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ARM RESTRAINER

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FIG. 1

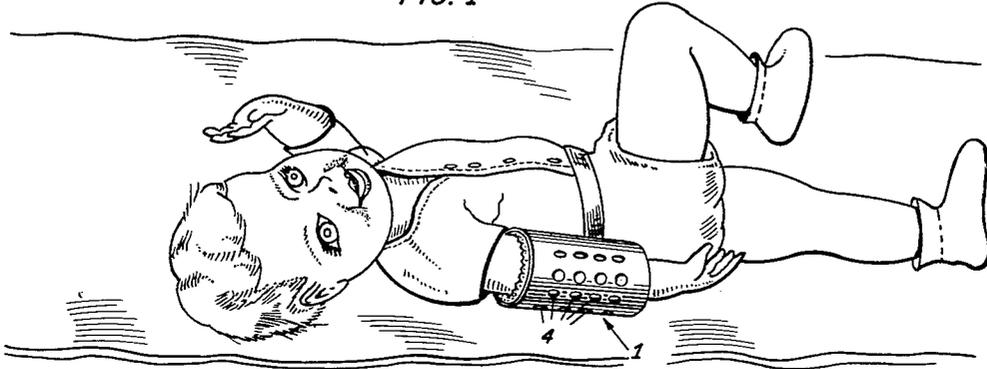


FIG. 2

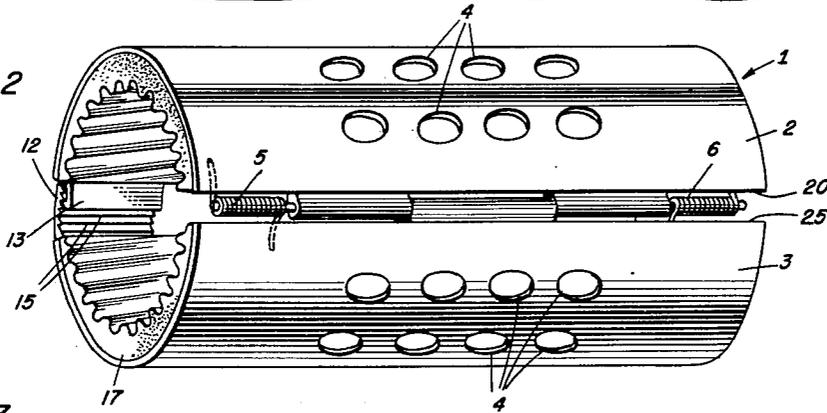


FIG. 3

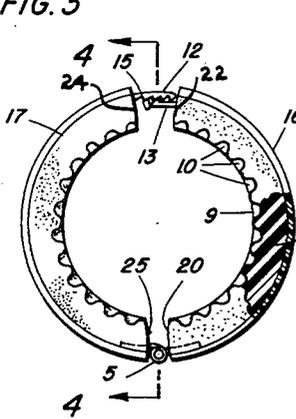
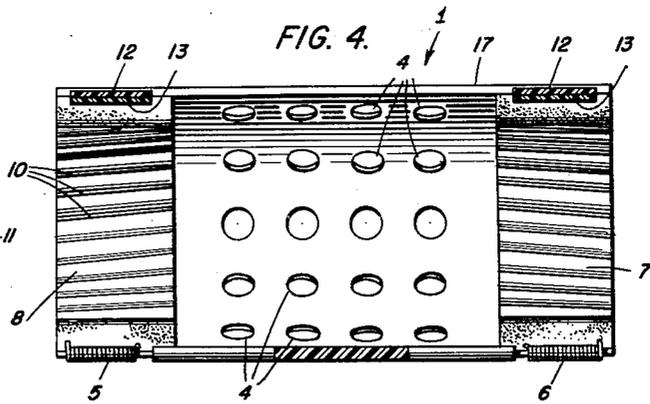


FIG. 4



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ARM RESTRAINER

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2 Claims. (Cl. 128—133)

This invention relates to new and useful improvements in arm restraining devices, the device herein described being particularly applicable for the preclusion of contact, inadvertent or otherwise, between the hand of an infant and the facial and head areas thereof. More specifically, the present invention has exhibited immeasurable value during post-operation periods, in cases involving children afflicted with a congenital defect of the palate, known as a cleft palate, in which a longitudinal fissure had existed in the roof of the mouth.

The palate, having been corrected through surgery, requires time to heal, and it is of the utmost importance that this period be without interference and/or contamination from foreign bodies, including the infant's hands. To that end the instant invention, in view of its structural characteristics to be described, accomplishes several desirable objects and advantages, among which are included the following.

The primary object of this invention is to provide a tubular arm restraining device, in the nature of a surgical splint, comprised of a pair of semi-cylindrical members hingedly connected to one another in a manner adapted to urge said semi-cylindrical members toward the formation of a unitary cylinder with means for adjustably securing said members in a position to embrace or encircle the elbow region of the arm.

Another object of the present invention is to provide an arm restraining device whereby minimum contiguity between the arm and the device is achieved through the employment of raised-end-inside peripheral areas composed of soft cushioning material fashioned to gently envelop the arm without chafing the minimal areas of contact.

A further object of this invention is the provision of a splint-like device wherein each of the said raised-end-inside peripheral areas is angularly fluted or furrowed in directions counter to one another, the depressions formed by said fluting functioning to provide air circulation between the spaced area between the inside cylinder wall, the elbow region, the surrounding regions of the arm and the ambient surrounding atmosphere.

A still further object of the instant invention is the provision of a non-slip relationship between the arm restraining device and the arm areas in contiguous relation therewith, said non-slip relationship being effectuated through the respective counter angular fluting arrangement of the raised-end-inside peripheral areas described in the detailed portion of the specification set forth below.

Another object is to provide a device of this character of simple and practical construction, which is efficient and reliable in use, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

In accordance with the invention, the foregoing objects are accomplished by the construction of and utilization of the device as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the arm restraining device shown as applied to the arm of an infant;

FIGURE 2 is a perspective view of the device;

FIGURE 3 is an end view; and,

FIGURE 4 is a transverse sectional view taken on the line 4—4 of FIGURE 3.

The illustrated embodiment of the invention comprises

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a device adapted to embrace the upper limbs of the human body as represented in FIGURE 1 of the drawings. As heretofore indicated, the device, once positioned on the arm as shown, will serve to sufficiently prevent movement at the joint or elbow, thereby interposing positive interference with the natural bending of the arm and thus preclude the placement, by the infant, of its fingers within its mouth or otherwise near the region of its head.

The configuration of the body of the present device is, according to FIGURE 2 of the drawings, is shown to be tubular or sleeve like, the device being designated generally as numeral 1. The tube or cylinder so designated is comprised of symmetrical halves or semi-cylinders 2 and 3 molded or extruded of polyethylene, polystyrene or other suitable material dimensionalized and having a wall thickness.

Semi-cylinders 2 and 3 are hingedly connected at their respective edges, 20 and 25, by means of spring loaded members 5 and 6, said spring members being adapted to flexibly connect said halves at their said respective edges and to further serve to constantly urge said halves toward the normal formation of open ended cylinder 1. Upon viewing the drawings, it will become apparent that an adult can readily apply or remove the device to or from an infant's arm by merely separating the unhinged edges 22 and 24 of the cylinders by overcoming the force imposed by spring hinges 5 and 6. Once opened, the device is placed over and around the elbow region and permitted to return to its normal cylindrical configuration. Ratchet-clasp members 12 and 13 located along the said unhinged edges 24 and 22 of said semi-cylinders 3 and 2 respectively, provide adjustable closure means in addition to the continued closing force imposed by the spring loaded hinges. While it is understood that other closure means, e.g., snaps, buckles, hooks, etc., could be adapted to the instant invention, the ratchet-clasp arrangement illustrated in the drawings is preferred in view of the practical simplicity thereof.

In addition to the effective closure action of both spring hinges 5 and 6 and ratchet-clasp closure means 12 and 13, raised-end-inside peripheral areas 7 and 8 furnish a third feature primarily intended as a preventive against slip or movement of the arm restraining device once said device is positioned according to this invention.

FIGURES 2 and 3 of the drawings indicate the proportionate thickness of said raised inside areas, FIGURE 2 being particularly illustrative of the parallel-angular crests and troughs comprising the fluted configuration thereof.

FIGURE 4, while also representative of the aforesaid parallel-angular configuration of the raised areas, is particularly demonstrative of the respective counter angular alignment of the parallel flutes or depressions comprising each respective raised area. To that end it will be noted that according to FIGURE 4, the slope of the angular alignment of the parallel flutes of raised-end-inside area 8 is positive with respect to the longitudinal axis of the cylindrical body 1, while the slope of the angular alignment of the parallel flutes of raised-end-inside area 7 is negative with respect to said longitudinal axis. The significance thereof can be compared to an oppositely threaded pair of lock-nuts the purpose of which is to prevent loosening due to a twisting movement imparted to one or both of said nuts. The aforescribed counter angular fluted areas situated at each end of the cylindrical body, function as the counter threaded nuts in the above analogy, that is, to preclude slip or movement about or along the infant's arm once the device is applied thereto.

Raised-end-inside peripheral areas 7 and 8 are preferably composed of soft, shape-retentive compositions, rubber 11, being the most applicable in view of its protective attritionless qualities. Utilization of a shape-retentive material is of obvious importance considering the function

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thereof; which is to provide a continual tread-on-skin effect as a guard against slippage. Of further importance concerning the shape-retentive quality is the ventilating function of the fluted structure of the raised inside areas.

In the usual arm restraining or splint-like devices heretofore used, slats, straps, casts, bands and/or tape, singly or in combination, were employed. In addition to the cumbersome and bothersome difficulties experienced through the use of such devices, chafing, itching and general annoyance often resulted for want of air circulation around the arm. While holes 4 provide limited ventilation, the effect of said holes in cooperation with the air channels formed within troughs 10 of said areas 7 and 8 is to accomplish free air flow about the restrained arm but for minimal regions necessitated along crests 9 of said areas 7 and 8. Air circulation occasioned by the instant construction is especially desirable in warm, humid climates particularly conducive to chafing and skin irritation.

While the post-operation period in the case of a cleft palate was cited herein as a situation demanding utilization of the arm restraining device disclosed herein, the myriad applications of this device are readily apparent, childhood pox diseases being merely one other obvious situation requiring restraint against hand and facial contact.

It will thus be seen that the objects of the invention have been accomplished both fully and effectively by the novel arm restraining device. It will also be realized that although specific embodiments of the invention have been described and illustrated, various changes therein will occur to one skilled in the art, all modifications which are encompassed within the spirit and scope of the following claims.

What is claimed is:

1. An arm restraining device comprised of first and second semi-cylindrical shell members, said first semi-cylindrical shell member being spring biased with respect to said second semi-cylindrical shell member, said semi-cylindrical shell members being continually urged toward the formation of a cylindrical body member having a longitudinal circular passage therethrough, said longitudi-

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nal circular passage being substantially uniform in cross-section, said passage being constricted by peripheral shoulder areas disposed adjacent the ends of said cylindrical body and disposed inwardly thereof, said shoulder areas having parallel angular flutes provided in the inwardly disposed surfaces thereof, the said parallel angular fluting of one end adjacent peripheral shoulder area being the mirror image of the other of said end adjacent peripheral shoulder areas.

2. An arm restraining device comprised of first and second semi-cylindrical shell members, said first semi-cylindrical shell member being spring biased with respect to said second semi-cylindrical shell member, said semi-cylindrical shell members being continually urged toward the formation of a cylindrical body member having a longitudinal circular passage therethrough, said longitudinal circular passage being substantially uniform in cross-section, said passage being constricted by peripheral shoulder areas disposed adjacent the ends of said cylindrical body and disposed inwardly thereof, said shoulder areas having parallel angular flutes provided in the inwardly disposed surfaces thereof, the said parallel angular fluting of one end adjacent peripheral shoulder area being the mirror image of the other of said end adjacent peripheral shoulder areas, and a plurality of orifices being spacedly arranged in the surface of said cylindrical body member, said orifices and said parallel angular flutes providing ventilation therebetween.

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