

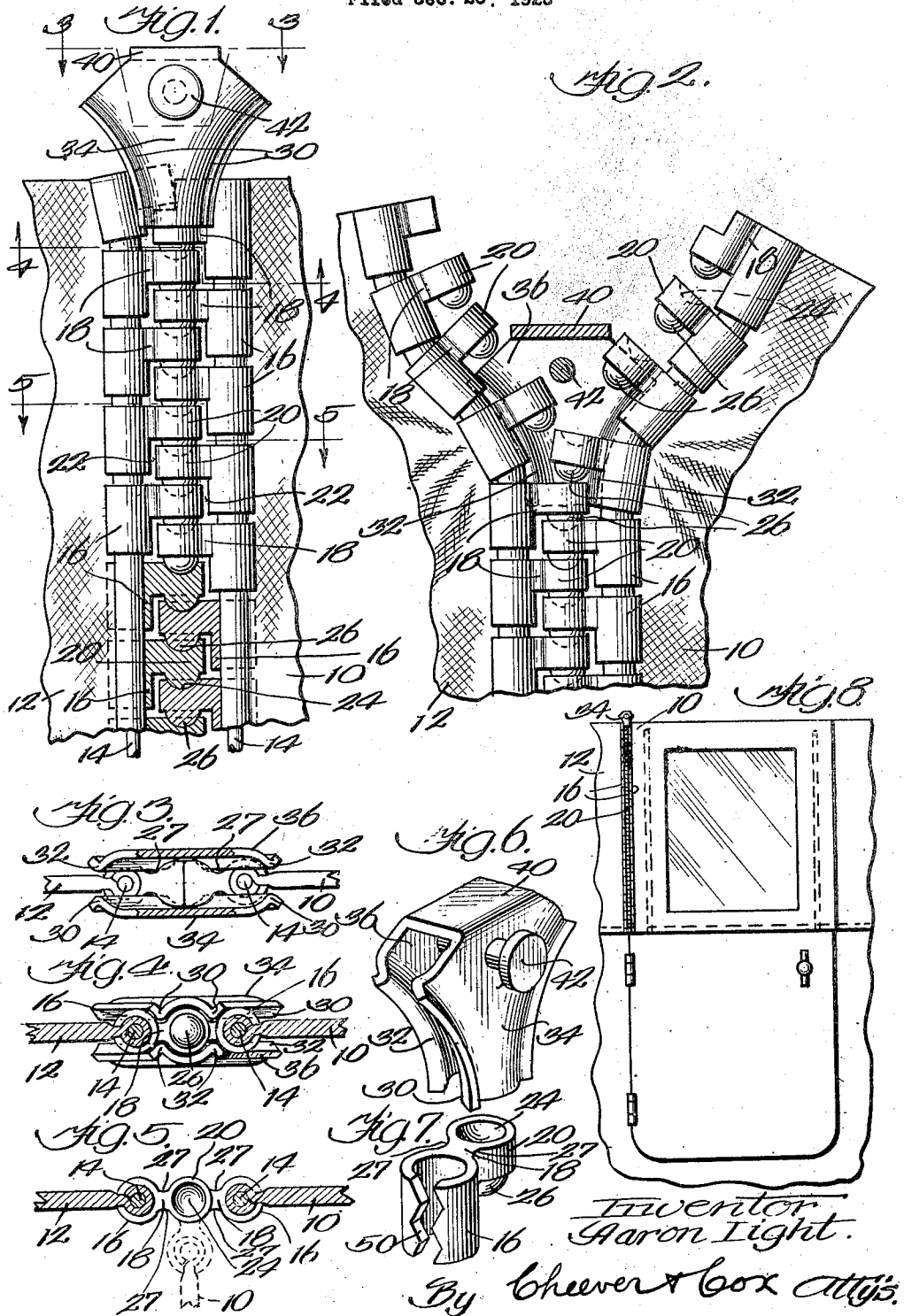
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SEPARABLE FASTENER

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SEPARABLE FASTENER.

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This invention relates to fastening devices of the general nature of automatic lacing devices of the general type now on the market applying to overshoes, etc., under the trade name of "Zippers". It is, however, applicable to all sorts of articles and conditions such, for instance, as a hinge for a removable part of an automobile door, as shown in Figure 8 of the drawings.

10 The object of the invention is to provide a device of this class which is much more flexible about the longitudinal center of the device, thereby making it readily adaptable for hinge purposes and in which the triangular locking slide common to all devices of this class is much smaller than in structures of the prior art, thus improving the appearance of garments to which the device is applied.

15 The invention consists in mechanism capable of attaining the foregoing and other objects; which will be hereinafter more fully set forth in the specification and claims.

Referring to the drawings in which like numerals represent the same parts throughout the several views:

Figure 1 is a side view of a structure illustrating this invention in its preferred form, the parts being in fastened or closed position.

Figure 2 is a changed position view of the parts of Figure 1 showing the method of opening the device.

Figures 3, 4 and 5 are detailed plan views taken on the correspondingly determined irregular lines of Figure 1.

Figure 6 is a perspective view of the fastener or lock removed from the rest of the device.

Figure 7 is a perspective view of one element of the fastening device removed from all other parts.

The mechanism of this invention is so applied to temporarily secure together or close two adjacent abutting portions of cloth 10 and 12, each carrying attached to its edge a flexible wire or cord 14 secured in place by any suitable means. In the particular case here illustrated, the cloth material is wrapped around the flexible members 14, as shown in Figures 3, 4 and 5.

Embracing each flexible member 14 and the cloth material thereon, is a multiplicity of split hubs 16, spaced apart as shown in Figures 1 and 2. Extending from each hub 16 at right angles thereto is a short bracket

arm 18 of substantially less width than the outside diameter of the adjacent hub 16 and on the end of each such bracket arm 18 is a cylindrical block 20 of greater external diameter than the thickness of the arm 18 which carries it. The hub 16 and the block 20 may be, as shown, but are not necessarily, of substantially equal external diameters. Each block 20 measured along its axis is approximately one-half—preferably slightly less than one-half—of the length of the hub 16 which carries it, this so that when the hubs 16 on opposite flexible members 14 are staggered, as shown in Figures 1 and 2, the blocks 20 carried by the respective hubs will interfit with each other as shown in Figure 1 and the lower half of Figure 2 in the rectangular spaces 22 (Fig. 1). This structure has the advantage of rendering the device very flexible, an important point in shoe, glove and similar uses. These cylindrical blocks 20 enter the spaces 22 to such an extent that in the finished, locked structure, all of the blocks 20 are in a common central axis midway between flexible members 14. Each block 20 is hollowed out on one of its non-cylindrical surfaces, in the particular case here illustrated the top one, in a semi-spherical cavity 24. Similarly, each block 20 carries on its opposite non-cylindrical surface, specifically as shown the bottom one, a semi-spherical ball 26. The parts are all so proportioned that when the device is in closed or locked position, as shown in Figure 1, each semi-spherical ball 26 enters and is journaled in a cavity 24 on an adjacent block. Obviously, as shown in the drawings, the ball carried by the block 20 supported from one flexible member 14 enters the cavity 24 on an adjacent block 20 sustained by the opposite flexible member 14.

The limited thickness of the arms 18 between the vertical surfaces of the members 16 and 20 produces parallel recesses or track surfaces 27 entered by V-shaped, curved wedges 30 and 32 on the respective front and rear plates 34 and 36 of the triangular locking slide 40, shown in perspective in Figure 6, provided with a handle 42 for ready manipulation along flexible members 14. The V-shaped curved wedges or cams 30 and 32 are so shaped that as the lock 40 moves from the position of Figure 1 to that of Figure 2, it moves successive oppositely disposed pairs of interfitting mem-

bers 16—20 apart as clearly shown in Figure 2, thus unlocking the fastening, and that, moved in a reversed direction, it brings successive pairs of these members together, causing the automatic insertion of successive semi-spherical ball members 26 in their respective recesses 24.

Particular attention is called to the fact that this lock 40 does not entirely embrace and operate upon the hub 16 immediately adjacent to the cloth to which it is attached, as in prior devices, but on the other hand, extends only into the trackways 26 between the hub 16 and blocks 20, thus reducing by more than one half the width of the lock device 40, thus materially improving the appearance of any shoes or locking device equipped with the mechanism of this invention. The fact that the lock 40 tracks only on the metal of the ball and socket mechanism also does away with the wear on the cloth parts to be connected.

Particular attention is further called to the fact that because the pivoting device: semi-spherical balls 26, and the recesses 24 in which they rock are, in fact, semi-spherical bearings, much greater flexibility is attained in the closed device about an axis extending through the successive balls 26. This flexibility about this axis is further assured by the fact that there is ample clearance between each two blocks 20 on a given flexible member 14 for the interfitting blocks carried by the opposite flexible member 14 to rock about said axis through the centers of the respective semi-spherical balls 26. In actual practice, the part 10 rocks through 90° in going from full line to dotted line position of Figure 5. This is of particular importance in hanging curtains and in door equipment suggested in Figure 8. In the structure of this invention, there is no danger of a given block 20 wedging against the corresponding blocks with which it interfits and thus accidentally forcing the semi-spherical ball bearings of the respective interfitting blocks apart and thus loosening the fastening device.

The structure of this invention makes a much more closely knit, finished, closed structure than the devices of the prior art because of the manner in which each block 20 closely approaches the opposite hub 16 of the finished closed structure. This is important in excluding moisture and the like and also adds to the attractive appearance of the device. The members 20—16 are preferably made of compressible material and each hub 16 is split along the irregular line 50 designed to allow the hub to be compressed by proper mechanism upon an adjacent cloth wrapped flexible member 14 at the proper point to construct a properly operated device, as shown and described.

Having thus described my invention,

what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising in combination with a pair of flexible elements to be detachably connected together, a plurality of members secured to each flexible element, each of said members including a hub portion, an arm extending from said hub portion, and a block carried by said arm in spaced relation to said hub portion, the block of each of said members having a recess adapted to receive a portion of the block of the other member, the arms of said members being of less thickness than the hubs and the blocks of said members whereby a track surface is provided on each member by the arm thereof between the hub and block portions of the member, and a lock member tracking on said surfaces and held against movement off of said surfaces in the directions of said hub and block portions by said hub and block portions respectively.

2. In mechanism of the class described, a connecting device made up of a multiplicity of connecting members, each comprising a hub member and an arm less than half the hub's length carrying a block which, measured lengthwise of the hub and arm, is of the same length as said arm, said block being provided on one side lengthwise of the hub with a protuberance and on its opposite side with a recess.

3. In mechanism of the class described, a connecting device made up of a multiplicity of connecting members, each comprising a hub member, an arm of less than one-half the length of said hub member projecting from said hub member, and a block carried by said arm, said block measured lengthwise of the hub member being of less than one-half the length of the hub member and being provided with a recess adapted to receive a protuberance on the block of a companion member.

4. In mechanism of the class described, a connecting device made up of a multiplicity of connecting members, each comprising a hub member, an arm projecting from said hub member, and a block carried by said arm, said block measured lengthwise of the hub member being of less than one-half the length of the hub member and being spaced therefrom by said arm, said arm being of less thickness than the hub member and block whereby a track groove is formed between said hub and said block to slidably receive a lock member, and said block being provided with a recess adapted to receive a protuberance on the block of a companion member.

In witness whereof, I have hereunto subscribed my name.

AARON LIGHT.