

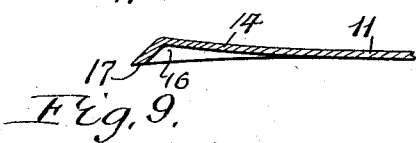
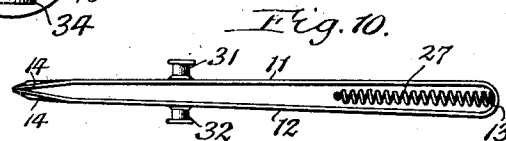
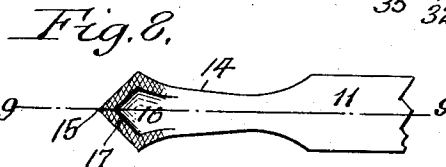
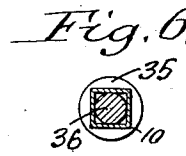
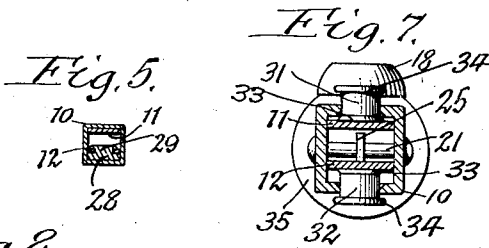
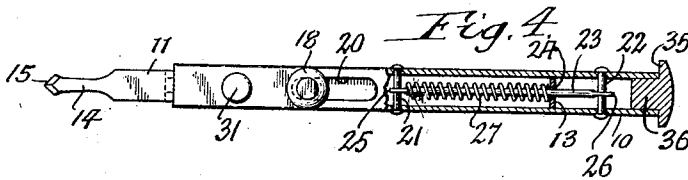
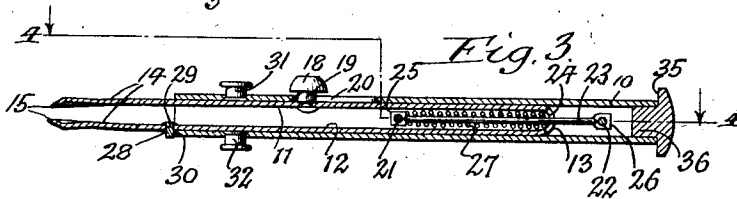
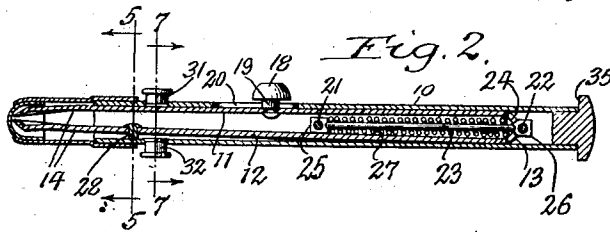
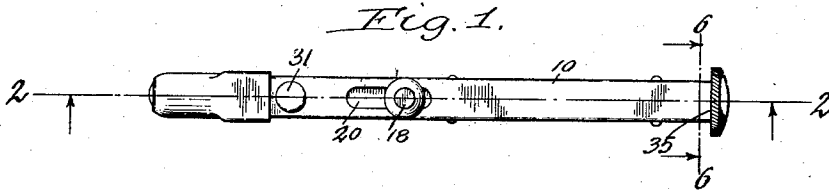
Dec. 23, 1930.

C. W. STICKEL ET AL

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TWEEZERS

Original Filed Dec. 6, 1928



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## UNITED STATES PATENT OFFICE

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## TWEEZERS

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This invention relates to tweezers and more particularly to tweezers which are designed for pulling out hairs from the face or elsewhere on the human body.

For the purpose of improving the facial appearance, superfluous hairs in the eyebrows are now pulled out by means of ordinary tweezers; which operation is unsatisfactory due to the slowness and uncertainty in the use of this instrument and also the pain experienced by the subject under treatment which often is only endurable for a comparatively short time and therefore necessitates repeated sittings before the work is completed.

One of the objects of this invention is to provide a tweezers which can be set or cocked preparatory to being used and which will operate to securely grasp the hairs and pull the same automatically with the roots out of the eyebrows or elsewhere so rapidly that the subject experiences no appreciable pain.

A further object of this invention is the production of such an instrument which is simple in construction and reliable in operation and which can be manipulated easily and conveniently by the use of only one hand, thereby leaving the other hand free to be used for other purposes.

In the accompanying drawings:—

Figure 1 is a top plan view of the improved tweezers showing the same completely enclosed in its casing for convenience in carrying the same in the pocket or for storage or transportation.

Figure 2 is a longitudinal section of the same taken on line 2—2 Fig. 1.

Figure 3 is a view similar to Fig. 2 but showing the cap for the casing removed and the hair gripping jaws projected ready for use.

Figure 4 is a longitudinal section taken on line 4—4 Fig. 3.

Figures 5 and 6 are cross sections taken on lines 5—5 and 6—6 Fig. 2, respectively.

Figure 7 is a cross section, on an enlarged scale, taken on line 7—7 Fig. 2.

Figure 8 is an inside view, on an enlarged scale, of one of the tweezer jaws.

Figure 9 is a longitudinal section taken on line 9—9 Fig. 8.

Figure 10 is a side view of the gripper arms and associated parts preparatory to pulling a hair or the like.

In the following description similar characters of reference indicate like parts in the several figures of the drawings.

The numeral 10 represents the holder, carrier or support of the tweezers and the enclosure for the actuating mechanism therefor, which holder in the preferred form is constructed of a sheet metal tube which is square in cross section, so that it serves as a convenient handle for manipulating the instrument which is held by one hand while the same is being used.

Within the tubular handle or holder are arranged one above the other two gripper bars or arms 11 and 12 which are preferably constructed from a single strip of spring metal such as steel, which is doubled or folded upon itself so that the two supporting arms are connected at their rear ends by a turn 13. The front ends of these gripper arms are constructed to form two gripper jaws 14, the inner sides of which oppose each other and are adapted to grasp the hairs which are to be removed. Each of these jaws is preferably made somewhat narrower than the width of the respective gripper arm, and the front end 15 thereof tapers forwardly and the inner side thereof is provided with a cavity 16 which is preferably formed by dishing or stamping this part of the jaw outwardly thereby producing a salient gripping edge 17 around the front and side portions of the cavity 16.

Upon pressing the opposing concave sides of the dished portion of these jaws toward each other the raised or elevated marginal

front parts thereof will grip the hair which is to be removed and retain a reliable hold thereon upon moving the instrument away from the surface from which the root of the hair is to be extracted.

In the absence of such raised marginal edge portions on the gripping jaws, engagement of the jaws with each other upon pressing them together would be liable to occur at points rearwardly from the front ends thereof and thereby fail to grasp the hair which is to be removed. By thus concentrating the gripping area of the jaws on the front parts thereof, it is impossible for the hair to be grasped by any parts of the jaws in rear of the front ends and thereby insuring a proper grasp upon the hair by the front ends of the jaws at all times.

The resilience of the spring arms operates normally to move the same as well as their jaws away from each other but the movement of the arms and the jaws toward one another is effected manually by the pressure of the fingers of one hand which holds the instrument.

The gripper arms and their jaws are mounted within the tubular holder so as to be capable of longitudinal movement so that the same may be projected forwardly into an operative position in which the jaws are engaged with the hair to be pulled, and the same may be retracted into a rearward position for the purpose of pulling the hair after the jaws had been pressed against opposite sides of the same. The forward movement of the gripper arms and the parts associated therewith is effected by a button or finger piece 18 arranged above the upper side of the tubular holder and provided with a reduced neck 19 which passes through a longitudinal slot 20 in the upper side of the holder and is secured at its lower end by riveting or otherwise to the upper gripper arm 11, as shown in Figs. 1-4.

The backward or retracting movement of the gripper arms relatively to the holder is effected by spring means which are put under tension when the gripper arms are moved forward, so that upon releasing the latter the same will be moved into their rearmost position. Although various forms of spring means may be employed those shown in the drawings are preferred and comprise a front abutment pin 21 passing transversely through the space between the gripper arms and secured at its opposite ends to the side walls of the tubular holder, a rear abutment pin 22 passing transversely through the space within the tubular holder in rear of the turn which connects the spring arms, a longitudinal guide rod 23 passing through an opening 24 in the connecting turn of the gripper arms and having an eye 25 at its front end which receives the front abutment pin 21 and an eye 26 at its rear end which receives

the rear abutment pin 22, and a helical spring 27 surrounding the guide rod 23 and bearing at its front end against the connection between the front end of this guide rod and the front abutment 21 while its rear end bears against the inner or front side of the connecting turn 13 of the gripper arms.

By these means the gripper arms and associated parts are yieldingly held in their retracted, innermost or rearward position within the tubular holder, and the return spring 27 is supported in the position in which it will not interfere with the free forward and backward movement of the spring arms, nor will the spring be cramped and prevented from operating to push the gripper arms quickly into their rearward position when the same are released.

The numeral 28 represents a downwardly projecting lug, latch or catch formed on the underside of the lower gripper arm 12 adjacent to the gripper jaw thereof, and preferably formed by a piece of metal which is secured to this gripper arm by passing the reduced upper part 29 of this lug through an opening in the lower gripper arm and riveting or upsetting the inner end of this reduced part against the inner side of the respective gripper arm, as shown in Figs. 2, 3 and 5.

In the retracted position of the gripper arms in which the rear turn thereof bears against the rear abutment pin 22, as shown in Fig. 2, the catch, lug, or latch 28 engages with the inner side of the lower wall of the tubular holder, as shown in the same figure, whereby the two jaws are brought close to each other but do not actually engage with one another.

Upon moving the gripper arms forwardly by means of the setting button 18 until the neck of this button engages with the front end of the slot 20, then the catch or lug 28 will be arranged slightly in front of the shoulder 30 formed by the lower front part of the tubular holder whereby the resilience of these spring arms will cause the same to be spread apart and bring the catch lug 28 in front of the shoulder 30. Upon now releasing the forward pressure on the push button 18 the spring 27 will push the gripper arms rearwardly until the catch lug 28 engages with the shoulder 30, as shown in Fig. 3, so that the gripper arms will be held in this forwardly set or cocked position in which the two jaws thereof are separated from each other to their maximum extent, and can be easily shifted into a position so as to receive between them the hair which is to be pulled.

Closing of the two gripper jaws so that they engage with opposite sides of the hair and release of the gripper arms from the holder so as to permit the spring 27 to retract them, is preferably effected by means of a closing pin 31 guided to slide vertically in an opening in the top wall of the tubular holder

in front of the push button 18 and adapted to engage with the upper side of the upper gripper bar 11, and a lower releasing pin 32 guided for vertical movement in an opening formed in the lower wall of the tubular holder and engaging with the underside of the lower gripper bar, as best shown in Fig. 3. Each of the shifting pins 31, 32 has its inner end upset, as shown at 33, so that this upset portion forms a stop which limits the outward movement of the respective pin relatively to the tubular holder, and at its outer end each of these pins is also enlarged, as shown at 34, so that this enlargement serves as a stop for limiting the inward movement of the respective pin relative to the tubular holder.

In the use of this tweezers the tubular holder which serves as a handle, is grasped by one hand with the fingers engaging the underside of the tubular holder and the thumb engaging with the push button 18. While thus held the push button is moved forwardly by the thumb until the gripper arms have been projected sufficiently to carry the catch lug 28 in front of the lower edge of the tubular holder, and then the thumb is released from this button, whereby the two gripper jaws will be spread and the catch lug 28 will be engaged with the front end of the tubular holder so as to retain the gripper arms and their jaws in a forwardly set or cocked position, and this also increases the tension of the compression spring 27.

While the gripper arms are thus projected and held in a set position, the operator places the two jaws astride of the hair which is to be pulled and when thus placed the operator pushes and presses simultaneously downwardly upon the upper push pin 31 by means of the thumb and upwardly against the lower push pin 32 by means of the first finger. Owing to the frictional engagement of the catch lug 28 with the front edge of the tubular holder, the upward movement of the lower gripper arm 12 is resisted thereby, while the upper gripper arm 11 which is not restrained against downward movement will be freely depressed by the downward pressure of the thumb against the upper push pin 31, thereby causing the upper jaw to move toward the lower jaw and grip the hair between them. After these jaws have been thus closed into a cooperative engagement with opposite sides of the hair, the continued inward pressure of the two push pins tending to move the same toward each other will cause the upper gripper arm to be held against upward movement and the lower gripper arm to be deflected inwardly or upwardly a sufficient extent to carry the catch lug 28 above the stop shoulder 30 on the lower edge of the tubular holder. The instant this occurs the gripper arms are released from interlocking engagement with the holder whereupon the resilience of the

retracting spring 27 quickly draws the two gripper arms backwardly and causes the jaws of the same which are at this time in engagement with opposite sides of a hair to pull the latter out by the roots automatically.

By retaining the pressure of the thumb and first finger against the upper and lower push pins of the upper and lower gripper arms, the hair which has been pulled out will be retained between the jaws, but when the pressure upon these pins is released the hair gripped thereby will be permitted to fall out, leaving the tweezers in a condition for again setting the same preparatory to effecting the pulling of another hair, these operations being repeated during each hair pulling operation.

In order to prevent the hand from slipping off the rear end of the holder while pushing the gripper bars forwardly and closing the jaws upon the hair to be pulled, a forwardly facing stop shoulder 35 is provided at the rear end of the tubular holder which projects laterally therefrom and is preferably formed on a plug or head 36 which is secured in the rear end of the tubular holder either by a friction fit or by soldering, riveting or otherwise.

This shoulder 35 is engaged by the small finger of the hand while the instrument is being held in position for use, thereby enabling the operator to retain a firm hold on the instrument and apply the same quickly and easily to the hair to be pulled, and also release the gripper arms so as to perform the pulling operation on the same, thereby enabling a comparatively large number of hairs to be pulled with this instrument with ease and facility in a short time.

Owing to the rapidity with which the hairs are pulled by this instrument no appreciable pain is produced due to this operation, thereby enabling a considerable number of hairs to be pulled out at one sitting without distress or inconvenience to the subject.

In the forward and rearward positions of the gripper arms the same are spread apart in a parallel position, as shown in Figs. 2 and 3, but when these arms while in their forward position are pressed together by the pins 31, 32 for engaging a hair or the like these gripper arms converge or taper forwardly, as shown in Fig. 10, whereby the pressure of these pins exert a wedge action on the arms which operates to assist the spring 27 in shooting the arms rearwardly and extracting the root of the hair grasped by the jaws with a snap, which causes no pain or discomfort to the patient and permits of the usual number of objectionable hairs to be removed at one sitting.

It is unnecessary to provide any means for adjusting the tweezers for gripping hairs of different thickness inasmuch as the jaws separate far enough when open to receive between

them hairs of varying thickness, and the arms are not released from the holder until after the jaws have been firmly pressed against opposite sides of the hair regardless of its thickness, thereby rendering the tweezers self adjusting to hairs of any thickness and enabling thick and thin hairs to be gripped and pulled promiscuously without requiring any special adjustment of the instrument for this purpose.

When the instrument is not in use a cap 37 is slipped over the front end portion of the tubular casing so as to enclose the gripper jaws. The tubular holder and the cap 37 therefore form a housing for the main movable parts of the instrument.

As a whole, this tweezers comprises comparatively few parts all of which are of simple construction which can be manufactured at comparatively low cost. The several parts of the instrument are also so mounted that they can be easily manipulated by the use of a single hand and by arranging most of the working parts within the tubular handle, they are not liable to get out of order.

We claim as our invention:—

1. A tweezers comprising a support, a pair of jaws mounted for forward and backward movement on said support, spring means for moving said jaws backwardly, and manually releasable detent means for holding said jaws in a forward position on said support.

2. A tweezers comprising a holder, a pair of jaws slidable forwardly and backwardly on said holder, spring means for retracting said jaws, detent means for retaining said jaws in a projected position, and means operable manually for first moving said jaws one toward another and then releasing said detent means to permit retraction of said jaws in a closed position by said spring means.

3. A tweezers comprising a holder, a pair of connected arms slidable lengthwise in said holder and provided with opposed jaws movable toward and from one another, spring means for retracting said arms, means for projecting said arms, detent means for retaining said arms in a projected position, and means for moving said arms toward each other for engaging the jaws thereof and releasing said detent means.

4. A tweezers comprising a holder, a pair of connected arms slidable lengthwise of said holder and held apart resiliently and provided with cooperating jaws, spring means for retracting said arms, manually operable means for projecting said arms, detent means between one of said arms and the holder for retaining said arms in a projected position, and manually operable means for pressing said arms together and releasing said detent means.

5. A tweezers comprising a tubular holder, a pair of connected arms slidable lengthwise in said holder and held apart resiliently and

provided with cooperating jaws, spring means for retracting said arms, manually operable means for projecting said arms, a detent lug arranged on one of said arms and adapted in the projected position of the same to engage a forwardly facing shoulder on said holder, and manually operable elements mounted on said holder and engaging said arms and adapted to shift the latter for bringing the jaws of the same together and disengaging said detent lug from the shoulder of the holder.

6. A tweezers comprising a tubular holder, a pair of arms arranged side by side in said holder and consisting of a doubled strip of spring metal connected by a turn at their rear ends and provided at their front ends with cooperating jaws, spring means for retracting said arms arranged between the inner parts thereof and engaging its rear end with said turn and engaging its front end with an abutment on the casing, means for projecting said arms, detent means for retaining said arms in a projected position, and manually operable means for pressing said arms together and releasing said detent means.

7. A tweezers comprising a tubular holder, a pair of arms arranged side by side in said holder and consisting of a doubled strip of spring metal connected by a turn at their rear ends and provided at their front ends with cooperating jaws, a front abutment pin arranged on said holder and extending across the space between said arms in front of the rear turn thereof, a rear abutment pin arranged on the holder and extending across the space in rear of said turn, a guide rod passing through said turn and mounted at its front and rear ends on said front and rear abutment pins, a spring surrounding said rod and bearing at its rear end against said turn and at its front end against the connection between said rod and front abutment, manual means for projecting said arms, detent means for retaining said arms in a projected position, and manually operable means for pressing said arms together and releasing said detent means.

8. A tweezers comprising a holder, a pair of connected arms slidable lengthwise of said holder and held apart resiliently and provided with cooperating jaws, spring means for retracting said arms, manually operable means for projecting said arms, consisting of a push button arranged on one of said arms and projecting through a longitudinal slot in the holder to the exterior thereof, detent means between one of said arms and the holder for retaining said arms in a projected position, and manually operable means for pressing said arms together and releasing said detent means.

9. A tweezers comprising a tubular holder, a pair of connected arms slidable lengthwise

in said holder and held apart resiliently and provided with cooperating jaws, spring means for retracting said arms, manually operable means for projecting said arms, a detent lug arranged on one of said arms and adapted in the projected position of the same to engage a forwardly facing shoulder on said holder, and transversely movable pins guided on opposite sides of the holder and engaging with the outer sides of said arms and operable manually for pressing said arms together and releasing said detent lug from said shoulder of the holder.

position for engaging the jaws with opposite sides of an object and disengaging said strip from said holder, and permitting said arms to withdraw themselves freely from said pressure means.

In testimony whereof we hereby affix our signatures.

CHARLES W. STICKEL.  
WILLIAM R. TUTTLE.

10. A tweezers comprising a support, a pair of jaws mounted for forward and backward movement on said support, spring means for moving said jaws backwardly, and manually releasable detent means for holding said jaws in a forward position on said support, said jaws being dish shaped and arranged with their concave sides facing each other. 75
11. A tweezers comprising a support, a pair of jaws mounted for forward and backward movement on said support, spring means for moving said jaws backwardly, and manually releasable detent means for holding said jaws in a forward position on said support, said jaws being dish shaped and arranged with their concave sides facing each other, and the front edges of said jaws being tapered forwardly. 80
12. A tweezers comprising a support, a pair of jaws mounted for forward and backward movement on said support, spring means for moving said jaws backwardly, manually releasable detent means for holding said jaws in a forward position on said support, and a head arranged at the rear end of said holder and projecting laterally therefrom to form a shoulder against which the hand may rest while operating the tweezers. 85
13. A tweezers comprising a support, a pair of jaws mounted for forward and backward movement on said support, spring means for moving said jaws backwardly, manually releasable detent means for holding said jaws in a forward position on said support, and a cap removably applied to the front end of said holder for enclosing said jaws. 90
14. A tweezers comprising a holder, a strip of resilient material movable forwardly and backwardly in said holder and bent to form two arms provided at their front ends with jaws and connected at their rear ends by a turn, spring means interposed between said strip and holder and operating to move said strip backwardly, means for moving said strip forwardly, detent means for holding said strip in its forward position on said holder, and pressure means engaging the outer side of said arms for moving them toward each other into a forwardly converging position. 95

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