April 23, 1963 S. LASH 3,086,214

SELF-ADJUSTING STRETCH COVERALL

Filed April 7, 1960 3 Sheets-Sheet 1

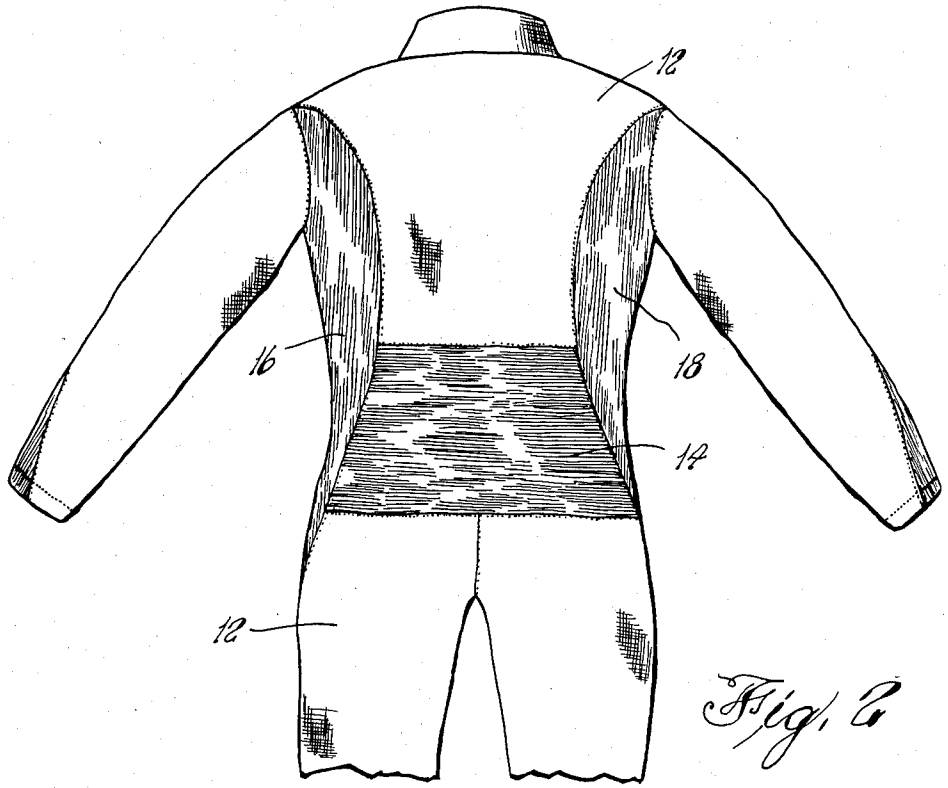

Fig. 2

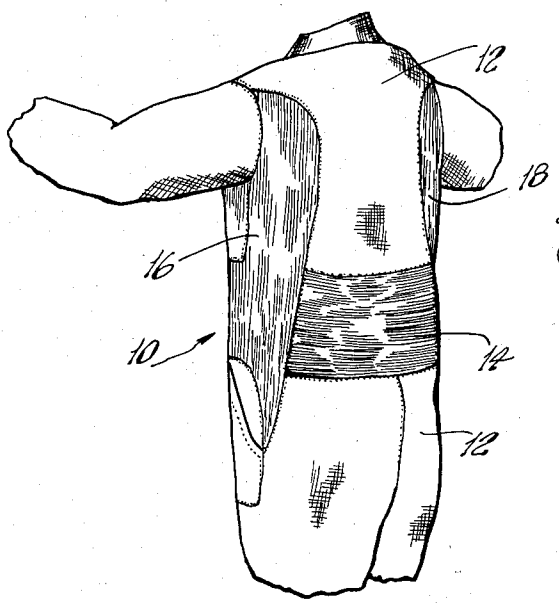

Fig. 1

INVENTOR.
SEYMOUR LASH
BY
Louis B. Cogswell
ATTORNEY

April 23, 1963 S. LASH 3,086,214

SELF-ADJUSTING STRETCH COVERALL

Filed April 7, 1960 3 Sheets-Sheet 2

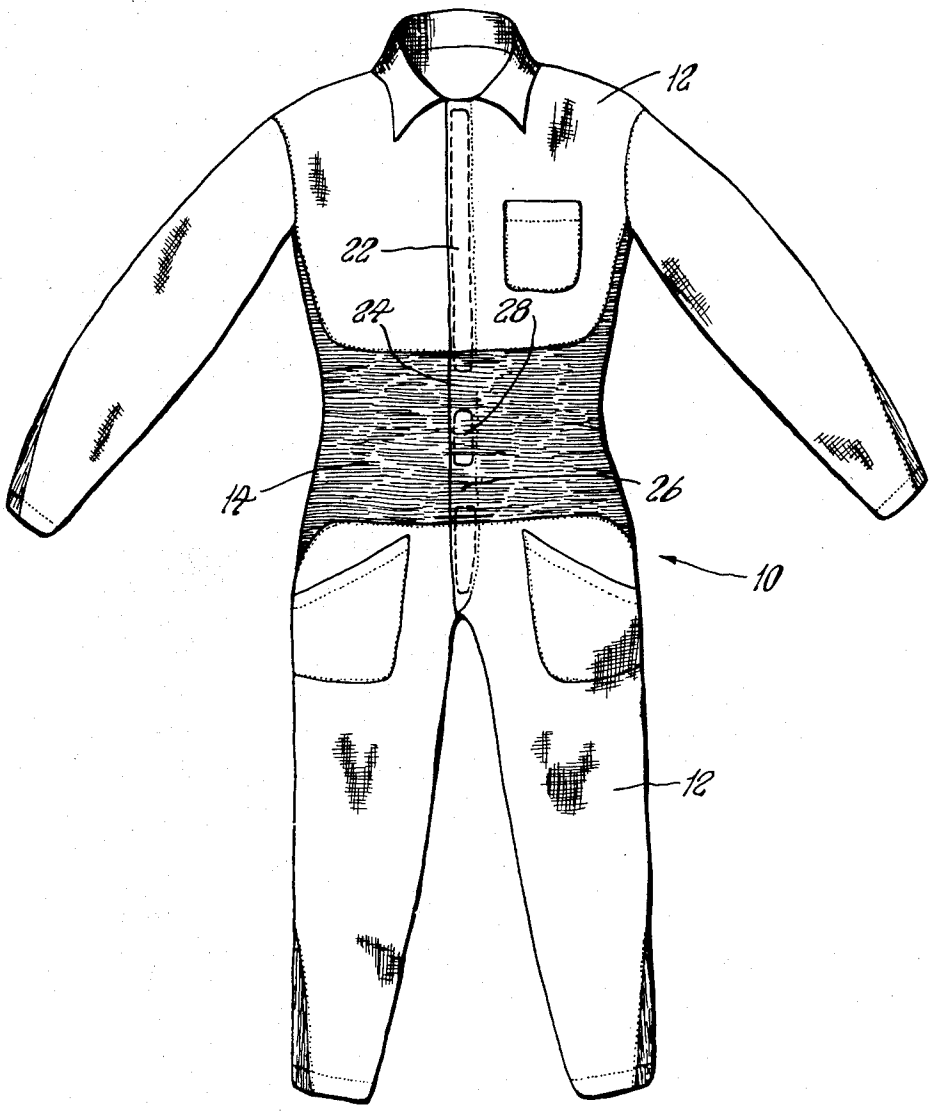

Fig. 3

INVENTOR.
SEYMOUR LASH
BY
Louis B. Eggleston
ATTORNEY

April 23, 1963 S. LASH 3,086,214

SELF-ADJUSTING STRETCH COVERALL

Filed April 7, 1960 3 Sheets-Sheet 3

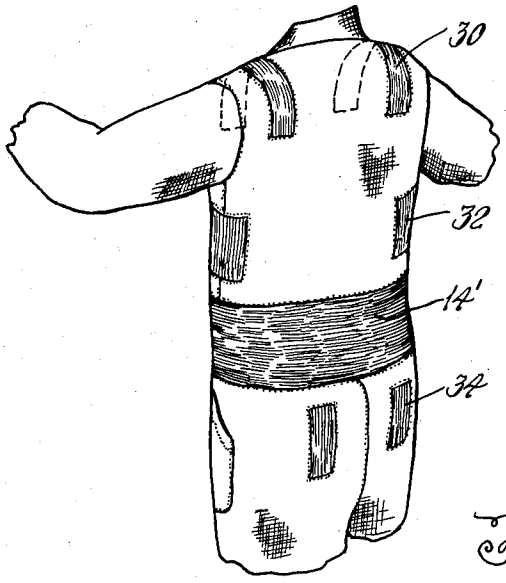

Fig. 4

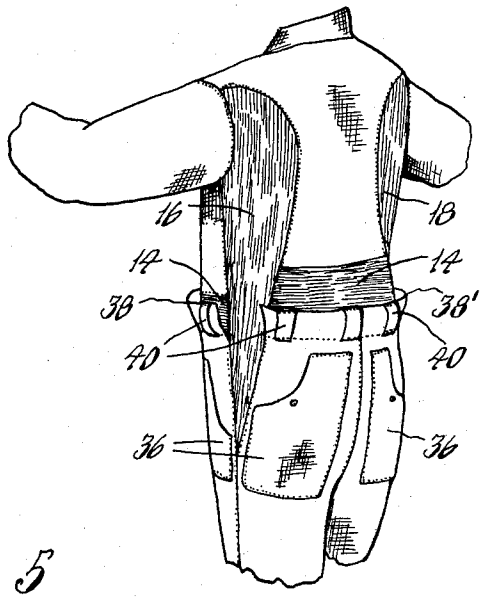

Fig. 5

INVENTOR.
SEYMOUR LASH

BY

Louis B. Applebaum
ATTORNEY

United States Patent Office 3,086,214 Patented Apr. 23, 1963

3,086,214

SELF-ADJUSTING STRETCH COVERALL

Seymour Lash, 40 Fox Place, Hicksville, N.Y.

Filed Apr. 7, 1960, Ser. No. 20,792
4 Claims. (Cl. 2—79)
(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

The invention relates to a coverall-type garment and especially to a coverall which adjusts in size to accommodate differently sized wearers.

In the military services, need arises for a work garment and the single-piece coverall type has been found to be more suitable than the two piece type, except for the fact that a snugly fitted coverall may provide somewhat less freedom of movement than a two-piece work garment.

Also, the military services have logistics and storage problems which can be greatly simplified if a given size of a given garment type can be used by servicemen of various shapes and sizes. Fewer replacement garments have to be transported and less space is needed for storage, which is extremely important for certain units, such as the submarine service.

The present invention is a coverall-type work garment which adjusts to differently sized wearers and provides a snug fit as well as complete freedom of movement. These advantages are provided by inserting a panel of stretch fabric in a coverall in a horizontal band around the waist, another panel in the shoulder area and a third panel in the area between shoulder and waist. The waist panel has horizontal and vertical elasticity and the other two panels have at least horizontal elasticity. Thus, both vertical and horizontal stretching of the garment is assured.

An object of the invention is to provide a coverall which automatically adjusts itself to fit differently sized wearers.

Another object is to provide freedom of movement in a coverall type garment.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of the back of and left side of a coverall made in accordance with the invention;

FIG. 2 is a view of the back of the coverall of FIG. 1;

FIG. 3 is a front view of the coverall of FIG. 1 showing the gaps in the front closure;

FIG. 4 is a perspective view of the back of a coverall employing individual elastic panel in place of the single vertical panel used in the coverall of FIG. 1; and

FIG. 5 is a three-quarter, perspective view of an improved version of the coverall.

A coverall-type garment **10**, as shown in FIG. 1, is fabricated from a durable fabric **12** such as nylon, Dacron, cotton twill, etc. A panel **14** of "two-way-stretch" elastic material, which may comprise a knitted stretch fabric of the "Helanca" type, for example, is inserted in a horizontal band around the waist of the garment **10**. A typical height for such a band might be eight inches, for example.

A vertical panel **16** of elastic material extends from the shoulder of the garment to the seat region below the waist band. This panel **16** must have elasticity at least in the horizontal direction and may be formed from the same two-way-stretch material as the waist panel **14**. Part of the panel **16** extends under the armpit of the garment **10** for greater freedom of movement of the arms of the wearer.

A second vertical panel **18** similar to the first **16** is placed at the other side of the garment **10**.

The garment **10**, by virtue of the elasticity and position of these panels, is provided with expandability in the vertical direction and in the horizontal direction in the shoulder, chest, waist and seat. It also provides a snug and freedom of movement for all wearers. The vertical panels are, in this embodiment, formed in continuous strips. However, each vertical panel could alternatively be replaced by three smaller panels (see FIG. 4) each providing elasticity in the horizontal direction. The first would be a panel **30** in the shoulder area, preferably extending up over the crest of the shoulder to provide accommodation to wearers who have different dimensions across the shoulders. The second would be a panel **32** between the shoulder and waist region to provide accommodation for different chest and back sizes and to accommodate torsions and muscle expansions resulting from the movements of a wearer. The third would be a panel **34** in the seat area, and would be preferable although not absolutely necessary since the seat could be designed loosely and would accommodate most wearers satisfactorily, if not quite snugly. Waist panel **14** would also be replaced by a modified waist panel **14'**. The unitary vertical panel is preferred, however, because it is easier to fabricate a garment with a single vertical panel than with three panels.

A full view of the back of the garment **10** is provided in FIG. 2.

The garment **10**, in its unoccupied condition, is sized for a small person (within the range of sizes it encompasses), the elasticity of the panels permitting it to expand so as to accommodate larger persons. It has been found that only three sizes (small, medium and large) of these garments **10** encompass the complete range of sizes of the conventional coveralls now in use in the military services.

FIG. 3 shows the garment in front view. The garment **10** can be opened from the neck substantially to the crotch and any convenient closure means may be employed, such as a zipper or snaps. At least one gap should be left to separate the upper and lower sections of the closure means if a unitary closure is employed, the gap being left in the waist panel region so that vertical expandability is not interfered with. The type of closure means employed in FIG. 3 is a nylon-tape closure **22**, indicated by dotted lines. (This type of closure also is known as a "Velcro" closure.) Two gaps **24** and **26** in the waist band region separate the upper and lower portions from a central portion **28** of the closure **22**.

FIG. 5 illustrates an improved version of the coverall, which is more satisfactory for wearers who carry heavy tools in the pockets **36** of the garment. This practice has been found to pull the trouser legs down too far because the horizontal waist panel **14** is stretched excessively. Waist flaps **38** and **38'** are therefore extended upward from the portion of the fabric **12** which joins the lower edge of the horizontal elastic panel **14**, the waist flaps substantially encircling the waist region except that they do not extend across the vertical panels **16** and **18**. Loops **40**, through which a belt may be inserted, are attached at intervals to the outside circumference of the flap **38**. Tightening the flap **38** around the waist by means of the belt supports the lower part of the coverall so that it will not sag when heavy tools are carried in the pockets. As can be seen, the horizontal elastic panel **14** may be separated into two sections, front and rear, by the vertical panels **16** and **18**, the height of the two sections not necessarily being equal.

It may be noted from the figures that the elastic material used in the panels is ribbed. Although the material is elastic in two directions, both in the direction of the ribbing and transversely to the ribbing, the direction

of maximum elasticity is transverse to the ribbing. Each panel, therefore, is arranged so that its ribbing is transverse to the direction in which the maximum amount of stretching may be expected. Thus, the ribbing of the vertical panels is in the vertical direction since maximum strain and stretching will occur in the horizontal direction across the chest and back, while the ribbing of the horizontal waist band or bands is in the horizontal direction because maximum strain across this panel will occur in the vertical direction, as, for example, when a wearer bends over from the waist. Although the panels could be made from material which has equal elasticity in both said directions, it has been found that restriction of the amount of elasticity in the direction in which it is least needed in a panel leads to a lesser amount of sagging and drooping of the garment under conditions of severe and extended usage.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

I claim:

1. A stretch coverall comprising:

a one-piece coverall garment having a panel of elastic material inserted as a horizontal band around the waist region thereof, said elastic material having elasticity in the vertical and horizontal directions;

a pair of vertical panels of elastic material extending from the shoulder region of the garment to said horizontal panel, one vertical panel on each side of said garment, said vertical panels having elasticity at least in the horizontal direction, said panels providing said garment with vertical expandability, and also horizontal expandability in the shoulder, chest and waist regions; and

a front and rear flap substantially encircling said coverall in the waist region, said flaps extending upward from the trouser section of said coverall, the junction of said flaps with the trouser section being close to the junction of the horizontal elastic panel with the trouser section; and

a plurality of belt loops attached at intervals to the outer surface of said flaps.

2. A stretch coverall comprising:

a one-piece coverall garment;

a panel of elastic material inserted as a horizontal band around the waist region thereof, said elastic material having elasticity in the vertical and horizontal directions;

a pair of vertical panels of elastic material extending from the shoulder region of the garment to said horizontal panel, one vertical panel on each side of said garment, said vertical panels having elasticity at least in the horizontal direction, said panels providing said garment with vertical expandability, and also horizontal expandability in the shoulder, chest and waist regions;

closure means extending from the neck region of said garment substantially to the crotch region, said closure having at least one gap in its vertical extent, said gap occurring in the elastic waist panel region;

a front and rear flap substantially encircling said coverall in the waist region, said flaps extending upward from the trouser section of said coverall, the junction of said flaps with the trouser section being close to the junction of the horizontal elastic panel with the trouser section; and

a plurality of belt loops attached at intervals to the outer surface of said flaps.

3. A stretch coverall comprising:

a one-piece coverall garment;

a panel of elastic material inserted as a horizontal band around the waist region thereof, said elastic material having elasticity in the vertical and horizontal directions;

at least one panel of elastic material inserted in the shoulder region of said garment, said panel having elasticity at least in the horizontal direction so that said garment has expandability in its shoulder measurement;

at least one panel of elastic material inserted medially between the shoulder and waist regions of said garment, said panel having elasticity at least in the horizontal direction so that said garment has expandability in the chest region;

closure means extending from the neck region of said garment substantially to the crotch region, said closure having at least one gap in its vertical extent, said gap occurring in the elastic waist panel region;

a front and rear flap substantially encircling said coverall in the waist region, said flaps extending upward from the trouser section of said coverall, the junction of said flaps with the trouser section being close to the junction of the horizontal elastic panel with the trouser section; and

a plurality of belt loops attached at intervals to the outer surface of said flaps.

4. A stretch coverall comprising:

a one-piece coverall garment;

at least one strip of elastic material inserted horizontally along the waist in the back of the garment, said elastic material having elasticity in the vertical and horizontal directions;

a pair of vertical panels of elatsic material extending from the shoulder region of the garment to said horizontal panel, one vertical panel on each side of said garment, said vertical panels having elasticity at least in the horizontal direction, said panels providing said garment with vertical expandability, and also horizontal expandability in the shoulder, chest and waist regions; and

a front and a rear flap substantially encircling said coverall in the waist region, said flaps extending upward from the trouser section of said coverall, the junction of said flaps with the trouser section being close to the junction of the horizontal elastic panel with the trouser section; and

a plurality of belt loops attached at intervals to the outer surface of said flaps.

References Cited in the file of this patent

UNITED STATES PATENTS

854,763	Scriven	May 28, 1907
884,815	Gould	Apr. 14, 1908
997,669	Hall	July 11, 1911
1,102,299	Scriven	July 7, 1914
1,112,720	Powell	Oct. 6, 1914
1,425,726	Walker	Aug. 15, 1922
1,929,506	McDonald	Oct. 10, 1933
2,280,479	Cohen	Apr. 21, 1942
2,664,570	Artzt	Jan. 5, 1954
2,717,437	De Mestral	Sept. 13, 1955