Aug. 19, 1958 N. C. SCOTT 2,847,676

EXPENDABLE MEDICAL EXAMINING SHIELD FOR THE HANDS

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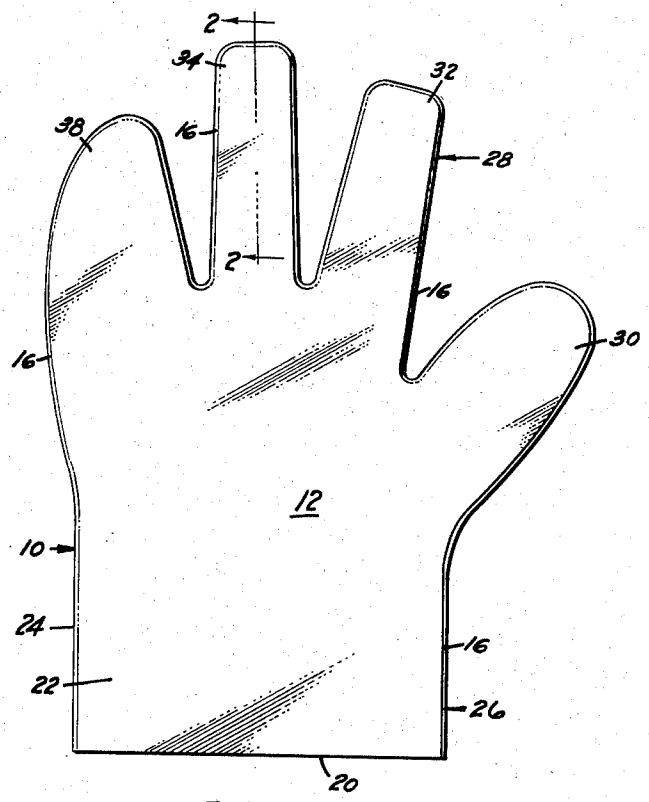

FIG. 1.

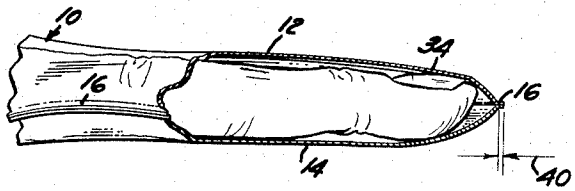

FIG. 2.

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EXPENDABLE MEDICAL EXAMINING SHIELD FOR THE HANDS

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3 Claims. (Cl. 2—159)

This invention relates to medical hand protective devices and more particularly it is an object of this invention to provide an expendable medical examining shield for the hands of a doctor or nurse.

Heretofore, no expendable shields for examination purposes have been available and the surgical glove has been used also for examining. The surgical glove in common use is formed of a single piece of seamless rubber. This type of glove has been the most popular although its cost has been so high as to make it economically impractical to throw such gloves away.

As a result, one of the most time consuming and unpleasant tasks of the nurses in a doctor's office or in a hospital has been the washing, drying and powdering of such gloves for re-use. Preliminary to the powdering step, it is also necessary that the glove be turned inside out. The total labor involved has high expense and I propose to reduce this expense with the provision of an expendable examining shield.

Certain attempts have been made to improve surgical gloves. For example, a patent titled "Surgical Gloves" was issued to Ken L. Milligan on December 7, 1943, Patent No. 2,335,871. In this patent a surgical glove is shown which is adapted to be used on either the right or the left hand similarly to my shield, however the cost of the glove is even greater than the surgical gloves in common use whereby there is no possibility of using this glove in an expendable manner.

A patent titled "Work Glove" issued March 17, 1946 to D. L. Creese et al., Patent No. 2,034,609 describes a work glove. This glove was conceived to attain the possibility of inexpensive manufacture so that it could be discarded after use. However, this work glove is not made of materials suitable for medical and surgical examination purposes. It is made of crepe paper in its preferred form. The two parts of this glove are secured together by stitching and it is a part of my concept to provide a glove that is positively sealed around its edges in a water-proof manner for completely eliminating the dangers of contamination of the hand of the user.

The Creese et al. glove attempts to attain an expansibility to permit the hand to enter it freely through the use of corrugated or creped paper. This allows the glove to expand somewhat but is a principle unsuitable for medical use because the material is not adapted to be sufficiently pliable for permitting the tactile sensation necessary for efficient examination in which the medical examiner must feel and discover such things as minute tumors in the vaginal or rectal tracts and which sometimes also appear in the mouth.

So, while the Creese et al. glove is expansible for ease of placing the hand in the glove, this is attained by corrugations which are themselves made possible through crepe paper. Crepe paper is by nature porous and is adapted to pick up and retain contaminated secretions in medical use. It is my concept to provide a shield for avoiding the transfer of contaminated secretions from one area of a patient's body to another during examination.

It is another objective to provide an expendable examining shield of such economic construction as to permit its being discarded after one examination whereby there is lesser likelihood of double use of the glove on two different patients whereby the transfer of contamination from one patient to another is more likely avoided.

It is the particular objective of my invention to make possible the use of a non-porous and relatively non-stretchable material through my concept of providing an entrance opening portion of the shield the sides of which are approximately in parallelism with each other for permitting the easy insertion of the hand so that a shield formed of inexpensive and expendable material can be used without the danger of breaking the material that would be present if the relatively inexpensive expendable material were used with a glove shape such that the entrance opening portion of the glove had sides which flared inwardly toward the base of the glove as is the shape shown in the Creese et al. and the Milligan constructions, and as is also the case in the surgical gloves of rubber or rubber-like material which are in most common use.

The gloves in most common use attain the possibility of receiving the hand because of the elasticity of the material. It is my belief that no one has heretofore invented a surgical glove of a disposable nature for the reason that the materials which are elastic and which lend themselves to this use are too expensive to use in expendable fashion.

It is therefore my concept to provide an expendable medical examining shield for the hands which attains the possibility of being easily placed on the hand and removed from the hand, not through the use of expensive elastic material as has heretofore been thought necessary, and not through crepe paper with corrugations which has been used in work gloves to attain ease of placing on the hand, but instead through my concept of approximately parallel sides to the base portion of the glove and the avoidance of the constricted base portion which is common in the gloves of the prior art.

It is an object of my invention to provide an expendable medical examining shield for the hands which can be manufactured with a lesser amount of material through making of the glove in a three-fingered shape whereby the ring and little finger both fit into the same finger pocket.

It is a further object of my invention to provide a three-fingered medical examining shield for the hands for the reasons described which shall further allow the attainment of the possibility of opposing the thumb and the little finger or the thumb and the ring finger in grasping objects without eliminating the possibilities of maximum economy of manufacture as would be eliminated if the shield would be made in a four-fingered-and-thumb fashion.

A further object of the invention is to provide an expendable medical examining shield, the sealed edge of which is much less bulky than heretofore for providing a maximum of comfort to the patient during the examination of body orifices which may contain painful sores of various kinds.

A further object is to provide a shield with a sealed edge in which the seal extends substantially to the tips of the terminal edges of the portions which are sealed together, thereby eliminating a large overlapping of material beyond the sealed portion itself which has been the characteristic of other products using two pieces of sealed plastic. In this way I achieve the objective of providing lesser open space between the overlapping portions which could otherwise pick up and contain contaminated body secretions with the possibility of un-

desirable transfer of such secretions from one area of a patient's body to another during examinations.

Other and further objects and advantages of the present invention will be apparent from the following detailed description, drawings and claims, the scope of the invention not being limited to the drawings themselves as the drawings are only for the purpose of illustrating a way in which the principles of this invention can be applied.

Other embodiments of the invention utilizing the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and purview of the appended claims.

In the drawings:

Figure 1 is a top plan view of the expendable medical examining shield for the hands of my invention; and

Figure 2 is a cross sectional view of one of the finger stalls of the expendable medical examining shield for the hands of my invention taken along the line 2—2 of Figure 1.

Referring to Figures 1 and 2 of the drawing, the shield of this invention is shown at **10** and comprises two pieces **12** and **14** sealed around their outer edges as seen at **16** and at all points with the exception of a portion **20** at the base **22** of the shield which is left unsealed to form a hand entrance-opening.

The pieces **12** and **14** are preferably formed of an inexpensive plastic material. The material which I prefer to use is polyethylene of a 1–M thickness. I have found that this material is sufficiently non-porous and also of a sufficiently low cost to be very practical. It provides tactile sensitivity superior to rubber because of its lesser thickness and also because of the absence of pressure on the fingers as is caused by the stretching of the rubber in standard surgical gloves.

However, I have found that this inexpensive material can be made into an expendable examining shield through the use of the two pieces sealed around their edges. I accomplish this through the use of a die having an electronically heated cutting and sealing edge. Such a die will cut two pieces of the material when they are laying parallel and seal them around their edges in the same motion.

The shield has parallel sides **24** and **26** on each side of its base portion **22** and these sides are sealed.

It is to be understood that the parallel sides **24** and **26** of the base portion **22** of the shield, best seen in Figure 1, are practical because this shield is being used for medical examination purposes primarily and not for surgical operations. Since this is the case it is unnecessary that the base portion **22** of the shield cling to the wrist in a tight fashion expected of surgical gloves, as is necessary in surgical gloves because of the desire to prevent foreign substances from passing into or out of the surgical glove at the base of the glove.

Surgical gloves of the type now in common use are less suitable for medical examinations than I desire because the tactile sensitivity attainable through the tightly stretched rubber is far less than I desire. It is therefore an object of my invention to provide a medical examining shield for the hands which avoids the tightly stretched rubber material around the fingers in a tight, binding fashion as is the characteristic of surgical gloves. I desire to eliminate this tight, binding effect or tight finger-compressing fit in order to increase the tactile sensitivity.

I have found in my examinations into the cost of the expendable examining shield of my invention that its use makes possible a considerable saving of money even though it is used in an expendable fashion and used in only one examination before it is thrown away in comparison with the rubber or synthetic rubber surgical gloves now in use inasmuch as the cost of cleaning and handling of the rubber-like surgical gloves to render them fit for re-use involves a labor cost which is normally very high.

The finger portion **28** of the shield comprises a thumb section **30** and index and middle finger sections **32** and **34** of expected shape.

However, a combination section **38** is used to receive both ring and little fingers. The section **38** is for this reason of an almost double-width when laying flat than the index or middle finger sections.

The parallel sides **24** and **26** preferably extend approximately directly down from the outer side of the index finger section **32** and from the middle of the outer tip of the combination finger section **38**.

It is an object of my invention to provide a shield which can be manufactured with a lesser amount of material through making of the shield in a three-fingered shape whereby the ring finger and the little finger both fit into the same pocket as best seen in Figure 1.

If these two fingers were in separate pockets the necessary amount of material to make the separate pockets of a large enough size to allow them to assume necessary depth and width upon the insertion of the fingers would be such an amount of material as would substantially increase the width of material needed to be cut from stock in manufacture. It is my concept to place the ring and little finger in the same pocket to lessen the amount of material needed to be used in manufacture through my concept of realizing that this is possible in this type of shield because only the index and middle finger together with the thumb are used in ordinary examinations.

The shield described allows the possibility of opposing the thumb and the little finger or the thumb and the ring finger in grasping objects without eliminating the possibilities of maximum economy of manufacture as would be eliminiated if the shield would be made in a four-fingered-and-thumb fashion.

Referring to Fig. 2 it will be seen that the sealed edge **16** protrudes outwardly from the remainder of the shield to a slight degree. It is preferable that the sealed edge be of one-sixteenth of an inch or less in width, and as indicated at **40**, for a maximum of comfort to the patient as above described.

It is further particularly desirable that the sealed edge **16** be sealed substantially to the outer terminal edges of the two portions thereof so that there are no bulky portions overlapping the seal itself such as would cause unnecessary discomfort to the patient and such as would tend to retain contaminated secretions as described in the objectives herein.

From the foregoing description, it is thought to be obvious that an expendible medical examining shield constructed in accordance with my invention is particularly well adapted for use, by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice, except as claimed.

I claim:

1. As a new article of manufacture, an expendable medical examining shield comprising in combination, a pair of adjacently-disposed members having adjacent marginal edge portions sealed together to form an open-ended pocket for receiving the hand of a wearer and having a base portion adjacent the open end and a finger portion at the closed end, said finger portion having a thumb section, an index finger section, a middle finger section and a combination section of greater width than either of the other finger sections for receiving both ring and little fingers, said shield being formed of a waterproof plastic material having a non-porous outer sur-

face which is sufficiently thin to allow tactile sensitivity, the seal of said edge portions extending completely to the edges thereof, said seal having a width of less than one-sixteenth of an inch.

2. The shield of claim 1 in which the base portion of each of said members has two side edges which are disposed in substantial parallelism and are aligned approximately with the outer side of the tip of the index finger and the middle of the tip of the combination finger respectively for providing an opening extending across the base portion adapted for easy insertion of the hand, said base portion having a length sufficient to extend to the

wrist of the wearer when the fingers are seated within the respective sections.

3. The shield of claim 1 in which the plastic is polyethylene having a thickness of approximately one-thousandth of an inch.

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