Oct. 28, 1924. 1,513,356

B. S. WATSON

FASTENING DEVICE

Original Filed Jan. 23, 1922 3 Sheets-Sheet 1

Fig. 1.

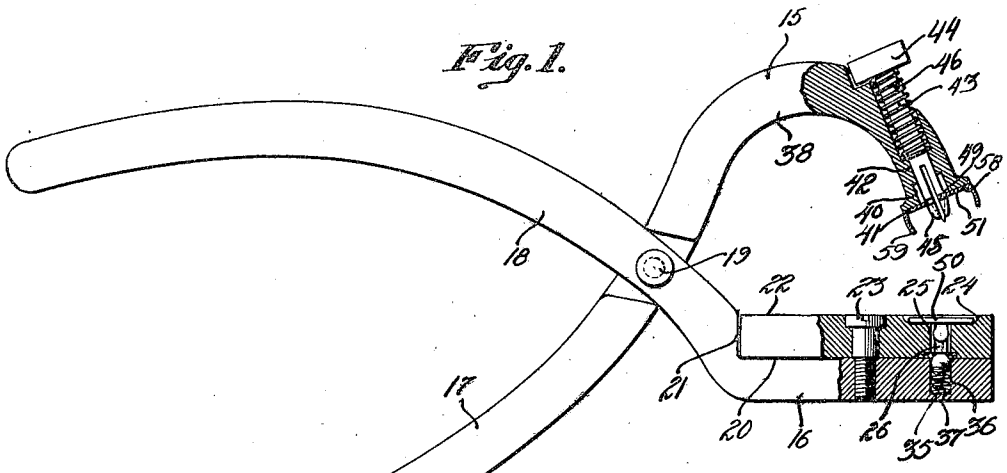
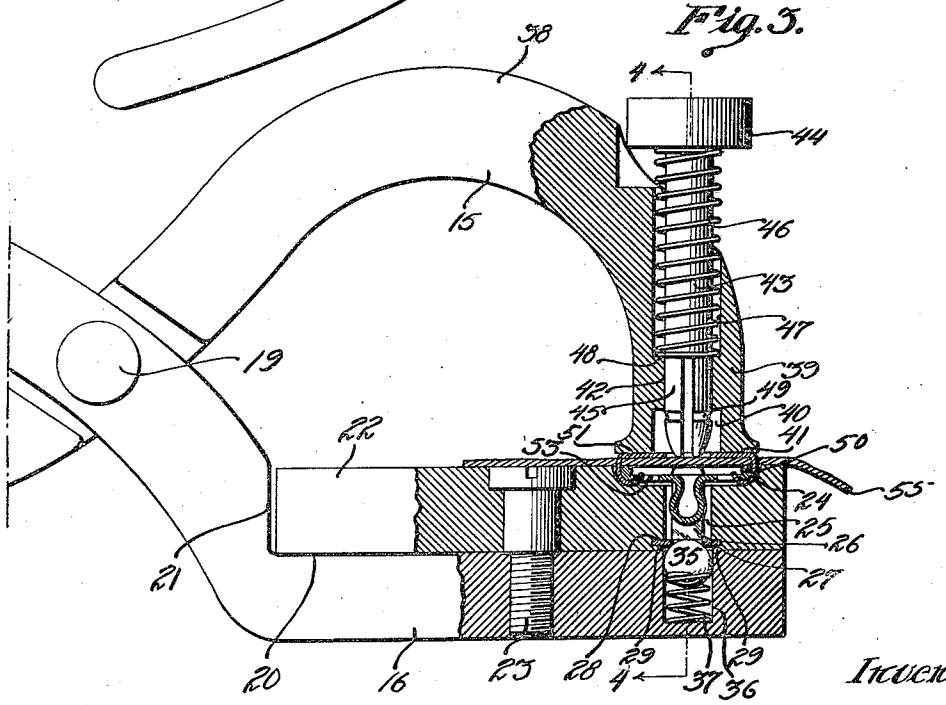


Fig. 3.



Witnesses

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FASTENING DEVICE

Original Filed Jan. 23, 1922 3 Sheets-Sheet 2

Fig. 2.

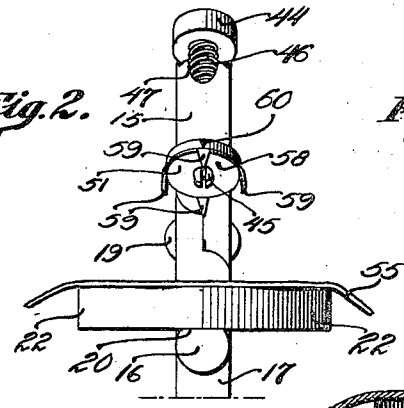


Fig. 4.

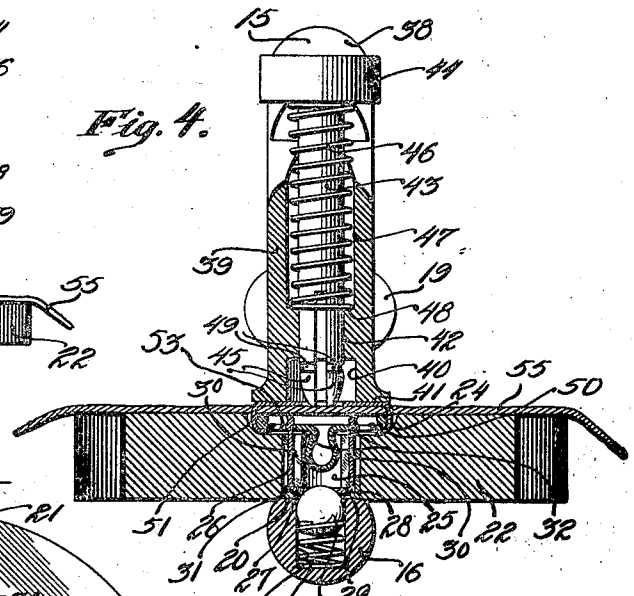


Fig. 5.

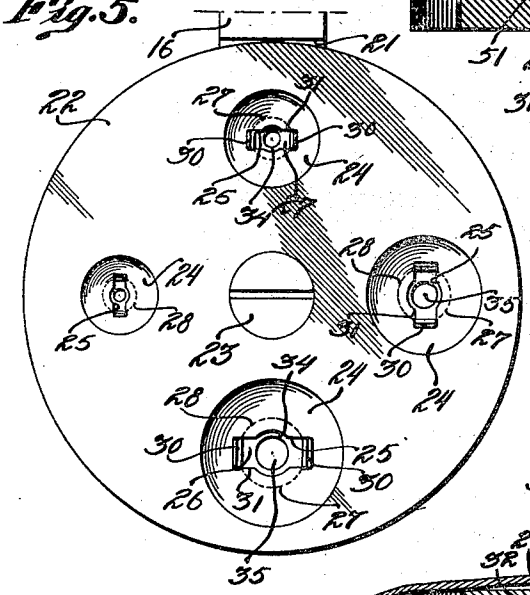
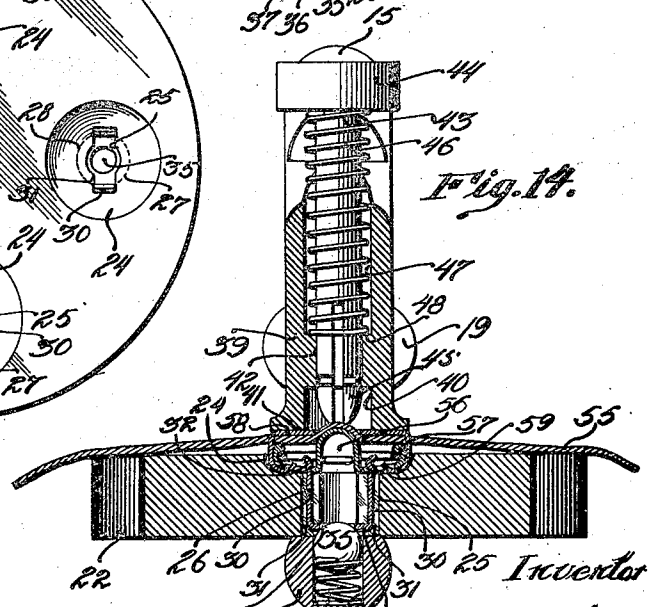


Fig. 14.



Witnesses

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FASTENING DEVICE

Original Filed Jan. 23, 1922 3 Sheets-Sheet 3

Fig. 6.

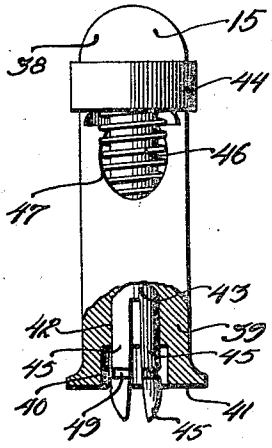


Fig. 8.

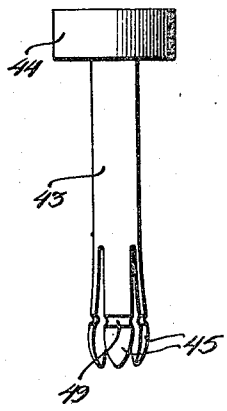


Fig. 12.

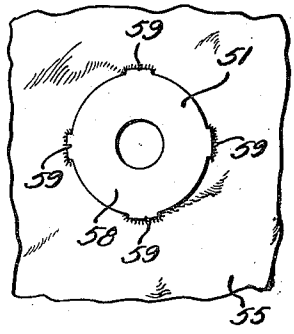


Fig. 7.

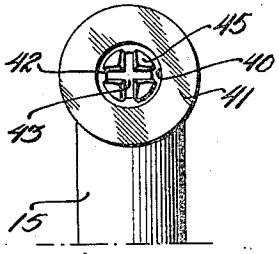


Fig. 13.

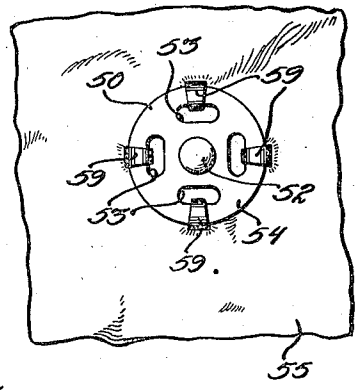


Fig. 9.

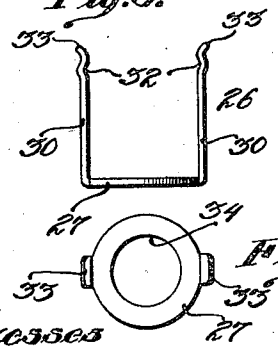


Fig. 10.

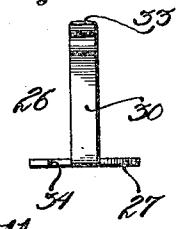


Fig. 11.

Witnesses
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Patented Oct. 28, 1924. 1,513,356

UNITED STATES PATENT OFFICE.

BYRON SAMUEL WATSON, OF CAMDEN, NEW JERSEY, ASSIGNOR OF ONE-HALF TO DAVID A. PHREANER, OF AUDUBON, NEW JERSEY.

FASTENING DEVICE.

Application filed January 23, 1922, Serial No. 531,022. Renewed August 13, 1924.

To all whom it many concern:

Be it known that I, BYRON SAMUEL WATSON, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Fastening Devices, of which the following is a specification.

One object of my invention is to provide improved means which can be conveniently and easily used to apply parts of snap fasteners or similar articles to cloth, garments or the like.

Another object is to so make my improved device that it can be readily operated by hand and will be positive and accurate in operation so as to prevent waste of material.

These objects, and other advantageous ends which will be described hereinafter, I attain in the following manner, reference being had to the accompanying drawings in which—

Figure 1 is a side elevation partly in section showing a device made in accordance with my invention,

Figure 2 is a fragmentary front end elevation of the device shown in Figure 1,

Figure 3 is an enlarged fragmentary elevation partly in central section showing said device in the act of securing a portion of a snap fastener to a piece of material, such for example as a cloth or part of a garment,

Figure 4 is a section taken on the line 4—4 of Figure 3,

Figure 5 is a top plan view showing the die table,

Figure 6 is an enlarged fragmentary view partly in section illustrating one of the advantages of the device with its split retaining plunger partly compressed by the action of a spring which I preferably employ,

Figure 7 is an inverted plan view of Figure 6,

Figure 8 is a detail view of said split retaining plunger illustrating the split portion in its full spread position,

Figure 9 is a face view of a centering portion of my invention,

Figure 10 is a side view of Figure 9,

Figure 11 is a top plan view of Figure 9,

Figure 12 is a view showing one side of a fastener as it appears when secured by the aid of my improved device,

Figure 13 is a view showing the opposite side of a fastener as applied by the device of my invention, and

Figure 14 is a view of the same general characteristics as shown in Figure 4 illustrating the attachment of a receptacle part of a snap fastener for co-action with the projecting part of the fastener for example as shown in Figure 4.

Referring to the drawings, my improved device in the form illustrated includes two jaws 15 and 16 which respectively have handles 17 and 18 which are pivoted together at 19. The upper face 20 of the jaw 16 is made flat and horizontal in the position shown in Figure 1; said jaw being recessed at 21 to provide a shoulder to allow the setting of a die table 22 which is rotatably mounted on a shouldered screw 23 which is screwed downward into the jaw 16 so as to allow the die table to be rotated for use in the application of fasteners of different sizes as will be obvious from the following description.

The upper surface of the die table 22 at positions spaced apart with respect to the axis of the table has a number of die recesses 24; these die recesses being of different diameters as shown in Figure 5. With the exception of the difference in diameters and difference in sizes of the associated parts of these die recesses they are all similarly constructed and have similar features and in the following description it is therefore necessary but to describe one of these recesses and its associated parts and it will be understood that all of the recesses are similarly arranged and have similar acting parts adjacent thereto. As shown in Figures 1, 2 and 4, the recess 24 which will be considered the active recess has a hole 25 leading centrally downward from the bottom thereof.

A centering member 26, shown in detail in Figures 9, 10 and 11, has a ring portion 27 which is situated in a cavity 28 which provides an upper shoulder at opposite sides of the hole 25 and a portion 29 of the metal of the die table 22 at each side of the hole 25 is bent upward into embracing position so as to firmly embed the centering member 26 within the cavity 28. Two resilient tines or tongues 30 lead upward from the ring portion 27 within upright channels 31 which are cut in the die table as shown in Figure 4. These channels 31 are diametrically opposed to each other as are also the tongues 30 of

the centering member 26. The upper end portions of the tongues 30 lead into the space provided by the recess 24 and these upper portions of the tongues are provided with transversely extending grooves 32 for a purpose hereinafter described; the extreme ends 33 of said tongues flaring slightly as shown in Figure 9.

The central hole 34 of the ring portion 27 of the centering member 26 is adapted to form a centering seat for a ball 35 which is mounted in a cavity 36 in the jaw 16; said ball being pressed upward by a spring 37 as clearly shown in Figures 1, 3 and 4 so that the ball tends to prevent accidental rotation of the die table on its pivot 23.

The jaw 15 includes an upwardly bowed portion 38 which terminates in a downwardly extending finger 39. The finger 39 has a hole 40 extending upward from its flat end surface 41 and the axis of this hole 40, when the jaw is moved into the position shown in Figure 3, is in alignment with the axis of the die recess 24 which is immediately below it. The hole 40 has portions of different diameters. For example, this hole has a portion 42 of comparatively small diameter in which is slidable a retaining plunger 43; said retaining plunger having a head 44 at one end and at the opposite end being split upward from its extreme lower end to provide tines 45 which tend to normally spread, as shown in Figure 8 to a diameter greater than the diameter of the portion 42 of the hole 40. However, when the plunger 43 is moved upward, as shown in Figure 3, the tines will be moved toward each other and the friction exerted will tend to hold the plunger in fixed relation relatively to the finger 39.

A coiled spring 46 surrounds the plunger and is partly located in a portion 47 of the hole 40 which is of greater diameter than the portion 42 of said hole 40 so that the lower end of the spring 46 rests against a shoulder 48 while the upper end of the spring 46 engages the under surface of the head 44. The lower ends of the tines 45 taper downward and inward so that when the tines are compressed they will provide a comparatively tapered structure such as shown in Figure 3. At a position slightly upward from the extreme lower ends of the tines, the latter are provided with grooved portions 49 which extend entirely around the tines and are only interrupted by the split portions between the tines.

My improved device is particularly adapted for attaching snap fastener portions to cloth, such as the cloth of garments, and as shown in Figures 1, 3, 4, 12 and 13, the snap fastener includes a button part 50 and a back 51. The button part 50 has a central protrusion 52 and four holes or slots 53; the slots 53 extending through a plate or disk portion 54; it being noted that when the part 50 is attached to a cloth or a garment, such for example as the piece of cloth illustrated at 55, that the protrusion 52 can engage within a receptacle of another part of the snap fastener, such for example as the receptacle 56 of the part 57 illustrated in Figure 14 so as to hold the two parts together in the well known manner of snap fasteners or snap buttons.

The back 51 of the snap fastener includes a plate ring portion 58 which has piercing points 59 which are normally bent in the position shown in Figure 1; there being four of these piercing points when the back is to be used in conjunction with a button part similar to that illustrated at 50; the piercing points being positioned annularly at equidistant positions and are arranged at an angle to the plane of the ring portion 58.

In the use of the device, one of the backs 51 is held by the retaining plunger 43 in the position shown in Figure 1 and to attach the same it is merely necessary to depress the head 44 of the plunger so as to extend the split end portion of the plunger to allow the plate ring portion 58 to be slipped over the split end and find a seat in the grooved portion 49 of the plunger. A release of the head 44 of the plunger will allow the spring 46 to slightly withdraw the plunger so as to move the plate ring portion 58 of the back 51 flat against the end surface 41 of the finger 39 of the jaw 15. The outer surface of the finger 39 is preferably provided with a registering marking, such for example as the mark 60 shown in Figure 2, so that one of the points 59 of the back can be moved into alignment with the mark 60; said mark being so arranged as to be directly over a center line of one of the slots 53 when the jaw 15 is moved toward the die table 22 by a compressing action of the handles 17 and 18.

The cup or die recess 24 has its surface curving downward and inward so that after the piercing points 59 are moved into engagement therewith they will be compelled to follow the path prescribed by the grooved deflecting surface of the die recess.

Considering that it is desired to attach one of the parts 50 to the cloth 55, said part 50 is placed with the protrusion 52 extending down into the hole 25 as shown in Figure 1 with the tongues 30 extending through two diametrically opposed slots 53 with the peripheral edge of the plate portion 54 within the grooves 32. The diameter of the plate portion 54 of the part 50 is slightly less than the diameter of the die recess 24 at its upper part so that when the jaw 15 is moved toward the die table 22, the piercing points 59 will pierce the cloth 55 and will extend into the recess 24 and

will be deflected so as to pass around the edge of the disk portion 54 and upward slightly into the respective slots 53; thus turning the piercing points to produce hooks which embrace the disk portion between the walls of the slots 53 and the peripheral edge of the disk portion 54.

In the actual and practical use of the device it has been found that this action can be quickly accomplished so that the cloth will be firmly clamped between the back 51 and the part 50 and the ends of the piercing points 59 will be turned inward so as not to catch or injure the hands or material with which the fastener comes in contact.

The receptacle portion of the fastener can be attached in the same manner as the part 50 as shown in Figure 14 and in attaching the receptacle portion a back is used similar to the back 51 above described; the receptacle portion having the slots which are substantially similar to the slots 53 above described in connection with the part 50.

By rotating the die table, recesses of various diameters can be brought into operative position and in each instance the ball 35 will serve to properly center the die recess when it is moved into a position directly over the ball.

While I have described my invention as taking a particular form, it will be understood that the various parts of my invention may be changed without departing from the spirit thereof, and hence I do not limit myself to the precise construction set forth, but consider that I am at liberty to make such changes and alterations as fairly come within the scope of the appended claims.

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

1. A device of the character described including a die provided with a recess for receiving a part of a fastener; means mounted in said recess for centering said part of the fastener within the recess; and means for holding another part of the fastener provided with piercing points, said holding means being movable relatively to the portion of said device including said die to cause the piercing points to engage the surface of said die, said holding means being operable to automatically release the supported part of the fastener, and said die surface being so shaped as to deflect the piercing points and turn them into said first part of the fastener; substantially as described.

2. A device including a die provided with a recess for receiving a part of a fastener; means with elements engaging in said part for centering said part of the fastener within said recess; and means for holding another part of said fastener provided with piercing points thereon, said latter means being movable relatively to the part including said die whereby the piercing points are moved into engagement with the surface of said die, said surface being so shaped as to deflect said piercing points into embracing position with and hidden in said first part of the fastener; substantially as described.

3. A device including a die provided with a recess for receiving a part of a fastener having openings for receiving the piercing points of the other part of the fastener; means for centering said first part of the fastener within said recess; means for holding the other part of said fastener provided with piercing points, said latter means being movable relatively to the part including said die whereby the piercing points are moved into engagement with the surface of said die, said surface being so shaped as to deflect said piercing points into embracing position with said first part of the fastener, and said centering means having tongues adapted to extend through the openings in the first part of said fastener; substantially as described.

4. A device including a die provided with a recess for receiving a part of a fastener having openings for receiving the piercing points of the other part of the fastener; means for centering said first part of the fastener within said recess; means for holding the other part of said fastener provided with piercing points, said latter means being movable relatively to the part including said die whereby the piercing points are moved into engagement with the surface of said die, said surface being so shaped as to deflect said piercing points into embracing position with said first part of the fastener, said centering means having tongues adapted to extend through the openings in the first part of said fastener, and said tongues including grooves for registering engagement with walls of said openings; substantially as described.

5. A device of the character described including means providing a die having a recess; and a ring member with resilient fastener centering tongues extending into said recess, said first means including channels in which portions of said tongues are located; substantially as described.

6. A device of the character described including a die provided with a recess for receiving a part of a fastener; means for centering said part of the fastener within said recess; means movably mounted with respect to said die; a plunger slidably mounted in said movable means and provided with resilient elements for engaging within a second part of a fastener having piercing points and to hold the same against said movable means during a setting operation; and resilient means for automatically retracting said plunger to hold the second fastener part against said movable means, said

die being shaped to deflect said piercing points to embrace the first part of the fastener and said plunger being arranged to automatically release said second part during this operation.

7. A device of the character described including a supporting structure; fastener centering means, said means including a portion having tongues projecting therefrom, said portion being secured to said supporting structure; and means engaging said fastener centering means to hold the supporting structure in position on said device; substantially as described.

8. A device of the character described including a supporting structure; fastener centering means, said means including a portion having tongues projecting therefrom, said portion being secured to said supporting structure and having a hole therein; and means to which said supporting structure is movably connected, said latter means including a spring-pressed member movable into said hole to prevent relative movement of said supporting structure; substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BYRON SAMUEL WATSON.

Witnesses:

ELIZABETH GARBE,

CHAS. E. POTTS.