April 20, 1948. M. GRABOI 2,440,086

SLIDE FASTENER

Filed April 26, 1944

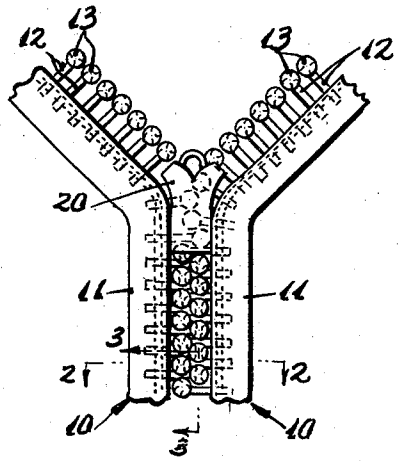

Fig. 1.

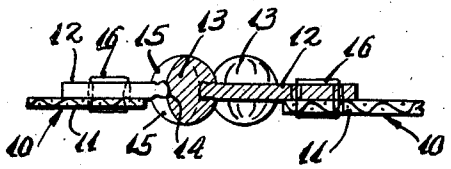

Fig. 2.

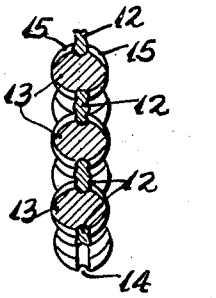

Fig. 3.

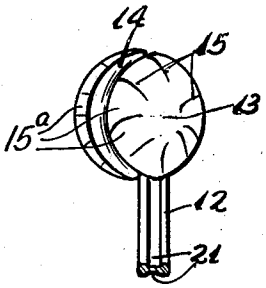

Fig. 4.

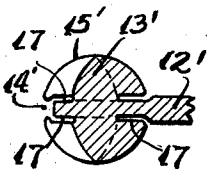

Fig. 5.

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Patented Apr. 20, 1948 2,440,086

UNITED STATES PATENT OFFICE

2,440,086

SLIDE FASTENER

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Application April 26, 1944, Serial No. 532,809

6 Claims. (Cl. 24—205)

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This invention relates to new and useful improvements in a slide fastener.

More particularly, it is proposed to construct an improved slide fastener which is characterized by an improved pair of stringers. It is contemplated to construct each stringer of a bendable strip, such as a strip of cloth, and a plurality of equally spaced flexible stems with spherical heads attached on and projecting at right angles from said strip of cloth. These flexible stems and spherical heads preferably are constructed of plastic material, though metal and other materials may be used as well.

It is proposed to construct each spherical head with a circumferential groove and to locate the projecting stem at one point on said groove.

The invention also contemplates an arrangement so that the grooves of the spherical heads receive and releasibly hold stems of adjacent spherical heads. It is proposed to so arrange these parts to securely hold the slide fastener in its closed position.

A slide is provided for engaging and disengaging the spherical heads and flexible stems of the slide fastener.

Another object of the invention is the construction of a device as mentioned which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure.

Fig. 1 is a fragmentary elevational view of a slide fastener constructed in accordance with this invention.

Fig. 2 is an enlarged horizontal sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary enlarged vertical sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a fragmentary perspective view of one of the flexible stems with its spherical head.

Fig. 5 is a fragmentary sectional view of a spherical head with its flexible stem constructed in accordance with a modified form of this invention.

The slide fastener, in accordance with the form of the invention disclosed in Figs. 1 through 4 inclusive, includes a pair of cooperative stringers 10. Each stringer 10 includes a bendable strip 11, preferably of cloth, and a plurality of equally

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spaced flexible stems 12 attached to and projecting at right angles from the strip 10. A spherical head 13 is provided for each stem 12 and has a circumferential groove 14 and is rigidly connected at one point upon the end of the stem 12.

Each spherical head 13 and flexible stem 12 preferably is constructed of plastic material, metal or other strong materials having some flexibility. A plurality of radiating slits 15 are formed upon the spherical head 13 and extend inwards from the sides of the circumferential groove 14. These slits 15 divide off portions 15a (see Fig. 4) of the spherical heads between the slits, which portions are capable of individually flexing outwards so very slightly so as to receive, catch and hold, and release, when necessary the adjacent stems 12 of adjacent spherical heads. The stems 12 are spaced from each other a distance which permits mating of adjacent stringers 10, as illustrated in Fig. 1. The stems 12 are attached to the bendable strips 10 by stitches 16, or other ways.

In Fig. 5 a modified construction of spherical head 13' and stem 12' is disclosed. This spherical head 13' is provided with a circumferential groove 14' which is squarelike in transverse section and which has its sides formed with under cuts 17. The slits 15' extend inwards to these under cuts 17. This arrangement gives more residiency to those portions of the spherical head 13' between the slits 15'. In other respects this form of the invention is identical to the previous form and like parts are identified by like reference numerals.

Each stem 12 has its faces formed with longitudinal grooves 21 complementary to the sides of the groove 14 so that the material of the side walls of the groove 14 may catch and hold the stems.

A slide 20 is used in conjunction with the pair of stringers 10 as is usual in a slide fastener. When the slide 20 is moved up it draws together and inter-engages the adjacent stringers 10. When it is moved down it separates them.

The inter-engaged position of the stringers 10 is one in which each pair of adjacent heads 13 of one of the stringers 10 stagger, that is, are located to the sides of a head of the other stringer 10. The staggered heads 13 receive the stem 12, and the stem 12 engages into and is caught and held in the groove 14.

When the slide fastener is closed, the slide 20 forces the stems 12 into the grooves 14 so that portions of the grooves 14 between the slits 15 are wedged open and then engage the groove

21 of the stems 12. This inter-engagement assists in holding the slide fastener closed.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. A slide fastener, comprising a pair of cooperative stringers, each consisting of a bendable strip, a plurality of equally spaced flexible stems attached to and projecting at right angles from said strip, and a spherical head divided by a plurality of radiating slits into several portions on each stem and having a circumferential groove connected at one point of said groove with an extremity of said stem.

2. A slide fastener, comprising a pair of cooperative stringers, each consisting of a bendable strip, a plurality of equally spaced flexible stems attached to and projecting at right angles from said strip, and a spherical head divided by a plurality of radiating slits into several portions on each stem and having a circumferential groove connected at one point of said groove with the extremity of said stem, said spherical head and stems being of material which is a plastic, and integral with each other.

3. A slide fastener, comprising a pair of cooperative stringers, each consisting of a bendable strip, a plurality of equally spaced flexible stems attached to and projecting at right angles from said strip, and a spherical head on each stem and having a circumferential groove connected at one point of said groove with the extremity of said stem, and said head having a plurality of slits extending radially of said circumferential groove to divide off resilient jaw-like portions.

4. A slide fastener, comprising a pair of cooperative stringers, each consisting of a bendable strip, a plurality of equally spaced flexible stems attached to and projecting at right angles from said strip, and a spherical head on each stem and having a circumferential groove connected at one point of said groove with the extremity of said stem, and said head having a plurality of slits extending radially of said circumferential groove to divide off resilient jaw-like portions, and said stems having grooves complementary to said jaw-like portions so that these parts may be inter-engaged when the slide fastener is closed.

5. A slide fastener, comprising a pair of cooperative stringers, each consisting of a bendable strip, a plurality of equally spaced flexible stems attached to and projecting at right angles from said strip, and a spherical head on each stem and having a circumferential groove connected at one point of said groove with the extremity of said stem, and said head having a plurality of slits extending radially of said circumferential groove to divide off resilient jaw-like portions, and said stems having grooves complementary to said jaw-like portions so that these parts may be inter-engaged when the slide fastener is closed, and said circumferential groove having under cuts to give more resiliency to the parts between said slits.

6. A slide fastener consisting of two flexible strips, each strip being provided with parallel stems projecting from one edge of the strip and each stem having a spherical head on its outer end formed with a circumferential groove having undercut side walls and a stem end which extends into said groove, the stem ends of one flexible strip being received by the grooves of the spherical heads of the stems of the other flexible strip, said stem ends of one flexible strip being adapted to be wedged between the undercut side walls of the grooved heads of the opposing flexible strip, and a slide mounted to move on the stems of both flexible strips to cause the heads of the stems of one flexible strip to interlock with the heads of the stems of the other flexible strip, and to cause said stem ends to enter the grooves of the opposite heads.

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