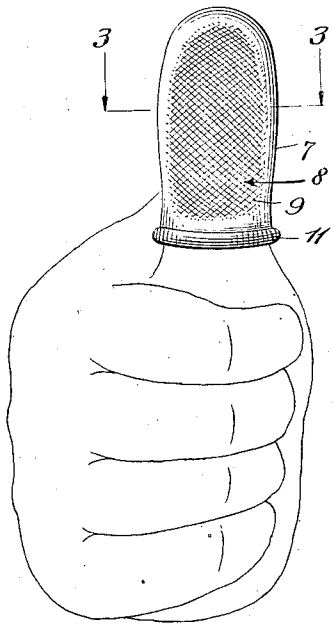


Fig. 2

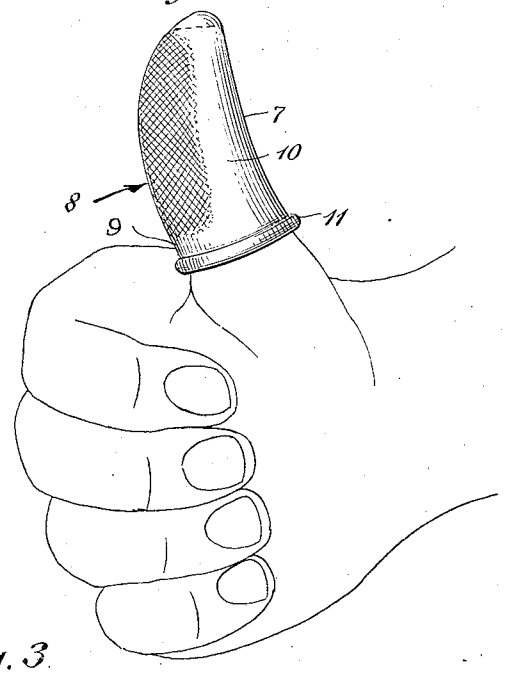


Fig. 3

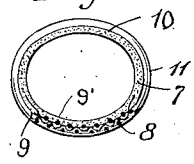


Fig. 5

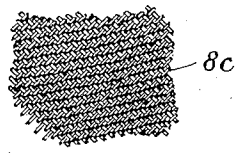


Fig. 4

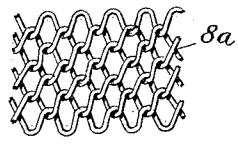


Fig. 6

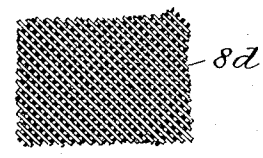
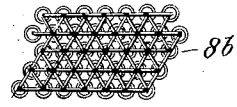


Fig. 4a



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2,039,505

FINGER PROTECTOR

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Application August 13, 1934, Serial No. 739,538

4 Claims. (Cl. 2—20)

This invention relates to improved finger protectors and particularly to an armored finger protector for use in homes and industries where there is a danger of cutting one's finger, with the attendant discomfort and danger of infection.

Heretofore there have been numerous finger protector proposals. The best known is a plain flexible rubber shell adapted to be worn over the finger of a user: its main use is to prevent damage to a finger nail and to prevent a finger from becoming worn or stained; however, such a protector is not safe when using a knife, for a sharp knife will cut through with comparative ease.

Another proposal was to provide a finger protector with cork plate inserts for the purpose of affording greater protection to the user from a knife than a plain rubber wall, but in this proposal a large complete cut out was made in the shell to accommodate the cork insert, thereby losing the protective advantage of the regular wall in this section of the finger sleeve, and in order to hold the cork insert in place a holding strip was added to the inside of the regular sleeve-like protector. This proposal had the disadvantages of providing a double built up thickness on the inside of the finger enveloping sleeve to the discomfort of the user and did not afford a real protection anyway because a sharp or slipping knife could cut through it as readily as through the plain rubber shell. Further, the underlying attached strip would become loose and allow vegetable and like juices to seep through and stain the finger.

Another proposal, in the past, was to provide a finger protector with a plurality of metal balls. However, such a structure was very costly, and because the balls were not articulated a sharp knife would just glance off the balls and cut right through the rubber and between the individual balls to the hand of the user. Also, cuts into the rubber would allow the individual balls to drop out of the protector and thereby quickly render the protective feature of the balls inoperative.

Still another proposal was the provision of a finger protector made completely from chain or an equivalent medium, woven or formed in the shape of a cap adapted to fit over a finger. This proposal had the advantage of affording real protection against knife cuts. Its disadvantages, however, outweighed the advantages. For example: the chain mesh cap was not resilient and had to be held in place by a separate strap or the like passed upwardly around the wrist of a user; the spaced links of the chain directly engaging the finger pressed into the finger when gripping any article, and the spaced chain links on the back of the cap which normally engaged the back tender portion of a finger cut into or pressed into this tender section causing much discomfort; the possibility of link ends cutting into the finger and the direct contact of the metal chain with the flesh of the finger and with possible small cuts on the finger created an ever present possibility of infection; the chain mesh would cut into and quickly squeeze juices from an onion or the like and these juices would freely flow through the chain mesh and engage with and stain the finger of a user; the entire protector was bulky and uncomfortable; and, the construction was such that its cost was prohibitive for ordinary usage.

It is an object of the present invention to provide a light yet flexible metal armored finger protector, which will effectively prevent cuts and other inconveniences.

It is another object to provide a metal armored finger protector which will be flexible enough to conform to the general shape of the finger upon which it is placed, thereby adding to the comfort of the user.

It is yet another object of the present invention to provide a metal armored finger protector which will prevent vegetable and fruit juices from reaching underlying sections of the protector to stain the finger.

A further object is to provide a metal armored finger protector which does not require separate, costly, and inconvenient holding straps.

A still further object is to provide a metal armored finger protector in which a flexible metal armor will be located and supported in spaced relation to the finger in order to prevent infection.

A final object is to provide a finger protector, embodying all of the above objects, but which can be manufactured and sold economically.

Features of the present invention include the provision of a flexible rubber shell, adapted to fit over and grip the finger of a user, carrying a flexible metal armor in those sections liable to be struck by a sharp knife, a metal armor preferably being in the form of wire or chain mesh adapted to flex or move with the flexible shell to conform with the finger and thereby not discomfort the user.

Another feature includes the provision of a flexible metal armor, in the form of a wire or chain mesh, embedded in a flexible finger sleeve, so that there is no danger of becoming detached, and having the further advantage of holding the

metal armor in spaced relation to the finger so that there is no danger of infection. A further feature is the provision of a finger protector with a wire or chain mesh, for protection against knife cuts, so formed that it will prevent vegetable and other juices from engaging and staining the finger under the protector. A still further feature is the provision of a metal armor finger protector which may be manufactured easily and which may be sold very economically.

Figure 1 is a front view of the metal armored protector of the present invention on the finger of a hand.

Fig. 2 is a view similar to Fig. 1 but gives a side view of the metal armored finger protector, and indicates how it yields to conform with the general shape of the finger.

Fig. 3 is a cross sectional view taken on line 3—3 in Fig. 1.

Fig. 4 is a fragmentary detail of spiral, flexible, woven mesh.

Fig. 4—*a* is a fragmentary detail of regular chain mesh.

Fig. 5 is a fragmentary detail of wire screen mesh.

Fig. 6 is a fragmentary detail in which straight wires are laid crosswise upon each other.

Referring now in detail to the drawing, and particularly to the most general illustrations in Figs. 1, 2, and 3, the present invention comprises a flexible sleeve 7 with a mat of metal mesh 8 carried by a front section 9 thereof, extending substantially through the length of the sleeve and substantially around the sleeve to protect all sections of the underlying finger which might be engaged by a slipping knife held in the hand of the user while paring vegetables, opening clams, and while performing like operations. If preferred, the metal mesh 8 may be extended a fuller extent around the sleeve 7, but for all practical purposes the extent shown has been found to be sufficient for the most general run of circumstances.

Since the metal mesh 8 forms an effective protection over the entire area of the finger which is normally subject to cuts and the like, the remainder of the sleeve may be made very thin and flexible, thus adding to the comfort of the user. Also, by having the metal mesh 8 extend only partially around the sleeve 7 it is possible to have a back section 10 thereof yielding a greater extent, thereby making the one finger protector applicable to a wider variety of finger sizes and making it possible to reduce the number of initial sizes to a minimum. In this latter connection it has been found that the yielding back section 10 makes it possible to produce the finger protector of the present invention in only three sizes, viz., small, medium, and large, and have it fit practically all sizes of fingers. This advantage cuts down the number of molding dies and consequently tooling costs, and also greatly reduces the amount of stock at the factory and in stores where these protectors will be sold.

The sleeve 7, since it is made of yielding material such as rubber, effectively grips the finger of a user and holds the protector in place thereon. An integral ring 11 at the lower and open end of the sleeve 10 provides added strength to the sleeve at the point where it is stretched most when applying it to a finger and also provides an additional medium for gripping the finger of the user. Use of the integral ring 11 is not absolutely essential, for the sleeve 10 may end with a thicker cross section at this point, but its use provides a longer life of the protector and a more satisfactory yielding connection to the finger.

At this point it should be noted that even though the protector of the present invention is referred to generally herein and is described as a finger protector, the intent of these terms is to embrace the thumb also as a finger. In some operations the protector may best be used on the index finger or another of the main fingers on the hand. Most generally, though, it will be used on the thumb. The term finger protector is intended to be generic and to embrace or cover a thumb protector equally well.

The metal mesh 8 has been generally indicated in Figs. 1 through 3. Specifically, it may be in the form of a mat (of desired area and shape) of spiral, flexible, woven mesh 8—*a*, a very fine mesh preferably, shown fragmentarily on a very enlarged scale in Fig. 4. This spiral flexible woven mesh is preferably woven to the right width and merely chopped off to the right length and is then embedded in the sleeve 7 as shown in Figs. 1, 2, and 3, either at the time the sleeve is initially made, or by subsequent heating and forcing it into the front section 9 of the sleeve sufficiently to be fixed by the rubber and held in place. The mesh itself, and the curling of the individual wires therein, form a very effective means for holding the mesh to the protector even though it is flexed or otherwise moved a great many times.

The expression "mat" as used herein is intended to describe a normally flat piece of mesh, and to clearly define from a tubular or sleeve-like member. The latter, if associated with a rubber cot, would not allow the cot to yieldingly grip a finger and to expand and accommodate itself to various sizes of fingers.

Although the mesh 8—*a* may be embedded through and into the front section 9, it is preferably carried thereby in spaced relation to the finger by an integral wall 9—*a* which holds the wire mesh in spaced relation to the finger in order to prevent the metallic feel, and particularly to prevent the danger of infection. This feature is not absolutely essential but is generally preferred.

The spiral, flexible, woven mesh allows the long spiral wires to pivot about each other so that the sleeve 7 flexes very readily to conform with the general peripheral contour of the finger, and also allows the top end thereof to flex sufficiently to conform with the general contour of the top of the finger as shown in Fig. 2 particularly.

A second form of metal mesh is shown in Fig. 4—*a*, comprising a plain chain mesh 8—*b* articulated both crosswise and lengthwise, which has the advantage of being equally flexible and yielding both lengthwise and crosswise. This chain mesh may be cut out or formed in the shape of a mat of desired size and secured (preferably embedded) to the sleeve 7 the same as the spiral, flexible, woven mesh 8—*a* just described in detail. However, the chain mesh 8—*b* is much more costly than the spiral, flexible mesh 8—*a*, and since the latter works nearly equally well it is used in preference to the former.

In Fig. 5 there is shown another modified form of metal mesh 8 which comprises a regular woven screen 8—*c* with two sets of wires crosswise to each other running over and under each other in the well known manner. When made of fine wires, a mat of screen 8—*c* may be used with the

sleeve 7 in the same manner as the metal mesh 8—*a* and 8—*b* already described in detail. The screen 8—*c* is capable of flexing to conform with the peripheral shape of a person's finger and the lengthwise contour thereof. It, too, forms an effective medium for preventing a knife from cutting through the sleeve 7 and into the finger.

A further modified form of metal mesh 8 for use as a mat of armor in the finger protector is disclosed in Fig. 6 and comprises a straight wire mesh 8—*d* in which there are two sets of straight wires with one set laid crosswise upon the other set. This straight wire mesh 8—*d* may be applied to the sleeve 7, the same as any of the mesh hereinbefore described.

The plain wire screen mesh 8—*c* and the straight wire mesh 8—*d* do not represent as satisfactory a construction in the finger protector, however, as does the spiral, flexible, woven mesh 8—*a*, or the plain chain mesh 8—*b* first described, because it is necessary to have the wires thereof a very small diameter in order to obtain the desired degree of yielding in order to have the mesh conform with the finger. It is possible to use a much heavier wire in the spiral, flexible woven mesh 8—*a* and the plain chain mesh 8—*b* and still have a greater degree of flexibility or conformity to the general shape of the finger.

Since the rubber sleeve 7 passes into the mesh between all the wires, it forms an effective medium to prevent the juices of onions or other vegetables and fruits from passing through the mesh and staining the finger. This holds true whether the mesh is spaced from the finger by the wall 9' or whether the mesh passes all the way through the front section 9 with rubber between the individual wires.

Although the sleeve 7 is illustrated as a completely closed sleeve and is preferably made in this manner to prevent staining, it may be made in the form of a hollow tube with an open top end, and may be provided with air holes in the back section 10 for comfort, if preferred, without departing from the spirit of the present invention. Resilient materials other than rubber may be used for the sleeve 7.

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

I claim:

1. In a finger protector the combination of a flexible rubber shell adapted to resiliently grip a finger, and having a front section and a back section; and a mat of metal mesh embedded in the front section of the rubber shell and adapted to flex therewith.

2. In a finger protector the combination of a flexible rubber shell adapted to resiliently conform with and grip a finger; and said rubber shell having molded thereto a flexible metal mesh, capable of flexing to conform with the flexible rubber shell to the general shape of the finger.

3. In a finger protector the combination of a flexible rubber shell adapted to resiliently grip a finger; and a mat of metal mesh embedded in the rubber shell and adapted to flex therewith.

4. In a finger protector the combination of a flexible rubber shell adapted to resiliently grip a finger; a mat of metal mesh embedded in the rubber shell and adapted to flex therewith; and integral means on said rubber shell underlying said mesh and adapted to support it in spaced relation to the finger in order to prevent liquids from passing through said mesh and entering said shell and to prevent the metal mesh from infectiously engaging the finger.

WALLACE P. VOLLMER.